Weight suppression and its effects on the management of eating behaviors

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WEIGHT SUPPRESSION AND ITS EFFECTS
ON THE MANAGEMENT OF EATING BEHAVIORS

by

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Abstract

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Weight Suppression and Its Effects on the Management of Eating Behaviors

Director: D. Balfour Jeffrey, Ph.D.

This investigation examined the effects of weight suppression on the management of eating behaviors in a conventional restraint ice-cream taste test paradigm. All 58 female participants were restrained eaters as defined by the Three Factor Eating Questionnaire-Cognitive Restraint scale and classified as either high or low in weight suppression using the Weight Suppression Index (WSI). Weight suppressors are those persons who have successfully employed a weight-loss diet and have kept the weight off for an extended period of time. The WSI = \{\text{highest weight ever - current weight}/ \text{ideal weight} \times 100\}. Under the pretense of a taste perception test, one half of subjects received a high calorie milkshake preload and the other half did not. The amount of ice-cream consumed was the measure of interest. The grams of ice-cream consumed were as follows: the high weight suppression (HWS) No Preload group (mean 97.74 gm, SD 64.01), low weight suppression (LWS) No Preload group (mean 85.33 gm, SD 58.7), the HWS Preload group (mean 79.70, SD 42.58), and the LWS Preload group (mean 78.04, SD 38.32). The 2x2 Analysis of Variance indicated no significant differences between the groups. The investigation failed to replicate many earlier restraint studies in which restrained eaters commonly consume more following a disinhibiting preload than those in the no preload condition, providing further evidence that restraint is not a homogeneous construct. It also failed to replicate a previous weight suppression study which found that high weight suppressors consumed less than low weight suppressors following a preload. Implications for further weight suppression studies are discussed. In particular, the findings question the reliability of using self-report measures for determining an individuals' weight suppression index.
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Chapter One

Weight Suppression and Its Effects on the Management of Eating Behaviors

Research on eating disorders has greatly increased in the past ten years in both the psychological and medical communities (Cantrell & Ellis, 1991). Undoubtedly, this expansion is due to the increasing incidence of eating disorders in both adult and adolescent females in Western society. The predominate theories suggest either psychoanalytic or psychocultural etiologies of eating disorders. The early psychoanalytic viewpoint of Freud's compared the loss of appetite in anorexia nervosa to a loss of libido (Scott, 1987). Current psychodynamic perspectives assert that problems in maturation from adolescence to adult femininity and/or adjustment to menarche may be important factors. In those terms, anorexia may be a defense mechanism against puberty, a regression from sexual impulses, a fixation at the oral stage, or an attempt to attain an abstinent and asexual life.

Psychocultural theory posits that the increased prevalence of eating disorders seen in females in this society is a result of an overwhelming pressure on women to be thin (Garfinkel & Garner, 1982; Wiseman, Gray, Mosimann, & Ahrens, 1992; Cantrell & Ellis, 1991). While curvaceous Rubenesque figures were once highly valued in the 17th century society, today's cultural standards of beauty and
attractiveness are equated with thinness (Garner, Garfinkel, Schwartz, & Thompson, 1980). Cantrel and Ellis reported that thinness is emphasized as a "primary component of female sexuality and identity" (1991, p. 53). Invariably, the mass media displays thin, young, beautiful women in a wide variety of exciting social roles (Striegel-Moore, 1993); giving women the message that in order to achieve such ideals one must be "model-thin". Wiseman et al. (1993) found the "ideal" female body is described as between 13% and 19% below that of expected body weight. Note that this range considerably overlaps with the Diagnostic and Statistical Manual - Fourth Edition's (DSM-IV; American Psychological Association, 1994) primary criterion for Anorexia Nervosa is the maintenance of at least 85% of expected weight.

Through the media, women are continuously reminded of how well they measure up to our society's vision of the "ideal" body. Women who see themselves as failing to measure up resort to various methods of weight loss. They utilize fad diets, binge/purge cycles, fasts, and strenuous exercise regimes. In their attempts to achieve the prototypical figure, countless women are at risk of acquiring some form of disordered eating behaviors.

Anorexia and Bulimia Nervosa

The most commonly known eating disorders are Anorexia Nervosa and Bulimia Nervosa. The DSM-IV (1994) categorizes
Anorexia Nervosa by the maintenance of one's body weight below one's minimum normal body mass (<85%), an intense fear of becoming fat, a disturbed perception of body size and shape, and amenorrhea in females (absence of at least three menstrual cycles). One subtype include persons who are Binge-Eaters/Purgers, where the individual regularly resorts to binge eating followed by compensatory behaviors such as self-induced vomiting, misuse of laxatives, enemas, and diuretics, or excessive exercise or fasting. The other subtype, Restricting Types, refers to those who have no binge-eating or purging behaviors but who greatly restrict their caloric intake.

Bulimia Nervosa is classified by frequent binge eating, and is also divided into two subtypes. Bulimics can be either Purging Types, where individuals regularly resort to self-induced vomiting or misuse of laxatives, enemas, and diuretics, or Nonpurging Types who offset their overeating with excessive exercise or fasting. The major differences between Anorexia and Bulimia is that Bulimics maintain their body weight at or above 85% and their menstrual cycles are regular.

Dietary Restraint

While anorexia and bulimia have received much attention, both in the scientific community as well as the media there is a third purportedly maladaptive pattern of eating behavior known as dietary restraint. The concept of
dietary restraint or chronic dieting was developed in 1975 by Herman and Mack. In the late 1960's and early 1970's two theories of obesity arose that gave way to contemporary theories of dietary restraint: Schacter's internal-external theory and Nisbett's set-point theory. Initially, Schacter's theory (1968, 1971) posited that the eating behaviors of obese individuals were more influenced by external clues (such as the smell and sight of food) than the eating behaviors of non-obese persons who respond to internal, physiological messages such as gastric contractions and feelings of hunger. However, critics feel this paradigm is too elementary to explain complex eating behaviors and the ambiguous results which may arise from methodological and descriptive problems (Ruderman, 1986).

In the alternate theory, Nisbett (1972) proposed that organisms have a "set-point", or an individually determined ideal weight that may be higher in obese persons than in non-obese persons. Thus, obese individuals striving to meet society's preference of thinness may be below their biological set point. It is theorized these individuals are in a constant state of deprivation, leaving them more susceptible to external food cues. This theory also has been difficult to test due to similar problems as in Schacter's ideology (see Ruderman, 1986 for review). Yet, these theories drew attention to the role that dieting plays in influencing eating behaviors.
Individuals who are chronic dieters are labeled restrained eaters because they utilize cognitive restraint or a "cognitively mediated effort to combat the urge to eat" (Ruderman, 1986, p. 248). Frequently, the restraint literature points to eating patterns of restrained eaters that are characterized by intervals of dieting and overindulgences (Herman & Polivy, 1980). Herman and Polivy (1984) presented their boundary model, which was devised to explain how organisms attempt to remain in the zone of biological indifference (see Figure 1). Within this range, organisms remain between the aversive upper and lower boundaries of physiological levels of hunger and satiety.

In this model it is hypothesized that restrained eaters (dieters) have a wider region of biological indifference than unrestrained eaters (nondieters). It follows then that restrained eaters have lower hunger boundaries and higher satiety boundaries than nondieters. As well, restrained eaters establish another diet boundary, located to the left of the center point of the range of biological indifference (closer to the hunger boundary). This third diet boundary represents the individuals' maximum desired food consumption.

Insert Figure 1 about here
Disinhibition

The disinhibition hypothesis posits that the diet boundary (or limit of self-control) of the restrained eater may occasionally be abandoned in light of particular circumstances known as disinhibitors. Once the dieter has surpassed their personal diet boundary, they often experience a release of their cognitive restraint. This disinhibition may be followed by a counterregulation of eating behaviors and the individuals' physiological state of hunger dominates eating behaviors until physiological satiation occurs. In addition to restrained and unrestrained eaters, the boundary model has also been employed to illustrate the eating behaviors of anorexics and bulimics (see Figure 2).

Insert Figure 2 about here

Pursuing the assumptions from the boundary model that restrained eaters do disinhibit and give up their diets when provoked, Herman and Mack (1975) developed an experimental paradigm for investigating the eating behaviors of restrained eaters. Their Restraint Scale (1975) was used as a measure of dietary restraint. This scale is comprised of two subscales, each containing five items. Based on the items' face validity; one subscale determined diet and weight history and the other
ascertained attitudes toward eating. Subjects are then categorized as either restrained or unrestrained using a median split. An equal number of subjects are then randomly assigned to either the experimental or control conditions. Prior to undergoing a fictitious ice-cream taste perception test, subjects in the experimental condition receive a milkshake preload. Those in the control group receive no preload. Subjects are then asked to taste and rate various flavors of ice-cream and are told they may eat as much of the ice-cream as they desire after they have recorded their ratings. The dependent variable is the amount of ice-cream consumed during the session.

Restrained eaters often counterregulate, consuming significantly more ice-cream following the disinhibiting preload than in the control condition (see Herman & Mack, 1985; Herman & Polivy, 1980). The preload is presumed to have breached the restrained eaters' diet boundary. This transgression results in a temporary elimination of eating inhibitions. The disinhibition continues until the aversive physiological sensations of satiety result in a cessation of eating.

Herman and Polivy (1984) offer two categories of events that can serve as disinhibitors: diet boundary transgressions and perceived stressors. As well, Ruderman (1986) reports that these disinhibitors can be cognitive, emotional (eg. fear or dysphoric mood), or pharmacological
(eg. alcohol and marijuana).

A weight cutoff is used in restrained eating paradigms to avoid including obese subjects whose eating patterns may differ from normal-weight individuals. Generally, restraint research involves normal weight subjects who are within 15% of the norms as listed in the 1979 weight and height table in the Metropolitan Life Insurance Company Statistical Bulletin (1983). It has been found that a counterregulatory increase in food consumption does not hold true for obese individuals (see Weber, Klesges, & Klesges, 1988). According to Nisbett's set-point theory, it is postulated that considerably overweight restrained eaters are closer to their body's set point and thus experience less hunger.

Current Measures of Restraint

Three measures of restrained eating have commonly been employed in recent restraint research. Herman and Polivy (1978) eventually developed a new version of the Restraint Scale called the Revised Restraint Scale. This latest revision is similar to its previous form, but was converted into a forced-choice format. More recently, two additional scales measuring dietary restraint have evolved: the Cognitive Restraint Scale from the Three Factor Eating Questionnaire (TFEQ-Cognitive Restraint; Messick & Stunkard, 1985) and the Restrained Eating scale from the Dutch Eating Behavior Questionnaire (DEBQ-Restrained...
Eating; van Strien, Frijters, Bergers, & Defares, 1986). In studies where the Restraint Scale was used, it was customarily found that restrained eaters exhibited preload- or mood-induced counterregulatory (overeating) behaviors in the laboratory (Herman & Mack, 1975; Herman & Polivy, 1980; Smith & Jeffrey, 1990). However, several investigations have found that the TFEQ-Cognitive Restraint and DEBQ-Restrained Eating scales identified individuals as restrained eaters who do not exhibit comparable counterregulatory behaviors (see Jansen, Oosterlaan, Merckelbach, & van den Hout, 1988; Lowe & Maycock, 1988; Wardle & Beales, 1987; cited in Lowe, 1993).

More recently, investigations have resulted in mixed results using these measures. Ridgway (1994) employed both the Revised Restraint Scale and the TFEQ-Cognitive Restraint scale in measuring restraint. No differences were found between groups in the amount of food consumed following a dysphoric mood induction. Neither measure of restraint predicted of eating behavior. Further, a recent study used all three aforementioned measures of restraint, as well as subject's dieting status on the day of participation in the study to identify restrained eaters (Dritschel, Cooper, & Charnock, 1993). No evidence of laboratory counterregulation among preloaded restrained eaters was found regardless of measure used.
Restrained Eating and Bulimia

A connection has been made between restrained eating and the development of bulimia nervosa (see Vanderheyden & Boland, 1987; Herman & Polivy, 1984; Herman & Polivy, 1980; Ruderman, 1986). Conforming to the boundary model, the major distinction between a restrained eater who has disinhibited and a bulimic is that the bulimic no longer listens to the aversive physiological sensations of satiety. Polivy and Herman (1985) argue that eating disorders exist along a continuum. They posit that since restrained eating causes some degree of binge eating, the probability exists that a restrained eater could deviate into more serious bulimic behaviors. Consequently, many researchers have focused their attention on restrained eaters and the effect their dieting has on food consumption.

Lowe's Three Factor Model

In a recent review of the restraint and dieting literature, Lowe (1993) examined the effects of dieting on eating behaviors. Lowe has developed an elaborate three-factor model that attempts to account for the heterogeneity of findings mentioned previously. He contends that Restraint theory is a "unifactorial model of dieting behavior" (1993, p. 105). At times, restrained eaters greatly restrict their food consumption, and at other times, for example when they experience a diet boundary
transgression, they will disinhibit and overeat. To this end, restrained eaters are never able to lose notable amounts of weight and are thus regarded as unsuccessful dieters (Heatherton, Herman, Polivy, King, & McGree, 1988; Heatherton, Polivy, & Herman, 1991b; cited in Lowe 1993). Lowe differentiates between those individuals who are chronic dieters and those who are acute dieters. A third group of restrained eaters, individuals who have lost weight and succeeded in keeping it off, is also described below. In his three-factor model, Lowe discusses these three "Dieting Types" as part of a three-dimensional grid which further considers the effect of weight status and the mechanisms that mediate the consequences of dieting (psychological, biological, and sensory).

Lowe theorizes that dieters fall into one of three categories: Frequency of Dieting/Overeating, Current Dieting, and Weight Suppression. The first factor, Frequency of Dieting and Overeating, includes those individuals who undergo a repetitive cycle of dieting and overeating. They comprise the foregoing prototype of restrained eaters. In the laboratory, they exhibit the preload- and affect-induced counterregulatory overeating behaviors. The Restraint Scale designates them as restrained via its numerous past weight fluctuation items.

Lowe asserts that these persons are at risk of overeating not because of their current state of restraint
but because of their chronic dieting and overeating history. This may be due to a decreased capacity to correctly perceive (or produce) physiological sensations of hunger and fullness (Herman & Polivy, 1984; Heatherton, Polivy, & Herman, 1989; cited in Lowe, 1993). Support for this came from a study in which restrained and unrestrained subjects were given a placebo tablet and informed that the tablet had made prior subjects either full or hungry (Heatherton et al. 1989; cited in Lowe, 1993). After participation in the usual ice-cream taste test, restrained subjects (as compared to unrestrained subjects) consumed less ice-cream when they thought they had been given a "full" tablet than in the "hungry" tablet condition. Thus, it may be that frequent dieting and overeating results in decreased responsiveness to sensations of appetite and satiation.

The second factor of Lowe's model, Current Dieting, encompasses persons who consider themselves to be currently on a diet with the intent of losing weight. These individuals are presently consuming less food than what would be required to maintain their current weight. If maintained, this reduction will yield a loss of body mass, as intended.

It is probable that many current dieters have at one time or another previously dieted. Because they are once again on a diet, it is safe to reason that they have been
unsuccessful. Most of these individuals are designated as restrained eaters by the Restraint Scale (Lowe, Whitlow, & Bellwoar, 1991). However, Lowe et al. (1991) found that just 37% of normal-weight restrained eaters reported they were presently on a weight loss diet. Even lower percentages were reported by other researchers.

Current dieters have different responses to preloads and affect manipulations than those in the Frequent Dieting and Overeating category. Studies by Lowe et al. (1991) and Eldredge (1993) found that current dieters did not counterregulate. Instead, they reduced their food intake following a preload or an induction of negative mood.

Weight Suppression

The third component of Dieting Types is Weight Suppression. In contrast to the previous assumption that dieters rarely sustain weight-loss over time, weight suppressors are those persons who have successfully employed a weight-loss diet and have managed to keep the weight off for an extended period of time (eg. twelve months or more). There is some recent evidence that weight suppression is linked to different effects on eating behavior than is experienced by both frequent dieters and overeaters and by current dieters. Weight suppressors are similar to these two categories of individuals in that it is believed they also have overeaten and dieted repeatedly in the past. Yet, weight suppressors have ultimately
reached an effective strategy of maintaining their weight at its present presumably acceptable level, despite their previous history of cycling (Schacter, 1982; cited in Lowe, 1993).

Few studies have directly investigated the eating behaviors of weight suppressors. However, there is evidence that this subgroup of restrained eaters succeeds in dieting without developing disturbed eating behaviors. A West German study (n=1000) compared the percentage of females reporting problems in eating behavior to their frequency of dieting behavior (Westenhoefer & Pudel, 1989; cited in Westenhoefer, 1991). It was found that a higher percentage of women with histories of intermittent dieting had problems in eating behavior than those who reported a more permanent approach to dieting. The intermittent dieters experienced problems in eating behaviors which involved increased cravings for sweets, binge eating, and excessive eating in reaction to stress (Westenhoefer, 1991).

Research also suggests that sustained weight suppression is correlated with appetitive adjustments that enhance weight management. Studies have shown that these adjustments may manifest as sweetness aversion, reduced eating, and/or a perceived lack of hunger. Lowe (1991) investigated past and recent weight loss, and their effects on perceptions of pleasantness and sweetness intensity of
sucrose solutions. Subjects were female dieters from a college population and a weight-loss clinic. Past high-weight losers (high weight suppressors) were shown to have an aversion to sweet taste before and after a glucose preload compared to past low-weight losers (low weight suppressors). These findings are in contrast to evidence that recent or ongoing weight losers showed enhanced sweetness preferences and increased consumption of sweet foods (Cabanac, Duclax, & Spector, 1971; Rodin, Moskowitz, & Bray, 1976; cited in Kleifield & Lowe, 1991).

An investigation into the role of cognitive restraint and weight suppression in eating regulation employed the customary ice-cream taste test paradigm (Lowe & Kleifield, 1988). Female undergraduates were evaluated as high or low in restraint according to the Three Factor Eating Questionnaire - Cognitive Restraint scale (subjects scores on the Restraint Scale were also documented). High or low weight suppression was defined by the difference between one's current weight and highest weight ever. The ice-cream taste test paradigm was altered slightly, in that all groups received a milkshake preload. Subjects were accordingly tested for ice-cream consumption. Surprisingly, the level of cognitive restraint was unrelated to amount of food consumed. Neither the Restraint Scale nor the Three Factor Eating Questionnaire - Cognitive Restraint scale predicted overeating. And
contrary to the authors' prediction, weight suppression was associated with a significant reduction in consumption following the preload. Furthermore, weight suppressors rated themselves as being significantly less hungry during the experiment than nonsuppressors, even though their caloric intake prior to participation in the study was significantly lower. Weight suppressors weighed more than nonsuppressors and scored higher on the restraint scales. Weight suppressors in this study had maintained a sizable weight loss for an average of twenty months. The authors therefore suggested that high weight suppressors were "successful long-term dieters who showed several signs of having adapted to the lower weights they were maintaining" (Lowe & Kleifield, 1988, p. 159).

This investigation had two methodological limitations which indicate that the results need cautious interpretation. First, because the independent variable of weight suppression was not manipulated by the experimenters, one must take caution when drawing conclusions about the causal direction of the association of eating behaviors and weight suppression (Lowe, 1993). Secondly, the length of time that the weight suppressors spent at their highest previous weight is unknown. Perhaps the body weight of these individuals peaked for only a short period. If so, then it may be that their past weight gain may have been considered an anomaly, as opposed to
their well-managed weight loss. It is also unknown if the measure used to determine current weight and highest weight included an exclusion regarding pregnancy.

Since the main finding of Lowe and Kleifields' study was contrary to original expectations, they called for a reexamination of the effects of weight suppression on eating following a preload. However, the eating behaviors of weight suppressors were not examined in the regular restraint taste test paradigm by virtue that they chose not to include a no-preload condition. The value of future research utilizing a preload and no-preload group would be two-fold. First, the replication could provide further evidence of the finding that subjects high in weight suppression consume less than those subjects low in weight suppression following a preload. Secondly, it may be valuable to examine the eating behavior of high weight suppressors compared with low weight suppressors in a no-preload condition. If results show that high weight suppressors correspondingly consume less food than low weight suppressors with no-preload, it is possible that high weight suppressors have adjusted their personal diet boundary closer to the hunger side of the boundary model (See Figures 1 & 2). That is, they simply eat less than they used to and have accepted this permanent reduction as a way of managing their weight.
Purpose and Hypothesis

In designing weight-reduction and maintenance programs it may be advantageous to study weight suppressors since they have become "successful dieters." The purpose of this study is to examine what effect weight suppression has on the management of eating behaviors in the conventional restraint ice-cream taste test paradigm. It is hypothesized that subjects high in weight suppression will consume less than those low in weight suppression in both the preload and the no-preload conditions.
Figure 1. Boundary Model of Dietary Restraint.

Zone of Biological Indifference

I---------------------------I

Hunger
(Physiological)
aversive

Diet Boundary
(Cognitive)

Satiety
(Physiological)
aversive
Figure 2. Boundary Model of Dietary Restraint, Bulimia, and Anorexia.

RESTRAINED EATER

pre-load of milkshake to surpass the diet boundary

ANOREXICS

Hunger: (Physiological) - aversive

BULIMICS

Satiety: (Physiological) - aversive

Diet Boundary: (Cognitive)

UNRESTRANDED EATER

Hunger: (Physiological)

Satiety: (Physiological)
Chapter 2

Method

Subjects

Subjects were 58 restrained eaters recruited from females enrolled in undergraduate psychology classes at the University of Montana. Subjects were required to be within 15% of their normal body weight as listed in the 1979 Metropolitan Life Insurance Company Statistical Bulletin (1983). Subjects with hypoglycemia, diabetes, lactose intolerance, or an allergic reaction to chocolate, strawberry, or vanilla were excluded. Subjects were asked to refrain from eating for two hours prior to coming to the laboratory.

Design

This was a 2x2 design with Weight Suppression (high and low) and a Preload condition (preload and no-preload). Subjects were identified as restrained according to the TFEQ-CR using the split-half median procedure ($\text{median} = 9.5$). They were further classified into the two weight suppression groups; high (HWS) and low (LWS). One half of the subjects in these groups were randomly assigned to an experimental condition in which they received a high-calorie milkshake preload (P), or the no-preload control condition (No-P).

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Measures

Three Factor Eating Questionnaire - Cognitive Restraint Scale (Stunkard & Messick, 1985). The Three Factor Eating Questionnaire (TFEQ) was administered during the initial screening. This questionnaire contains a factor called Cognitive Restraint (TFEQ-CR). This 21-item subscale measures concern about and knowledge of dieting and "describes specific cognitive and behavioral strategies for reducing caloric intake" (Lowe, 1993, p. 102). Allison, Kalinsky, and Gorman (1992) reported an alpha coefficient, a measure of internal consistency, of .90. Test-retest stability was .91 over two weeks (Ganley, 1982; cited in Stunkard & Messick, 1985). The TFEQ-CR is deemed reliable and a valid measure of cognitive restraint (See Appendix A).

Demographic Questionnaire (Ridgway, 1993). Administered during the screening session, this questionnaire elicited the name, gender, age, education, and telephone number of each subject (See Appendix B).

Eating Inventory (adapted from Lowe & Kleifield, 1988). Administered during the screening, this questionnaire requested information about subjects' height, current weight, length of time at or near current weight, highest weight ever since reaching their current height, and length of time at or near highest weight ever since reaching their current height. Three additional items were
added to the inventory: method(s) used for subjects' weight loss; dieting history over the past year; and current dieting status (See Appendix C).

Revised Restraint Scale (Herman & Polivy, 1978). The Revised Restraint Scale (RRS) is a 10 item questionnaire that measures dieting concern and eating habits in a forced choice format. The RRS discriminates between individuals who worry about what they consume and chronically diet, and those who eat freely and do not concern themselves with abstaining from food. The RRS has high internal consistency, with coefficient alphas of .78 to .86 reported with a normal weight sample and a test-retest stability of .95 for a span of two weeks (Allison, Kalinsky & Gorman, 1992) (See Appendix D).

Hunger Scales (Preston, 1982). Two forms of this measure were utilized. The pre-experimental form was administered upon subjects arrival at the laboratory. This scale determined when and what they last ate, and rated their level of hunger. Subjects who had eaten within two hours prior to the taste test were rescheduled. The post-experimental form was given immediately after the taste test to determine subjects' level of satiety following their food consumption, current dieting status, and current medications (See Appendices E & F).

Procedure

Using the Cognitive Restraint factor of the TFEQ,
subjects' level of cognitive restraint (knowledge of and concern about dieting) was measured. Lowe and Kleifield (1988) concluded that the TFEQ-Cognitive Restraint scale was a purer measure of restraint than Herman and Polivy's RRS as the Revised Restraint Scale assesses both dietary concern and amount of weight fluctuations. For example, weight fluctuations may occur because of other antecedents such as exercise, illness, or pharmacological use. Subjects who scored in the upper 50% on the TFEQ-CR were classed as restrained eaters and utilized in this investigation.

These restrained eaters were then categorized as either high- or low-weight suppressors using Lowe and Kleifield's (1988) weight suppression index (WSI). The WSI = \{(greatest weight ever - current weight)/ideal weight x 100\}. Lowe and Kleifield chose to utilize the ideal weight as the divisor to correct for height differences in subjects. Due to the possibility of error embodied in subjects self-reports of greatest and current weight, Lowe and Kleifield separated the high and low weight suppressors by taking upper and lower quartiles. While it was planned to employ the same procedure in this study, it was determined that the upper and lower thirds would be a better partition of the distribution.

Experimenters contacted subjects by phone and asked them to participate in a research study examining the
effect of temperature on taste perception. At this point, experimenters screened for subjects with hypoglycemia, diabetes, lactose intolerance, or an allergic reaction to chocolate, strawberry, or vanilla. Subjects were asked to refrain from eating for two hours before their appointment.

Subjects were tested individually by normal-weight undergraduate female experimenters who were blind to the subjects' cognitive restraint scale score and weight suppression index. Experimenters used a script during the experimental session to standardize the procedure as much as possible. Upon their arrival at the laboratory, subjects read and signed an informed consent form (Appendix I). Subjects then completed the Pre-experimental Hunger Scale and experimenters rescheduled any subject who reported they have recently eaten.

Those subjects randomly assigned to the preload condition were asked to consume a 15-ounce chocolate milkshake within five minutes (using a kitchen timer). This time-limit was set in order to reduce variation in subjects' metabolic response to glucose. From this juncture, all subjects received the same treatment. Subjects were provided with three large bowls each of which contained 1150 grams of either strawberry, vanilla, or chocolate ice-cream. They were also provided with large serving spoons, three individual tasting cups and spoons, and three rating forms. Subjects rated the ice-cream in
terms of how good, sweet, rich, thick, and flavorful it was. Subjects were instructed to serve the ice-cream into their own tasting cups with the serving spoons and to taste the ice-cream using their tasting spoons. Experimenters asked subjects to rate the three flavors according to the following instructions:

"Please taste and rate each of these three flavors of ice-cream. Take as much as you need to be sure of your rating before going on to the next flavor. Fill out all of the ratings for the first flavor before tasting any of the next flavor. Please do not change a rating for any previous flavor after having tasted another flavor -- once you have tasted a new flavor you may not go back and change any ratings of another flavor. Please rate the three flavors in the order in which they are laid out in front of you so that the tastes do not get mixed up. By the way, we will be throwing out any left-over ice-cream, so after you finish all your ratings, feel free to go back and help yourself to as much of any flavor as you like. It is important, however, that you don't change any of your ratings. I'll be back in about 10 minutes" (from Polivy, Heatherton, & Herman, 1988; cited in Schrader, 1993).

After ten minutes had elapsed (using the timer), the experimenter returned to the "tasting room". The experimenter removed the ice-cream and rating sheets and gave the subject the Post-experimental Hunger Scale to
complete (See Appendix F). The experimenter then measured the subject's weight and height. Subject was debriefed about the taste perception test (Appendix G) and given information regarding full disclosure upon completion of the study. The subject was asked to refrain from revealing any details of this study to others until it is completed. A post-experimental questionnaire was then given to the subject to determine if she had any ideas about the purpose of this study and if those ideas had any influence on her behavior.

The ice-cream was reweighed once the subject had departed. The number of grams consumed by each subject was the dependent variable used in the data analysis.
Chapter 3

Results

Overview

A total of 483 subjects from the undergraduate psychology subject pool at the University of Montana were screened. Initially, 248 were excluded because their scores on the TFEQ-CR fell below the median score of 9.5. Seven more were dropped because of missing data on the TFEQ-CR. Of the remaining 228 subjects, 24 were dropped because they weighed more than 15% above the MPMW for their height and nine were underweight. Ten subjects were eliminated due to contamination as the cover story of this experiment was divulged to their Psychology 100 section of the subject pool.

The remaining 185 subjects were classified into either high or low weight suppression groups using their scores on the Weight Suppression Index (WSI) using the formula: \( \text{WSI} = \left\{ \frac{\text{highest weight ever} - \text{reported current weight}}{\text{ideal weight}} \times 100 \right\} \). Subjects whose scores were in the middle one-third of the distribution were excluded in order to separate high and low weight suppressors due to the possibility of error embodied in subjects' self-reports of greatest and current weight. Seventy-one subjects were excluded because of their scores: 31 had a WSI of 0, 26 had a WSI in the middle one-third range (4.0 - 6.9), and 14 had a WSI greater than 20. Subjects with a WSI over 20 were
excluded to ensure a balanced distribution of scores. Experimenters were unable to contact 36 women and there were five no-shows. Eight subjects were excluded due to reported milk allergies, lactose intolerance, or hypoglycemia. Six were excused from the study because they did not consume their milkshake preload in the required five minutes, while one refused to drink the milkshake.

Subject Characteristics

The participants ranged in age from 17 to 43, with a mean age of 20 years, and a standard deviation of 4.07. The mean reported current weight was 136.41 pounds, with a standard deviation of 14.76, and a range of 103 to 170. Subjects' actual current weight was recorded in the lab revealing a mean of 145.84 pounds, a standard deviation of 18.77, and a range of 110 to 185. The mean difference between subjects' actual and reported weights was 9.43 pounds, with a standard deviation of 8.40, and a range of -6 to +32.

Self-Report Accuracy - Over and Underestimation of Weight

Ninety percent of subjects (52/58) reported their weight as less than their actual (measured) weight by a mean difference of 10.9 pounds, with a standard deviation of 7.6, and a range of 1 to 32 pounds. Ten percent of subjects (6/58) reported their current weight as more than their actual (measured) weight, with a mean difference of...
3.3 pounds, a standard deviation of 2.1, and a range of 1 to 6 pounds.

**Actual Weight Compared with Reported Highest-Ever Weight**

Fifty-two percent of subjects (30/58) had actual weights less than their reported highest-ever weight, with a mean difference of 7.1 pounds, a standard deviation of 5.4, and a range of 1 to 21 pounds. Forty eight percent of subjects (28/58) had actual (measured) weights equal to or higher than their reported highest-ever weights, with mean difference of 6.9 pounds, a standard deviation of 5.8, and a range of 0 to 25 pounds.

**Measures of Restraint**

The Three Factor Eating Questionnaire - Cognitive Restraint Scale was used to determine subjects' level of cognitive restraint and a median-split procedure was employed. The median score of all subjects screened was 9.5, with a low score of 0 and a high of 21. Subjects scoring above the median were used in this investigation and were considered highly restrained. Therefore, the mean score on the TFEQ-CR was 13.50 (as the mean was calculated from the scores of 10 and above), with a standard deviation of 2.67. The Revised Restraint Scale was not utilized to establish dietary restraint, thus there was no median split and scores ranged from 8 to 23, with a mean of 15.76, and a standard deviation of 3.8. The subject characteristics are reported in Table 1.
Because of the discrepancies between subjects' reported weight at the time of the screening and their actual weight as measured in the lab, subjects' weight suppression indexes (WSIs) were recalculated post-hoc. The new formula replaces subjects reported current weight with actual current weight: \( WSI = \frac{(\text{highest reported weight ever} - \text{actual current weight})/\text{ideal weight} \times 100}{} \). Only 12 of the 58 subjects (20.7%) remained in their original weight suppression category (7 in HWS) and (5 in LWS). Twenty-eight subjects (48.37%) had WSIs of equal to or less than zero, which would have resulted in their exclusion from this study. Another nine subjects (15.5%) ended up in the middle one/third category (WSIs = 4.0 - 6.9) and also would have been excluded from participation. Thus, 37 of the 58 subjects (63.7%) would not have been utilized.

Food Consumption

Subjects consumed an average of 84.98 grams of ice-cream during the taste test, with a standard deviation of 50.86 and a range of 13.4 to 246.8. The ice-cream consumption by groups was as follows: the HWS No Preload group (mean 97.74 gm, SD 64.01), the LWS No Preload group (mean 85.33 gm, SD 58.7), the HWS Preload group (mean 79.70, SD 42.58), and the least amount was consumed by the
LWS Preload group (mean 78.04, SD 38.32). There were very large standard deviations relative to the means. The mean number of grams of ice-cream consumed by groups is presented in Table 2. The 2x2 Analysis of Variance (ANOVA) indicated no significant main effects or interactions. The ANOVA table is presented in Table 3.

Insert Table 2 about here

Insert Table 3 about here

A correlational analysis was conducted for: TFEQ-CR, RRS, the Pre-and Post-Experimental Hunger Scales and ice-cream consumption. As expected, there was a relatively high positive correlation between the TFEQ-CR and the RRS ($r = .396$, df=55, $p < .002$). There was a non-significant positive correlation between the RRS and food consumption and a non-significant negative correlation between the TFEQ-CR and consumption. These results are explained by the fact that all RRS scores were included in the data analysis while subjects scoring less than the median on the TFEQ-CR were excluded as unrestrained eaters and were thus not analyzed.

There were non-significant negative correlations between the pre- and post-experimental hunger scales and
food consumption. The correlation matrices are presented in Tables 4 and 5.

Insert Table 4 about here

Insert Table 5 about here

Manipulation Check

To determine the effectiveness of the preload manipulation, a 2x2 repeated measures analysis of variance was conducted (pre- and post-experimental hunger scales by preload condition). Significant main effects were found for preload condition ($F(1,56) = 37.42, p < .0001$). These results indicate that subjects in the preload group rated themselves as being significantly less hungry on the post-experimental hunger scale compared to the pre-experimental hunger scale than those subjects in the no-preload condition.

Dieting Status

During their participation in the study, subjects were asked if they were dieting. Seventeen (29.31%) reported that they were currently dieting while 41 (70.69%) stated they were not dieting. Dieters mean consumption was 98.74 grams, with a standard deviation of 65.64. Non-dieters mean consumption was 79.28 grams, with a standard deviation
of 43.00. A one-way analysis of variance for unequal Ns showed no main effects for dieting status ($F(1,56) = 1.78, p < .187$).

**Medications**

Subjects were requested to list any prescription and over-the-counter medications they were taking at the time of their participation in this study. A list of these medications is presented in Table 6.

Certain medications, such as antidepressants and oral contraceptives, have side effects which can affect an individual's body weight. Often, the weight gain or loss can be predicted by knowing the length of time that person has been taking the medication. For example, women taking oral contraceptives often see a 5 to 10 pound weight gain in the first 3 months, yet this can result in a 10 to 15 pound gain over a year (C. Bartels, personal communication, May 8, 1996). Alternatively, individuals taking specific classes of antidepressants (such as SSRIs) often see a transient weight loss within the first month due to nausea and diarrhea. After the body adjusts to these initial effects, the person usually returns to its original weight. Consequently, it would have been useful to ask subjects how long they had been on the various medications.

When an individual is has been prescribed antibiotics it is likely that the person is ill, and therefore, their hunger and satiety levels may be affected. It would also
have been valuable to determine the reason for taking such medications. Table 7 contains the distribution of subjects taking the most frequently reported medications for this sample (antibiotics, antidepressants, and oral contraceptives).

---

Insert Table 6 about here

---

Insert Table 7 about here
### Table 1
Means and Standard Deviation Scores for Subject Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>58</td>
<td>20.00</td>
<td>4.07</td>
<td>17-43</td>
</tr>
<tr>
<td>TFEQ-CR</td>
<td>58</td>
<td>13.50</td>
<td>2.67</td>
<td>10-21</td>
</tr>
<tr>
<td>Revised Restraint Scale</td>
<td>58</td>
<td>15.76</td>
<td>3.80</td>
<td>8-23</td>
</tr>
<tr>
<td>Reported Weight</td>
<td>58</td>
<td>136.41</td>
<td>14.76</td>
<td>103-170</td>
</tr>
<tr>
<td>Actual Weight</td>
<td>58</td>
<td>145.84</td>
<td>18.77</td>
<td>110-185</td>
</tr>
<tr>
<td>Weight Difference (actual-reported)</td>
<td>58</td>
<td>9.43</td>
<td>8.40</td>
<td>-6 - +32</td>
</tr>
<tr>
<td>Weight Difference (Ss under-estimating weight)</td>
<td>52</td>
<td>10.9</td>
<td>7.6</td>
<td>1-32</td>
</tr>
<tr>
<td>Weight Difference (Ss over-estimating weight)</td>
<td>6</td>
<td>3.3</td>
<td>2.1</td>
<td>1-6</td>
</tr>
<tr>
<td>Reported Highest-Ever Weight</td>
<td>58</td>
<td>146.05</td>
<td>16.14</td>
<td>107-178</td>
</tr>
<tr>
<td>Weight Difference (Ss actual weight equal to or greater than highest-ever weight)</td>
<td>28</td>
<td>6.9</td>
<td>5.8</td>
<td>0-25</td>
</tr>
<tr>
<td>Weight Difference (Ss actual weight less than highest-ever weight)</td>
<td>30</td>
<td>7.1</td>
<td>5.4</td>
<td>1-21</td>
</tr>
<tr>
<td>Hours Since Last Ate</td>
<td>58</td>
<td>4.55</td>
<td>3.90</td>
<td>2-17</td>
</tr>
<tr>
<td>Pre-Experimental Hunger Scale</td>
<td>58</td>
<td>3.44</td>
<td>1.30</td>
<td>1-5</td>
</tr>
<tr>
<td>Post-Experimental Hunger Scale</td>
<td>58</td>
<td>2.58</td>
<td>1.63</td>
<td>1-7</td>
</tr>
<tr>
<td>Ice-Cream Consumption (in grams)</td>
<td>58</td>
<td>84.98</td>
<td>50.86</td>
<td>13.4-246.8</td>
</tr>
</tbody>
</table>

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### Table 2
Ice-Cream Consumption and Weight Characteristics of Subjects by Group

<table>
<thead>
<tr>
<th>Group</th>
<th>LWS P</th>
<th>HWS P</th>
<th>LWS No-P</th>
<th>HWS No-P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice-Cream Consumption (in grams)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>78.04</td>
<td>79.70</td>
<td>85.33</td>
<td>97.74</td>
</tr>
<tr>
<td>SD</td>
<td>38.32</td>
<td>42.58</td>
<td>58.70</td>
<td>64.01</td>
</tr>
<tr>
<td>Range</td>
<td>28.1-170.9</td>
<td>14.0-185.7</td>
<td>26.0-195.7</td>
<td>13.4-246.8</td>
</tr>
<tr>
<td>Actual Weight of Subjects (in pounds)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>152.27</td>
<td>150.27</td>
<td>139.00</td>
<td>141.07</td>
</tr>
<tr>
<td>SD</td>
<td>21.74</td>
<td>21.77</td>
<td>13.43</td>
<td>14.13</td>
</tr>
<tr>
<td>Range</td>
<td>110-185</td>
<td>113-181</td>
<td>116-162</td>
<td>117-168</td>
</tr>
</tbody>
</table>

Note: Groups are classified as either low (LWS) or high (HWS) in weight suppression; P denotes if subjects received a preload & No-P indicates no-preload.
Table 3
Analysis of Variance for Preload Condition x Weight Suppression using grams as the dependent variable

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F ratio</th>
<th>Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explained</td>
<td>3420.246</td>
<td>3</td>
<td>1140.082</td>
<td>.428</td>
<td>.734</td>
</tr>
<tr>
<td>Main Effects</td>
<td>3002.052</td>
<td>2</td>
<td>1501.026</td>
<td>.563</td>
<td>.573</td>
</tr>
<tr>
<td>Supress (S)</td>
<td>680.034</td>
<td>1</td>
<td>680.034</td>
<td>.255</td>
<td>.616</td>
</tr>
<tr>
<td>Preload (P)</td>
<td>2322.019</td>
<td>1</td>
<td>2322.019</td>
<td>.871</td>
<td>.355</td>
</tr>
<tr>
<td>S x P</td>
<td>418.194</td>
<td>1</td>
<td>418.194</td>
<td>.157</td>
<td>.694</td>
</tr>
<tr>
<td>Residual</td>
<td>144006.397</td>
<td>54</td>
<td>2666.785</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>147426.643</td>
<td>57</td>
<td>2586.432</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 4
Correlations between Restraint Scales and Consumption

<table>
<thead>
<tr>
<th></th>
<th>TFEQ-CR</th>
<th>RRS</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFEQ-CR</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RRS</td>
<td>.396*</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Cons</td>
<td>-.120</td>
<td>.084</td>
<td>1.000</td>
</tr>
</tbody>
</table>

TFEQ-CR = Three Factor Eating Questionnaire-Cognitive Restraint Scale  
RRS  = Revised Restraint Scale  
Cons = Ice-Cream Consumption  
* = p = .002

### Table 5
Correlations Between Hunger Scales and Consumption

<table>
<thead>
<tr>
<th></th>
<th>Cons</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cons</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>-.0083</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Post</td>
<td>-.0173</td>
<td>----</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Pre  = Pre-Experimental Hunger Scale  
Post = Post-Experimental Hunger Scale  
Cons = Ice-Cream Consumption
Table 6
Prescription and Over-the-Counter Medications Reported by Subjects

<table>
<thead>
<tr>
<th>Drug Category</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adrenergic Beta Antagonist</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Analgesic</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Antibiotic</td>
<td>7</td>
<td>12.1</td>
</tr>
<tr>
<td>Anticonvulsant</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Antidepressant</td>
<td>3</td>
<td>5.2</td>
</tr>
<tr>
<td>SSRI</td>
<td>2</td>
<td>(3.4)</td>
</tr>
<tr>
<td>Tricyclic</td>
<td>1</td>
<td>(1.7)</td>
</tr>
<tr>
<td>Antihistamine</td>
<td>4</td>
<td>6.9</td>
</tr>
<tr>
<td>Antihypertensive</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Antimania</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Antipsychotic</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>Diet Aids (over-the-counter)</td>
<td>2</td>
<td>3.4</td>
</tr>
<tr>
<td>Corticosteroid</td>
<td>2</td>
<td>3.4</td>
</tr>
<tr>
<td>Oral Contraceptive</td>
<td>10</td>
<td>17.24</td>
</tr>
</tbody>
</table>

Table 7
Distribution of Subjects Over Groups for Antibiotics, Antidepressants, and Oral Contraceptives

<table>
<thead>
<tr>
<th>Group</th>
<th>LWS P</th>
<th>HWS P</th>
<th>LWS No-P</th>
<th>HWS No-P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotic</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Antidepressant</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SSRI</td>
<td>(0)</td>
<td>(2)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Tricyclic</td>
<td>(0)</td>
<td>(1)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Oral Contraceptive</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

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Chapter Four
Discussion

The results of this investigation provide further evidence of the heterogeneity of restrained eaters. The data refutes the classic restraint findings in which restrained eaters generally exhibit higher food consumption in taste tests following a disinhibiting preload than restrained eaters with no preload. Contrary to expectations, this sample of restrained eaters did not consume more ice-cream following the high-calorie milkshake preload. Subjects in the preload groups consumed less ice-cream than those in the no-preload groups. Yet, none of these differences were significant because of the large standard deviations.

The mean number of grams of ice-cream consumed by participants in this study was 84.98 grams. Consumption by Low and High Weight Suppressors was 81.7 and 88.7 grams, respectively. Lowe and Kleifield (1988) reported a lower mean ice-cream consumption of 72.33 grams. Their Low and High Weight Suppression subjects consumed an average of 94.1 and 49.3 grams. The large differences between amounts consumed in the two studies may be due to a methodological problem discussed below.

The findings of this investigation suggest that the present operationalization of weight suppression using self-report measures is inadequate. The problem may be
inherent in the practice of utilizing subjects' self-reports of body weight in determining their level of weight suppression. The self-reports from the screening data were used to calculate each individual's weight suppression index as delineated in Lowe's formula: \[ WSI = \left( \frac{\text{highest weight ever} - \text{reported current weight}}{\text{ideal weight}} \right) \times 100. \] Participants in this study did not reliably report their current weight. Ninety percent of the participants underestimated their weight by an average of 10.9 pounds and only ten percent overestimated their weight by an average of 3.3 pounds. The overall average difference between reported current weight and actual current weight was 9.43 pounds, which is higher than recent restraint studies utilizing subjects from the same university which reported means of 7.93 and 6.87 pounds (Smith, 1990; & Schrader, 1995). This discrepancy may be due to the fact that the current study used exclusively restrained eaters, while the two earlier investigations utilized both restrained and unrestrained individuals.

When subject's actual current weight was substituted for the reported current weight in the formula, 63.7% (37/58) of the women would have been excluded from participation in this study (see exclusionary analysis in Chapter Three, p. 26). Lowe and Kleifield (1988) reported that only 1 of 43 subjects (2.3%) was eliminated because her WSI score (based on actual weight) fell in between the
cutoff values. It is important to regard these revised WSIs as questionable since the new formula still contains conceivably unreliable self-reported highest-ever weights.

It is difficult to estimate the accuracy of subjects' reported highest-ever body weights. It may be that subjects reported their highest-ever weights in the similar manner as they did their current weights. That is, if a subject underestimated her current weight by ten pounds she may have also underestimated her highest-ever weight by ten pounds. Forty-eight percent of the subjects had measured body weights equal to or higher than their reported highest-ever weights. Alternatively, some individuals may elect to overestimate their highest-ever weight in order to present a picture of dramatic weight loss. This may be especially true for those whose weights are more deviant from their ideal weights. For example, if a person's ideal weight is 120 pounds and they report that their current weight is 128 pounds (when it is actually higher, say 139 pounds), they may choose to overestimate their highest weight (say 160 pounds, when it was really 150 pounds) as a means of appearing much closer to their ideal weight at this time. A third explanation might be that subjects overestimate their highest-ever weight for the purpose of ameliorating their discomfort in underestimating their current body weight. Consequently, determining an accurate measure of one's highest-ever weight appears a difficult
Methodological Issues

The findings of this investigation revealed a principal methodological obstacle, that is, trusting the veracity of self-reported weights during the screening. In order to determine the accuracy of self-report data, the self-reports are contrasted with an external criterion such as measured weight. A review of the literature surrounding the reliability and validity of self-reported body weight as revealed inconsistencies in the conclusions. Some researchers contend that self-reports are reliable, while others disagree.

In an early study of the accuracy of self-reports of weights, a correlation of 0.96 was found between self-reported and actual weights and a general underestimation of about 5%, with obese individuals underreporting to a greater degree (Charney, et al., 1976; cited in Norvell & Boaz, 1986). These findings were supported by other researchers (see Perry & Leonard, 1963; Schlichting, Hoilund-Carlsen, & Quaade, 1981; Stunkard & Albaum, 1981; Wing, Epstein, Ossip, & LaPorte, 1979; cited in Norvell & Boaz, 1986). The consensus from these early investigations was that subjects can be relied upon to report accurate body weights.

In a more recent study of the accuracy of self-reported weight, researchers concluded that their sample of
female and male college students were moderately accurate in weight-reporting, with 66% of male and 70% of female reporting their weight within 5 pounds of their actual weight (Cash, Grant, Shovlin, & Lewis, 1992). They found that underreporting was correlated with fear of fat, drive for thinness, and greater eating restraint as measured by the RRS.

There is more recent evidence against the use of self-reported body weights in research. Cash, Counts, Hangen, and Huffine (1989) investigated the validity of self-reports of weight in two separate studies using college females. In the first study, subjects reported their current weight and desired (ideal) weight in a paper and pencil task, ten minutes prior to an unanticipated weighing. In the second investigation, another group of college women were weighed, but researchers did not disclose their weight information to them. Ten minutes later, subjects completed the same paper and pencil task as in the first experiment, reporting their current and desired (ideal) weight. Subjects in the second experiment were significantly more accurate about their weights on the self-report measures than subjects the first. In the first Report Then Weigh condition, 30.9% inaccurately reported their weight by more than 5 pounds (plus or minus), compared with 17.9% of the Weigh Then Report group. The authors concluded that the accuracy of self-reporting body
weight increases when subjects know their weight can be verified.

In an investigation of gender differences in the accuracy of self-reported weights, Betz, Mintz, and Speakmon (1994) examined the disparity between subjects reported and actual weights in male and female college students. Female subjects underreported their body weights significantly more than males. Females underreported an average of 7.1 pounds and males underreported an average of 5.3 pounds. Overall, accuracy (over and underreporting) was also significantly different between females and males (means of 5.6 and 3.0, respectively). The authors comment on the small absolute magnitude of this difference, but indicate that, relative to body weight, the difference is 4% for women and 1.7% for males. The authors concluded that the use of self-reported weights, instead of actual weights, would result in more women incorrectly categorized as normal or underweight than overweight.

Bowman and DeLucia (1992) conducted a meta-analysis of twenty-four epidemiological and treatment-outcome studies. The Standard Mean Difference and Absolute Value Estimation methods were utilized to construct effect sizes for the total sample, by gender and population type (clinical or general population). Bias was significant in all groups as were discrepancies between actual and self-reported weights. They concluded that self-reports are
"sufficiently accurate for epidemiological groups but not in clinical weight-loss subject pools" (p. 637).

In the current study, subjects' self-reports were plainly unreliable. It may be possible to enhance the same methodology by adding a middle step. Subjects could be screened in a similar manner, as in this study. If they meet the criteria for restraint, they would be contacted and offered experimental credit to come into the lab and be weighed under the guise of a study "A". Following study "A", and using the actual current body weight, subjects' WSIs could be calculated employing the original WSI formula. Once the distribution was determined, and final selections made, subjects could be contacted by different experimenters and offered experimental credits for a separate experiment "B". They could then be asked to come in for the customary taste test paradigm. The two studies would need to be run as close in time to each other as possible in order to control for weight gain during the elapsed time. This methodology would allow for a much more accurate calculation of subjects' WSIs on the basis of using actual weight.

The exclusionary criteria of the present study resulted in the elimination of approximately three out of every four subjects screened. The added procedure would necessitate weighing many more subjects than would be utilized in the taste test and require considerable time
and energy. Although this strategy appears to be a solid solution to the problem inherent in self-reports of actual current weight, researchers would still be at the mercy of the self-report of highest-ever weights.

In order to obtain more accurate highest-ever weights from subjects, it may be helpful to request more specific information on the demographic questionnaire. The addition of items such as "How long ago were you at your highest-ever weight?" and "How long were you at this weight?" may aid subjects in retrieving more accurate information.

Another method of conducting weight suppression research using subject's self-reported highest-ever weights would be to utilize a correction factor. Comparing the difference between a subject's self-reported current weight and actual measured weight would allow for the computation of a correction factor. This difference would then be added to the subject's reported highest-ever weight to increase its reliability.

Theoretical Issues

Subsequent to his review of the restraint and dieting literature, Lowe (1993) concluded that the classic restraint theory is "a unifactorial model of dieting behavior" (p. 105). He suggests that the cognitive diet boundary construct may be too elementary to account for the extensive variability of eating behaviors seen in recent studies. Lowe conceptualized a three-factor model of
restraint comprising frequent dieting and over-eating, current dieting, and weight suppression in an attempt to explain the heterogeneity of results found in recent investigations.

In this study, the average ice-cream consumption of 84.98 grams (SD 50.86), was less than that reported in some previous studies. Schrader (1995) reported a mean of 108.74 grams, (SD 52.98); Herman et al. (1978) reported a mean of 146 grams, and while Lowe et al. (1991) did not report the mean consumption, it can be estimated at 125 to 130 grams (standard deviations for the latter studies are unavailable). Preloaded subjects in this study consumed an average of 78.87 grams compared with Schrader's average of 98.16 grams. Subjects not receiving a preload consumed 91.54 grams of ice-cream while Schrader reported a mean of 118.61 grams. This decrease in food consumption as seen in the current study, raises questions about current trends in college women's eating behaviors.

The amount of within group variance in ice-cream consumption by subjects in the current investigation further suggests that this sample of restrained eaters is not a homogeneous group. An explanation for this failure to replicate the classic counterregulatory pattern of ice-cream consumption may be that these subjects tended to have body weights closer to their upper 15% weight boundaries. Schrader (1995) reported a mean body weight of 137.6
pounds, with a standard deviation of 13.44, and a range of 110 to 170 pounds, while subjects in this study had an overall mean weight of 145.84 pounds, with a standard deviation of 18.77 and a range of 110 to 185 pounds. Thus, these restrained eaters with weights closer to their upper weight boundaries may also exhibit different patterns of eating behaviors.

In addition, recall that the exclusionary criteria required that subjects considered overweight (via their self-report of current body weight) be eliminated from participation in this study during the initial screening. However, due to the generally unreliable nature of this sample in self-reporting their current body weights, 19% of the participants (11/58) had actual weights which surpassed their upper weight boundary. The original restraint studies excluded overweight persons from participation in taste tests since they showed no counterregulatory increases in consumption (see page 8).

As this study eliminated subjects who scored less than the median on the TFEQ-CR, it is not possible to compare the mean with those found in previous studies. However, the median score of 9.5 was similar to the median of 10.15 in the Ridgway (1994) study. Scores on the Revised Restraint Scale in this study were, on average, slightly higher than those reported in previous studies, however there is a smaller degree of variability in those scores.
Subjects scored an average of 15.76 (SD 3.8), while Smith (1990), Ridgway (1994), and Schrader (1995) reported means of 14.62 (SD 6.0), 14.18 (SD 6.3), and 14.99 (SD 5.39), respectively. It may be that with sociocultural influences on the ideal shape and size of women's figures, researchers will see elevations in scores of cognitive restraint in the future. With the recent advances in the manufacturing of foods with greatly reduced amounts of fat, it is not surprising that today's women are eating less of the traditional ice-cream products as utilized in this study. Choosing low-fat treats such as frozen yogurt and reduced fat ice-cream products would aid them in their efforts to maintain or achieve their ideal body.

Approximately 29% of participants reported that they were on a diet at the time of the study. On average, dieters ate more ice-cream than non-dieters (98.74, SD 65.64 compared to 79.28, SD 43.0 grams), yet, this difference was not significant. The variance was much greater for the dieters than the non-dieters. Lowe postulates that restrained current non-dieters are frequent dieters and overeaters whose eating behaviors (i.e. sensitivity to counterregulatory overeating) differ from that of current dieters. Yet, it may be that the only difference between these current dieters and non-dieters may be that the non-dieters are "in-between" diets and both groups may actually have a history of frequent dieting and
overeating. These results illuminate the need for further research in order to delineate the various factors which affect eating behaviors, in particular, weight management.

Conclusion and Future Research

Contrary to expectations of restraint research, these restrained eaters did not display the classic disinhibition and counterregulatory eating behaviors following a high-calorie milkshake preload in an ice-cream taste test paradigm. Further, the unreliability of self-reports of current body weight resulted in the erroneous categorization of subjects into high and low weight suppression groups. It may be necessary to develop new means of operationalizing weight suppression. In particular, a means of determining an accurate highest-ever weight would be invaluable to researchers interested in weight suppression.

From studying the ability of researchers to substitute self-reported weights for actual (measured) body weights, it has been suggested that the knowledge of the extent and direction of the inaccuracy of self-reports may permit the calculation of correction factors to be used in research where it is a necessity to utilize self-reports (Bowman & DeLucia, 1992). Using such a correction factor may help to eliminate some of the variability found in dietary restraint studies. Furthermore, it would be interesting to determine if individuals high in cognitive restraint differ
from those low in restraint in self-reports of body weight. Certainly, further exploration of Lowe's three factors: weight suppression, frequent dieting and overeating, and current dieting is necessary in order to more accurately reconceptualize dietary restraint theory.
References


Appendix A

Three Factor Eating Questionnaire
(Stunkard & Messick, 1985)

One point is given for each item in Part I and for each item (numbered question) in Part II. The correct answer for the true/false items is underlined and beside it is the number of the factor that it measures. The direction of the question in Part II is determined by splitting the responses at the middle. If the item is labelled '+', those responses above the middle are given a zero. Vice versa for those with a '-'. For example, anyone scoring 3 or 4 on the first item in Part II (item No. 37) would receive one point. Anyone scoring 1 or 2 would receive a zero. (Note: this means "above" is interpreted as meaning a smaller number, as if listed vertically; eg. 1 and 2 are "above", and 3 and 4 are "below".

<table>
<thead>
<tr>
<th>Part I</th>
<th>Factor #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. When I smell a sizzling steak or see a juicy piece of meat, I find it very difficult to keep from eating, even if I have just finished a meal.</td>
<td>T F 2</td>
</tr>
<tr>
<td>2. I usually eat too much at social occasions, like parties and picnics.</td>
<td>T F 2</td>
</tr>
<tr>
<td>3. I am usually so hungry that I eat more than three times a day.</td>
<td>T F 3</td>
</tr>
<tr>
<td>4. When I have eaten my quota of calories, I am usually good about not eating any more.</td>
<td>T F 1</td>
</tr>
<tr>
<td>5. Dieting is so hard for me because I just get too hungry.</td>
<td>T F 3</td>
</tr>
<tr>
<td>6. I deliberately take small helpings as a means of controlling my weight.</td>
<td>T F 1</td>
</tr>
<tr>
<td>7. Sometimes things just taste so good that I keep on eating even when I am no longer hungry.</td>
<td>T F 2</td>
</tr>
<tr>
<td>8. Since I am often hungry, I sometimes wish that while I am eating, an expert would tell me that I have had enough or that I can have something more to eat.</td>
<td>T F 3</td>
</tr>
<tr>
<td>9. When I feel anxious, I find myself eating.</td>
<td>T F 2</td>
</tr>
<tr>
<td>10. Life is too short to worry about dieting.</td>
<td>T F 1</td>
</tr>
</tbody>
</table>
11. Since my weight goes up and down, I have gone on reducing diets more than once.  
   T F 2

12. I often feel so hungry that I just have to eat something.  
   T F 3

13. When I am with someone who is overeating, I usually overeat too.  
   T F 2

14. I have a pretty good idea of the number of calories in common food.  
   T F 1

15. Sometimes when I start eating, I just can't seem to stop.  
   T F 2

16. It is not difficult for me to leave something on my plate.  
   T F 2

17. At certain times of the day, I get hungry because I have gotten used to eating then.  
   T F 3

18. While on a diet, if I eat food that is not allowed, I consciously eat less for a period of time to make up for it.  
   T F 1

19. Being with someone who is eating often makes me hungry enough to eat also.  
   T F 3

20. When I feel blue, I often overeat.  
   T F 2

21. I enjoy eating too much to spoil it by counting calories or watching my weight.  
   T F 1

22. When I see a real delicacy, I often get so hungry that I have to eat right away.  
   T F 3

23. I often stop eating when I am not really full as a conscious means of limiting the amount that I eat.  
   T F 1

24. I get so hungry that my stomach often seems like a bottomless pit.  
   T F 3

25. My weight has hardly changed at all in the last ten years.  
   T F 2

26. I am always hungry so it is hard for me to stop eating before I finish the food on my plate.  
   T F 3

27. When I feel lonely, I console myself by eating.  
   T F 2
28. I consciously hold back at meals in order not to gain weight. T F 1
29. I sometimes get very hungry late in the evening or at night. T F 3
30. I eat anything I want, any time I want. T F 1
31. Without even thinking about it, I take a long time to eat. T F 2
32. I count calories as a conscious means of controlling my weight. T F 1
33. I do not eat some foods because they make me fat. T F 1
34. I am always hungry enough to eat at anytime. T F 3
35. I pay a great deal of attention to changes in my figure. T F 1
36. While on a diet, if I eat a food that is not allowed, I often then splurge and eat other high calorie foods. T F 2

Part II
Directions: Please answer the following questions by circling the number above the response that is appropriate to you.

Factor #

37. How often are you dieting in a conscious effort to control your weight?
1 rarely 2 sometimes 3 usually 4 always +1

38. Would a weight fluctuation of 5 pounds affect the way you live your life?
1 not at all 2 slightly 3 moderately 4 very much +1

39. How often do you feel hungry?
1 only at mealtimes 2 sometimes between meals 3 often almost meals 4 always +3
40. Do your feelings of guilt about overeating help you to control your food intake?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>+1</th>
</tr>
</thead>
<tbody>
<tr>
<td>never</td>
<td>rarely</td>
<td>often</td>
<td>always</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>easy</td>
<td>slightly</td>
<td>moderately</td>
<td>very</td>
<td>difficult</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>+1</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all</td>
<td>slightly</td>
<td>moderately</td>
<td>extremely</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>+1</th>
</tr>
</thead>
<tbody>
<tr>
<td>almost</td>
<td>seldom</td>
<td>usually</td>
<td>almost</td>
<td>always</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>+1</th>
</tr>
</thead>
<tbody>
<tr>
<td>unlikely</td>
<td>slightly</td>
<td>moderately</td>
<td>very</td>
<td>unlikely</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>+2</th>
</tr>
</thead>
<tbody>
<tr>
<td>never</td>
<td>rarely</td>
<td>often</td>
<td>always</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>+1</th>
</tr>
</thead>
<tbody>
<tr>
<td>unlikely</td>
<td>slightly</td>
<td>moderately</td>
<td>very</td>
<td>unlikely</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>almost</td>
<td>seldom</td>
<td>at least</td>
<td>almost</td>
<td>once a week</td>
</tr>
</tbody>
</table>

| never | every day |

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

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

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

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

50. On a scale of 0 to 5, where 0 means no restraint in eating (eating whatever you want, whenever you want it) and 5 means total restraint (constantly limiting food intake and never "giving in"), what number would you give yourself?

0 eat whatever you want, whenever you want it +1
1 usually eat whatever you want, whenever you want it
2 often eat whatever you want, whenever you want it
3 often limit food intake, but often "give in"
4 usually limit food intake, rarely "giving in"
5 constantly limiting food intake, never "giving in"

51. To what extent does this statement describe your eating behavior? "I start dieting in the morning, but because of any number of things that happen during the day, by evening I have given up and eat what I want, promising myself to start dieting again tomorrow."

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

Note: Factor 1 = Cognitive Restraint
Factor 2 = Disinhibition
Factor 3 = Hunger Sensitivity
Appendix B

Demographic Questionnaire

Name: __________________________ Age: _____ Phone: ________

Gender: M__ F__ Height: ___feet ___inches

Current Weight: _____lbs.

Years of Education: __________ eg. high school=12, college degree=16
Appendix C

Eating Inventory

Length of time at or near current weight: __________

Highest weight ever since reaching your current height (excluding pregnancy) _____________

Length of time at or near highest weight ever since reaching current height (excluding pregnancy) __________

Method used for the weight loss ________________

Over the past year how often have you dieted? __________

Are you currently dieting? Yes ___ No ___
Appendix D

Revised Restraint Scale
(Herman & Polivy, 1978)

How often are you dieting?
Never rarely sometimes often always

What is the maximum amount of weight (in pounds) that you have ever lost within one month?
0-4 5-9 10-14 15-19 20+

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

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

Would a weight fluctuation of 5 pounds affect the way you live your life?
Not at all slightly moderately very much

Do you eat sensibly in front of others and splurge alone?
Never rarely often always

Do you give too much time and thought to food?
Never rarely often always

Do you have feelings of guilt after overeating?
Never rarely often always

How conscious are you of what you are eating?
Not at all slightly moderately extremely

How many pounds over your desired weight were you at your maximum weight?
0-1 1-5 6-10 11-20 21+
Appendix E

Pre-Experimental Hunger Rating Scale

1. How many hours has it been since you last had something to eat? _________

2. Describe what it was you ate and/or drank.

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________

3. How hungry are you right now?

| x-------------------x-------------------x-------------------x |
| 1 3 5 7 |

not hungry  extremely hungry
at all
Appendix P

Post-Experimental Hunger Rating Scale

1. How hungry are you right now?

<table>
<thead>
<tr>
<th>x------------------------------x------------------------------x</th>
</tr>
</thead>
<tbody>
<tr>
<td>I I</td>
</tr>
</tbody>
</table>

1 3 5 7

not hungry at all

extremely

hungry

2. Are you currently dieting (as of this day and week)?

Yes _______  No _______

If yes:

How long have you been on this present diet? ________ days

How much weight have you lost? ________ pounds

3. Please list any over-the-counter or prescription drugs that you are currently taking.

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________
Appendix G
Debriefing Summary

Thank you very much for keeping your appointment and participating in this investigation. We have been investigating the effects of past dieting on food taste preferences. After this study is completed a summarized description of the study and its results will be posted near the experiment sign-up sheets. Your experimental credits will be recorded and given to your TA immediately. Please refrain from discussing your participation in this study with others until it has been completed. Again, thank you for your time.
Appendix H

Normal Weights for Women

<table>
<thead>
<tr>
<th>Height</th>
<th>MPMW</th>
<th>Range of Normal Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>ft in</td>
<td>inches</td>
<td>-15%</td>
</tr>
<tr>
<td>4 10</td>
<td>58</td>
<td>115</td>
</tr>
<tr>
<td>4 11</td>
<td>59</td>
<td>117</td>
</tr>
<tr>
<td>5 0</td>
<td>60</td>
<td>119.5</td>
</tr>
<tr>
<td>5 1</td>
<td>61</td>
<td>122</td>
</tr>
<tr>
<td>5 2</td>
<td>62</td>
<td>125</td>
</tr>
<tr>
<td>5 3</td>
<td>63</td>
<td>128</td>
</tr>
<tr>
<td>5 4</td>
<td>64</td>
<td>131</td>
</tr>
<tr>
<td>5 5</td>
<td>65</td>
<td>134</td>
</tr>
<tr>
<td>5 6</td>
<td>66</td>
<td>137</td>
</tr>
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<td>5 7</td>
<td>67</td>
<td>140</td>
</tr>
<tr>
<td>5 8</td>
<td>68</td>
<td>143</td>
</tr>
<tr>
<td>5 9</td>
<td>69</td>
<td>146</td>
</tr>
<tr>
<td>5 10</td>
<td>70</td>
<td>149</td>
</tr>
<tr>
<td>5 11</td>
<td>71</td>
<td>152</td>
</tr>
<tr>
<td>6 0</td>
<td>72</td>
<td>155</td>
</tr>
</tbody>
</table>

(MPMW, or matched population mean weight is derived from the weight and height table of 1979, Metropolitan Life Insurance Statistical Bulletin, 1983)
Appendix I

Institutional Review Board Proposal
WEIGHT SUPPRESSION AND ITS EFFECTS
ON THE MANAGEMENT OF EATING BEHAVIORS
Investigator: Pamela J. Morgan

1. Description of the Research

The proposed research project is designed to investigate the effects of weight suppression on the eating behaviors of female undergraduate students. The subject variable will be weight suppression and the experimental variable is the administration of a milkshake "preload." This study will be a 2 x 2 factorial design (level of weight suppression x preload condition). A structured interview will conclude the procedure, with hopes of eliciting specific cognitions which enable weight suppressors to maintain their current weight.

2. Benefits of the Research

Dietary restraint has been identified as a risk factor for the development of the clinical eating disorder Bulimia Nervosa. Previous theories regarded dietary restraint as a unifactorial model of eating behaviors in which restrained eaters are able to remain on their diets until particular variables disinhibit their restraint, resulting in a breach of their consumption limit. A recent model postulates that dietary restraint is more accurately composed of three factors: Frequent Dieting and Overeating, Current Dieting, and Weight Suppression. This third factor, Weight Suppression, refers to individuals who have maintained a
significant diet-induced weight loss over a lengthy period of time (eg. one year or more).

Evidence has accrued over the past few years to suggest that weight suppressors exhibit different eating behaviors than individuals who comprise the first two factors of the model. This investigation has been designed to identify the eating behaviors of weight suppressors in a typical restraint paradigm using both preload and no-preload conditions. Additionally, a structured interview is expected to ascertain specific cognitions weight suppressors may have concerning their food consumption which allows them to remain at their reduced weight.

3. Use of Subjects

Subjects will be approximately 80 female Psychology 100 students who are within 15% of their ideal body weight. These subjects will be recruited from the general screening session held on January 31, 1995. Approximately 200 female subjects will fill out a brief demographic questionnaire, an Eating Inventory, and two measures of dietary restraint: the Revised Restraint Scale and the Three-Factor Eating Questionnaire.

Female subjects scoring in the upper 40% on the Three Factor Eating Questionnaire - Cognitive Restraint Scale will be contacted for inclusion in this study. Information from the Eating Inventory will be utilized to calculate subjects Weight Suppression Index and determine if they are
currently dieting. Subjects will be designated as either high (upper quartile) or low (lower quartile) weight suppressors according to their Weight Suppression Index.

Approximately 20 subjects will participate in each of the four groups. Subjects will be tested individually by normal-weight female experimenters taking the Psychology 397 - Supervised Research course. Experimenters will contact subjects by telephone in order to set up an appointment and ask that they refrain from eating for at least two hours prior to coming to the laboratory. Subjects will be greeted by the experimenter and asked to complete the informed consent form and a hunger scale which determines when and what they last ate, and rates their level of hunger. Subjects who have eaten within two hours prior to coming to the lab will be rescheduled.

Subjects will be randomly assigned to either the preload condition (15-ounce chocolate milkshake) or the no-preload condition. All subjects will be asked to taste and rate three flavors of ice-cream. The ice-cream will be in separate bowls with separate spoons and three rating forms will be provided. Subjects will be informed that they may consume as much of the ice-cream they desire after they have made their ratings since the ice-cream will be discarded, but are requested not to change their initial ratings. Subjects will be left alone for 10 minutes to reduce self-consciousness. Subjects will then have their
weight and height measured and be debriefed about the taste test. Subjects will be given the name and telephone number of the principal investigator so that they may contact her regarding any questions they may have. Testing will take approximately 45 to 60 minutes to complete.

4. Description of Subjects

Subjects will be eighty normal weight female undergraduate students enrolled in Introductory Psychology in the Spring semester 1995. Minors will be excluded from participation in this study. For their participation, subjects will receive two experimental credits.

5. Risks and Discomforts

It is expected that this investigation will not expose any subject to deleterious effects or violations of normal expectations. During the appointment contact, research assistants will exclude from participation in this study subjects with allergies to any of the ice-cream flavors, lactose intolerance, diabetes, or hypoglycemia.

6. Correction of Undesirable Consequences to Subjects

It is expected that no undesirable consequences will occur. In the event that a subject becomes uncomfortable with any of the procedures, the experiment will be stopped and she will be debriefed about the experiment. Once she indicates that she has recovered fully, she will be given the primary investigator's telephone number should she require further debriefing. The subject will still receive
their experimental credits.

7. Protection of Confidentiality

The brief demographic will ask for subjects name and phone number. These demographic forms will be labeled and filed with a subject number which is also marked on the screening questionnaire. The forms and the questionnaires will be stored separately. Research assistants (Psychology 397 students) will conduct the experimental sessions and will be blind as to subjects' responses to questionnaires. As a means of scheduling appointments, research assistants will be given a list of prospective subjects along with their phone numbers, but no other subject information will be available to them.

8. Informed Consent

A copy of the informed consent form is attached.

9. Waiver of Informed Consent

Not applicable.

10. Other Information Pertaining to Ethical Responsibility

Not necessary.

I HAVE READ THE ABOVE AND AGREE THAT IT IS AN ACCURATE REPRESENTATION OF THE PROCEDURES TO BE USED IN THIS STUDY.

D. Balfour Jeffrey, Ph.D.
Professor Psychology
Chairperson of Thesis Committee
Appendix J

Informed Consent Form

Weight Suppression and Its Effects on the Management of Eating Behaviors

Principal Investigator: Pamela J. Morgan
Under the direction of D.B. Jeffrey, Ph.D.
University of Montana

I understand that by signing my name below, I give my informed consent to participate in this study.

1. The procedures to be followed include completion of several short questionnaires, perhaps consuming a cold drink, and participation in a taste perception test. The total time of participation in this study is between 45 minutes and one hour, including the debriefing session after your participation.

2. All information you provide will be kept strictly confidential. Your name will not be associated with any of the data collected. Only a subject number will be associated with your data.

3. You will receive two experimental credits for your participation in this study.

4. You may refuse to participate or discontinue participation at any time, without prejudice to you and without jeopardy to any credits you are entitled to.

5. You may contact the Principal Investigator, Pamela J. Morgan, at 243-4521 to answer any questions you may have about the study. Because of confidentiality, no information regarding you or any other participating individual can be provided.

I HAVE READ AND UNDERSTOOD THE ABOVE AND AGREE TO PARTICIPATE IN THIS STUDY.

Participant ___________________________ Date _________________

Experimenter ___________________________ Date _________________

Address ________________________________