

PERCEIVED WEIGHT MANAGEMENT SUCCESS
AMONG CHRONIC AND EPISODIC DIETERS

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ABSTRACT

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by Veronica L. Archer

Although dieting (i.e., managing food intake) is a popular weight management strategy, current models and measures of dieting fail to differentiate dieters with different dieting goals and dieting styles. Additionally, despite the popularity of dieting as a weight management strategy, many dieting attempts are unsuccessful, in that any weight loss is typically regained. However, success has traditionally been assessed using anthropometric measures, and rarely includes subjective measures of perceived success in weight management. This study categorized undergraduate females based on weight management strategy (dieting v. methods other than dieting), and further categorized self-identified dieters based on dieting goal (weight loss v. weight maintenance) and dieting style (chronic, episodic, or combination) and explored group differences on traditional dieting measures, body mass index (BMI) and perceived success in weight management. Results indicate that dieting was a less popular weight management strategy compared to non-dieting and that dieters tended to have higher BMIs and perceived themselves to be less successful in managing their weight compared to non-dieters. Further, Dieters with the goal of weight loss tended to score higher on commonly used measures of dieting, have higher BMIs and perceived themselves to be less successful at managing their weight compared to those dieters with the goal of weight maintenance. Lastly, chronic, episodic, and combination dieters all tended to score higher on traditional measures of dieting, and perceive themselves to be less successful in managing their weight than non-dieters. Similar results were found in a specific normal weight subgroup of the overall sample. Based on these findings it can be concluded that dieters are a diverse population that differ by goal and style, and

that traditional measures of dieting may be adequate for differentiating between dieters and non-dieters but fail to differentiate among dieters with different dieting styles. Implications for the validity of current dieting measures, future research and practice are discussed.

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CHAPTER I

INTRODUCTION

Dieting Prevalence

Dieting is common practice in the United States. Approximately 30-50% of adults report having actively tried to control their weight over the previous year (Bish, Blank, Serdula, Marcus, Kohl, & Khan, 2005; Kruger, Galuska, Serdula, & Jones, 2004; Laska, Pasch, Lust, Story, & Ehlinger, 2011; Weiss, Galuska, Khan, & Serdula, 2006). Among women these estimates are even higher. In a population study of 11,589 women, nearly 74% reported they were actively trying to control their weight (Williams, Germov, & Young, 2007). Further, over two thirds of women in the U.S. have reported dieting at least once in their lives, compared to 47% of men (Jeffery, Adlis, & Forster, 1991). Weight control practices more common in women than men, who also begin dieting at a younger age (Hill, 2002) and at a lower weight (Andreyeva, Long, Henderson, & Grode, 2010; Bish et al., 2005).

Among women, dieting tends to begin at an early age. Among adolescents, 30-42% of females report dieting compared to only about 10-26% of males (Field et al., 2007; Viner et al., 2006). One recent study found that, among females, over 30% of 7-year-olds, over 35% of 9-year-olds, and over 45% of 11-year-olds reported currently dieting (Westerberg-Jacobson, Ghaderi, & Edlund, 2012). The prevalence of dieting tends to increase in girls between the ages of 9 and 18 years and a motivation to be thinner at a younger age predicted dieting at an older age (Westerberg-Jacobson et al., 2012).

Among adults in the United States, Caucasian women are more likely to diet than women of other ethnicities (Breitkopf & Berenson, 2004; Chandler-Laney et al., 2009; Striegel-Moore, Wilfley, Caldwell, Needham, & Brownell, 1996), an effect also found in adolescents (Desmond,

Price, Hallinan & Smith, 1989; Field et al., 2007; Neumark-Sztainer, Story, Falkner, Beuhring, & Resnick, 1999; Strauss, 1999). Ethnic differences in dieting have been attributed to cultural differences in body satisfaction and ideals of thinness (Chandler-Laney et al., 2009; Harris, 1994; Miller et al., 2000). Chandler-Laney and colleagues (2009) found that, prior to a weight loss intervention, Caucasian women reported a more extensive dieting history, greater body dissatisfaction and less dietary control than African American women. Moreover, it was found that weight loss resulted in greater improvement in body satisfaction for African American compared to Caucasian women; and weight regain resulted in worsened dietary self-efficacy in Caucasian compared to African American women.

Socioeconomic status also impacts weight and dieting. In the U.S., obesity and overweight tends to be more common in lower SES groups than in higher SES groups (Drewnowski, Kurth & Krahn, 1994; Jeffery & French, 1996), an effect that has also been found globally (Kołolo & Woynarowska, 2004; Wardle & Griffith, 2001). Wardle and Griffith (2001) found that women in lower SES groups were 2.8 times more likely to be obese compared to women in higher SES groups. However, minority groups are overrepresented in lower SES groups confounding the relationship between dieting, ethnicity and SES (Crimmins, Hayward, & Seeman, 2004).

Compared to those in the normal weight range, obese and overweight individuals are more likely to feel overweight and to try to lose weight (Wardle & Griffith, 2001). A recent study found that, 93% of an obese, veteran population reported trying to lose or maintain weight (Wang et al., 2005), while only 30-50% of the overall population report active weight management (Bish et al., 2005). Haddock and colleagues (1999) found that 56% of overweight or obese women (BMI \geq 25) compared to 26% of normal weight women (BMI = 19-24.9)

reported *frequently* or *always* being concerned with their weight. Nearly 44% of overweight or obese women reported frequently or always dieting compared to less than 17% of normal weight women. Dieting and weight control practices have also been found to be positively related to BMI in adolescents (Desmond et al., 1989; Field et al., 2003; Strauss, 1999). Thus, although dieting is common amongst all individuals, especially women, it is even more prevalent among individuals who are overweight or obese.

Defining Weight Management

The prevalence estimates of weight management practices are widely variable. The first reason for the variability is related to the range of *strategies* utilized by different individuals to manage their weight. People who manage their weight use a number of different strategies, and sometimes a combination of strategies. In general, it has been found that dieting (referring only to changes in eating patterns) tends to be a more common strategy than exercise but that combinations of strategies, rather than just one, are the most common strategy for weight management (Stuckey et al., 2011; Wang et al., 2005; Weiss et al., 2006; Williams et al., 2007).

It has been found that general questions (e.g., Are you *trying* to lose weight?) typically are endorsed at greater rates than more specific questions (e.g., Are you *currently dieting* to lose weight?) indicating individuals utilize multiple weight management strategies. For example, Hill (2002) reported that 39% of women and 21% of men reported currently *trying* to lose weight. However, when asked more specifically if one was currently *dieting* to lose weight, only 24% of women and 8% of men endorsed the item.

Among women trying to lose weight, four of the five most common strategies involved changes in diet: eating less food (65%) exercising (58%), eating less fat (47%), switch to lower calorie foods (38.7%) and drink more water (34%; Weiss et al., 2006). Stuckey and colleagues

(2011) identified five primary themes from 36 strategies to control weight: better nutrition, physical activity, dietary restraint, self-monitoring, and motivation. Similarly, Wang and colleagues (2005) found that the most common weight loss strategy for obese veterans and non-veterans was to modify diet (81.3% and 84.6%, respectively) and that exercise was much less common (53% and 56%, respectively).

Lastly, Williams and colleagues (2007) found that 73.8% of women reported having used at least one strategy to control their weight over the past year and 83% used a combination of practices. Further, dietary modifications were more common than increasing exercise. In fact, the majority of women attempting to control their weight used some form of dietary change, and only 6.4% tried to control their weight without any dietary change. The most common combination of strategies for weight control included reducing portion size, reducing sugar and fat consumption, and exercise.

Thus, one reason for variability among weight managers is the wide range of strategies used to control weight. Despite the diversity in strategies, diet changes are reported to be the most common. Moreover all reported combination strategies included at least one diet modification, but did not always include exercise (Williams, 2007).

A second reason for the variability in prevalence estimates is related to the differences among dieters in *dieting goal*. Dieters typically have one of two goals for modifying their eating habits: to lose weight, or to maintain their current weight or avoid weight gain (Serdula et al., 1994; Wang et al., 2005; Wardle & Griffith, 2001; Weiss et al., 2006; Williamson et al., 1992). In a population study, Serdula and colleagues (1994) found that overall among female dieters, 39% had the goal of losing weight, whereas 28% had the goal of maintaining their current weight or avoiding weight gain. Among normal weight women, 48% endorsed a weight loss goal and

26% endorsed a weight management goal. Weight maintenance was a more popular goal among underweight dieters (36%), whereas weight loss was a more popular goal among normal weight, overweight (65%), and obese (70%) individuals.

Similarly, Wang and colleagues (2005) found that among obese veterans 75% had the goal of losing weight and 17% had the goal of maintaining weight. Comparable variability in goals was found among obese non-veterans such that 66% had the goal of losing weight compared to 21% with the goal of weight maintenance.

Wardle and Griffith (2001) reported findings from a British population sample that overall, 36% of women had the goal of weight loss, and the same number (36%) had the goal of maintaining their current weight. In another American population sample, Weiss et al. (2006) found that overall 48% of women had the goal of losing weight compared to 10% who had the goal of maintaining weight. More specifically, one third of normal weight women had the goal of losing weight and 14% had the goal of maintaining their current weight or avoiding weight gain.

Lastly, in a population sample, Williamson and colleagues (1992) found that overall among women, 39% were trying to lose weight compared to 28% who were trying to maintain their weight. Moreover, among normal weight women one third had the dieting goal of losing weight, and one third had the dieting goal of maintaining their weight. Again, weight loss was a more popular goal among overweight (55%), obese (64%) and severely obese populations (69%). Therefore, one important factor leading to variability amongst dieters is dieting goal, as both the goal of weight loss and the goal of weight maintenance are common.

A third reason for the variability in dieting prevalence estimates is the variability that exists between dieters in terms of *dieting style* (Field et al., 2003; Heatherton et al., 1997; Williamson et al., 1992). Williamson and colleagues (1992) reported that 11% of women

endorsed *always* dieting, and among women trying to lose weight as many as 27% reported that they were *always* dieting. However, the median duration of the current weight loss attempt was four weeks for women younger than 50 years and eight weeks for women 50 years and older.

Heatherton and colleagues (2007) also found that individuals varied in their dieting practices. Among college women 25% reported *never* dieting, 15% reported *rarely* dieting, 37% reported *sometimes* dieting, and 23% reported *often* dieting. At a ten year follow-up, individuals tended to diet less frequently, 33% reported *never* dieting, 30% reported *rarely* dieting, 27% reported *sometimes* dieting, and only 11% reported *often* dieting.

Similarly, among adolescents, Field and colleagues (2003) found dieting frequency to vary for both girls and boys. As many as 25% of the girls and 14% of the boys endorsed occasional dieting, whereas 5% of girls and 2% of boys endorsed frequent dieting. Therefore, individuals employ multiple dieting styles that differ in frequency and duration of dieting behaviors.

Additionally, multiple dieting styles have been proposed in the research literature. For example, some researchers describe dieters characterized by chronic, cyclical bouts of restricting food intake and punctuated by episodes of overeating (Herman & Polivy, 1980), whereas others characterize dieters as episodically engaging in dieting behaviors (Lowe, 1993). Consequently, multiple measures that conceptualize dieting in different ways (Herman & Polivy, 1980; Stunkard & Messick, 1985; Van Strien et al., 1986) capture heterogeneous groups of dieters.

Models of Dieting

Restraint Theory

Research on dieting began in the 1970's with the introduction of Restraint Theory (Herman & Mack, 1975; Herman & Polivy, 1980). According to Restraint Theory, both the physiological desire to eat and the cognitive restraint of that desire influence eating behavior. Restraint theory is based on Schachter's internal-external theory of obesity and Nisbett's set point theory of obesity, both of which suggest that overweight and obese individuals are more externally, and less internally responsive than normal weight individuals (Herman & Polivy, 1980; Nisbett, 1972; Schachter, 1968, 1971).

Two hypotheses have been developed regarding the nature of restraint and postulated in Restraint Theory (Herman & Polivy, 1980). The "disinhibition hypothesis" suggests that dieters' cognitive restraint can be interrupted by "disinhibitors" (i.e., stress, alcohol, mood, abstinence violation) resulting in overeating. The "obesity and restraint" hypothesis suggests that obese individuals are expected to have higher levels of restraint than normal weight individuals as a direct result of being overweight. Further, obese individuals are more sensitive to external food-cues as a direct result of their restraint, which leads to more frequent overeating. Although there are several studies corroborating the "disinhibition hypothesis", there is little support for the "obesity and restraint hypothesis" (see Ruderman, 1986 for a review).

Herman and Polivy have incorporated the construct of restraint into the Boundary Model (Herman & Polivy, 1984). According to the Boundary Model all individuals have a biologically determined range of consumption. Ruderman (1986) describes "The aversive qualities of hunger work to keep consumption above some minimum level and the aversive qualities of satiety work to keep it below some maximum level (p. 249)." The area between the hunger boundary and the

satiety boundary is referred to as the zone of “biological indifference”. Herman and Polivy posit that dieters have a wider zone of biological indifference, and that all dieters have a self-imposed “diet boundary” indicating the maximum allowed consumption. It is suggested that when dieters overeat and transgress that boundary, they will eat until they reach their satiety boundary.

Three-Factor Model

Lowe (1993) presents three major criticisms of traditional Restraint Theory: (1) it describes dieting as a unidimensional construct; (2) it fails to differentiate between restrained eating (characterized by cycling between periods of under- and over-eating) and current dieting; and (3) it fails to account for the long-term weight loss success of some dieters. As a result Lowe (1993) proposed an alternative three-dimensional model of dieting behavior. The three-factor model of dieting behavior defines dieting as a multidimensional construct consisting of three interrelated facets of dieting behavior: (1) frequency of dieting and overeating; (2) current dieting; and (3) weight suppression. According to Lowe, each of these facets is associated with different effects on eating.

The first factor, frequency of dieting and overeating, is a different perspective than Restraint Theory on disinhibited eating. According to Lowe (1993) restrained eaters’ vulnerability to disinhibited eating is a consequence of a history of dieting and overeating as opposed to a current state of dietary restraint. Therefore, Lowe argues that frequency of dieting and overeating plays a causal role in producing a vulnerability to disinhibited eating.

The second factor, current dieting, refers to individual efforts to restrict caloric intake to lose weight. The current dieting factor is considered to be a cognitive factor, and as such is characterized by one’s determination to diet rather than actual caloric deficits. According to Lowe, although it is true that most current dieters have a history of unsuccessful dieting (and as

such would be characterized as restrained eaters using the RRS; Lowe et al., 1991), the converse has not been found to be true. Lowe, Whitlow and Bellwoar (1991) found that only 37% of normal weight restrained eaters also reported currently dieting to lose weight. Therefore, these two factors (i.e., frequency of dieting and overeating and current dieting) are distinguished as two independent facets of dieting behavior that have different effects on eating behavior (Durrant, 1981; Klajner, Herman, Polivy & Chhabra, 1981; LeGoff & Spigelman, 1987; Rosen, 1981; Sahakian, Lean, Robbins, & James, 1981; Wooley & Wooley 1981).

If restrained eaters are defined as chronic dieters (Heatherton et al., 1988), then these findings suggests that current dieters are different than chronic dieters. Thus, whereas restrained eaters are considered to be chronic dieters, Lowe's current dieting factor represents episodic dieters characterized by occasional dieting efforts. Chronic and episodic dieters have been found to differ in eating behavior. In the laboratory, chronic dieters have been found to overeat after a high-calorie preload compared to without a preload (counterregulatory eating), whereas episodic dieters tend to eat more after weight loss than before, regardless of preload condition (Rodin, Moskowitz, & Brays, 1976; Wardle & Beales, 1988). Additional studies have corroborated the finding that the eating patterns of chronic and episodic dieters differ, regardless of objective caloric restriction or weight loss (Eldredge, 1993; Hetherington & Rolls, 1991; Lowe et al., 1991).

Finally, Lowe argues that by defining restrained eaters as unsuccessful dieters (Heatherton et al., 1988), restraint theorists fail to consider those restrained eaters who achieve long-term, sustained weight loss. Although most weight loss attempts are unsuccessful, especially in the overweight population (Brownell & Wadden, 1986; Schachter, 1982), some individuals are able to achieve sustained weight loss. There is some evidence that most restrained

eaters have achieved at least some success in reducing their weight below their highest prior weight (Lowe, 1984; Rand & Kulda, 1991). Lowe (1984) found that among normal weight individuals, restrained eaters were more than four times more overweight than unrestrained eaters at their highest prior weight (means of 11.7% vs. 2.5%, respectively). Thus, Lowe's third factor: *weight suppression* (i.e., "significant diet-induced weight loss that is sustained for a lengthy period of time [e.g., 1 year or more]"; Lowe, 1993, p. 100) is associated with effects on eating behavior that are distinct from those associated with frequent dieting and overeating or with current dieting.

Unlike restraint theory, Lowe's theory does not suggest that dieters are in a chronic cycle of restraint causing, and resulting from, disinhibited eating (Herman & Polivy, 1980). In contrast, Lowe's conceptualization of current dieting describes episodic dieters, who occasionally engage in dieting efforts.

Measures of Dieting

The Revised Restraint Scale

Developed based on the principles of Restraint Theory, the original Restraint Scale (RS; Herman & Mack, 1975), later The Revised Restraint Scale (RRS; Herman & Polivy, 1980; Appendix D) is a 10-item self-report measure that assesses weight fluctuation, chronic dieting, and attitudes toward weight and eating (Herman & Polivy, 1980). According to Heatherton and colleagues (1988) the RRS identifies dieters who are usually unsuccessful, as it reflects patterns of eating behaviors characterized by attempts to restrain eating and periodic losses of control. Therefore, individuals scoring high on the RRS are conceptualized as unsuccessful, chronic dieters that are concerned with their weight (Heatherton et al., 1988).

Blanchard and Frost (1983) identified two subscales of the RRS: the Weight Fluctuation (WF) subscale and the Concern for Dieting (CD) subscale (Blanchard & Frost, 1983). The WF measures weight instability and history of overweight and the CD assesses preoccupation with food, over concern about eating, and overeating tendencies. The WF subscale has been found to be related to binge eating (Williamson et al., 2007), and the CD subscale tends to be related to other popular measures of restraint (Wardle, 1987; Boerner et al., 2004; Van Strien et al., 2007)

Higher scores on the RRS have been found to be positively related to overweight (Drewnoski et al., 1982; Klem, Klesges, Bene, & Mellon, 1990; Ruderman, 1983, 1985) and have been shown to predict greater fluctuations in body weight (Heatherton, Polivy, & Herman, 1991; Tiggeman, 1994). High levels of restraint as measured by the RRS are also related to eating disorder symptomatology (Boerner, Spillane, Anderson, & Smith, 2004; Bourne, Bryant, Griffiths, Touyz, & Beumont, 1998; Heatherton & Polivy, 1992; Polivy & Herman, 1985; Prussin & Harvey, 1991; Ruderman & Grace, 1987; Scagliusi et al., 2005; Thelen, Farmer, Wonderlich, & Smith, 1991), and have been shown to predict future onset of binge eating (Stice, Killen, Hayward, & Taylor, 1998) and bulimic pathology (Killen et al., 1994; Killen et al., 1996). Therefore, the RRS, developed based on restraint theory, purports to identify chronic dieters, who tend to be unsuccessful in their attempts at weight management.

The psychometric properties of the RRS have been a frequent topic of debate (e.g., Heatherton et al., 1988; Ogden, 1993; Van Strien, 1999). The psychometrics of the RRS have been criticized on a number of grounds including the confounding of restraint with disinhibition, the validity for use with obese populations, problems with the factor structure of the scale, and difficulties in completing the scale (Heatherton et al., 1988). Despite these criticisms, Heatherton

et al. (1988) concluded that the RRS is still the best tool for identifying differences between dieters and non-dieters.

The classic study paradigm comparing restrained and non-restrained eaters identified by the RRS utilized a median split to differentiate between the two groups (e.g., Herman & Mack, 1975). Preliminary attempts at norming the RRS have found the female median score to be around 16 (range from 0-35), and the male median score to be around 12 (Drewnowski, Risky, & Deser, 1982; Polivy et al., 1988). However, the RRS is more commonly utilized in correlational studies, so establishing cutoff points is not typically necessary (Gorman & Allison, 1995). Also researchers have been cautioned against utilizing median splits on the RRS because of the significant loss of power, and it is suggested that more predictive power could be gained when using continuous RRS scores in regression analyses (Stein, 1988; Maxwell & Delaney, 1993). Similarly, others have suggested not dichotomizing RRS scores unless there is a strong rationale (Allison, Gorman & Primavera, 1993; Gorman & Allison, 1995)

Other Measures of Dieting

The Three Factor Eating Questionnaire (TFEQ; Stunkard & Messick, 1985), also the Eating Inventory (EI; Stunkard & Messick, 1988) and the Dutch Eating Behavior Questionnaire (DEBQ; Van Strien, Frijters, Bergers, & DeFares, 1986; Appendix E) are two other popular measures for assessing dietary restraint. The TFEQ assesses three dimensions of eating behavior: Cognitive Control of Eating (i.e., Restraint), Disinhibition, and Susceptibility to Hunger. The DEBQ also assesses three dimensions of eating behavior: Dietary Restraint (DEBQ-R), Emotional Eating and External Eating. These measures are thought to be more homogeneous measures of dietary restraint because disinhibition is assessed as a separate factor (Heatherton et al., 1988).

The DEBQ-R was developed to identify current dieters, without assessing for weight fluctuation or body size (Van Strien et al., 1986). The DEBQ-R can be further broken down into two factors: intentions to restrict food intake, and actual behavioral restraint (Larsen, Van Strien, Eisinga, Herman & Engels, 2007). The DEBQ-R is considered to be a purer measure of dieting than the RRS because disinhibition is assessed as a separate factor (Van Strien et al., 1986). Preliminary norms for the DEBQ-R have been identified (Gorman & Allison, 1995). However, it is suggested that DEBQ-R scores be analyzed as a continuous variable as the use of cutoff scores is typically unnecessary and dichotomizing scores minimizes power (Gorman & Allison, 1995).

The DEBQ-R is positively correlated with emotional eating ($r = .37$; Van Strien et al., 1986; $r = .15$ [women], $r = .48$ [men]; Wardle, 1987). Van Strien et al. (1986) found a slight positive correlation between DEBQ-R and external eating ($r = .16$), but Wardle (1987) found a slight negative correlation in women ($r = -.05$) and a slight positive correlation in men ($r = .08$). The emotional eating and external eating subscales are highly intercorrelated ($r = .48$; van Strien et al., 1986; $r = .45$ [women], $r = .32$ [men]; Wardle, 1987).

Therefore, the DEBQ-R was developed to identify individuals who are episodic dieters that are currently dieting. Further, these individuals are more likely to be successful in their weight management attempts compared to dieters identified using the RRS (e.g., Laessle et al., 1989). Laessle and colleagues (1989) found that scores on the DEBQ-R were significantly negatively correlated with mean daily caloric intake ($r = -.49$, $p < .0001$), indicating that those scoring higher on the DEBQ-R also reported eating fewer calories per day. In contrast, scores on the RRS were not found to be related to reported caloric intake ($r = -.04$).

Comparison of Measures of Dieting

The goal of the RRS, TFEQ-R and DEBQ-R is to identify dieters, so it is unsurprising that they are intercorrelated. Both the TFEQ-R and DEBQ-R have been found to be significantly correlated with the RRS (Allison et al., 1992; Laessle et al., 1989; Williamson et al., 2007). Further, the DEBQ-R and TFEQ-R were found to correlate with the RRS CD subscale, but not the RRS WF subscale (Wardle, 1987; Boerner et al., 2004; Van Strien et al., 2007).

The TFEQ-R and DEBQ-R are intercorrelated ($r = .66$ [Laessle et al., 1989], $r = .69$ [Williamson et al., 2007] $r = .89$ [Allison et al., 1992]) to a greater degree than either are related to the RRS. The similarity between these two measures is partially because they were both developed using items from Pudel, Metzdorff, & Oetting's (1975) measure of "latent obesity". Latent obesity is conceptualized as the tendency for normal weight individuals to exhibit eating patterns previously associated with obesity (e.g., external eating; Lowe & Thomas, 2009). The TFEQ-R also contains some items from the RS.

Despite some similarities and item overlap, validity studies of the RRS, DEBQ-R and TFEQ-R consistently find that they measure different constructs. While the RRS is typically considered a measure of chronic, unsuccessful dieting (Laessle et al., 1989; Heatherton et al., 1988), the TFEQ-R and DEBQ-R are often considered measures of successful dieting (Laessle et al., 1989; Stunkard & Messick, 1985; Van Strien, 1999; Williamson et al., 2007).

Laessle and colleagues (1989) found that the RRS was correlated with disinhibited eating and weight fluctuations, factors typically associated with unsuccessful dieting, and was not related to caloric restriction, whereas the TFEQ-R and DEBQ-R were correlated with behaviors more characteristic of successful dieting (e.g., actual restriction of food intake). However, it was also found that all three measures loaded onto a single motivation factor indicating that the RRS,

DEBQ-R and TFEQ-R similarly identified individuals who were motivated to diet because of concerns about shape and weight and a desire to be thin.

A second construct validity study (Williamson et al., 2007) also found that while the DEBQ-R loaded solely onto the intent to diet/ dietary restraint factor, the RRS loaded onto both the intent to diet/ dietary restraint factor and the binge-eating/ overeating factor. More specifically, the RSCD subscale also loaded onto both factors while the RSWF factor did not load onto either, but was correlated with binge-eating. Therefore, the RRS is likely to identify unsuccessful dieters due to a tendency toward restraint and binge-eating.

One criticism of the RRS, TFEQ-R and DEBQ-R is that these scales are not consistently found to be related to actual caloric restriction. Although some studies have found a negative correlation between scores on these dieting measures and caloric consumption (Herman & Mack, 1975; Herman, Polivy & Leone, 2005; Van Strien, Frijters, van Staverson, Defares & Deurenberg, 1986), a number of studies have not found an association between restraint and caloric restriction (Stice et al., 2007; Stice et al., 2004; Stice et al., 2010; Williamson et al., 2007).

Because overweight and obese individuals tend to score higher on restraint (e.g. Goldfield et al., 2010; Ruderman, 1983, 1985), and restrained eaters tend to gain weight (Drapeau et al., 2003; Klesges, Isbell, & Klesges, 1992; Stice, Cameron, Killen, Hayward, & Taylor, 1999), some have argued that restraint is a characteristic of unsuccessful dieting. However, other researchers have found higher restraint to be associated with successful dieting and weight loss (Stice et al., 2010; Tiggeman, 1994) and that restrained and unrestrained eaters do not differ in body dissatisfaction (Pietrowsky, Straub, & Hachl, 2003).

Therefore, popular dieting measures do not adequately capture the variability in dieting goal and dieting style that exists within dieters, nor are they capable of differentiating between successful and unsuccessful dieters.

Weight Management Success

Dieting, defined in this study as altering one's desired eating behavior to reach some weight-management goal, is a popular, but not particularly effective strategy for achieving and maintaining a healthy weight. Several reviews of obesity treatment outcome research conclude that diets lead to short term weight loss (about 5-10% of body weight) but that losses are not maintained (Jeffery et al., 2000; Perri & Fuller, 1995; Wooley & Garner, 1991). In one study, as many as two thirds of dieters regained more weight than they had lost (Mann, Tomiyama, Westling, Lew, Samuels & Chatman, 2007). Weight loss typically occurs during the first months on a diet or weight control program, but dieters often regain weight within a year or two (Aronne, Wadden, Isoldi, & Woodworth, 2009; Dansinger, Tatsioni, Wong, Chung, & Balk, 2007; Mann et al., 2007).

Weight management is defined in this study as one's ability to achieve or maintain a desired body size and weight. Weight management outcomes have been measured in a number of objective ways. Anthropometric measurements such as longitudinal assessment of BMI (Chambers & Swanson, 2012), waist circumference (Konttinen et al., 2009) binge eating frequency (Popkess-Vawter & Owens, 1999), and sustained weight loss (typically 5% or more) have all been used as objective measures of weight management outcomes (e.g., Ferguson & Spitzer, 1995; Wing & Hill, 2001; Wing & Phelan, 2005).

Others have defined successful dieting as a low tendency to overeat (Van Strien, 1997a; Westenhoefer, Broeckmann, Munch, & Pudel, 1994), as measured by the TFEQ disinhibition

factor (Ouwens et al., 2003; Van Strien et al., 2000; Yeomans & Coughlan, 2009) or the DEBQ external eating and emotional eating subscales (Ouwens et al., 2003; Van Strien et al., 2000).

In the dieting literature, the phenomenon of counterregulatory eating after a pre-load frequently observed in restrained eaters is only found when the RRS is used, as opposed to when other measures of restraint are applied (Ouwens et al., 2003). Indeed, a number of studies using the DEBQ-R and TFEQ-R have found that measures of disinhibition appear to be a better predictor of eating behavior than dietary restraint (Ouwens et al., 2003; Van Strien et al., 2000; Van Strien, 1997b; Westenhoefer et al., 1994).

Westenhoefer et al. (1994) found that dieters defined by the TFEQ-R only over ate after a pre-load if they were also disinhibited (TFEQ-Disinhibition). Thus, it was concluded that restrained eaters consist of two populations: those with a low (i.e., high scores on TFEQ-R and low scores on TFEQ-D) and those with a high susceptibility toward failure of restraint (i.e., high scores on the TFEQ-R and high scores on the TFEQ-D).

Van Strien (1997b) replicated these findings using the DEBQ scales for restraint, emotional and external eating along with the bulimia scale of the Eating Disorders Inventory (EDI; Garner, Olmsted & Polivy, 1983). Subjects scoring above the median on restraint and below the median on emotional eating, external eating, and bulimic symptoms were considered dieters with a low tendency toward failure of restraint, whereas subjects scoring above the median on restraint and above the 85th percentile on at least one of the scales of overeating (i.e., emotional eating, external eating, or bulimic symptoms) were considered dieters with a high tendency toward failure of restraint.

Dieters with a low tendency toward failure of restraint were considered to be successful dieters, whereas dieters with a high tendency toward failure of restraint were considered to be

unsuccessful dieters. Dieters with a low and high tendency toward failure of restraint were successfully differentiated 75.9% of the time on the basis of five predictive variables: ability to sustain a diet, frequency of binge-eating, present dieting, weight fluctuation and use of laxatives.

Van Strien and colleagues (2000) replicated the study of Westenhoefer and colleagues (1994). They found that measures of restraint alone (RS, DEBQ-R, and TFEQ-R) were not predictive of counterregulatory eating after a pre-load, but when restraint was analyzed in combination with tendency toward overeating (i.e., a composite of scores on emotional and external eating of the DEBQ and the bulimia scale of the EDI-2), restraint was predictive of counterregulatory eating and explained a significant proportion of variance in ice-cream consumption.

Ouwens and colleagues (2003) also found that restraint (as measured by RRS, DEBQ-R or TFEQ-R) was not related to food consumption, but that tendency toward overeating significantly predicted food consumption.

Although the above measures of weight management success are popular, they fail to assess an individual's perceived success with dieting. There are few studies that use self-reported weight management success as an outcome variable. Using a sample of predominantly normal weight undergraduate females, Stotland and Zuroff (1990) examined the relationship between measures of dieting self-efficacy (the Weight Locus of Control scale [WLOC]; Saltzer, 1982; and the Dieting Beliefs Scale [DBS]; Stotland & Zuroff, 1990) and three factors associated with successful weight management: self-perception of having a weight problem (e.g., "Do you see yourself as having a weight problem?"), confidence in reaching one's goal weight, and self-rated success at previous dieting attempts.

Using this method, it was found that individuals reporting more severe weight problems were more likely to believe that internal factors, particularly internal factors that are under one's control (i.e., willpower, effort) are responsible for one's weight management. Individuals' who reported greater confidence in reaching their weight-loss goals had higher levels of dieting self-efficacy and were more likely to reject the belief that uncontrollable external factors (i.e., available support) are responsible for weight management. Lastly, individuals reporting greater success at previous diets had higher levels of dieting self-efficacy and were more likely to believe that controllable personal factors are responsible for weight gain, particularly reflected by the rejection of the belief that uncontrollable internal properties (i.e., luck, fate, genes) or uncontrollable external circumstances are responsible for weight management.

Therefore, one way of measuring perceived successful weight management is by assessing self-perception of having a weight problem, confidence in reaching one's goal weight, and self-rated success at previous dieting attempts. Further, successful weight managers defined in this way are characterized by the belief that weight management is a function of internal/personal factors that are under one's control, rather than internal or external factors that are beyond one's control.

In a sample of British medical students Ogden (1993) asked subjects (1) whether they attempted to diet in order to lose weight, and (2) whether they regarded themselves as a successful dieter. Based on their responses to these two items, subjects were divided into three groups: successful dieters (dieters who rate their success at dieting as higher than their attempts), reasonable dieters (dieters who rate their success at dieting as the same as their attempts) and failed dieters (dieters who rate their success at dieting as lower than their attempts).

Using this method a significant difference between groups was found on DEBQ-R scores and RRS scores. Failed dieters scored the highest, and successful dieters scored the lowest on both measures of restraint. Thus, measuring dieting success as the ratio of self-reported attempted diets and self-reported successful diets categorizes successful dieters as being unrestrained or less restrained eaters and unsuccessful dieters as being highly restrained eaters.

Fishbach and colleagues were the first to assess perceived self-regulatory success among dieters. The Perceived Self-Regulatory Success in Dieting Scale (PSRS; Fishbach, Friedman, & Kruglanski, 2003) assesses dieting success by asking subjects to rate how successful they are in watching their weight, in losing weight, and how difficult it is for them to stay in shape. By assessing dieting success using the PSRS, successful dieters versus unsuccessful dieters were found to activate dieting goals in response to attractive food cues (Papies, Stroebe, & Aarts, 2008; Stroebe, Mensink, Aarts, Schut, & Kruglanski, 2008; Van Koningsbruggen, Stroebe, & Aarts, 2011), experience fewer food cravings (Meule, Lutz, Vogele & Kubler, 2012), and more frequent use of dietary control strategies (Meule, Westenhoefer, & Kubler, 2011). Moreover, using the PSRS, dieting success was found to be negatively correlated with BMI, concern for dieting, rigid dietary control strategies, food addiction symptoms, food cravings, binge eating frequencies, and impulsivity, and positively correlated with flexible dietary control strategies (Meule, Papies, & Kubler, 2012).

Van Strien (1997a) measured dieting success in three different ways: ability to sustain a diet, frequency of binge-eating, and weight fluctuation. Subjects who indicated that they were able to sustain a diet had higher restraint scores (DEBQ-R) than subjects who indicated that they could not sustain a diet. Subjects reporting either weight loss or weight fluctuation had significantly higher DEBQ-R scores than subjects reporting weight gain or weight maintenance.

Lastly, Restraint was not able to differentiate between successful and unsuccessful dieters when success was measured using frequency of binge-eating. However, those who reported at least one episode of binge-eating scored significantly higher on measures of overeating (emotional eating, external eating, and bulimic eating).

Lowe's (1993) weight suppression dimension of dieting has implications for dieting success. Sustained weight suppression has been found to be associated with appetitive reactions that enhance weight control including decreased appetite, specifically reduced eating and the development of sweetness aversion (Kleifeld & Lowe, 1991). For example, following a preload, weight suppressors tended to eat less (Lowe & Kleifeld, 1988) and rate sweet taste as less pleasant (Esses & Herman, 1984) relative to nonsuppressors. Moreover, women who reported engaging in permanent dieting behavior experienced fewer eating control problems compared to women engaging in intermittent dieting behaviors (Westenhoefer, Pudel, & Maus, 1990) suggesting that weight suppression (i.e., weight maintenance or avoidance of weight gain) is associated with an enhanced ability to manage one's weight.

Current Study

Evidence has been presented to support the notion that there are differences between dieters and non-dieters as well as important differences within dieters. Most dieting research uses measures of dietary restraint that have psychometric problems. Restraint, as measured by the RRS, is unable to differentiate between restraint and disinhibition in one person because of variance across time within one person in eating behavior (i.e., restrained eaters identified by RRS are characterized by chronic cycling between restricting and overeating). Other measures of restraint (DEBQ-R and TFEQ-R) are unable to differentiate between dieters with low versus high tendency to overeat due to variance across people in eating behavior. That is, some

restrained eaters also have a tendency to overeat, while others do not. Therefore, current measures of dieting do not capture important differences between and within dieters, including different dieting goals, dieting styles and perceived success in weight management.

This study seeks to categorize individuals in a novel way based on weight management strategy (i.e., dieting v. not dieting), dieting goal (i.e., weight loss v. weight maintenance) and dieting style (chronic, episodic, or combined). This study also seeks to assess weight management style or *typical* dieting practices, as opposed to *current* dieting status. By assessing weight management style in this way, it is hoped that individuals will be categorized based on meaningful differences in enduring weight management practices rather than current (but perhaps not typical) status.

In addition to weight management strategy (i.e., diet v. no diet) dieting goal among dieters must also be considered. Two main types of dieting goals emerged from the literature: the goal of weight loss and the goal of weight maintenance (Field et al., 2007).

This study seeks to assess the enduring weight management of four types of eaters: (1) *Non-Dieters* who do not diet to manage their weight by dieting (these individuals may use other means to manage their weight such as physical activity, or make no deliberate efforts at managing their weight); (2) *Chronic Dieters* who are almost always dieting; (3) *Episodic Dieters* who periodically restrict eating, but also have significant periods where eating is not constrained; and (4) *Combination Dieters* who are almost always dieting, but also periodically exercise additional restraint.

In this study, chronic dieters are similar to dieters described by Herman and Polivy (1980) using the Restraint Scale whereas episodic dieters reflect Lowe's (1993) observation that dieters tend to fluctuate between periods of dieting and non-dieting. The combination dieters

reflect a combination of both Herman and Polivy's chronic dieters and Lowe's episodic dieters such that these individuals are almost always dieting but periodically exert additional dieting efforts. As dieting in this study refers exclusively to changes in *eating* behavior, the non-dieting group takes into account that some individuals may rely on other strategies (e.g., lifestyle factors, exercise), rather than dietary restriction to manage weight, or may make no deliberate efforts to manage weight.

Weight management success has been measured in a variety of ways that fail to consider the individual's *perceived* success with dieting outcomes. Anthropometric measurements and scores on measures of restraint and disinhibition fail to answer the question of whether the dieter (or non-dieter) feels they are successful in managing their weight. This study will determine whether individuals endorsing different weight management styles also differ in their perception of their personal weight management success.

Research Hypotheses

I. Group Differences by Weight Management Strategy:

Hypothesis 1.1: A greater proportion of participants will endorse dieting than not dieting as a weight management strategy.

Hypothesis 1.2: Self-Identified dieters will score higher on the RRS and DEBQ-R than non-dieters.

Hypothesis 1.3: Self-identified dieters will have higher BMIs than non-dieters.

Hypothesis 1.4: Non-dieters will endorse greater perceived success in weight management compared to dieters.

II. Group Differences among Dieters by Dieting Goal:

Hypothesis 2.1: A greater proportion of dieters will endorse dieting with the goal of weight loss versus dieting with the goal of weight maintenance.

Hypothesis 2.2: Dieters endorsing weight loss as a dieting goal will score higher on the RRS and DEBQ-R than dieters endorsing weight maintenance as a dieting goal.

Hypothesis 2.3: Dieters endorsing weight loss as a dieting goal will have higher BMIs than dieters endorsing weight maintenance as a dieting goal.

Hypothesis 2.4: Dieters with the goal of weight maintenance will perceive themselves as more successful in weight management than those dieters with the goal of weight loss.

III. Group Differences among Dieters by Dieting Style:

Hypothesis 3.1: Chronic dieters will score higher on the RRS compared to episodic dieters. Conversely, episodic dieters will score higher on the DEBQ-R compared to chronic dieters.

Hypothesis 3.2: Episodic dieters will report greater weight management success compared to chronic or combination dieters.

CHAPTER II

METHOD AND PROCEDURES

Participants

Data were collected from 224 undergraduate females using the undergraduate research pool at Central Michigan University. Participants received course credit for taking part in the study. From the original sample of 224 participants, 1.3% (3 participants) of the sample was removed due to incomplete responding and one participant was removed because he was male. The overall sample size for the study was $N = 220$. Participants were primarily Caucasian (91.8%) and ranged in age from 18 to 37 years ($M = 19.9$ years). Participants were predominantly normal weight (70.9%), and ranged in BMI from 12.45 to 53.21 ($M = 24.0$).

Measures

Demographics

Participants were asked to complete a brief demographics questionnaire including, gender (as only females were included in analyses), ethnicity (Caucasian, African American, Hispanic/Latino, or Other), age, current height and weight, and highest weight. Participants were asked to report their current height and weight in order to calculate their BMI. BMI is a commonly used measure of adiposity and its validity in similar studies has been established (e.g., Mihalopoulos, Auinger, & Klein, 2008). Participants were also asked to report their highest weight at their current height (or since age 16) for exploratory purposes. (See Appendix A for Demographics Questionnaire).

Weight Management Style

Three dimensions of weight management style were assessed (i.e., weight management strategy, dieting goal and dieting style) using the 3-item Weight Management Style Questionnaire, developed for this study (See Appendix B for Weight Management Style Questionnaire).

Weight management strategy was assessed by asking participants to indicate which one of the following two weight management strategies listed best characterizes their typical weight management strategy: (1) “I diet to manage my weight” or (2) “I do not diet to manage my weight”. Participants were reminded that for the purpose of this study, dieting refers only to changes in eating behavior, and does not include changes in physical activity or other weight management strategies. Participants endorsing (2) “I do not diet to manage my weight”, were classified as *non-dieters* and skipped the following two questions regarding dieting goal and dieting strategy, and were directed to the next measure, perceived weight management success. Participants endorsing (1) “I diet to manage my weight” were classified as *dieters* and directed to the following two questions.

Among those endorsing dieting as a weight management strategy, dieting goal was assessed by asking participants to indicate which one of two goals best characterizes their typical weight management goal: (1) “In general, my goal of dieting is to lose weight” or (2) “In general, my goal of dieting is to avoid putting on weight”.

Also, among dieters dieting style was assessed by asking participants to indicate which one of three weight management styles best characterizes their typical weight management style: (1) “I am almost always dieting”; (2) “I diet occasionally”; or (3) “I am almost always dieting and occasionally do extra dieting to manage my weight”. Option one is intended to reflect

Herman and Polivy's (1980) chronic dieters, whereas option two is intended to reflect Lowe's (1993) episodic dieters. Option three was created as a combination of both types of dieters for exploratory purposes.

Perceived Weight Management Success

A one-item measure of Weight Management Success was developed for this study (See Appendix C for Weight Management Success Questionnaire). The purpose of this measure was to assess an individual's perceived weight management success using a modified version of the first item of the Perceived Self-Regulatory Success in Dieting Scale (PSRS; Fishbach et al., 2003). Participants were asked to rate on a 7-point scale how successful they perceived themselves to be in managing their weight. The item reads "In your opinion, how successful are you at managing your weight?" Responses range from 1 ("Very Unsuccessful") to 7 ("Very Successful").

Dietary Restraint

The Revised Restraint Scale (RRS; Herman & Polivy, 1980; Appendix D) is a 10-item self-report questionnaire assessing weight fluctuations, chronic dieting, and attitudes toward weight and eating. High scores on the RRS are reflective of a chronic dieting style characterized by dietary restriction and bouts of overeating. Internal consistency reliability estimates for the RRS range from $\alpha = .51-.86$ (Lowe & Thomas, 2009) and test-retest reliability estimates range from $\alpha = .64$ (1 month; Scagliusi et al., 2005) - $.95$ (2 weeks; Allison, Kalinsky & Gorman, 1992). The validity of the RRS in normal weight populations has been established (Lowe & Thomas, 2009).

The Dutch Eating Behavior Questionnaire Cognitive Restraint subscale (DEBQ-R; Van Strien et al., 1986) is a 10-item self-report questionnaire that assesses thoughts and behaviors related to dieting. High scores on the DEBQ-R (Appendix E) are reflective of a greater degree of deliberate, planned weight control. Participants were asked to respond to items on a 5-point Likert-type scale (1= never, 2 = seldom, 3 = sometimes, 4 = often and 5 = very often).

Internal consistency reliability estimates for the DEBQ-R range from $\alpha = .89-.95$ (Lowe & Thomas, 2009) and test-retest reliability is also good ($\alpha = .92$ [2 weeks], Allison et al., 1992; $\alpha = .85$ [4-5 weeks], Banasiak, Wertheim, Koerner, & Voudouris, 2001). The validity of the DEBQ-R in normal weight populations has been established (Lowe & Thomas, 2009).

Procedure

Students were recruited using the psychology department subject pool which provided a link directing them to the online survey. Participants were first taken to a module to obtain informed consent to research before beginning the survey. Participants were asked to check a box indicating that they agreed to participate in the study and are over the age of 18 (by declining participation, the subsequent page indicated that they have declined participation and instructed them to close out of the website). The consent module also informed the participants that they were free to stop participating at any point throughout the study.

The subsequent modules required participants to complete self-report measures, including demographic information, and the measures used for the study (measure of weight management style, weight-management success, RRS and DEBQ-R). Finally, participants were directed to a separate link to receive Sona-Systems credit for their participation.

Statistical Analyses

The hypothesis that a greater proportion of participants will endorse dieting than not dieting as a weight management strategy (Hypothesis 1.1) and the hypothesis that a greater proportion of dieters will endorse weight loss as a dieting goal versus weight maintenance (Hypothesis 2.1) were tested using a chi-square test.

The remaining hypotheses regarding group differences by weight management strategy, dieting goal, and dieting style on dependent variables were tested using multivariate analysis of variance (MANOVA). MANOVA was used to determine main effects across these groups on RRS and DEBQ-R scores, BMI, and perceived success in weight management. Unlike univariate ANOVA, MANOVA removes error from multicollinearity and thus provides a better estimate of main effects (Huberty & Morris, 1989).

The significance of the overall model was tested using Wilk's lambda (λ). Wilk's lambda is a multivariate F test, similar to the F test yielded from a univariate ANOVA. Hypothesized main effects were tested by examining the multivariate results for each dependent variable (RRS score, DEBQ-R score, BMI, and perceived success). Effect sizes were estimated using partial eta squared (η^2). Values for partial eta squared range from 0-1, with greater values indicating a greater proportion of variance in the dependent variable accounted for by the specific independent variable. *Cohen's d* was also calculated to determine the magnitude of standardized mean differences between groups. An effect size between 0.2 and 0.5 is considered small, between 0.5 and 0.8 is considered medium, and greater than 0.8 is considered large (Cohen, 1992).

CHAPTER III

RESULTS

Correlations and Descriptive Statistics

The mean BMI of the sample participants was found to be within the normal range ($M = 24.0$). The distribution of the sample by BMI classification is listed in Table 1. BMI was found to be significantly positively correlated with RRS scores ($r = .46, p < .01$) and, to a lesser degree, DEBQ-R scores ($r = .19, p < .01$), indicating that individuals with a higher BMI were more likely to score higher on the RRS and DEBQ-R. In contrast, BMI was found to be significantly negatively correlated with weight management success ($r = -.52, p < .01$), indicating that individuals with a higher BMI are less likely to perceive themselves as successful in managing their weight.

Scores on the RRS and DEBQ-R were significantly positively correlated ($r = .70, p < .01$), indicating that individuals who tended to score high on the RRS also tended to score high on the DEBQ-R. Further, both RRS and DEBQ-R scores were significantly negatively correlated with perceived success ($r = -.37, p < .01$ and $r = -.18, p < .01$, respectively), indicating that individuals scoring higher on the RRS and DEBQ-R were less likely to perceive themselves as successful in managing their weight. Correlations between dependent variables are listed in Table 2.

Table 1. *Sample Distribution by BMI*

| BMI Class | Frequency | Percent |
|---------------------------|-----------|---------|
| Very Severely Underweight | 1 | .5 |
| Severely Underweight | 1 | .5 |
| Underweight | 12 | 5.5 |
| Normal Weight | 156 | 70.9 |
| Overweight | 23 | 10.5 |
| Moderately Obese | 16 | 7.3 |
| Severely Obese | 6 | 2.7 |
| Very Severely Obese | 5 | 2.3 |

Note. $N = 220$. Very Severely Underweight BMI < 15; Severely Underweight BMI = 15.0-15.99; Underweight BMI = 16.0-18.49; Normal Weight BMI = 18.5-24.99; Overweight BMI = 25–29.99; Moderately Obese (Obese Class I) BMI = 30.0-34.99; Severely Obese (Obese Class II) = 35.0-39.99; Very Severely Obese (Obese Class III) BMI \geq 40.

Table 2. *Correlations Among BMI, RRS, DEBQ-R, and Success*

| | BMI | RRS | DEBQ-R |
|---------|-------------|-------------|-------------|
| BMI | 1.00 | | |
| RRS | .46 | 1.00 | |
| DEBQ-R | .19 | .70 | 1.00 |
| Success | -.52 | -.37 | -.18 |

Note. $N = 220$. $p < .01$ for all r s.

Overall, fewer subjects endorsed dieting as a weight management strategy ($N = 93$; 42.3%) compared to methods other than dieting ($N = 127$; 57.7%). Among dieters, 73.1% reported that their goal was to lose weight, compared to 26.9% that reported their goal was to maintain their current weight or avoid weight gain.

Among dieters, 24.7% reported chronic dieting, 59.1% reported episodic dieting, and 16.1% reported combination dieting. Among chronic dieters, 95.7% reported the goal of dieting was weight loss and 4.3% reported the goal of dieting was weight maintenance. Among Episodic dieters, 63.6% reported the goal of dieting was weight loss and 36.4% reported the goal of dieting was weight maintenance. Among Combination dieters, 73.3% reported the goal of dieting

was weight loss and 26.7% reported the goal of dieting was weight maintenance. See Table 3 for the frequency and variability in weight management practices among dieters.

Table 3. *Frequency Table of Weight Management Practices among Dieters*

| | Weight Loss Goal | Weight Maintenance Goal | Total |
|-------------|------------------|-------------------------|-------|
| Episodic | 35 | 20 | 55 |
| Chronic | 22 | 1 | 23 |
| Combination | 11 | 4 | 15 |
| Total | 68 | 25 | 93 |

Note. Dieters $N = 93$.

BMI was found to be significantly negatively correlated with perceived success in weight management ($r = -.52, p < .01$), indicating that individuals with higher BMI are less likely to perceive themselves as being successful in managing their weight. Table 4 contains the perceived success ratings among the different BMI classes. Because some groups contained very few individuals, the very severely underweight, severely underweight and underweight classes have been collapsed into one underweight group. Similarly, the moderately obese, severely obese, and very severely obese groups were collapsed into one obese group.

Among underweight individuals, 71.5% of participants reported being successful or very successful at managing their weight. Among Normal weight participants, 37.8% of participants reported being successful or very successful at managing their weight. Among overweight and obese individuals, none reported being very successful, and only 17.4% and 3.7%, respectively, reported feeling successful at managing their weight. In contrast, none of the individuals in the underweight group reported being unsuccessful or very unsuccessful in managing their weight. Among normal weight participants, only 2.6% reported being unsuccessful or very unsuccessful at managing their weight. However, among overweight participants, 34.8% reported being

unsuccessful at managing their weight, and among obese participants, 44.4% reported being unsuccessful or very unsuccessful at managing their weight.

Table 4. *Perceived Success Ratings Among Different BMI Classes*

| | Very Unsucc. | Unsuccessful | Somewhat Unsuccessful | Neutral | Somewhat Successful | Successful | Very Successful |
|------------------|-----------------|--------------|--------------------------|----------|------------------------|------------|--------------------|
| Underweight | 0(0.0) | 0(0.0) | 1(7.1) | 2(14.3) | 1(7.1) | 4(28.6) | 6(42.9) |
| Normal Weight | 2(1.3) | 2(1.3) | 15(9.6) | 20(12.8) | 58(37.2) | 42(26.9) | 17(10.9) |
| Overweight | 0(0.0) | 8(34.8) | 8(34.8) | 0(0.0) | 3(13.0) | 4(17.4) | 0(0.0) |
| Obese | 6(22.2) | 6(22.2) | 5(18.5) | 4(14.8) | 5(18.5) | 1(3.7) | 0(0.0) |

Note. $N = 220$. Frequency(Percentage). Very Severely Underweight ($N = 1$), Severely Underweight ($N = 1$), and Underweight ($N = 12$) groups were collapsed into one Underweight group ($N = 14$). Normal Weight ($N = 156$). Overweight $N = 23$. Moderately Obese ($N = 16$), Severely Obese ($N = 6$), and Very Severely Obese ($N = 5$) were collapsed into one Obese group ($N = 27$).

Table 5 contains the distribution of the full range BMI sample by weight management strategy, dieting goal, and dieting style. Overall, dieting was less popular compared to non-dieting as a weight management strategy. However, among overweight individuals, 73.9% endorsed dieting as a weight management strategy. Among dieters, weight loss was a more common dieting goal than weight maintenance, except among underweight individuals. Of the two underweight dieters, both endorsed weight maintenance as a dieting goal. In contrast 66.1% of normal weight dieters, 94.1% of overweight dieters, and 91.7% of obese dieters endorsed weight loss as a dieting goal.

Among dieters episodic dieting (or occasional dieting) was the most commonly endorsed dieting strategy. However, as BMI increased, a greater percentage of dieters endorsed chronic dieting. For example chronic dieting was endorsed by 19% of normal weight dieters, 35% of overweight dieters, and 33% of obese dieters. Further, 25% of obese dieters also endorsed combination dieting. Therefore, those with a higher BMI tend to engage in more intense dieting styles (chronic and combination) versus individuals with lower BMI.

Table 5. *Distribution of Sample by Weight Management Strategy, Dieting Goal, and Dieting Style.*

| | Non-Dieter | Dieter | Weight Loss | Weight Maintenance | Chronic | Episodic | Combination |
|---------------|------------|----------|-------------|--------------------|----------|----------|-------------|
| Underweight | 12(85.7) | 2(14.3) | 0(0.0) | 2(100.0) | 1(50.0) | 1(50.0) | 0(0.0) |
| Normal Weight | 94(60.3) | 62(39.7) | 41(66.1) | 21(33.9) | 12(19.4) | 39(62.9) | 11(17.7) |
| Overweight | 6(26.1) | 17(73.9) | 16(94.1) | 1(5.9) | 6(35.3) | 10(58.8) | 1(5.9) |
| Obese | 15(55.6) | 12(44.4) | 11(91.7) | 1(8.3) | 4(33.3) | 5(41.7) | 3(25.0) |

Note. $N = 220$. Frequency(Percentage). Very Severely Underweight ($N = 1$), Severely Underweight ($N = 1$), and Underweight ($N = 12$) groups were collapsed into one Underweight group ($N = 14$). Normal Weight ($N = 156$). Overweight $N = 23$. Moderately Obese ($N = 16$), Severely Obese ($N = 6$), and Very Severely Obese ($N = 5$) were collapsed into one Obese group ($N = 27$).

Hypothesis Tests

Group Differences by Weight Management Strategy

Contrary to the hypothesis that a greater proportion of participants would endorse dieting as a weight management strategy compared to other strategies, the opposite result was found. In the current sample a significantly greater proportion of participants endorsed methods other than dieting as their primary weight management strategy, $\chi^2(1, N = 220) = 5.26, p = .02$.

Weight management strategy was found to have an overall significant effect on RRS scores, DEBQ-R scores, BMI, and perceived success, Wilks $\Lambda = .68, F(4,215) = 25.73, p < .001$. As hypothesized, dieters scored significantly higher on RRS, $F(1,218) = 80.00, p < .001, \eta^2 = .27$, and DEBQ-R, $F(1,218) = 71.19, p < .001, \eta^2 = .25$) than non-dieters. The magnitude of the mean difference of RRS scores between dieters ($M = 17.34, SD = 4.52$) and non-dieters ($M = 11.69, SD = 4.71$) was medium ($d = .61$). The magnitude of the mean difference of DEBQ scores between dieters ($M = 33.29, SD = 6.66$) and non-dieters ($M = 24.65, SD = 8.07$) was medium ($d = .59$).

As hypothesized, Dieters as a group had significantly higher BMIs than non-dieters, $F(1,218) = 7.01, p < .01, \eta^2 = .03$. The magnitude of the mean difference of BMI between dieters ($M = 25.10, SD = 5.58$) and non-dieters ($M = 23.17, SD = 5.16$) was small ($d = .18$).

Although it was hypothesized that non-dieters would endorse greater perceived success in weight management compared to dieters, no significant difference was found between dieters and non-dieters on perceived ability to successfully manage their weight, $F(1, 218) = .38, p = .54, \eta^2 = .002$.

Table 6. *Main Effects of Weight Management Strategy*

| Variable | Non-Dieter | Dieter | <i>F</i> | <i>p</i> | η^2 | <i>d</i> |
|----------|----------------------|----------------------|----------|----------|----------|----------|
| RRS | 11.69(4.71) | 17.34(4.52) | 80.00 | < .001 | .27 | .61 |
| DEBQ-R | 24.65(8.07) | 33.29(6.66) | 71.19 | < .001 | .25 | .59 |
| BMI | 23.17(5.16) | 25.10(5.58) | 7.00 | < .01 | .03 | .18 |
| Success | 4.72(1.67) | 4.59(1.45) | .38 | .54 | .002 | .04 |

Note. $N = 220$. Mean(**Standard Deviation**). Non-Dieter $N = 127$. Dieter $N = 93$.

Group Differences by Dieting Goal

As hypothesized, a significantly greater proportion of dieters endorsed weight loss as a dieting goal compared to weight maintenance, $\chi^2(1, N = 93) = 19.88, p < .001$.

Dieting goal was found to have an overall significant effect on RRS scores, DEBQ-R scores, BMI, and perceived success, Wilks $\Lambda = .77, F(4,88) = 6.48, p < .001$. As hypothesized, Dieters with the goal of weight loss scored significantly higher than dieters with the goal of weight maintenance on the RRS, $F(1, 91) = 11.30, p = .001, \eta^2 = .11$, and the DEBQ-R, $F(1, 91) = 10.88, p = .001, \eta^2 = .11$. The magnitude of the mean difference between dieters with the goal of weight loss ($M = 18.25, SD = 4.30$) and dieters with the goal of weight maintenance ($M = 14.88, SD = 4.24$) on RRS scores is medium ($d = .40$). The magnitude of the mean difference

between dieters with the goal of weight loss ($M = 34.60, SD = 5.88$) and dieters with the goal of weight maintenance ($M = 29.72, SD = 7.44$) on DEBQ-R scores is medium ($d = .37$).

Consistent with hypotheses, dieters with the goal of weight loss had significantly higher BMIs compared to dieters with the goal of weight maintenance, $F(1, 91) = 11.38, p = .001, \eta^2 = .11$. The magnitude of the mean difference between dieters with the goal of weight loss ($M = 26.22, SD = 5.88$) and dieters with the goal of weight maintenance ($M = 22.05, SD = 3.07$) on BMI is medium ($d = .47$).

As hypothesized, dieters with the goal of weight maintenance reported greater success in weight management compared to dieters with the goal of weight loss, $F(1, 91) = 10.67, p = .002, \eta^2 = .11$. The magnitude of the mean difference between dieters with the goal of weight loss ($M = 4.31, SD = 1.47$) and dieters with the goal of weight maintenance ($M = 5.36, SD = 1.08$) on perceived success in weight management is medium ($d = .41$).

Table 7. *Main Effects of Dieting Goal*

| Variable | Lose | Maintain | F | p | η^2 | d |
|----------|----------------------|----------------------|-------|------|----------|-----|
| RRS | 18.25(4.30) | 14.88(4.24) | 11.30 | .001 | .11 | .40 |
| DEBQ-R | 34.60(5.88) | 29.72(7.44) | 10.88 | .001 | .11 | .37 |
| BMI | 26.22(5.88) | 22.05(3.07) | 11.38 | .001 | .11 | .47 |
| Success | 4.31(1.47) | 5.36(1.08) | 10.67 | .002 | .11 | .41 |

Note. Dieter $N = 93$. Mean(**Standard Deviation**). Weight Loss Goal $N = 68$, Weight Maintenance Goal $N = 25$.

Group Differences by Dieting Style

Overall there was a significant main effect for dieting style on RRS scores, DEBQ-R scores, BMI, and perceived success, *Wilk's Λ* = .63, $F(12, 564) = 8.89, p < .001, \eta^2 = .14$. A significant main effect for dieting style was found for RRS scores, $F(3, 216) = 31.83, p < .001, \eta^2 = .31$, and DEBQ-R scores, $F(3, 216) = 27.60, p < .001, \eta^2 = .28$. A significant main effect for

dieting style was also found for BMI, $F(3, 216) = 3.63, p = .01, \eta^2 = .05$. Contrary to hypotheses, no significant difference was found among individuals with different dieting styles on perceived success in weight management, $F(3, 216) = 1.39, p = .25, \eta^2 = .02$.

Tukey's HSD post-hoc test was used to determine specifically which dieting style groups differed on RRS score, DEBQ score, and BMI. Chronic dieters ($M = 19.30, SD = 3.69, p < .001$), episodic dieters ($M = 16.00, SD = 4.14, p < .001$), and combination dieters ($M = 19.27, SD = 5.42, p < .001$) scored significantly higher on the RRS compared to non-dieters ($M = 11.69, SD = 4.71$). Also, as hypothesized, chronic dieters ($M = 19.30, SD = 3.69$) scored significantly higher than episodic dieters ($M = 16.00, SD = 4.14, p = .02$) on the RRS.

Chronic dieters ($M = 35.57, SD = 6.32, p < .001$), episodic dieters ($M = 31.38, SD = 5.73, p < .001$), and combination dieters ($M = 36.80, SD = 8.14, p < .001$) scored significantly higher on the DEBQ-R compared to non-dieters ($M = 24.65, SD = 8.07$). Although it was hypothesized that episodic dieters would report greater weight management success compared to chronic or combination dieters, this hypothesis was not supported.

Chronic dieters ($M = 26.78, SD = 8.07$) had significantly greater BMIs than non-dieters ($M = 23.17, SD = 5.16, p = .02$). The magnitude of this difference was small ($d = .19$).

Table 8. *Main Effects of Dieting Style*

| Dependent Variable | Chronic | Episodic | Combination | Non-Dieter | <i>F</i> | <i>p</i> | η^2 |
|--------------------|----------------------|----------------------|----------------------|----------------------|----------|----------|----------|
| RRS | 19.30(3.69) | 16.00(4.14) | 19.27(5.42) | 11.69(4.71) | 31.83 | < .001 | .31 |
| DEBQ-R | 35.57(6.32) | 31.38(5.73) | 36.80(8.14) | 24.65(8.07) | 27.60 | < .001 | .28 |
| BMI | 26.78(8.07) | 24.26(3.95) | 25.63(5.86) | 23.17(5.16) | 3.63 | .01 | .05 |
| Success | 4.09(1.73) | 4.84(1.21) | 4.47(1.64) | 4.72(1.67) | 1.39 | .25 | .02 |

Note. $N = 220$. Mean(**Standard Deviation**). Chronic Dieter $N = 23$, Episodic Dieter $N = 55$, Combination Dieter $N = 15$, Non-Dieter $N = 127$.

A MANOVA was used to determine whether a significant interaction between diet goal and diet style was evident for RRS score, DEBQ-R score, BMI and success. However, no significant interaction effect was found between dieting goal and dieting style, *Wilks's Λ* = .94, $F(8,168) = .68$, $p = .71$, $\eta^2 = .03$.

Additionally, perceived success was dichotomized into unsuccessful (collapsed somewhat unsuccessful, unsuccessful, and very unsuccessful groups) and successful (collapsed somewhat successful, successful, and very successful) groups and a MANOVA was used to determine whether a significant interaction between dieting style (non-dieter, chronic dieter, episodic dieter, and combination dieter) and success (unsuccessful and successful) was evident for RRS score, DEBQ-R score, or BMI. No significant interaction effect was found between dieting style and perceived success, *Wilks's Λ* = .95, $F(9,448) = 1.03$, $p = .42$, $\eta^2 = .02$. However, there was a main effect found for the dichotomized success variable on RRS scores, $F(1,186) = 22.25$, $p < .001$, $\eta^2 = .11$, and BMI, $F(1,186) = 38.05$, $p < .001$, $\eta^2 = .17$, such that individuals who perceived themselves to be successful ($N = 140$, 72.2%) scored significantly lower on the RRS ($d = .35$) and had significantly lower BMIs ($d = .52$) compared to individuals who perceived themselves to be unsuccessful ($N = 54$, 27.8%). No differences were found on DEBQ-R scores between self-reported successful and unsuccessful weight managers.

Group Differences by BMI

An overall significant main effect was found for BMI class on RRS scores, DEBQ-R scores, and perceived success, *Wilks's Λ* = .19, $F(12, 564) = 41.83$, $p < .001$, $\eta^2 = .43$. A significant main effect was found for RRS scores, $F(3, 216) = 18.60$, $p < .001$, $\eta^2 = .21$, DEBQ-R, $F(3, 216) = 5.57$, $p = .001$, $\eta^2 = .07$, and perceived success, $F(3, 216) = 26.77$, $p < .001$, $\eta^2 = .27$.

Tukey's HSD post-hoc test was used to determine specifically which BMI groups differed on RRS score, DEBQ score, and perceived success. Both overweight and obese individuals scored significantly higher than underweight and normal weight individuals on the RRS. The magnitude of the difference between underweight ($M=10.43$, $SD = 6.41$) and overweight individuals ($M= 19.04$, $SD = 5.02$) was large ($d = .75$). The magnitude of the difference between underweight and obese individuals ($M = 17.85$, $SD = 5.02$) was medium ($d = .65$). The magnitude of the difference between normal weight ($M = 13.03$, $SD = 4.68$) and overweight individuals was medium ($d = .62$). The magnitude of the difference between normal weight and obese individuals was medium ($d = .50$).

Overweight individuals ($M = 34.00$, $SD = 6.56$) scored significantly higher on the DEBQ-R than both underweight ($M = 23.14$, $SD = 12.20$) and normal weight individuals ($M = 27.81$, $SD = 8.18$). The magnitude of the mean differences between these groups were both medium ($d = .58$ and $.42$, respectively).

Both underweight and normal weight individuals perceived themselves to be more successful than overweight or obese individuals. The magnitude of the difference between underweight ($M = 5.43$, $SD = 1.83$) and overweight individuals ($M = 3.43$, $SD = 1.53$) was medium ($d = .60$). The magnitude of the difference between underweight and obese individuals ($M = 2.96$, $SD = 1.56$) was large ($d = .73$). The magnitude of the difference between normal weight ($M = 5.08$, $SD = 1.24$) and overweight individuals was medium ($d = .60$). The magnitude of the difference between normal weight and obese individuals was large ($d = .76$).

Table 9. *Main Effects of BMI Class*

| Dependent Variable | Underweight | Normal Weight | Overweight | Obese | <i>F</i> | <i>p</i> | η^2 |
|--------------------|-----------------------|----------------------|----------------------|----------------------|----------|----------|----------|
| RRS | 10.42(6.42) | 13.03(4.68) | 19.04(4.70) | 17.85(5.02) | 18.60 | < .001 | .21 |
| DEBQ-R | 23.14(12.20) | 27.81(8.19) | 34.00(6.56) | 28.96(8.45) | 5.57 | < .001 | .07 |
| Success | 5.43(1.83) | 5.08(1.24) | 3.43(1.53) | 2.96(1.56) | 26.77 | < .001 | .27 |

Note. *N* = 220. Mean(**Standard Deviation**). Underweight *N* = 14, Normal Weight *N* = 156, Overweight *N* = 23, Obese *N* = 27.

Exploratory Analyses

A specific subgroup of the total sample, normal weight individuals who have never been overweight, was investigated for exploratory purposes. Of the total sample, *N* = 124 participants were currently within the normal BMI range and had never been in the overweight or obese range at their highest weight. Similar to the demographics of the entire sample, these participants were predominantly Caucasian (95.2%) and ranged in age from 18-25 years (*M* = 19.6). Among this subgroup, the mean BMI was *M* = 21.70.

Correlations and Descriptive Statistics

Body Mass Index (BMI) was found to be significantly positively correlated with RRS scores ($r = .33, p < .01$) and DEBQ-R scores ($r = .30, p < .01$), indicating that those with greater BMIs also tended to score higher on the RRS and the DEBQ-R. Further, BMI was significantly negatively correlated with perceived success in weight management ($r = -.22, p < .05$), indicating that those with a higher BMI were less likely to perceive themselves to be successful at managing their weight.

Scores on the RRS and DEBQ-R were highly intercorrelated ($r = .80, p < .01$), and both the RRS and DEBQ-R were significantly negatively correlated with perceived success ($r = -.22,$

$p < .05$ and $r = -.24$, $p < .01$, respectively). Therefore, those individuals who scored high on the RRS also tended to score high on the DEBQ-R, and those who scored higher on the RRS and DEBQ-R were less likely to perceive themselves to be successful at managing their weight.

Table 10. *Normal Weight Sub-Sample Correlations among BMI, RRS, DEBQ-R, and Success*

| | BMI | RRS | DEBQ-R | Success |
|---------|-------|-------|--------|---------|
| BMI | - | - | - | - |
| RRS | .33** | - | - | - |
| DEBQ-R | .30** | .80** | - | - |
| Success | -.22* | -.22* | -.24* | - |

Note. $N = 124$.

* $p < .05$. ** $p < .01$

Fewer subjects endorsed dieting as a weight management strategy ($N = 46$; 37.1%) compared to other methods ($N = 78$; 62.9%). Overall 60.9% of dieters reported dieting with the goal of weight loss compared to 39.1% that reported dieting with the goal of weight maintenance. Among dieters, 17.4% reported chronic dieting, 67.4% reported episodic dieting, and 15.2% reported combination dieting. All individuals who reported chronic dieting also reported a dieting goal of weight loss. Among episodic dieters, 51.6% reported a dieting goal of weight loss, and 48.4% reported a dieting goal of weight maintenance. Among combination dieters, 57.4% reported a dieting goal of weight loss, and 42.9% reported a dieting goal of weight maintenance. See Table 11 for the frequency and variability in weight management practices.

Table 11. *Frequency Table of Weight Management Practices among Dieters within the Normal Weight Sub-Sample*

| Dieting Style | Weight Loss Goal | Weight Maintenance Goal | Total |
|---------------|------------------|-------------------------|-------|
| Episodic | 16 | 15 | 31 |
| Chronic | 8 | 0 | 8 |
| Combination | 4 | 3 | 7 |
| Total | 28 | 18 | 46 |

Note. Dieters $N = 46$.

Group Differences by Weight Management Strategy

Consistent with findings from the full sample, in the normal weight sub-sample a significantly greater proportion of participants endorsed methods other than dieting as their primary weight management strategy, $\chi^2(1, N = 124) = 8.26, p = .004$. This finding is contrary to the hypothesized result that a greater proportion of participants would endorse dieting as a weight management strategy compared to other strategies.

Dieting strategy was found to have an overall significant effect on RRS scores, DEBQ-R scores, and perceived success, Wilks $\Lambda = .73, F(3,120) = 14.80, p < .001$. Dieters scored significantly higher on RRS, $F(1,122) = 34.40, p < .001, \eta^2 = .22$, and DEBQ-R, $F(1,122) = 40.08, p < .001, \eta^2 = .25$) than non-dieters. The magnitude of the mean difference of RRS scores between dieters ($M = 15.11, SD = 3.55$) and non-dieters ($M = 10.85, SD = 4.11$) was medium ($d = .56$). The magnitude of the mean difference of DEBQ scores between dieters ($M = 31.87, SD = 6.52$) and non-dieters ($M = 23.76, SD = 7.10$) was medium ($d = .60$). No significant difference was found between dieters and non-dieters on perceived ability to successfully manage their weight, $F(1, 122) = .15, p = .70, \eta^2 = .001$.

Table 12. *Normal Weight Sub-Sample Main Effects of Weight Management Strategy*

| Variable | Non-Dieter | Dieter | <i>F</i> | <i>p</i> | η^2 | <i>D</i> |
|----------|----------------------|----------------------|----------|----------|----------|----------|
| RRS | 10.85(4.11) | 15.11(3.55) | 34.40 | < .001 | .22 | .56 |
| DEBQ-R | 23.76(7.10) | 31.87(6.52) | 40.08 | < .001 | .25 | .60 |
| Success | 5.18(1.39) | 5.08(1.09) | .149 | .70 | .00 | .04 |

Note. $N = 124$. Non-Dieter $N = 78$. Dieter $N = 46$. Mean (**Standard Deviation**).

Group Differences by Dieting Goal

As hypothesized, a greater proportion of dieters endorsed weight loss as a dieting goal compared to weight maintenance. However, this difference failed to reach significance, $\chi^2(1, N = 46) = 2.17, p = .14$.

Dieting goal had an overall significant effect on RRS scores, DEBQ-R scores, and perceived success, *Wilks's Lambda* = .64, $F(3,42) = 7.77, p < .001$. Dieters whose goal is weight loss scored significantly higher on the RRS, $F(1,44) = 7.44, p < .01, \eta^2 = .15$, and DEBQ-R, $F(1,44) = 15.38, p < .001, \eta^2 = .26$) than those dieters with the goal of weight maintenance. The magnitude of the difference on RRS scores between dieters with the goal of weight loss ($M = 16.18, SD = 2.92$) and dieters with the goal of weight maintenance ($M = 13.44, SD = 3.87$) was medium ($d = .40$). The magnitude of the difference on the DEBQ-R between dieters with the goal of weight loss ($M = 34.50, SD = 5.34$) and dieters with the goal of weight maintenance ($M = 27.78, SD = 6.16$) was also medium ($d = .58$).

Those dieters who reported dieting to maintain weight or avoid weight gain reported greater success at managing their weight than those dieters whose goal was to lose weight, $F(1,44) = 10.00, p < .01, \eta^2 = .19$. The magnitude of the difference in perceived success between dieters with the goal of weight maintenance ($M = 5.67, SD = .84$) and dieters with the goal of weight loss ($M = 4.71, SD = 1.08$) was medium ($d = .50$).

Table 13. *Normal Weight Sub-Sample Main Effects of Dieting Goal*

| Variable | Weight | | <i>F</i> | <i>p</i> | η^2 | <i>d</i> |
|----------|----------------------|----------------------|----------|----------|----------|----------|
| | Weight Loss | Maintenance | | | | |
| RRS | 16.18(2.92) | 13.44(3.87) | 7.44 | .009 | .145 | .40 |
| DEBQ-R | 34.50(5.34) | 27.78(6.16) | 15.38 | < .001 | .259 | .58 |
| Success | 4.71(1.08) | 5.67(.84) | 10.00 | .003 | .185 | .50 |

Note. Weight Loss $N = 28$. Weight Maintenance $N = 18$. Mean(**Standard Deviation**)

Group Differences by Dieting Style

Dieting style had an overall significant effect on RRS scores, DEBQ-R scores and perceived success, *Wilks's* $\Lambda = .67$, $F(9,287) = 5.64$, $p < .001$. There was a significant main effect for dieting style on RRS scores, $F(3,120) = 12.86$, $p < .001$, $\eta^2 = .24$, and DEBQ-R scores, $F(3,120) = 16.48$, $p < .001$, $\eta^2 = .29$. There was no significant main effect for dieting style on perceived success in weight management, $F(3,120) = 1.05$, $p = .38$, $\eta^2 = .03$.

Tukey's HSD post-hoc test was used to determine specifically which dieting style groups differed on RRS score and DEBQ score. Episodic, chronic, and combination dieters all scored significantly higher than non-dieters on the RRS and the DEBQ-R. Additionally, chronic dieters scored significantly higher on the DEBQ-R compared to episodic dieters ($d = .61$).

Table 14. *Normal Weight Sub-Sample Main Effects of Dieting Style*

| Dependent Variable | Chronic | Episodic | Combination | Non-Dieter | <i>F</i> | <i>p</i> | η^2 |
|--------------------|----------------------|----------------------|----------------------|----------------------|----------|----------|----------|
| RRS | 17.50(1.69) | 14.55(3.86) | 14.86(2.67) | 10.85(4.11) | 12.86 | < .001 | .24 |
| DEBQ-R | 37.25(5.52) | 30.13(6.11) | 33.43(6.27) | 23.76(7.10) | 16.48 | < .001 | .29 |
| Success | 4.38(1.06) | 5.23(1.12) | 5.29(.76) | 5.18(1.39) | 1.05 | .38 | .03 |

Note. $N = 124$. Mean(**Standard Deviation**). Chronic $N = 8$, Episodic $N = 31$, Combination $N = 7$, Non-Dieter $N = 78$.

CHAPTER IV

DISCUSSION

Summary and Interpretation of Findings

Weight Management Strategy

The hypothesis that a greater proportion of participants would endorse dieting as a weight management strategy compared to other methods was not supported. Overall, fewer subjects endorsed dieting as a weight management strategy (42.3%) compared to methods other than dieting (57.7%). This is inconsistent with findings that changes in diet are the most common weight management strategy (Want et al., 2005; Weiss et al., 2006). However, both of these studies used samples that were trying to lose weight, whereas the participants in the current study were not all currently trying to lose weight. Also, dieting is more common among overweight and obese populations (e.g., Wardle & Griffith, 2001), whereas the current population was predominantly normal weight (70.9%). This is consistent with the current finding that among the subsample of normal weight participants who had never been overweight, the prevalence of dieting was even lower (37.1%).

It was hypothesized that self-identified dieters would score higher on the RRS and the DEBQ-R than non-dieters. This hypothesis was supported. Dieters scored significantly higher on the RRS ($d = .61$) and DEBQ-R ($d = .59$) compared to non-dieters, a difference that was also observed among the normal weight subsample ($d = .56$ and $.60$, respectively). This finding provides evidence for the validity of the RRS and DEBQ-R as measures capable of identifying individuals who typically utilize dieting as a weight management strategy.

The hypothesis that self-identified dieters would have higher BMIs than non-dieters was also supported ($d = .18$). This is consistent with the finding that dieting is more common in overweight or obese populations compared to normal weight populations (e.g., Haddock et al., 1999; Wardle & Griffith, 2001). This finding also makes intuitive sense, as individuals who are overweight or obese may have greater motivation to lose weight for cosmetic or health reasons, compared to normal weight or underweight individuals.

The hypothesis that non-dieters would endorse greater perceived success in weight management compared to dieters was not supported. No significant difference was found between dieters and non-dieters on perceived ability to successfully manage their weight in either the full sample or the normal weight subsample.

This finding suggests that the individuals who did not endorse dieting as a weight management strategy likely make up a heterogeneous group. For example, participants who did not endorse dieting as a weight management strategy may (1) not need to diet because they are happy with their weight, (2) manage their weight through exercise or lifestyle habits, (3) be unhappy with their body, but do not have the desire to diet or do not believe dieting will be an effective strategy for managing their weight, or (4) utilize dieting as a strategy in combination with other weight management strategies.

Prevalence data indicates that there are a greater number of individuals who are unhappy with their body weight than individuals who diet. Markey and Markey (2005) reported that 77% of women experienced body dissatisfaction, which is much higher than prevalence estimates for dieting behaviors (e.g., Bish et al., 2005). Also, a number of studies have found that although dieting tends to be more common than exercise as a weight management strategy, combinations of strategies are the most common (e.g., Stuckey et al., 2011).

Weight Management Goal

It was hypothesized that a greater proportion of dieters would endorse weight loss as a dieting goal versus weight maintenance. This hypothesis was supported. Among dieters 73.1% endorsed weight loss as a dieting goal versus 26.9% who endorsed weight maintenance as a dieting goal. Similarly, among the normal weight subsample 60.9% of dieters reported weight loss as a goal compared to 39.1% that reported weight maintenance as a goal. This is consistent with previous findings that weight loss was a more common goal among dieters than weight maintenance (e.g., Weiss et al., 2006).

It was hypothesized that those dieters with the goal of weight loss would score higher on the RRS and DEBQ-R than dieters with the goal of weight maintenance. This hypothesis was supported in the current study. Dieters with the goal of weight loss scored significantly higher than dieters with the goal of weight maintenance on the RRS ($d = .40$) and the DEBQ-R ($d = .37$). These findings were replicated in the normal weight subsample ($d = .40$ and $.58$, respectively). This finding lends support to the validity of the RRS and DEBQ-R as measures capable of specifically identifying dieters with the goal of weight loss.

It was hypothesized that those dieters with the goal of weight loss would have higher BMIs than those dieters with the goal of weight maintenance. This hypothesis was supported. Dieters with the goal of weight loss had significantly higher BMIs compared to dieters with the goal of weight maintenance ($d = .47$). This finding reflects similar findings in the literature that weight loss attempts are more common among overweight and obese individuals (Wardle & Griffith, 2001; Weiss et al., 2006). Again, as discussed previously, this finding also makes intuitive sense, as individuals who are overweight or obese may have greater motivation to lose weight for cosmetic or health reasons compared to normal weight or underweight individuals.

The hypothesis that dieters with the goal of weight maintenance would report greater success in weight management compared to dieters with the goal of weight loss was supported. It was found that those dieters with the goal of weight maintenance reported significantly greater success in weight management compared to dieters with the goal of weight loss ($d = .41$). Similar findings were observed in the normal weight subsample ($d = .51$).

This finding is consistent with the literature on Lowe's (1993) concept of weight suppression. According to Lowe, weight suppressors are individuals who are able to maintain diet-induced weight loss over a long period of time. These individuals have been able to adjust their habits to avoid regaining the weight they had lost; as such they are similar to those dieters with the goal of weight maintenance. Westenhoefer and colleagues (1990) reported that individuals who engage in "permanent dieting behavior", similar to those individuals whose goal is to avoid weight gain, experience fewer eating control problems, and suggests that these individuals are more successful at managing their weight.

However, it should be noted that although dieters with the goal of weight maintenance tended to consider themselves to be more successful at managing their weight compared to dieters with the goal of weight loss, those dieters with the goal of weight loss tended to rate themselves as relatively successful at managing their weight. The mean success rating for weight-maintenance dieters was between "somewhat successful" and "successful" ($M = 5.36$, $Mdn = 5.0$), whereas the mean success rating for weight-loss dieters was between "neutral" and "somewhat successful" ($M = 4.31$, $Mdn = 5.0$). Therefore, although dieters with the goal of weight loss may tend to perceive themselves as relatively less successful than dieters with the goal of weight maintenance, overall they perceive themselves to be somewhat successful in their ability to manage their weight.

Weight Management Style

The hypothesis that chronic dieters would score higher than episodic dieters on the RRS was supported. Indeed, chronic dieters scored significantly higher than episodic dieters on the RRS ($d = .42$). However, this effect was not robust in the normal weight subsample.

The hypothesis that episodic dieters would score higher than chronic dieters on the DEBQ-R was not supported. In fact, among the normal weight subsample chronic dieters scored significantly higher on the DEBQ-R compared to episodic dieters ($d = .61$).

Therefore, the assertion that the RRS identifies chronic dieters (Heatherton et al., 1988) was supported. However, the DEBQ-R was not found to be an appropriate measure for differentiating between chronic and episodic dieting styles, and was actually found to identify chronic dieters in a normal weight sample. This is inconsistent with the assertion that the DEBQ-R measures “current” or episodic dieting (Van Strien et al., 1986).

The hypothesis that episodic dieters would report greater weight management success compared to chronic or combination dieters was not supported. No significant differences were found among individuals with different dieting styles on perceived success in weight management in either the full sample or the normal weight subsample. Although, chronic, episodic, and combination dieters all perceived themselves to be less successful than non-dieters, there were no differences between these different groups of dieters on perceived weight management success. It is possible that no differences were found because there were few individuals who endorsed chronic ($N = 8$) and combination ($N = 7$) dieting styles. Therefore, due to small group sizes the analysis may have lacked sufficient power to identify an effect (Cohen, 1992), thus, differences may have been observed if the groups had been larger.

Study Limitations

Although the current study contributes to the research literature on weight management, some limitations should be addressed. First, all data was self-reported. Although self-report is a common data collection method, it is associated with a number of potential problems including responder biases, dishonesty, and common method variance (Spector & Brannick, 2009). Social desirability may also compromise the validity of dietary self-report measures (Hebert et al., 1995). As dieter self-reported behavior and actual behavior do not always coincide (e.g., Stice et al., 2010), future studies utilizing observation or other objective methods would be valuable for gaining more objective, and externally valid data related to dieting behaviors between dieters and non-dieters, and among dieters with different dieting goals and dieting styles.

A second limitation of the current study is that the sample consisted of a very demographically homogeneous group of predominantly Caucasian, female undergraduates. This population was chosen because it is commonly used in the dieting literature, as many young women engage in dieting (Malinauskas, Raedeke, Aeby, Smith & Dallas, 2006). However, eating and dieting practices are related to culture and have been shown to differ across cultures (e.g., Chandler-Laney et al., 2009). It would be valuable to conduct future research with a more culturally diverse sample to expand our knowledge of dieting behaviors across cultures.

A third limitation of the current study is that physical activity was not assessed. Individuals who are student athletes, or lead a more active lifestyle may find themselves to be more successful at managing their weight, even if they identify as dieters. Physical activity has been shown to be associated with the long-term maintenance of weight loss (e.g., Pronk & Wing, 1994), thus, differences in physical activity may influence perceived success in weight

management. Future studies should consider assessing for physical activity to control for its effects, or to determine mediation or moderation effects.

A fourth limitation of the current study is that the validity of the RRS has been questioned on a number of grounds. One criticism is that it confounds dietary restriction with disinhibited eating as the RRS identifies dieters who display both restraint and disinhibition (Heatherton et al., 1988). The validity of the RRS for use with obese populations has been questioned due to psychometric differences between obese and normal-weight populations, and spuriously high restraint scores in obese individuals (Ruderman, 1983). Lastly, both the RRS and the DEBQ-R have been criticized because although they are both measures of dieting, they are not always found to be related to actual caloric restriction (e.g., Stice et al., 2010). Despite these criticisms, these measures remain popular in weight management research. Further, one purpose of this study was to examine the validity and elucidate the specific types of dieters identified by the RRS and the DEBQ-R.

Lastly, after dividing the sample by strategy, and subdividing by goal and style, some of the groups contained relatively few individuals. Future studies should look to categorize dieters in a similar way, but with a larger sample, to determine whether enough individuals endorse different dieting styles, specifically chronic and combination dieting styles, to warrant differentiating between such groups.

Implications for Future Research

The findings of the present study have several important implications for weight management interventions and future research.

The RRS is a dieting measure that is intended to identify chronic dieters (Polivy et al., 1988). In contrast, the DEBQ-R is a dieting measure that is intended to identify episodic dieters,

who are currently dieting (VanStrien et al., 1986). The findings of this study have implications for the validity of these scales.

Dieters tended to score significantly higher on both the RRS and DEBQ-R compared to non-dieters, indicating that both measures are successful in differentiating dieters and non-dieters. As hypothesized, chronic dieters tended to score higher on the RRS compared to episodic dieters, however this effect was not robust in the normal weight subsample, indicating that the utility of the RRS in identifying chronic dieters may vary as a function of sample BMI. Therefore, the assertion that the RRS identifies chronic dieters (Heatherton et al., 1988) was partially supported. However, the DEBQ-R was not found to be an appropriate measure for differentiating between chronic and episodic dieting styles. Interestingly, chronic dieters tended to score higher than episodic dieters on the DEBQ-R within the normal weight sample. Therefore, the DEBQ-R is not an appropriate measure for identifying episodic dieters, and in fact may identify chronic dieters in normal weight samples.

In previous studies, the overweight and obese individuals have been found to score higher on the RRS compared to normal weight individuals (e.g., Ruderman, 1983). This has been identified as a possible criticism of the RRS as some critics have argued that obese individuals obtain spuriously high restraint scores due to weight fluctuation (Bray, 1976). However support for this supposition has been equivocal (Lowe, 1984; Ruderman, 1985).

Consistent with previous findings, both overweight and obese individuals scored significantly higher than normal weight and underweight individuals on the RRS. Moreover, scores on the RRS were found to be significantly positively correlated with BMI, indicating that individuals with a higher BMI tended to score higher on the RRS. It is also notable that chronic dieting was more common among the overweight (35%) and obese (33%) individuals compared

to the normal weight individuals (19%). Further scores on the RRS were found to be significantly negatively correlated with perceived success in dieting ($r = -.37, p < .01$), which is consistent with previous studies suggesting that the RRS identifies chronic, unsuccessful dieters (Laessle et al., 1989; Heatherton et al., 1988).

However, it should be noted that these findings are correlational, and as such do not imply directionality or causation. Therefore, it cannot be determined whether obese individuals are more likely to diet *because* they are overweight, or whether they are obese because they tend to diet and most dieting attempts are unsuccessful and lead to weight gain. Similarly, it cannot be known from these findings whether obese individuals perceive themselves to be unsuccessful in weight management because they are overweight, or whether they are obese because they have been unsuccessful in weight management.

Both the DEBQ-R and the RRS were found to be significantly negatively correlated with self-reported success in weight management. When success was dichotomized, self-reported “unsuccessful” weight managers scored significantly higher on the RRS compared to self-reported “successful” weight managers, but this difference was not observed in DEBQ-R scores. This finding is in contrast to Ogden (1993) finding that self-reported “unsuccessful” dieters scored the highest, and “successful” dieters scored the lowest on both the DEBQ-R and the RRS. The difference may be related to differences in sample, as the current study included both dieters and non-dieters, whereas the Ogden (1993) study included only dieters. Therefore the relationship between perceived success and DEBQ-R scores may vary as a function of weight management strategy (dieting versus other methods). This finding also reflects the inconsistency in the literature related to the ability of the DEBQ-R and RRS to differentiate between successful and unsuccessful dieters (e.g, Goldfield et al., 2010; Stice et al., 2010).

Overall, findings from this study support the validity of the RRS as a measure of chronic, unsuccessful dieting. However, the findings fail to support assertions that the DEBQ-R is a measure of more successful, episodic dieting. Episodic dieters failed to score higher than chronic dieters on the DEBQ-R indicating it is not a measure sensitive enough to differentiate chronic and episodic dieters. Further, DEBQ-R scores were significantly positively correlated with BMI ($r = .19, p < .01$), and significantly negatively correlated with perceived success in weight management ($r = -.18, p < .01$), indicating that individuals with high scores on the DEBQ-R are more likely to be overweight or obese, and to perceive themselves as unsuccessful in weight management.

BMI was found to be negatively correlated with perceived success in weight management, indicating that overweight and obese individuals tend to perceive themselves as unsuccessful at managing their weight. This has implications for weight management interventions, as overweight and obese dieters may benefit from increased dieting self-efficacy. Dieting self-efficacy has been found to be related to successful weight management (Stotland & Zuroff, 1990).

Differences in dieting style were found between different BMI classes. Dieting, specifically chronic and combination dieting, was found to be more common in higher BMI groups. Further research investigating differences in successful and unsuccessful weight management practices between overweight/obese and normal weight groups would provide valuable information with implications for practice.

Similarly, dieters and non-dieters endorsed different weight management strategies yet did not differ in perceived weight management success. Dieting is a primary strategy utilized in weight loss interventions (e.g., Burke, Wang & Sevick, 2011); however, as perceived success did

not differ between dieters and non-dieters in the current study, examining the multiple strategies people use for weight management may provide equally effective, alternative strategies for weight loss interventions. Moreover, as combinations of multiple strategies are a likely weight management practice among those self-reported “non-dieters” in the current study (Stuckey et al., 2011); dieting may be conceptualized as a necessary but not sufficient condition for successful weight management.

Previous studies on dieting have identified a tendency to overeat, or tendency toward failure of restraint, as a viable indicator of dieting success or failure (Van Strien, 1997a; Westenhoefer, Broeckmann, Munch, & Pudel, 1994). It may be worthwhile to include a subjective measure of success, like the perceived success in weight management scale used in this study, as a validity indicator to determine whether individuals who have a high tendency to overeat also perceive themselves to be unsuccessful in their weight management attempts. If these constructs are found to be related, tendency to overeat may serve as a valid predictor for success in weight management programs.

Lastly, as it was found in this study that dieters with a goal of weight maintenance tend to perceive themselves as more successful in weight management compared to dieters with the goal of weight loss, it would be beneficial to compare the different practices utilized by each group. Successful weight loss and successful weight maintenance may require different practices (Sciamanna et al., 2011). Identifying these strategies and tailoring these practices to individual dieters based on personal dieting goal may improve outcomes in weight management programs.

Conclusions

Based on the results of the current study, individuals endorse a range of weight management practices. Overweight and obese individuals are more likely to use dieting as a

weight management strategy compared to normal weight and underweight individuals. Dieting is a primary intervention in most weight management interventions. However, the current study did not find meaningful differences in perceived success in weight management between dieters and non-dieters. Therefore, weight loss interventions should introduce multiple strategies, in addition to dieting, in order to increase the chance of success.

APPENDICES

APPENDIX A

DEMOGRAPHICS QUESTIONNAIRE

Please answer the following questions about yourself.

1. Gender: Male Female
2. Ethnicity: White/ Caucasian African American Hispanic/Latino
 Other
3. Age (in years) _____
4. Current Height: _____ ft _____ inches
5. Current Weight (in pounds): _____
6. Highest Weight at Current Height or since age 16 (in pounds): _____

APPENDIX B

WEIGHT MANAGEMENT STYLE QUESTIONNAIRE

Please answer the following questions related to your typical weight management style. For the purpose of this study, dieting refers only to changes in eating behavior, and does not include changes in physical activity or other weight management strategies.

1. Please indicate which ONE of the following two weight management strategies below best characterizes your typical weight management strategy. Remember, for the purpose of this study, dieting refers only to changes in eating behavior, and does not include changes in physical activity or other weight management strategies.
 - 1 = I diet to manage my weight
 - 2 = I do not diet to manage my weight

2. Please indicate which ONE of the following best characterizes your typical weight management goal.
 - 1= In general, my goal of dieting is to lose weight
 - 2= In general, my goal of dieting is to avoid putting on weight

3. Please indicate which ONE of the following best characterizes your typical weight management style. Remember, for the purpose of this study, dieting refers only to changes in eating behavior, and does not include changes in physical activity or other weight management strategies.
 - 1 = I am almost always dieting
 - 2 = I diet occasionally
 - 3 = I am almost always dieting and occasionally do extra dieting to manage my weight

APPENDIX C

WEIGHT MANAGEMENT SUCCESS

Please answer following question regarding how successful you perceive yourself to be at managing your weight.

1. In your opinion, how successful are you at managing your weight?
 - 1 = Very unsuccessful
 - 2 = Unsuccessful
 - 3 = Somewhat unsuccessful
 - 4 = Neutral
 - 5 = Somewhat successful
 - 6 = Successful
 - 7 = Very successful

APPENDIX D

THE REVISED RESTRAINT SCALE

The following questions refer to your normal eating pattern and weight fluctuations. Please answer accordingly. For the purpose of this study, dieting refers only to changes in eating behavior, and does not include changes in physical activity or other weight management strategies.

1. How often are you dieting?
0 = Never
1 = Rarely
2 = Sometimes
3 = Usually
4 = Always

2. What is the Maximum amount of weight (in pounds) you have ever lost within one month?
0 = 0-4
1 = 5-9
2 = 10-14
3 = 15-19
4 = 20+

3. What is your maximum weight gain within a week?
0 = 0-1
1 = 1.1-2
2 = 2.1-3
3 = 3.1-5
4 = 5.1+

4. In a typical week, how much does your weight fluctuate?
0 = 0-1
1 = 1.1-2
2 = 2.1-3
3 = 3.1-5
4 = 5.1+

5. Would a weight fluctuation of 5 lbs. affect the way you live your life?
0 = Not at all
1 = Slightly
2 = Moderately
3 = Very much

6. Do you eat sensibly in front of others and splurge alone?
0 = Never
1 = Rarely
2 = Often
3 = Always

7. Do you give too much time and thought to food?
0 = Never
1 = Rarely
2 = Often
3 = Always

8. Do you have feelings of guilt after overeating?
0 = Never
1 = Rarely
2 = Often
3 = Always

9. How conscious are you of what you're eating?
0 = Not at all
1 = Slightly
2 = Moderately
3 = Very much

10. How many pounds over your desired weight were you at your maximum weight?
0 = 0-1
1 = 1-5
2 = 6-10
3 = 11-20
4 = 21+

APPENDIX E

THE DUTCH EATING BEHAVIOR QUESTIONNAIRE- RESTRAINT SCALE

Please answer the following questions related to your typical weight management style. For the purpose of this study, dieting refers only to changes in eating behavior, and does not include changes in physical activity or other weight management strategies.

Response format:

1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Very Often

1. When you have put on weight, do you eat less than you usually do?
1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Very Often
2. Do you try to eat less at mealtimes than you would like to eat?
1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Very Often
3. How often do you refuse food or drink offered because you are concerned about your weight?
1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Very Often
4. Do you watch exactly what you eat?
1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Very Often
5. Do you deliberately eat foods that are slimming?
1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Very Often
6. When you have eaten too much, do you eat less than usual the following days?
1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Very Often
7. Do you deliberately eat less in order not to become heavier?
1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Very Often
8. How often do you try not to eat between meals because you are watching your weight?
1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Very Often
9. How often in the evening do you try not to eat because you are watching your weight?
1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Very Often
10. Do you take into account your weight with what you eat?
1 = Never 2 = Seldom 3 = Sometimes 4 = Often 5 = Very Often

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