

**Dietary Restraint: The Role of
Causal Attributions**

M. A. Thesis

by
Darlene Flood ©

Dr. Ken Rotenberg
Dr. Brian O'Connor

Lakehead University

July 1995

ProQuest Number: 10611427

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



ProQuest 10611427

Published by ProQuest LLC (2017). Copyright of the Dissertation is held by the Author.

All rights reserved.

This work is protected against unauthorized copying under Title 17, United States Code
Microform Edition © ProQuest LLC.

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346



National Library
of Canada

Bibliothèque nationale
du Canada

Acquisitions and
Bibliographic Services Branch

Direction des acquisitions et
des services bibliographiques

395 Wellington Street
Ottawa, Ontario
K1A 0N4

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Your file *Votre référence*

Our file *Notre référence*

The author has granted an irrevocable non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of his/her thesis by any means and in any form or format, making this thesis available to interested persons.

L'auteur a accordé une licence irrévocable et non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de sa thèse de quelque manière et sous quelque forme que ce soit pour mettre des exemplaires de cette thèse à la disposition des personnes intéressées.

The author retains ownership of the copyright in his/her thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without his/her permission.

L'auteur conserve la propriété du droit d'auteur qui protège sa thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

ISBN 0-612-09207-0

Canada

Acknowledgements

First and foremost I would like to extend my deep appreciation to Dr. Ken Rotenberg, my thesis supervisor, for his assistance during this thesis writing process. I would also like to thank Dr. Brian O'Connor and Dr. Fred Boland for their invaluable feedback and all the Lakehead University students who participated in this study. Special thanks to my husband, Robert, for his unfailing support and encouragement throughout my educational career.

Abstract

Previous studies have indicated that restrained and unrestrained eaters exhibit different eating patterns in response to preloading or no preloading. After a preload, restrained eaters tend to exhibit counterregulatory behaviour, where they consume more and unrestrained eaters tend to exhibit normal regulatory behaviour, where they consume less. The present study was designed to examine whether these patterns are due to different attributional styles exhibited by restrained and unrestrained eaters. In Phase 1, undergraduates enrolled in Introductory Psychology were administered the Restraint Scale, the Beck Depression Inventory, and the Eating Attributional Style Questionnaire. It was hypothesized that restrained eaters would attribute failure to maintain dietary restraint in hypothetical situations to internal, stable, and global causes which are associated with the abstinence violation effect (AVE). Contrary to expectations, failure to maintain restraint was attributed to external and global causes. For Phase 2, 100 female subjects were selected from the above pool of subjects based on their scores on the questionnaires. Using a matching procedure, subjects were randomly assigned to one of two conditions: preload or no preload. In both conditions, subjects' cookie consumption was measured in a taste test. The results, using a median split analysis, indicated that an external orientation to food consumption was a better predictor of the preloading effect than the dimension of restraint.

Table of Contents

	<u>Page No.</u>
Introduction	1
Conceptualization of Dietary Restraint	2
Attribution Theory	10
Dietary Restraint and Attribution Theory	18
Method	25
Subjects	25
Scales and Measures	26
Procedure	28
Phase 1 Results	31
Characteristics of the Scales	31
Correlations Among the Measures with Corresponding Means	33
Discussion	34
Phase 2 Results	36
Restraint and the Preloading Effect	36
Attributional Style and the Preloading Effect	37
Restraint and the Preloading Effect When Adjusted for Locus of Control	38
Locus of Control and the Preloading Effect When Adjusted for Restraint	39
Discussion	40
General Discussion	41
References	52

Introduction

The construct of restraint was originally developed to describe how and why the eating patterns of obese individuals differed from normal weight individuals (Ruderman, 1986). This construct, which was developed in the mid-1970's by Herman and Mack (1975), had its roots in Schachter's (1971) and Nisbett's (1972) theories of obesity. In 1980, Herman and Mack defined restraint as a "cognitively mediated effort to combat the urge to eat." Empirical studies of restraint theory have demonstrated that restraint, rather than the degree of overweight is a determining factor in the amount of food consumed (Hibschler & Herman, 1977; Spencer & Fremouw, 1979; Baucom & Aiken, 1981; Rodin, 1981).

Restraint has been assessed, predominantly, by the Restraint Scale; a 10-item scale measuring concern with weight and dieting (Herman & Polivy, 1980; Wardle, 1986). Individuals who are overly concerned with weight and dieting are classified as restrained eaters and fall at one end of the continuum, whereas individuals who give little thought to dieting fall at the other end of the continuum and are classified as unrestrained eaters. It is important to note that females tend to score higher on the Restraint Scale than do males (Herman & Polivy, 1980; Wardle, 1986).

The purpose of the present study was to investigate the relationship between dietary restraint and cognitive factors, more specifically the types of attributions that are responsible for the maintenance or the violation of dietary restraint. In an effort to address this issue a brief review of the literature on dietary restraint and attribution theory will be presented.

Conceptualization of Dietary Restraint

Over twenty years ago, overeating was thought to be a problem of just overweight individuals (Lowe, 1993), thus psychological theories concerning obesity focused on trying to explain why the eating patterns of obese people differed from normal weight individuals (Schachter, 1971; Nisbett, 1972). One of these theories was Schachter's (1971) internal-external theory of obesity. Schachter (1971) proposed that external cues, such as the sight, smell and taste of food triggered eating among overweight individuals, whereas eating among normal weight people was triggered by internal factors such as gastric contractions. Studies examining Schachter's theory have yielded inconclusive results (Leon & Roth, 1977; Rodin, 1981).

Nisbett (1972) presented an alternative model, which proposed that everyone has a biologically determined ideal weight or set point and that obese people have higher than average setpoints. Furthermore, Nisbett (1972) argued

that because of society's emphasis on slimness, many overweight people attempt to suppress their weight below this set-point. Thus, Nisbett's theory not only included physiological and sensory elements, but introduced the notion of self-control as an important determinant of eating behaviour.

Herman and Mack (1975) extended Nisbett's theory by finding that behaviours formerly thought to characterize only the obese also characterized normal weight individuals attempting to suppress their weight below biologically appropriate levels. For example, Herman and Polivy (1975) found that normal weight dieters or restrained eaters responded to anxiety by eating more than normal weight nondieters or unrestrained eaters; the same response exhibited by anxious obese individuals (McKenna, 1972). Hibscher and Herman (1977) found that elevated levels of free fatty acids, normally found in the obese was associated more with dieting than obesity. Similarly, Herman, Polivy, Pliner, Threlkeld and Munic (1978) found that dieters, irrespective of weight, were more emotional than nondieters.

As restraint theory developed, Herman and Polivy (1980) deemphasized the set point explanation of restrained eaters' behaviour and focused on a more cognitive explanation instead. They conceptualized restraint as a cognitive resolve not to eat and believed it to be the key determinant of eating style. According to

Herman and Polivy (1980), this cognitive resistance to the demands posed by hypothalamic urgings or gastric complaints is only novel in the context of the laboratory. The introduction of a mental element as a component governing eating behaviour is actually just a reacknowledgement of the important role that cognitive factors play in determining any form of human behaviour (Herman & Polivy, 1980).

Research on dietary restraint has confirmed that under low threat and low temptation conditions, restrained eaters can successfully control their food intake (Hibscher & Herman, 1977; Ruderman, 1985a). It is important to note, however, that maintenance of restraint is often difficult and violation or disinhibition of this restraint is a frequent occurrence among dieters (Ogden & Wardle, 1991). Much of the research in this area has focused on the identification of factors that are believed to compromise dietary restraint. These diet disrupting factors are often referred to as disinhibitors (Ruderman, 1985a).

The most frequently investigated disinhibitor has been the forced preload. Several studies have found that an initial dietary violation (operationalized as a milkshake preload) leads restrained eaters to binge and unrestrained eaters to consume less (Herman & Mack, 1975; Hibscher & Herman, 1977, Ruderman & Christensen, 1983). The process by which a preload is presumed to induce binge

eating behaviour in restrained eaters is the perception of having overeaten. It is assumed that restrained eaters hold an all-or-nothing attitude toward diets and that eating a forbidden substance (e.g., a milkshake), induces stressful cognitions such as "I've blown it," or "I might as well continue to eat." The eating pattern of restrained eaters has been described as counterregulatory because a preload tends to increase subsequent intake. In contrast, the pattern of unrestrained eaters is seen as regulatory because once preloaded they will consume less (Herman & Polivy, 1980; 1984).

Further studies investigating counterregulatory behavior have found that high-restrained individuals not only binge after they consume a high-calorie preload, but also if they believe they have eaten excessively, regardless of whether they have or not. For example, Polivy (1976) found that restrained subjects who perceived the preload as high calorie ate more sandwiches than those who thought the preload to be low calorie, while unrestrained subjects did the reverse. It is important to note that Polivy's (1976) use of sandwiches rather than ice cream provides evidence that disinhibition of restraint is not absolutely dependent on the best tasting foods. Spencer and Fremouw (1979) also found that high-restrained subjects binged when they thought they had consumed a large number of calories, in contrast to the high-restrained subjects who thought that they had consumed

only a few calories.

To provide further support that cognitive factors influence the consumption of restrained eaters, Ruderman, Belzer, and Halperin (1985) tested the influence of expected consumption and restraint on present consumption. They found that when anticipating a milkshake, restrained eaters increased their consumption, whereas unrestrained eaters decreased it. Thus, responses to anticipated dietary violation are comparable to those following actual dietary transgressions.

In order to account for the phenomenon of counterregulation, Herman and Polivy (1984) proposed a boundary model for the regulation of eating. According to the model, biological pressures work to maintain consumption within a certain range. The aversive qualities of hunger work to keep consumption above some minimum level, while the aversive qualities of satiety work to keep it below some maximum level. The area between the boundaries of hunger and satiety is referred to as the zone of "biological indifference". Herman and Polivy (1984) propose that this zone of biological indifference is wider in dieters than in nondieters. More specifically, it takes greater food deprivation for them to experience hunger and greater consumption for them to experience satiety.

In the absence of a preload, the unrestrained eater is well away from the zone of satiety (Herman & Polivy, 1984). Given highly palatable ice cream

(Herman & Polivy, 1975), the unrestrained eater will eat a great deal before satiety pressures are encountered. After a sizable preload, however, the unrestrained eater will begin eating within a range that is closer to the zone of satiety and as a result consumption will be reduced.

In order to account for counterregulation in restrained eaters, Herman and Polivy (1984) modified the boundary model by adding a diet boundary. This diet boundary is not physiological, but psychological and it consists of cognitive rules for limiting caloric intake to maintain or achieve a desirable weight. The diet boundary falls within a restrained eater's zone of biological indifference and is closer to the zone of hunger than the zone of satiety. Under no preload conditions, restrained eaters consume only a minimal amount of food because anything more than minimal consumption would breach their diet boundary. After a large preload, however, or after a perceived high calorie preload, the restrained eater has already transgressed or thinks they have transgressed the diet boundary. Once this has occurred, the restrained eater will see no reason to restrict further consumption and will eat substantial amounts of palatable foods to the point where true satiety pressures begin to inhibit consumption. Herman and Polivy (1984) refer to this psychological state as the what-the-hell effect.

In addition to the forced preload, emotional arousal has also been

implicated as a disinhibitor of dietary restraint. More specifically, studies have focused on the disinhibiting impact of anxiety and depression. A study conducted by Herman and Polivy (1975) that looked at the influence of anxiety on the amount eaten, by restrained and unrestrained eaters, found that unrestrained eaters ate significantly less when anxious than when calm, whereas restrained eaters ate more when anxious.

A study by Heatherton, Herman, and Polivy (1991) examined three types of distress and their effects on the eating patterns of both restrained and unrestrained eaters. The physical fear threat (anticipated electric shock) significantly decreased unrestrained subjects' eating and slightly increased restrained subjects' eating. Both ego threats (failure at an easy task or anticipating having to give a speech in front of an audience) increased restrained subjects' eating, but did not significantly decrease unrestrained subjects' eating. Thus, it appears that the type of distress is an important determinant of eating patterns in both restrained and unrestrained eaters.

Several studies have also examined depression and depressed mood as disinhibitors. In a retrospective study, conducted by Polivy and Herman (1976), restrained eaters reported a significant weight gain and unrestrained eaters a significant weight loss after the onset of their depression. Using an experimental

approach, Frost et al. (1982) induced a neutral, elated, or depressed mood in restrained and unrestrained individuals. They found that high-restraint individuals induced into a depressed mood ate significantly more than high-restraint individuals induced into either a neutral or elated mood. Depressed unrestrained individuals ate somewhat, but not significantly, less than those in neutral or elated moods.

A study conducted by Baucom and Aiken (1981) also found a significant interaction of mood and dieting. More specifically, dieters (restrained eaters) ate more when depressed than when nondepressed, and nondieters (unrestrained eaters) ate less when depressed than when nondepressed. Similarly, Ruderman (1985a) found that restrained eaters ate more when in a dysphoric mood than when in a nondysphoric mood, and unrestrained eaters consumed similar amounts in both mood states.

Studies have also investigated the effects of social factors on the amount of food consumed by restrained and unrestrained eaters. A study conducted by Herman, Polivy, and Silver (1979) used forced preloading, but also had an experimenter remain with half of the subjects during the "tasting" session. The results indicated that unrestrained eaters compensated appropriately, irrespective of the experimenter's presence. Restrained eaters left alone showed their typical

counterregulation, whereas restrained eaters with the experimenter present ate less after a large preload and more after a small preload.

Similarly, in a study by Polivy, Herman, Hackett, and Kuleshnyk (1986) both self-attention (subject kept track of how much they ate) and public-attention (experimenter informed of how much subject ate) inhibited the consumption of preloaded dieters. Preloaded nondieters ate minimally in all conditions and were not influenced by the attention manipulations.

In a study by Polivy et al. (1979), subjects were left to engage in eating along with another "subject" (experimental confederate) who ate either a little or a lot and indirectly identified herself as either a dieter or nondieter. The results indicated that all subjects, both restrained and unrestrained, were strongly affected by the behavior of the confederate, eating much more when she overate and eating less when she identified herself as a dieter. The results from these three studies strongly suggest that social factors are important influences in the expression of restraint.

Attribution Theory

It is difficult to describe one unified and coherent attribution theory, rather there are numerous theories, models and frameworks that differ in content, but are unified by their objective of understanding how people determine the causes of

events (Kelley & Michela, 1980; Frieze & Bar-Tal, 1979). One such model is Weiner's model of causal attributions (Weiner, 1979, 1985, 1986) that cross-classifies causes along two dimensions: locus of control (internal-external) and stability (stable-unstable).

Weiner has used this model to illustrate how cognitive reactions to success and failure are of great importance in understanding achievement-oriented behavior (Weiner, 1985; Frieze & Bar-Tal, 1979; Valle & Frieze, 1976). He postulated that individuals attribute success and failure at an achievement task, such as taking an examination, to one of four primary causal factors: ability, effort, task difficulty, and luck. These causal factors can be classified along the dimensions of locus of control and stability. Ability is seen as internal and stable, effort as internal and unstable, task difficulty as external and stable, and luck as external and unstable.

In order to distinguish causal factors that apply generally across situations from those specific to a situation, Abramson, Seligman, and Teasdale (1978) identified a third dimension: globality. For example, an individual may perceive failure on a math test as due to low math aptitude (specific) or to low intelligence (global).

A good deal of attribution research has been concerned with determining what influences the kinds of causal attributions people make in a given situation.

According to Alloy, Abramson, Metalsky, and Hartlage (1988) and Kelley (1973), people's causal attributions for events are, in part, a function of the situational information they confront. For example, individuals would be predicted to make internal, stable and global attributions for an event if they were confronted with situational information suggesting that the event is low in consensus (reacting differently than others to the same stimulus), high in consistency (reacting in the same manner to the stimulus on other occasions), and low in distinctiveness (reacting in the same manner to a wide range of stimuli). Additional factors that may also guide the causal attribution process include, the motivation to protect or enhance one's self-esteem, focus of attention and salience of a potential causal factor (Alloy et al., 1988).

Besides using the situational information surrounding an event, Abramson et al. (1978) suggested that individual differences in attributional style also influence the content of people's causal attributions. For example, some individual exhibit a general tendency to attribute negative events to internal, stable, global factors whereas other individuals do not. Thus, individuals with this negative attributional style are more susceptible to developing depressive symptoms (Alloy et al., 1988).

Weiner (1974) also suggested that the type of causal ascriptions a person

makes determines his affective and cognitive reactions, which in turn affect his achievement behavior. Attributions of success or failure to internal factors (ability, effort) cause a person to react more emotionally than when he attributes the outcome to external factors (task difficulty, luck). Further research has shown that specific causal attributions tend to elicit a particular emotional response. For example, success perceived as due to good luck produces surprise, whereas success attributed to effort produces pride (Weiner, 1986; Frieze & Bar-Tal, 1979).

In addition, each causal dimension is related to a set of feelings (Weiner, 1986). Success and failure perceived as due to internal causes such as personality or effort respectively raise or lower self-esteem (Weiner, 1986). More specifically, successful outcomes that are ascribed to the self (personality, ability, effort) result in greater self-esteem than success that is externally attributed (task ease, luck). In a similar manner, failures ascribed to the self result in lower self-esteem than failure that is externally attributed. Past history of failure and failure when others succeed tends to increase the likelihood of ascribing failure to the self and in turn increases negative affect (Alloy et al., 1988).

Furthermore, Weiner et al. (1976) proposed that expectations for future performance are a function of past performance and the stability of attributions for

past performance. More specifically, results indicated that expectancy for success varied with the stability of attributions for success. Subjects who felt they succeeded because of their ability or the ease of the task felt they would do better in the future than those who attributed success to effort or luck. Similar results were found in a study conducted by Valle and Frieze (1976), who asked business school students to imagine they were employers evaluating an employee, who had performed above average in sales. Predictions for future sales and willingness to promote were higher when the employee's performance was attributed to stable factors such as ability and personality. Another study conducted by Carroll (1978) looked at the causal attributions made by actual members of a parole-board when considering an offender for parole. Individuals whose crimes were attributed to stable causes were considered worse risks and were more likely to be denied parole than those whose crimes were attributed to unstable causes.

Besides having generalizability outside the Western culture (Murphy-Berman & Sharma, 1986), Weiner's theory also has wide range applicability outside achievement-related contexts. For instance, the conception has been used to examine a number of personal and social problems, including, alcoholism (McHugh, Beckman, & Frieze, 1979); wife battering (Frieze, 1979); reactions to rape (Weiner, 1986); loneliness (Michela, Peplau, & Weeks, 1982; Peplau, Russell,

& Heim, 1979); and consumer reactions to product failure (Folkes, 1984; Valle & Johnson, 1979).

In addition, attribution theory has also been used to analyze the construct of depression. According to the reformulated learned helplessness model (Abramson et al., 1978) and its most recent revision, the hopelessness theory of depression (Alloy et al., 1988; Abramson, Metalsky, & Alloy, 1989), depressive symptoms are associated with a particular attributional style. Individuals who possess a depressogenic attributional style are more likely to attribute negative events to stable and global factors thereby increasing the likelihood of becoming hopeless and in turn developing depressive symptoms (Abramson et al., 1989). Lowered self-esteem will also occur when the individual attributes the negative event to internal, stable, and global causes (Abramson et al., 1989). Furthermore, the attribution theory reformulation also implies that depression can result if there is a predisposition to make external, unstable and specific attributions about desirable (positive) events (Seligman, Abramson, Semmel, & von Baeyer, 1979).

Many studies have tested the predictions of the reformulated learned helplessness model. In a study, conducted by Golin et al. (1981), the attributional dimensions of internality, stability, and globality were found to be correlated with depression. Similarly, using a sample of diagnosed unipolar depressed patients,

Raps et al. (1982) found that depressive patients made much more internal, stable and global attributions for bad events than did nondepressed medical/ surgical patients or schizophrenics. Results of this study also suggest that this negative attributional style is not a general characteristic of psychopathology, since it was not evident in the sample of schizophrenic patients (Raps et al., 1982).

A study that analyzed female college students' interpretations of important personal events such as an academic failure, found only partial support for the reformulated learned helplessness model of depression (Harvey, 1981). The only difference found between the depressed and nondepressed students was for the internal dimension. Depressed students made fewer internal attributions for positive events and they also gave more internal causes for negative events. There were no differences for the stable and global dimensions.

Another study that lends only partial support to the reformulated learned helplessness model was conducted by Metalsky et al. (1982). Using a naturalistic setting (the classroom), Metalsky et al. (1982) looked at the content of college students' attributions in order to determine which students' attributional style would be conducive to the development of a depressed mood, upon learning that they received a low grade on an exam. Results indicated that the more internal or global students' attributional styles for negative outcomes were, the more severe

their depressive mood reactions to the receipt of a low midterm grade. Students' scores along the stability attribution dimension, however, were not correlated with the severity of their depressive mood response to the low midterm grade.

A study, conducted by Feather and Davenport (1981), that assessed depressive affect in a sample of unemployed youth, found subjects with high levels of depressive affect were less likely to blame themselves for their unemployment and were more likely to blame external difficulties, such as the current economic situation. Therefore, the results are not consistent with the reformulated learned helplessness model of depression that implies individuals who report high levels of depression are more likely to make internal attributions when confronted with negative events. Metalsky et al. (1982) suggest that the discrepancies found in the various studies of attributional style and depression are a result of a failure to examine the interaction of attributional style and situational factors in predicting depression. Thus, they suggest that future studies in this area should specify how people's attributional styles interact with features of the situation as well as their perceptions of these features in determining affective responses.

Kelley (1973) elaborated further on the attribution theory, by proposing that people use the two basic principles of discounting and augmentation to form causal judgments. The discounting principle suggests that less importance is

attached to a given cause of a behavior when other potential causes are also present. This principle is illustrated in a study by Thibaut and Rieken (1955), where compliance by a lower status person is seen to be attributed less to internal properties (e.g., helpfulness) because of the assumption that there are external forces operating as well. On the other hand, external pressure is not assumed to be a plausible cause for a person of higher status; therefore compliance is solely attributed to internal properties.

The augmentation principle suggests that when a given behavior occurs in the presence of facilitative causes and inhibitory causes, the role of the facilitative cause in producing the effect will be judged greater than if it alone were present as a plausible cause for the effect. According to Kelley (1973) the central idea of the augmentation principle is that when there are known to be costs, sacrifices or risks involved in taking an action, the action once taken is attributed more to the person than it would be otherwise.

Dietary Restraint and Attribution Theory

Original attempts to explain the mechanism of overeating in restrained eaters focused primarily on physiological factors (Herman and Polivy, 1984; Nisbett, 1972; Schachter, 1971), but recently the explanatory framework has expanded to include the potential contribution of cognitive factors (French, 1992;

Polivy & Herman, 1993; Ogden and Wardle, 1991). As previously mentioned, Herman and Polivy (1984) put forward a boundary model for the regulation of eating, which proposes that while normal eaters are cued to eat by hunger and eat to a boundary of satiety, successful restraining dieters regulate their intake according to cognitively determined rules. If a violation of dietary restraint occurs, the restrained eater will most likely perceive their diet as ruined or hopeless and consequently restriction of further consumption is seen as futile. Herman and Polivy (1984) described this cognitive state as the "what the hell effect."

Similarly, Ruderman (1985b) also found that normal dieters are prone to irrational thinking, especially about food and eating (Knight & Boland, 1989). According to Ruderman (1985b), these irrational thought patterns make restrained eaters susceptible to disinhibited eating or binges when they believe they have broken their diets.

The starve or binge pattern characterizing restrained eaters can also be conceptualized in terms of the abstinence violation effect (AVE); a construct that has been applied in drug abuse research (Marlatt, 1985). According to Polivy and Herman (1993), the irrational thought patterns of restrained eaters will precipitate binge eating when they believe they have violated their diets by eating a small amount of forbidden food, much like a drug abuser who will go on a drug binge if

they violate their abstinence.

As is evident from the above studies, cognitive factors do appear to play a significant role in the violation of dietary restraint. Unfortunately, the research in this area has not provided adequate explanations as to why the cognitions of restrained eaters differ from those of unrestrained eaters. Applying attribution theory to this area of research, however, may provide an explanation as to why certain thought patterns emerge in restrained eaters and not unrestrained eaters.

A model that may be applied to restrained and unrestrained eating is Marlatt's (1985) reformulation of the abstinence violation effect (AVE), which incorporates an attributional component. The abstinence violation effect (AVE) is actually a cognitive-affective reaction to an initial slip that influences the probability that the lapse will be followed by an increased use of the substance. In his reconceptualization of the abstinence violation effect (AVE) relapse is seen as a two stage process: the first stage is the initial slip or lapse; whether or not this slip leads to a full blown relapse (loss of control) in the second stage depends on the individual's perceptions of the cause of the first lapse. Thus, rather than viewing the abstinence violation effect (AVE) as an all-or-none reaction, it is best conceived as a dimensional construct: the greater the abstinence violation effect (AVE), the greater the probability of a relapse following an initial lapse (Marlatt,

1985). As previously mentioned the abstinence violation effect (AVE) is comprised of two components: a cognitive attribution as to the perceived cause of the lapse coupled with an affective reaction to this attribution.

According to Marlatt (1985), an individual, who attributes the cause of a lapse (violation of restraint) to internal, stable, and global aspects of the self will experience a more intense abstinence violation effect (AVE) because they are more likely to perceive the violation as a generalized failure (e.g., "I have no self-control"). This generalized sense of failure will reduce the individual's perception that they are able to exert control (helplessness) over their consumption, which in turn will undermine subsequent attempts to exert control. The intensity of the abstinence violation effect (AVE) is decreased, however, if the individual attributes the cause of the lapse to external, unstable and specific factors that are perceived to be controllable. It is important to note that despite some evidence suggesting attributional sex differences (Simon & Feather, 1973), Marlatt (1985) does not distinguish between males and females in his reformulated abstinence violation effect (AVE) model.

Marlatt (1985) also points out that when an individual attributes a lapse to internal, stable and global factors, negative affect is likely to occur. This negative affect is a byproduct of comparing one's immediate behavior (loss of restraint) to

an internalized standard of ideal behavior (maintaining restraint). The larger the discrepancy, the greater the reactions of guilt and self-blame (Marlatt, 1985). According to Marlatt (1985), in an attempt to cope with these negative feelings the individual may do one or both of the following: experience a total relapse and/or redefine the self to bring it in line with the immediate behavior (e.g., if a person takes one drink they may redefine themselves as an alcoholic and continue drinking).

Utilizing Marlatt's (1985) reconceptualization of the abstinence violation effect (AVE), Collins and Lapp (1991) conducted a study looking at alcohol consumption in a group of social drinkers. In accordance with Marlatt's reformulation of the abstinence violation effect (AVE), attributing the cause of drinking related events to internal, stable, and global characteristics contributed to a higher maximum number of drinks and a greater number of alcohol-related problems. Similarly, Curry et al. (1987) applied Marlatt's reconceptualization of the abstinence violation effect (AVE) to smoking. They found that males and females who relapsed (returned to normal smoking) after an initial slip reported significantly higher abstinence violation effects (AVEs) and consequently more internal, stable and global attributions than those who regained abstinence following a slip. Grilo and Shiffman (1994) examined whether variations in

abstinence violation effect (AVE) reactions to binges would account for recurrence of binge eating. The attributional reactions to two successive binges were evaluated through of a series of structured phone interviews. They found when subjects made more intense internal, global and uncontrollable causal attributions (i.e., an intense AVE) after a binge, they were likely to binge again sooner.

Although the above studies support Marlatt's (1985) reconceptualization of the abstinence violation effect (AVE), there have been no experimental attempts to assess the attributional style of restrained eaters who fail to maintain dietary restraint by indulging in high fat, high calorie food. Similarly, the attributional style of restrained eaters who are successful at maintaining dietary restraint, by eating in moderation, is yet to be examined. Thus for the present study the following hypotheses were proposed: (a) females will receive higher scores on the Restraint Scale than males as reported by Herman and Polivy (1980); (b) a failure to maintain dietary restraint (i.e., indulging in high fat, high calorie food) in hypothetical situations by male and female restrained eaters will be attributed to internal, stable and global causes which are associated with the abstinence violation effect (AVE); (c) success in maintaining dietary restraint (i.e., eating in moderation) in hypothetical situations by restrained eaters, regardless of sex, will

be attributed to external, unstable and specific causes; (d) control over eating by unrestrained eaters will be attributed to internal, stable, and global causes; (e) loss of control over eating by unrestrained eaters will be attributed to external, unstable, and specific causes; (f) when female restrained eaters experience preloading there will be an increase in the salience of internal, stable and global attributions resulting in a loss of restraint and a stronger abstinence violation effect (AVE); and (g) restrained eaters who attribute their failures to internal, stable, and global factors will likely experience feelings of helplessness and in turn depressed affect (Alloy et al., 1988). In an attempt to address these hypotheses, the present study was conducted in two phases.

Method

Subjects

For Phase 1 of the study, 319 undergraduates (207 females and 112 males) enrolled in Introductory Psychology completed a battery of questionnaires consisting of the Restraint Scale (Herman & Polivy, 1980), the Eating Attributional Style Questionnaire and the short form of the Beck Depression Inventory (Beck, Rial, & Rickels, 1974). Subjects for the second phase of the study were selected from the above pool of subjects and consisted of 100 female undergraduate students. Selection was based on the results from Phase 1. Using a matched random assignment procedure, subjects were rank-ordered from highest to lowest on the basis of their scores on the above questionnaires. Subject pairs were formed that had approximately the same scores (i.e., the highest two subjects formed the first pair, the next two formed the second pair, and so forth). Finally, the members of each pair were randomly assigned to one of two conditions (preload or no preload). Subjects were categorized as restrained or unrestrained on the basis of a median split of scores on the Restraint Scale (Herman & Polivy, 1980). Those scoring above 13 were classified as restrained and subjects scoring below 13 were considered unrestrained.

The decision to use only female subjects, in the second phase of the study,

is based on previous studies that have used only female subjects when examining the preloading effect (French, 1992; Herman & Polivy 1980; Ruderman & Christensen, 1983). This is hardly surprising given that the prevalence of dieting is found to be much higher in women than in men (Attie & Brooks-Gunn, 1989; Hill, Rogers, & Blundell, 1989; Wardle, 1987).

Scales and Measures

Restraint Scale (Herman & Polivy, 1980). The scale consists of 10 self-report items designed to categorize individuals as restrained or unrestrained eaters. Each item consists of either four or five alternative responses graded in severity from 0 to 3 or 0 to 4.

Eating Attributional Style Questionnaire (EASQ). The EASQ was developed for the present study. In line with other content-specific measures of causal attributions (Collins & Lapp, 1991; Curry et al., 1987), the EASQ employs the format and instructions of the **Attributional Style Questionnaire** (Peterson, Semmel, von Baeyer, Abramson, Metalsky, & Seligman, 1982). Subjects read descriptions of 8 events (4 successful and 4 failure situations) that were related to eating. The "successful" events were situations that constituted moderate eating. In contrast "failure" events were situations that constituted indulging in high fat, high calorie foods. The events were generated by the present authors and the

foods described in each situation were selected from a list of foods that were classified along a continuum from dietary permitted foods to dietary forbidden foods (Knight and Boland, 1989).

Participants were instructed to vividly imagine themselves in each of the situations and to answer a series of questions that applied to each. The questions included an open-ended request to note one major cause for having overeaten (or not overeaten) in that particular situation. Next, subjects rated the degree to which each of these causes was due to them or to other people or circumstances (locus of control); whether the cause would be present in similar situations in the future (stability); whether the cause influenced other areas of their lives besides eating (globality); and the degree of importance of the event. Subjects rated each of the causes they generated on a 5-point Likert scale. Importance ratings were included in light of the possibility that the proposed relationship between restraint and attributional style would occur only for important events, or more strongly for important events than for unimportant events (Peterson et al., 1982).

Beck Depression Inventory - Short Form (Beck et al., 1974). The inventory consists of 13 items relevant to various aspects of the depressive syndrome. Each item consists of four alternative statements graded in severity from 0 to 3. The **BDI** was administered as a means of addressing the relationship

between negative affect and attributional style (Abramson et al., 1978; Alloy et al., 1988).

Cookie ratings. Each student was asked to complete a rating form for three types of commercial cookies (Dad's Oatmeal Cookies, The Decadent Chocolate Chip Cookie, and Fudgee-O). The rating form contained 5, 5-point Likert scales for each cookie to measure cookie qualities such as sweetness and crispness, as well as the cookie's overall appeal.

Procedure

Several weeks prior to the experiment, potential subjects from an Introductory Psychology class were administered the Restraint Scale, the Eating Attributional Style Questionnaire and the short form of the Beck Depression Inventory. This comprised the first phase of the study.

Using a matched design, 100 female participants were selected and matched on their scores from the questionnaires completed in Phase 1. Once the subjects were matched on these variables, they were randomly assigned to one of two conditions (preload or no preload) making sure that restrained and unrestrained eaters were evenly distributed in each of the conditions. Since the Restraint Scale produces a continuous distribution of scores with no obvious line of demarcation within this distribution (Herman & Polivy, 1980), subjects were

classified as restrained or unrestrained eaters based on a median split of restraint scores.

Subjects were telephoned and invited to participate in a study designed to discover how the taste of some foods affect the taste of other foods. Individuals suffering from either a medical condition such as diabetes or food allergies were excluded from the study. Interested subjects were asked to refrain from eating at least two hours prior to coming to the experiment. Subjects participated individually.

Upon arrival the subject was assigned to the predetermined condition and told that the purpose of the study was to discover how the taste of some foods affect the taste of other foods. Subjects in the no preload condition were informed that they were assigned to the no taste condition and that the purpose of this group was to provide information on the way the final food tastes, if it has not been immediately preceded by another taste. Thus, this group preceded directly to the final taste test.

Subjects in the preload condition were informed that they would provide information as to the effect of one particular taste on subsequent tastes. They were presented with a chocolate milkshake and informed that consumption of the entire milkshake was a prerequisite for preceding to the final taste test. After the

milkshake was consumed they proceeded to the final taste test.

During the final taste test all subjects were treated identically. Subjects were asked to rate three different types of cookies. Three types of cookies were included to increase the likelihood that each student would find at least one type of cookie that she liked and would thus eat as many as desired. The cookies were placed in separate containers and labelled A, B, and C. Subjects were instructed to taste the cookies in a specified order (first Type A, then Type B and then Type C) in order to control for the effects of one taste on another. The subjects were told to eat as many cookies as necessary to ensure accurate ratings and once the ratings were completed they could help themselves to any remaining cookies, provided that they did not change their initial ratings. Subjects were left alone in the room and were given ten minutes to complete the ratings. The amount of cookies eaten served as the dependent variable.

Once the subjects finished rating the cookies, they were asked two questions: "What factors do you think were being looked at in this study" and "What do you believe to be the purpose of the study?" During debriefing subjects were informed of the true nature of the experiment. Subjects were also asked to refrain from discussing the study with others.

Phase 1 Results

Characteristics of the Scales

The alpha coefficients for the Restraint Scale, Beck Depression Inventory (short form) and each of the subscales on the Eating Attributional Style Questionnaire are presented in Table 1, located in Appendix A. Although modest, the alpha coefficients indicate that there is acceptable internal consistency.

The subscales on the Eating Attributional Style Questionnaire are scored such that greater numbers designate greater internality, stability, globality, and importance. The means and standard deviations of the variables for males and females are presented in Tables 2 and 3, in Appendix A. Analyses of variance indicated sex differences on two variables. Females were significantly more restrained than males $F(1, 317) = 23.4, p < .001$ and females were significantly lower on locus of control for success than males $F(1, 317) = 5.56, p < .05$. Thus, the latter finding indicates that females are more likely to attribute success to external factors than males.

Correlations were computed in order to examine the relationships among the subscales of the Eating Attributional Questionnaire. These correlations are presented in Tables 4 and 5, in Appendix A. Several patterns of interest emerged. There was consistency across the Success and Failure situations for each of the

four subscales. Thus, all of the correlations between Success and Failure situations for the subscales attained significance. Individuals who scored high on locus of control, globality, stability and importance for Success situations also scored high on these subscales for Failure situations. Furthermore, there were patterns of correlations among the subscales for each of the Success and Failure situations. For Failure situations, locus of control was positively correlated with stability and negatively correlated with importance. In addition, globality was positively correlated with stability and importance. These patterns were evident in females and males, with the exception that the correlation between locus of control and stability, although in the same direction, did not attain significance for males. For the Success situations, the patterns of correlations differed for males and females. Locus of control was negatively correlated with globality and importance in the females. In addition, importance was positively correlated with globality and stability. For males, locus of control was positively correlated with stability and globality was positively correlated with stability and importance.

Furthermore, there were also a number of "cross-over" correlations; associations between different subscales across Success and Failure situations as shown in Tables 4 and 5. Many of these correlations reflect the intercorrelations among the attributional dimensions (locus of control, globality and stability)

coupled with the stability of these dimensions across Success and Failure situations.

Correlations Among the Measures with Corresponding Means

The purpose of this study was to examine the attributional styles associated with restrained eating and the relationship between these styles and depression. The correlations among the relevant measures are shown in Tables 4 and 5. In order to clarify the former set of relations further, the subjects were divided into restrained and unrestrained eaters on the basis of a median split and their attributional styles on the subscales were compared. The means for these contrasts are presented in Table 6. Mixed support emerged for the hypothesized relations between attributional style and both depression and restraint. Restraint in both males and females was correlated positively with depression, however the correlation between restraint and depression was greater for females than for males (Fisher $z = 2.34$, $p = .026$) as portrayed in Tables 4 and 5. For Success situations, restraint in females was correlated negatively with locus of control, positively with globality, and positively with stability as shown in Table 4. In contrast, restraint in males was positively correlated with only one dimension; globality as shown in Table 5. Depression in both males and females was negatively correlated with locus of control (see Tables 4 and 5). The pattern of intercorrelations for females

is consistent with the expectation that restrained eaters would show a "learned helplessness" pattern and therefore tend to show less internal control, more globality and more stability than unrestrained eaters (see Table 6). Males are also within this "learned helplessness" pattern, but the correlations are weaker as compared to females.

For the Failure situations, some unexpected correlations emerged between restraint and attributional style. Contrary to expectations, restraint in both males and females was negatively correlated with locus of control and positively correlated with globality. In addition, depression in females was negatively correlated with locus of control, much like it was for Success situations. Therefore contrary to expectation, restrained eaters showed less internal control than unrestrained eaters in Failure situations (see Table 6). It should be noted that restraint and depression were positively correlated with importance for both Success and Failure situations.

Phase I Discussion

Consistent with Herman and Polivy (1980), females in the present study scored higher on the Restraint Scale than males. Furthermore, restraint in both males and females was associated with depression, although the association was greater for females than males. The present results also suggest the presence of

sex differences in attributional style; which is somewhat consistent with previous research (Simon & Feather, 1973). Maintenance of dietary restraint by female restrained eaters was attributed to external, stable and global causes, whereas male restrained eaters tended to attribute success to strictly global causes. Depression in females was also associated with external attributions.

The present findings only partially supported Marlatt's reconceptualization of the abstinence violation effect (AVE). It was hypothesized that restrained eaters would have a learned helplessness orientation to eating, where failure to maintain restraint would be attributed to internal, stable, and global causes. Contrary to what was expected, failure to maintain restraint was attributed to external and global causes in both males and females.

Despite the lack of evidence in Phase 1 to support the reformulated abstinence violation effect (AVE), Phase 2 was designed to further explore the relationship between restraint and attributional styles by measuring actual eating behaviour (i.e., number of cookies eaten). A preload condition was used to test the hypothesis that an initial lapse by restrained eaters would precipitate the abstinence violation effect (AVE) causing them to overeat; the so-called "counterregulatory eating" effect (Herman & Polivy, 1980). This procedure was similar to a study conducted by Ruderman and McKirnan (1984) that investigated

whether an alcohol preload would result in higher alcohol consumption in restrained drinkers. Consistent with Phase 1, the relationship between restraint and preloading is hypothesized to be mediated by attributional style and in particular the external dimension. Most studies investigating the preloading effect have used strictly female subjects, therefore only female subjects were used in the second phase of the present study (French, 1992; Herman & Polivy, 1980; Ruderman & Christensen, 1983).

Phase 2 Results

Restraint and the Preloading Effect

Employing a procedure similar to Ruderman (1985a), the amount of cookies eaten served as a measure of eating behaviour. Subjects with a score above the median (13) on the Restraint Scale were classified as restrained eaters, and those with a score below 13 were classified as unrestrained eaters. The amount of cookies consumed per subject was subjected to a 2 (restrained, unrestrained) x 2 (preload, no preload) analysis of variance. No significant main effects or interaction effects were found. It should be noted that there was a tendency for restrained eaters in the preload condition to eat more than unrestrained eaters in the preload condition. The means for this analysis are presented in Table 7.

In addition, a regression analysis using restraint as a continuous variable

revealed a significant main effect for restraint such that restrained eaters consumed more cookies than unrestrained eaters $F(1, 97) = 4.76, p < .05$. Condition and the restraint score by condition interaction were not significant predictors of the number of cookies consumed.

Attributional Style and the Preloading Effect

To further investigate the findings from Phase 1 that restrained eaters tend to make external attributions, the effects of locus of control and condition on the amount of cookies consumed was subjected to a 2 (external, internal) x 2 (preload, no preload) analysis of variance. The items that contribute to the locus of control for success (IES) subscale and the items that comprise the locus of control for failure (IEF) subscale were collapsed for this particular analysis to produce one subscale (IE). This yielded a significant two-way interaction between locus of control and condition $F(1, 97) = 4.10, p < .05$. The means for this analysis are presented in Table 7. Tukey *a posteriori* comparisons, with the level of significance established at $p < .05$, revealed that individuals with an external orientation ate significantly more than individuals with an internal orientation in the preload condition.

In order to capture more of the variance, a regression analysis using locus of control, condition, and the interaction of locus of control and condition as

independent variables and total number of cookies consumed as the dependent variable was conducted. In contrast to the above findings, no significant main effects or interaction effects were revealed.

A series of 2 x 2 ANOVAs were conducted on the other attributional dimensions by condition (preload or no preload). No significant main effects or interaction effects were found. It should be noted, however, that there was a tendency for individuals with global attributions to eat more in the preload condition ($M= 4.07$) than individuals with specific attributions in the preload condition ($M= 3.30$).

Furthermore, regression analyses using the other attributional dimensions (i.e., stability and globality) as continuous variables revealed only a main effect of globality such that individuals who made global attributions ate more than individuals who made specific attributions $F(1, 97)= 4.34, p<.05$. Stability, the interaction of stability and condition, and the interaction of globality and condition were not significant predictors of the total number of cookies consumed.

Restraint and the Preloading Effect When Adjusted for Locus of Control

To further explore the relationship between restraint and preloading, the amount of cookies consumed was subjected to a 2 (restrained, unrestrained) x 2 (preload, no preload) analysis of covariance with locus of control serving as the

covariate. Although no significant main effects or interaction effects were found, it appears from an examination of the means that the interaction variance slightly decreased in size. The adjusted marginal means are presented in Table 8 (Appendix A).

Locus of Control and the Preloading Effect When Adjusted for Restraint

The relationship between locus of control and preloading was further clarified by a 2 (external, internal) x 2 (preload, no preload) analysis of covariance with the dimension of restraint serving as the covariate. A significant two-way interaction between locus of control and condition resulted, $F(1, 96) = 4.64$, $p < .05$. In this case it appears, from an examination of the means, that the interaction variance increased in size. The adjusted marginal means are presented in Table 8 (Appendix A). Tukey a posteriori comparisons, with the level of significance established at $p < .05$, revealed that individuals with an external orientation ate significantly more in the preload condition than individuals with an external orientation in the no preload condition. Furthermore, individuals with an external orientation ate significantly more than individuals with an internal orientation in the preload condition. Individuals with an internal orientation also ate significantly less in the preload condition than individuals with an internal orientation in the no preload condition.

In contrast to the above findings, a regression analysis using locus of control as a continuous variable and restraint as a covariate revealed no significant main effects or interaction effects.

Phase 2 Discussion

Previous research regarding the relationship between restraint and preloading has found restrained eaters to consume more after a preload and unrestrained eaters to consume less (Herman & Mack, 1975; Hibscher & Herman, 1977; Ruderman, 1986). In the present study, restrained eaters showed a similar pattern to the above findings, but the results were not significant. The preloading effect, however, was more clearly shown in individuals who made external attributions regarding their eating behaviour. Thus, it appears that locus of control is a better predictor of eating behaviour than the dimension of restraint. It is important to note that this finding was based on a median split of scores on the Locus of Control scale and was not found when locus of control was used as a continuous variable. Regardless of the analyses used, the hypothesis that preloading would increase the salience of internal, stable and global attributions resulting in a failure to maintain restraint and a stronger abstinence violation effect (AVE) was not supported.

General Discussion

In studying the relationship between restrained eating and attributional styles, the present study found numerous sex differences. Consistent with Herman and Polivy (1980), females in the present study scored higher on the Restraint Scale than males. This is hardly surprising given that approximately 40% of women are currently dieting, as opposed to 24% of men (Brownell & Rodin, 1994). Although restraint in both males and females was associated with depression, the association was greater for females than males. Similarly, Ogden and Wardle (1991) found that female restrained eaters reported an overall higher level of depression than unrestrained eaters. A possible explanation for the above findings is that the constant attempt to restrict food intake (Ogden & Wardle, 1991) coupled with high body image dissatisfaction (Polivy & Herman, 1993) is enough to induce depression in women who are dieting.

The attributional styles of males and females also varied in situations where there was moderate eating (i.e., successful situations). Females tended to attribute success to external, global, and stable causes, whereas males attributed success to global causes. This is somewhat consistent with previous research. Simon and Feather (1973) found that females were more inclined to assign success on an exam to external factors (luck or task difficulty) than males. According to Simon

and Feather (1973) females are more likely to view their fate as being determined by external factors because they don't see themselves as having control over their destinies. Similarly, a study by Ickes and Layden (1978) found that females were inclined to take less credit for positive outcomes by attributing them to external causes; whereas males attributed positive outcomes to internal causes. In contrast to the above findings, Frieze, Whitley, Hanusa, and McHugh (1982) did not find strong evidence to support sex differences in attributional styles.

In situations where individuals ate in moderation (i.e., successful situations), depression was associated with the dimension of externality in both the male and female groups. This is consistent with Benassi, Sweeney and Dufour's (1988) meta-analysis of the locus of control-depression literature, which indicates greater externality is associated with greater depression. The above finding also lends partial support to Seligman, Abramson, Semmel and von Baeyer's (1979) attributional model of depression that suggests depression-prone persons tend to attribute the cause of success to external, unstable, and specific factors. According to Alloy and Abramson (1982), depressives fail to make attributions in accordance with the self-serving bias. This refers to the pattern of attributing success to internal factors and failure to external factors in order to maintain or enhance one's self-esteem. In most cases, depressives are not motivated to protect their self-

esteem, so they tend to externalize success rather than internalize it (Alloy & Abramson, 1982).

The present study also found that depression in females was associated with the perceived importance of the success and failure situations. This is in accordance with Abramson et al. (1978) attributional model of depression, which states that the severity and intensity of depressive symptoms will vary with the perceived importance of the situation. Thus, the more important the situation is perceived to be, the more pronounced the depressive symptoms. In the present study, it may be the high degree of body-image dissatisfaction among the females (Herman & Polivy, 1993) that leads them to view situations involving eating as extremely important.

The hypotheses that restrained eaters would attribute success in maintaining dietary restraint (i.e., eating in moderation) to external, unstable and specific causes and failure (i.e., indulging in high fat, high calorie food) to internal, stable and global causes were only partially confirmed in the present study. Restrained females attributed eating in moderation (i.e., success situations) to external, stable and global causes, whereas restrained males attributed success to global causes. Contrary to expectations, the present findings did not yield support for Marlatt's reconceptualization of the abstinence violation effect (AVE) or the

learned helplessness model. Restrained males and females attributed failure (i.e., indulging in high fat, high calorie food) to external and global causes. Thus, it appears that Marlatt's (1985) abstinence violation effect model, although successful in explaining the irrational thought patterns that precipitate binge eating in binge eaters (Grilo & Shiffman, 1994), fails to account for the causal attributions made by restrained eaters that result in overeating.

In general, the findings point to the conclusion that restrained eaters, particularly females, believe that eating in moderation (i.e., success situations) or indulging in high fat, high calorie food (i.e., failure situations) are both products of external and global causes. Consequently, restrained eaters fail to exhibit the self-serving bias, which contends that people tend to make an internal attribution following success and an external attribution following failure in order to protect their self-esteem (Reeve, 1992). Perhaps the self-esteem of restrained eaters is already so low, that like depressives, they are not motivated to protect it (Alloy and Abramson, 1982). A history of internalizing success and externalizing failure tends to breed a self-conception that one has more control over one's outcomes than is actually the case (Reeve, 1992). Thus, a possible explanation as to why restrained eaters attribute success and failure to external causes is that they believe that they have no control over their eating behaviour; that factors outside of their

control such as the presence of other people (i.e., friends or family members persuading them to eat) or the qualities of the food itself (e.g., the sight of delicious food) control what and how much they eat.

Previous research regarding the relationship between restraint and preloading have found restrained eaters to consume more after a preload and unrestrained eaters to consume less (Herman & Mack, 1975; Hibscher & Herman, 1977; Ruderman, 1986). In the present study, restrained and unrestrained eaters showed a similar pattern to the above findings, but the results were not significant. A possible explanation for this finding is that the present study used a median restraint score of 13, whereas many studies finding counterregulatory effects have medians between 15 and 16 (Herman & Polivy, 1980; Polivy & Herman, 1991; Ruderman et al., 1985). According to Jansen, Oosterlaan, Merckelbach, & van den Hout (1988) there is a trend for counterregulation to occur in studies with high medians, rather than studies with lower medians. It is interesting to note that other recent attempts to replicate the preloading effect have also failed to produce counterregulation in restrained eaters (Jansen, Merckelbach, Oosterlaan, Tuiten, & van den Hout, 1988; Ruderman & Christensen, 1983; Wardle & Beales, 1987). Based on the above findings and the findings from Phase 1, the hypothesis that preloading would increase the salience of internal, stable, and global attributions

resulting in a more intense abstinence violation effect (AVE) was not supported.

Unexpectedly, a regression analysis revealed a significant main effect for restraint, with restrained eaters consuming more than unrestrained eaters.

According to Ruderman, Belzer and Halperin (1985), this may suggest that the tendency for restrained eaters to eat more than unrestrained eaters may be a response style that prevails over a wide range of situations not just after consuming a milkshake preload. Furthermore, disinhibition may not be an all-or-none phenomenon like restraint theory suggests (Herman & Polivy, 1980), but it may occur in varying degrees (Ruderman et al., 1985). For example in the present study, restrained eaters overate (relative to unrestrained eaters) to a mild degree in the single taste test, but to a greater extent when preloaded with a milkshake.

Although the restrained eaters in the present study failed to exhibit the counterregulatory effect, there were a number of unexpected findings regarding the role of attributional styles in the relation between restrained eating and the preloading effect. Rather than the attributional styles serving a mediational role, the findings point to the conclusion that an external orientation to food consumption is a better predictor of the preloading effect than is the dimension of restraint. Given the uniqueness of this finding, any attempts to explain it should be considered highly speculative at this point. It should also be cautioned that the

above finding was found only when a median split of scores on the locus of control scale was used and not when locus of control was used as a continuous variable.

A possible explanation for the above finding is that any previously observed relation between restrained eating and preloading is actually the result of an overlap between the dimension of restraint and an external orientation for food consumption. Furthermore, the preload paradigm can be viewed as a compliance to multiple requests. In the present study, individuals were socially pressured by the experimenter and the experimental context to consume a milkshake (preload). Once the milkshake was consumed, subjects were asked to comply with a second request; to taste three different cookies and rate them. Since the experimenter left the room while the subjects conducted the taste test, there was less social pressure to comply with the second request. Although the first request is somewhat larger than the second request, the preload paradigm is similar to other multiple requests like the foot-in-the-door technique. This theory proposes that once an individual is induced to yield to a small request, they are more likely to comply with a larger request in the future (Freedman & Fraser, 1966).

There is evidence (Eisenberg, Cialdini, McCreath, & Shell, 1987) that changes in individual's self-perceptions are responsible for the foot-in-the-door technique. Once an individual yields to a small request, they experience a subtle

shift in their own self-perceptions, viewing themselves as the sort of person who does that sort of thing which in turn produces greater compliance to subsequent larger demands. Similarly, individuals who are induced by social pressure to eat a fattening food are predisposed to comply with a second request to eat because it is compatible with their adjusted self-concept. This is especially the case with individuals who are externally oriented when it comes to food. In the present study, the first request to consume a milkshake makes the individual's perception of their external orientation salient (i.e., they themselves have no control over their eating behaviour), which then predisposes them to yield to the social pressure and consequently to drink the whole milkshake. They then view themselves as the sort of person who yields to external demands to eat, which predisposes them to yield to pressures to eat again. Thus, restrained eaters who feel they themselves have no control over their eating behaviour (i.e., externally oriented) eat more after a preload than restrained eaters who see themselves as being in control of what and how much they eat (i.e., internally oriented). As previously stated this explanation is purely speculative and does warrant further investigation.

Given that the findings in the present study were for the most part unexpected, it is important that the limitations of the study be clearly examined. First, because the Eating Attributional Style Questionnaire was developed for the

present study, its ability to assess the causal attributions of restrained and unrestrained eaters has not been well established. Although, the Eating Attributional Style Questionnaire exhibited adequate reliability, further work is needed to address the reliability and validity of the individual dimensions and to determine its usefulness as an instrument for assessing the causal attributions of restrained and unrestrained eaters.

Other limitations of the present study also bear comment. A major assumption of the present study was that subjects' attributional responses to the hypothetical events on the Eating Attributional Style Questionnaire would result in individual attributional styles that would influence actual eating behaviour in the second phase of the study. Some studies have found only weak correlations between subjects' attributional responses to hypothetical events and specific attributions evoked by actual events (Curry et al., 1987; Grilo & Shiffman, 1994). Thus, future studies should compare the subjects' attributional responses on the Eating Attributional Style Questionnaire to subjects' attributions for actual events involving eating to determine whether attributions are stable across occasions. An addition of a hypothetical situation on the Eating Attributional Style Questionnaire involving a preload situation and a taste test may also prove to be a useful predictor of an individual's attributions and eating behaviour in an actual taste test

situation.

It should also be noted that the abstinence violation effect model assumes an individual has some degree of volitional control over whether they will engage in the restricted behaviour. For example, in a social situation when offered a piece of cake, an individual has the choice of accepting or rejecting the offer. In the present study, however, subjects had very little volitional control over milkshake consumption. Therefore, applying the abstinence violation effect model to an experimental context is somewhat questionable. Future experimental studies investigating the abstinence violation effect model may want to address this issue of volitional control.

Finally, it should be emphasized that the finding that an external orientation to food consumption was a better predictor of the preloading effect than the dimension of restraint was found only when a median split analysis was used. Thus, further experimental substantiation of the above finding is warranted. It is also recommended that any future studies in this area utilize regression analysis rather than analysis of variance to analyze the data.

In addition to the above recommendations, future research should attempt to address the controllability aspect, since the perception of loss of control seems to play a critical role in governing eating behaviour. Furthermore, future studies

in this area should include self-esteem as a covariate since it has been shown to be influenced by attributional styles (Abramson et al., 1989; Alloy et al., 1988). A study conducted by Polivy, Heatherton and Herman (1988) has shown that the counterregulatory effect occurs only in high restrained eaters who also exhibit low self-esteem. Given the close relationship between dieting and eating disorders, it is hoped that future research in this area will only serve to help the high prevalence of women in our society that suffer from this debilitating sometimes fatal disorder.

References

- Abramson, L. Y., Seligman, M. E. P., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. Journal of Abnormal Psychology, *87*, 49-74.
- Abramson, L. Y., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. Psychological Review, *96* (2), 358-372.
- Alloy, L. B., & Abramson, L. Y. (1982). Learned helplessness, depression, and the illusion of control. Journal of Personality and Social Psychology, *42*, 1114-1126.
- Alloy, L. B., Abramson, L. Y., Metalsky, G. I., & Hartlage, S. (1988). The hopelessness theory of depression: Attributional aspects. British Journal of Clinical Psychology, *27*, 5-21.
- Attie, I., & Brooks-Gunn, J. (1989). Development of eating problems in adolescent girls: a longitudinal study. Developmental Psychology, *25* (1), 70-79.
- Baucom, D. H., & Aitken, P. (1981). Effect of depressed mood on eating among obese and nonobese dieting and nondieting persons. Journal of Personality and Social Psychology, *41*, (3), 577-585.
- Beck, A. T., Rial, W. Y. & Rickels, K. (1974). Short form of depression inventory: cross validation. Psychological Reports, *34*, 1184-1186.
- Benassi, V. A., Sweeney, P. D., & Dufour, C. L. (1988). Is there a relation between locus of control orientation and depression? Journal of Abnormal Psychology, *97* (3), 357-367.
- Brownell, K. D., & Rodin, J. (1994). The dieting maelstrom: Is it possible and advisable to lose weight? American Psychologist, *49* (9), 781-791.
- Carroll, J. S. (1978). Causal attributions in expert parole decisions. Journal of Personality and Social

Psychology, 36, (12), 1501-1511.

Collins, R. L., & Lapp, W. M. (1991). Restraint and attributions: evidence of the abstinence violation effect in alcohol consumption. Cognitive Therapy and Research, 15 (1), 69-84.

Curry, S., Marlatt, G. A., & Gordon, J. R. (1987). Abstinence violation effect: validation of an attributional construct with smoking cessation. Journal of Consulting and Clinical Psychology, 55 (2), 145-149.

Eisenberg, N., Cialdini, R. B., McCreath, H., & Shell, R. (1987). Consistency-based compliance: When and why do children become vulnerable? Journal of Personality and Social Psychology, 52, 1174-1181.

Feather, N. T. & Davenport, P. R. (1981). Unemployment and depressive affect: A motivational and attributional analysis. Journal of Personality and Social Psychology, 41 (3), 422-436.

Folkes, V. S. (1984). Consumer reactions to product failure: An attributional approach. Journal of Consumer Research, 10, 398-409.

Freedman, J. L., & Fraser, S. C. (1966). Compliance without pressure: The foot-in-the-door technique. Journal of Personality and Social Psychology, 4 (2), 195-202.

French, S. A. (1992). Restraint, food choice and cognitions. Addictive Behaviors, 17 (3), 273-281.

Frieze, I. H. (1979). Perceptions of battered wives. In I. H. Frieze, D. Bar-Tal, & J. Carroll (Eds.), New approaches to social problems (pp. 79-108). San Francisco: Jossey-Bass Publishers.

Frieze, I. H. & Bar-Tal, D. (1979). Attribution theory: Past and present. In I. H. Frieze, D. Bar-Tal, & J. Carroll (Eds.), New approaches to social problems (pp. 1-20). San Francisco: Jossey-Bass Publishers.

Frieze, I. H., Whitley, B. E., Hanusa, B. H., & McHugh, M. C. (1982). Assessing the theoretical

models for sex differences in casual attributions for success and failure. Sex Roles, 8 (4), 333-343.

Frost, R. O., Goolkasian, G. A., Ely, R. J., & Blanchard, F. A. (1982). Depression, restraint and eating behavior. Behavior Research and Therapy, 20, 113-121.

Golin, S., Sweeney, P. D., & Shaeffer, D. E. (1981). The causality of causal attributions in depression: A cross-lagged panel correlational analysis. Journal of Abnormal Behavior, 90 (1), 14-22.

Grilo, C. M., & Shiffman, S. (1994). Longitudinal investigation of the abstinence violation effect in binge eaters. Journal of Consulting and Clinical Psychology, 62 (3), 611-619.

Harvey, D. M. (1981). Depression and attributional style: Interpretations of important personal events. Journal of Abnormal Psychology, 90, 134-142.

Heatherton, T. F., Herman, C.P., & Polivy, J. (1991). Effects of physical threat and ego threat on eating behavior. Journal of Personality and Social Psychology, 60 (1), 138-143.

Herman, C. P., & Mack, D. (1975). Restrained and unrestrained eating. Journal of Personality, 43, 647-660.

Herman, C. P., & Polivy, J. (1975). Anxiety, restraint and eating behavior. Journal of Abnormal Psychology, 84, (6), 666-672.

Herman, C. P., & Polivy, J. (1980). Restrained eating. In A. J. Stunkard (Ed.), Obesity (pp. 208-225). Philadelphia: Saunders.

Herman, C. P. & Polivy, J. (1984). A boundary model for the regulation of eating. In A. J. Stunkard and E. Stellar (Eds.), Eating and Its Disorders (pp. 141-156). New York: Raven.

Herman, C. P., Polivy, J., Pliner, P., Threlkeld, J., & Munic, D. (1978). Distractability in dieters

and nondieters: An alternative view of "externality". Journal of Personality and Social Psychology, 36 (5), 536-548.

Herman, C. P., Polivy, J., & Silver, R. (1979). The effects of an observer on eating behavior: The induction of "sensible" eating. Journal of Personality, 47, 85-99.

Hibscher, J. A., & Herman, C. P. (1977). Obesity, dieting, and the expression of "obese" characteristics. Journal of Comparative and Physiological Psychology, 91, (2), 374-380.

Hill, A. J., Rogers, P. J., & Blundell, J. E. (1989). Dietary restraint in young adolescent girls: a functional analysis. British Journal of Clinical Psychology, 28, 165-176.

Ickes, W., & Layden, M. A. (1978). Attributional styles. In J. Harvey, W. Ickes, & R. Kidd (Eds.), New Directions in Attribution Research, vol. 2. Hillsdale, NJ: Erlbaum.

Jansen, A., Merckelbach, H., Oosterlaan, J., Tuiten, A., & van den Hout, M. (1988). Cognitions and self-talk during food intake of restrained and unrestrained eaters. Behaviour Research and Therapy, 26 (5), 393-398.

Jansen, A., Oosterlaan, J., Merckelbach, H., van den Hout, M. (1988). Nonregulation of food intake in restrained, emotional, and external eaters. Journal of Psychopathology and Behavioral Assessment, 10, 345-353.

Kelley, H. H. (1973). The processes of causal attribution. American Psychologist, 28, 107-128.

Kelley, H. H., & Michela, J. L. (1980). Attribution theory and research. In M. R. Rosenzweig & L. W. Porter (Eds.), Annual review of psychology (Vol. 31, pp. 457-501). Palo Alto, CA: Annual Reviews.

Knight, L., & Boland, F. (1989). Restrained eating: An experimental disentanglement of the disinhibiting variables of calories and food type. Journal of Abnormal Psychology, 98,

412-420.

Leon, G. R. & Roth, L. (1977). Obesity: Psychological causes, correlations, and speculations.

Psychological Bulletin, 84, 117-139.

Lowe, M. R. (1993). The effects of dieting on eating behavior: A three-factor model.

Psychological Bulletin, 114 (1), 100-121.

Marlatt, G. A. (1985). Cognitive factors in the relapse process. In G. A. Marlatt & J. R. Gordon

(eds.), Relapse prevention (pp. 128-200). New York: Guilford Press.

McHugh, M., Beckman, L., & Frieze, I. H. (1979). Analyzing alcoholism. In I. H. Frieze, D. Bar-

Tal, & J. S. Carroll (Eds.), New Approaches to social problems (pp. 168-208). San

Francisco: Jossey-Bass Publishers.

McKenna, R. J. (1972). Some effects of anxiety levels and food cues on the eating behavior of

obese and normal subjects. Journal of Personality and Social Psychology, 22, 311-319.

Metalsky, G. I., Abramson, L. Y., Seligman, M. E. P., Semmel, A., & Peterson, C. (1982).

Attributional styles and life events in the classroom: Vulnerability and invulnerability to

depressive mood reactions. Journal of Personality and Social Psychology, 43, 612-617.

Michela, J. L., Peplau, L. A., & Weeks, D. G. (1982). Perceived dimensions of attributions for

loneliness. Journal of Personality and Social Psychology, 43 (5), 929-936.

Murphy-Berman, V., & Sharma, R. (1986). Testing the assumptions of attribution theory in India.

The Journal of Social Psychology, 126 (5), 607-616.

Nisbett, R. E. (1972). Hunger obesity and the ventromedial hypothalamus. Psychological Review,

79, 433-453.

Ogden, J., & Wardle, J. (1991). Cognitive and emotional responses to food. International Journal

of Eating Disorders, 10 (3), 297-311.

- Peplau, L. A., Russell, D., & Heim, M. (1979). The experience of loneliness. In I. H. Frieze, D. Bar-Tal, & J. S. Carroll (Eds.), New approaches to social problems, (pp. 53-78). San Francisco: Jossey-Bass Publishers.
- Peterson, C., Semmel, A., von Baeyer, C., Abramson, L. Y., Metalsky, G. I., & Seligman, M. E. P. (1982). The attributional style questionnaire. Cognitive Therapy and Research, 6 (3), 287-300.
- Polivy, J. (1976). Perception of calories and regulation of intake in restrained and unrestrained subjects. Addictive Behaviors, 1, 237-243.
- Polivy, J., Heatherton, T. F., & Herman, C. P. (1988). Self-esteem, restraint, and eating behavior. Journal of Abnormal Psychology, 97 (3), 354-356.
- Polivy, J., & Herman, C. P. (1976). Clinical depression and weight change: a complex relation. Journal of Abnormal Psychology, 85, 338-340.
- Polivy, J., & Herman, C. P. (1993). Etiology of binge eating: Psychological mechanisms. In C. G. Fairburn and G. T. Wilson (Eds.), Binge eating: Nature, assessment and treatment, (pp. 173-205). New York: The Guilford Press.
- Polivy, J., & Herman, C. P., Hackett, R., & Kuleshnyk, I. (1986). The effects of self-attention and public attention on eating in restrained and unrestrained subjects. Journal of Personality and Social Psychology, 50 (6), 1253-1260.
- Polivy, J., Herman, C. P., Younger, J. C., & Erskine, B. (1979). Effects of a model on eating behavior: The induction of a restrained eating style. Journal of Personality, 47, 100-114.
- Raps, C. S., Peterson, C., Reinhard, K. E., Abramson, L. Y., & Seligman, M. E. P. (1982).

- Attributional style among depressed patients. Journal of Abnormal Psychology, 91, 102-108.
- Reeve, J. M. (1992). Understanding motivation and emotion. Fort Worth: Harcourt Brace Jovanovich College Publishers.
- Rodin, J. (1981). Current status of the internal-external hypothesis for obesity: What went wrong? American Psychologist, 36, (4), 361-372.
- Ruderman, A. J. (1985a). Dysphoric mood and overeating. A test of restraint theory's disinhibition hypothesis. Journal of Abnormal Psychology, 94, 78-85.
- Ruderman, A. J. (1985b). Restraint and irrational cognitions. Behavior Research and Therapy, 23, 557-561.
- Ruderman, A. J. (1986). Dietary restraint: A theoretical and empirical review. Psychological Bulletin, 99 (2), 247-262.
- Ruderman, A. J., Belzer, L. J. & Halperin, A. (1985). Restraint, anticipated consumption, and overeating. Journal of Abnormal Psychology, 94 (4), 547-555.
- Ruderman, A. J., & Christensen, H. (1983). Restraint theory and its applicability to overweight individuals. Journal of Abnormal Psychology, 92, 210-215.
- Ruderman, A. J., & McKirman, D. (1984). The development of a Restrained Drinking Scale: A test of the abstinence violation effect among alcohol users. Addictive Behaviors, 9, 365-371.
- Schachter, S. (1971). Some extraordinary facts about obese humans and rats. American Psychologist, 37, 436-444.
- Seligman, M. E. P., Abramson, L. Y., Semmel, A., & von Baeyer, C. (1979). Depressive attributional style. Journal of Abnormal Psychology, 88, 242-247.

- Simon, J. G. & Feather, N. T. (1973). Causal attributions for success and failure at university examinations. Journal of Educational Psychology, 64, (1), 46-56.
- Spencer, J. A., & Fremouw, W. J. (1979). Binge eating as a function of restraint and weight classification. Journal of Abnormal Psychology, 88, 262-267.
- Thibaut, J. W., & Riecken, H. W. (1955). Some determinants and consequences of the perception of social causality. Journal of Personality, 24, 113-133.
- Valle, V. A., & Frieze, I. H. (1976). Stability of causal attributions as a mediator in changing expectations for success. Journal of Personality and Social Psychology, 33 (5), 579-587.
- Valle, V. A. & Johnson, E. J. (1979). Consumer response to product quality. In I. H. Frieze, D. Bar-Tal, & J. S. Carroll (Eds.), New approaches to social problems (pp. 109-129). San Francisco: Jossey-Bass Publishers.
- Wardle, J. (1986). The assessment of restrained eating. Behavior Research and Therapy, 24, 213-215.
- Wardle, J. (1987). Compulsive eating and dietary restraint. British Journal of Clinical Psychology, 26, 47-55.
- Wardle, J., & Beales, S. (1987). Restraint and food intake: An experimental study of eating patterns in the laboratory and in normal life. Behaviour Research and Therapy, 25 (3), 179-185.
- Weiner, B. (1974). Achievement motivation as conceptualized by an attribution theorist. In B. Weiner (Ed.), Achievement Motivation and Attribution Theory. Morristown, N.J.: General Learning Press.
- Weiner, B. (1979). A theory of motivation for some classroom experiences. Journal of Educational

Psychology, 71, 3-25.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. Psychological Review, 92 (4), 548-573.

Weiner, B. (1986). An attributional theory of motivation and emotion. New York: Springer-Verlag.

APPENDIX A

Table 1
Alpha Coefficients for the Restraint Scale, Beck Depression Inventory
and the Eating Attributional Style Questionnaire Subscales

Measure	Alpha
Restraint Scale	.78
Beck Depression Inventory	.77
Eating Attributional Style Questionnaire	
Locus of Control for failure	.60
Locus of Control for success	.53
Locus of Control across success and failure	.63
Globality for failure	.68
Globality for success	.67
Stability for failure	.59
Stability for success	.60
Importance for failure	.77
Importance for success	.76

Table 2
Means, Standard Deviations, and Ranges of Variables for Females

Measure	Mean	Standard Deviation	Range	
			Minimum	Maximum
Restraint Scale	13.39	6.46	1.00	33.00
Beck Depression Inventory	16.76	4.21	10.00	31.00
Eating Attributional Style Questionnaire:				
Locus of Control for failure	16.67	3.22	5.00	20.00
Locus of Control for success	16.05	3.29	5.00	20.00
Globality for failure	11.16	3.66	3.00	20.00
Globality for success	12.39	3.74	4.00	20.00
Stability for failure	14.22	3.21	2.00	20.00
Stability for success	14.67	3.03	4.00	20.00
Importance for failure	9.36	4.03	1.00	20.00
Importance for success	8.90	3.73	4.00	20.00

Note: N=207

Table 3
Means, Standard Deviations, and Ranges of Variables for Males

Measure	Mean	Standard Deviation	Range	
			Minimum	Maximum
Restraint Scale	9.91	5.45	.00	35.00
Beck Depression Inventory	16.41	4.20	12.00	31.00
Eating Attributional Style Questionnaire:				
Locus of Control for failure	17.21	3.10	8.00	20.00
Locus of Control for success	16.91	2.77	9.00	20.00
Globality for failure	10.50	3.96	4.00	20.00
Globality for success	12.24	4.01	4.00	20.00
Stability for failure	14.51	2.82	8.00	20.00
Stability for success	14.71	2.86	8.00	20.00
Importance for failure	8.66	3.81	2.00	20.00
Importance for success	8.54	4.03	4.00	19.00

Note: N=112

Table 4
Correlations Among the Measures by Sex

Females										
Measure	Res	Dep	"Success"				"Failure"			
			IES	GLS	STS	IMPS	IEF	GLF	STF	IMPF
Restraint (Res)		.48**	-.19**	.25**	.18**	.40**	-.28**	.15*	-.02	.43**
Depression (Dep)			-.17*	.10	.10	.29**	-.14*	.09	.04	.27**
Attributional Style for "Success":										
Locus (IES)				-.16*	-.02	-.27**	.30**	.16*	-.02	-.23**
Globality (GLS)					.12	.52**	-.10	.62**	.12	.47**
Stability (STS)						.26**	.11	.21**	.43**	.22**
Importance (IMPS)							-.15*	.30**	-.06	.67**
Attributional Style for "Failure":										
Locus (IEF)								-.05	.37**	-.20**
Globality (GLF)									.23**	.45**
Stability (STF)										.02
Importance (IMPF)										

Note: * $p < .05$
 ** $p < .01$

Table 5
Correlations Among the Measures by Sex

Male										
Measure	Res	Dep	"Success"				"Failure"			
			IES	GLS	STS	IMPS	IEF	GLF	STF	IMPF
Restraint (Res)		.24**	-.03	.23*	.18	.33**	-.20*	.21*	.07	.38**
Depression (Dep)			-.21*	.04	-.01	.03	-.07	-.02	.11	.06
Attributional Style for "Success":										
Locus (IES)				-.08	.19*	-.05	.21*	-.01	-.21*	-.12
Globality (GLS)					.27**	.56**	-.06	.73**	.14	.36**
Stability (STS)						.15	.02	.22*	.35**	.06
Importance (IMPS)							-.09	.36**	.10	.60**
Attributional Style for "Failure":										
Locus (IEF)								-.03	.18	-.24*
Globality (GLF)									.32**	.45**
Stability (STF)										.15
Importance (IMPF)										

Note: * $p < .05$
 ** $p < .01$

Table 6

Eating Attributional Style Questionnaire Subscale Means
as a Function of Restraint for Females and Males

Eating Attributional Style Questionnaire Subscales								
Restraint	Success				Failure			
	IES	GLS	STS	IMPS	IEF	GLF	STF	IMPF
Females								
Restrained	15.42	13.09	15.14	10.15	15.72	11.45	14.15	10.91
Unrestrained	16.56	11.82	14.29	7.88	17.44	10.92	14.28	8.10
Males								
Restrained	16.96	13.36	15.35	9.71	16.71	11.44	14.55	9.80
Unrestrained	16.86	11.16	14.09	7.42	17.68	9.60	14.47	7.56

Table 7

Mean Amount of Cookies Consumed as a Function of
Condition and Either Restraint or Locus of Control

Condition	Restraint		Locus of Control	
	Restrained	Unrestrained	External	Internal
Preload	3.88	3.42	4.32a	2.98b
No Preload	3.77	3.66	3.73	3.70

Note: Different subscripts indicate differences between the means.

Table 8

Mean Amount of Cookies Consumed as a Function of
Condition and Either Restraint Adjusted for Locus of Control
or Locus of Control Adjusted for Restraint

Condition	Restraint (Adjusted for Locus of Control)		Locus of Control (Adjusted for Restraint)	
	Restrained	Unrestrained	External	Internal
Preload	3.91	3.39	4.92b	2.32c
No Preload	3.71	3.60	3.63a	3.74a

Note: Different subscripts indicate differences between the means.

APPENDIX B

QUESTIONNAIRE

Please indicate your name, student #, gender, age, and phone number below:

Name: _____ Student # _____

Gender: Male Female (Circle your answer) Age: _____

Phone Number: _____

It is **IMPORTANT** that you fill out your student # on the attached multiple choice answer sheet. Place your name on the back of the sheet as well. Please answer all questions on the multiple choice answer sheet unless otherwise specified. Hand in **BOTH** this questionnaire and the multiple choice answer sheet. All answers will remain confidential.

For this part of the questionnaire, please try to imagine yourself in the situations that follow. If such a situation happened to you, what would you feel would have caused it? While events may have many causes, we want you to pick only one - the **major** cause if this event happened to you. Please write this cause in the blank provided after each event. Next we want you to answer some questions about the cause. Decide which choice 1, 2, 3, 4, or 5 best describes your answer. Fill-in the corresponding A, B, C, D, or E on the accompanying answer sheet. Keep in mind there are **NO** right or wrong answers.

Scenario A

You go out to an elegant restaurant for dinner one evening, with a group of friends, and to your surprise included with the meal is an all you can eat dessert buffet. Your friends sample all the desserts on the buffet, you eat a bowl of fruit salad for dessert.

Write down the **one** major cause: _____

1. Is the cause of you eating a bowl of fruit salad due to something about you or to something about other people or circumstances?

Totally due to
other people
or circumstances

1 2 3 4 5
(A) (B) (C) (D) (E)

Totally due
to me

2. In the future after eating a fruit salad when confronted with an all you can eat dessert buffet, will this cause again be present?

Will never again be present	1	2	3	4	5	Will always be present
	(A)	(B)	(C)	(D)	(E)	

3. Is the cause something that just influences you when confronted with numerous desserts or does it influence other areas of your life?

Influences just this particular situation	1	2	3	4	5	Influences all situations in my life
	(A)	(B)	(C)	(D)	(E)	

4. How important would this situation be if it happened to you?

Not at all important	1	2	3	4	5	Extremely important
	(A)	(B)	(C)	(D)	(E)	

Scenario B

You are at home, alone, watching a movie on TV. You eat a big bag of ripple potato chips with dip and drink a couple of cans of cola.

Write down the **one** major cause: _____

5. Is the cause of you eating a bag of chips and drinking cola due to something about you or to something about other people or circumstances?

Totally due to other people or circumstances	1	2	3	4	5	Totally due to me
	(A)	(B)	(C)	(D)	(E)	

6. In the future when eating a bag of chips and drinking cola in front of the TV, will this cause again be present?

Will never again be present	1	2	3	4	5	Will always be present
	(A)	(B)	(C)	(D)	(E)	

7. Is the cause something that just influences you when eating a bag of chips and drinking a cola or does it influence other

areas of your life?

Influences just
this particular
situation

1 2 3 4 5
(A) (B) (C) (D) (E)

Influences
all situations
in my life

8. How important would this situation be if it happened to you?

Not at all
important

1 2 3 4 5
(A) (B) (C) (D) (E)

Extremely
important

Scenario C

You receive a box of your favorite chocolates at Christmas. You eat two and share the rest with friends and family.

Write down the **one** major cause: _____

9. Is the cause of you eating only two chocolates due to something about you or to something about other people or circumstances?

Totally due to
other people
or circumstances

1 2 3 4 5
(A) (B) (C) (D) (E)

Totally due
to me

10. In the future when you receive a box of chocolates and eat only a few, will this cause again be present?

Will never again
be present

1 2 3 4 5
(A) (B) (C) (D) (E)

Will always
be present

11. Is the cause something that just influences you when you receive a box of chocolates and eat only a few or does it influence other areas of your life?

Influences just
this particular
situation

1 2 3 4 5
(A) (B) (C) (D) (E)

Influences
all situations
in my life

12. How important would this situation be if it happened to you?

Not at all
important

1 2 3 4 5
(A) (B) (C) (D) (E)

Extremely
important

Scenario D

You meet a friend at McDonald's and you eat a Big Mac, large fries and a large chocolate milkshake.

Write down the **one** major cause: _____

13. Is the cause of you eating a Big Mac, large fries and a large milkshake due to something about you or to something about other people or circumstances?

Totally due to
other people
or circumstances

1 2 3 4 5
(A) (B) (C) (D) (E)

Totally due
to me

14. In the future when you go to McDonald's and eat a Big Mac, large fries and a large chocolate milkshake, will this cause again be present?

Will never again
be present

1 2 3 4 5
(A) (B) (C) (D) (E)

Will always
be present

15. Is the cause something that just influences you when you are at McDonald's and eat the above mentioned foods or does it influence other areas of your life?

Influences just
this particular
situation

1 2 3 4 5
(A) (B) (C) (D) (E)

Influences
all situations
in my life

16. How important would this situation be if it happened to you?

Not at all
important

1 2 3 4 5
(A) (B) (C) (D) (E)

Extremely
important

Scenario E

You are at a friend's birthday party where there is a table full of your favorite foods, including chocolate cheesecake. You eat a salad and for dessert a slice of cantaloupe and a few strawberries.

Write down the **one** major cause: _____

17. Is the cause of you eating a salad and fruit due to something about you or to something about other people or circumstances?

Totally due to
other people
or circumstances

1 2 3 4 5
(A) (B) (C) (D) (E)

Totally due
to me

18. In the future when you attend a celebration of some sort and you eat a salad and fruit, will this cause again be present?

Will never again
be present

1 2 3 4 5
(A) (B) (C) (D) (E)

Will always
be present

19. Is the cause something that influences you when you eat a salad and fruit or does it influence other areas of your life?

Influences just
this particular
situation

1 2 3 4 5
(A) (B) (C) (D) (E)

Influences
all situations
in my life

20. How important would this situation be if it happened to you?

Not at all
important

1 2 3 4 5
(A) (B) (C) (D) (E)

Extremely
important

Scenario F

It's Halloween and you go shopping for candy. You decide to buy your favorite chocolate bars because if there is any left over you would hate to see any go to waste. You arrive home and before the first child appears at your door, you eat all the candy you bought.

Write down the **one** major cause: _____

21. Is the cause of you eating the candy due to something about you or to something about other people or circumstances?

Totally due to
other people
or circumstances

1 2 3 4 5
(A) (B) (C) (D) (E)

Totally due
to me

22. In the future when you eat a large amount of candy, will this cause again be present?

Will never again be present	1	2	3	4	5	Will always be present
	(A)	(B)	(C)	(D)	(E)	

23. Is the cause something that influences you only when you eat a large amount of candy or does it influence other areas of your life?

Influences just this particular situation	1	2	3	4	5	Influences all situations in my life
	(A)	(B)	(C)	(D)	(E)	

24. How important would this situation be if it happened to you?

Not at all important	1	2	3	4	5	Extremely important
	(A)	(B)	(C)	(D)	(E)	

Scenario G

Before going to the movies, you and your friends decide to go to Robin's Donuts. All of your friends have their favorite donuts and hot chocolate, you have a cup of coffee.

Write down **one** major cause: _____

25. Is the cause of you having just a coffee due to something about you or to something about other people or circumstances?

Totally due to other people or circumstances	1	2	3	4	5	Totally due to me
	(A)	(B)	(C)	(D)	(E)	

26. In the future when you just have a coffee at Robin's Donuts will this cause again be present?

Will never again be present	1	2	3	4	5	Will always be present
	(A)	(B)	(C)	(D)	(E)	

27. Is the cause something that just influences you when you have a coffee at Robin's Donuts or does it influence other

areas of your life?

Influences just
this particular
situation

1 2 3 4 5
(A) (B) (C) (D) (E)

Influences
all situations
in my life

28. How important would this situation be if it happened to you?

Not at all
important

1 2 3 4 5
(A) (B) (C) (D) (E)

Extremely
important

Scenario H

You go to a relative's house for a big Christmas dinner with all the trimmings. You have two helpings of everything and a slice of chocolate cake with ice cream on the side for dessert.

Write down **one** major cause: _____

29. Is the cause of you eating two helpings of dinner and dessert due to something about you or to something about other people or circumstances?

Totally due to
other people
or circumstances

1 2 3 4 5
(A) (B) (C) (D) (E)

Totally due
to me

30. In the future when you eat two helpings of dinner and have dessert, will this cause again be present?

Will never again
be present

1 2 3 4 5
(A) (B) (C) (D) (E)

Will always
be present

31. Is the cause something that just influences you when you eat two helpings of dinner and dessert or does it influence other areas of your life?

Influences just
this particular
situation

1 2 3 4 5
(A) (B) (C) (D) (E)

Influences
all situations
in my life

32. How important would this situation be if it happened to you?

Not at all
important

1 2 3 4 5
(A) (B) (C) (D) (E)

Extremely
important

In this part of the questionnaire, you will be required to judge which one of a group of statements best describes how you feel. There is a set of four statements for each question. Read the entire group of four statements (ranging from 0 to 3) and pick out the one statement in that group which best describes the way you feel today. Fill in the corresponding A for 0, B for 1, C for 2, or D for 3, on the multiple choice answer sheet. Begin on number 33 of the multiple choice answer sheet.

33. 0 (A) I do not feel sad.
1 (B) I feel sad.
2 (C) I am sad all the time and I can't snap out of it.
3 (D) I am so sad or unhappy that I can't stand it.
34. 0 (A) I am not particularly discouraged about the future.
1 (B) I feel discouraged about the future.
2 (C) I feel I have nothing to look forward to.
3 (D) I feel that the future is hopeless and that things cannot improve.
35. 0 (A) I get as much satisfaction out of things as I used to.
1 (B) I don't enjoy things the way I used to.
2 (C) I don't get real satisfaction out of anything anymore.
3 (D) I am dissatisfied or bored with everything.
36. 0 (A) I don't feel particularly guilty.
1 (B) I feel guilty a good part of the time.
2 (C) I feel quite guilty most of the time.
3 (D) I feel guilty all of the time.
37. 0 (A) I don't feel disappointed in myself.
1 (B) I am disappointed in myself.
2 (C) I am disgusted with myself.
3 (D) I hate myself.
38. 0 (A) I would kill myself if I had the chance.

- 1 (B) I would like to kill myself.
- 2 (C) I have thoughts of killing myself, but I would not carry them out.
- 3 (D) I don't have any thoughts of killing myself.
39. 0 (A) I have lost all of my interest in other people.
- 1 (B) I have lost most of my interest in other people.
- 2 (C) I am less interested in other people than I used to be.
- 3 (D) I have not lost interest in other people.
40. 0 (A) I can't make decisions at all anymore.
- 1 (B) I have greater difficulty in making decisions than I used to.
- 2 (C) I try to put off making decisions more than I used to.
- 3 (D) I make decisions about as well as ever.
41. 0 (A) I can work about as well as before.
- 1 (B) It takes an extra effort to get started at doing something.
- 2 (C) I have to push myself very hard to do anything.
- 3 (D) I can't do any work at all.
42. 0 (A) I believe I look ugly.
- 1 (B) I feel that there are permanent changes in my appearance that make me look unattractive.
- 2 (C) I am worried that I am looking old or unattractive.
- 3 (D) I don't feel I look worse than I used to.
43. 0 (A) I don't get more tired than usual.
- 1 (B) I get tired more easily than I used to.
- 2 (C) I get tired from doing almost anything.
- 3 (D) I am too tired to do anything.
44. 0 (A) I do not feel like a failure.

- 1 (B) I feel I have failed more than the average person.
 - 2 (C) As I look back on my life, all I can see is a lot of failures.
 - 3 (D) I feel that I am a complete failure as a person.
-

In this part of the questionnaire, answer the questions as honestly as you can. Read all possible answers and select the answer that is appropriate for you. Fill in the corresponding A for 0, B for 1, C for 2, D for 3 and in some cases E for 4, on the multiple choice answer sheet. Begin on number 45 of the multiple choice answer sheet. **Remember all answers will remain confidential.**

45. How often are you dieting?

- 0 (A) Never
- 1 (B) Rarely
- 2 (C) Sometimes
- 3 (D) Often
- 4 (E) Always

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

- 0 (A) 0-4
- 1 (B) 5-9
- 2 (C) 10-14
- 3 (D) 15-19
- 4 (E) 20+

47. What is your maximum weight gain within a week (in pounds)?

- 0 (A) 0-1
- 1 (B) 1.1-2
- 2 (C) 2.1-3
- 3 (D) 3.1-5
- 4 (E) 5.1+

48. In a typical week, how much does your weight fluctuate?
- 0 (A) 0-1
 - 1 (B) 1.1-2
 - 2 (C) 2.1-3
 - 3 (D) 3.1-5
 - 4 (E) 5.1+
49. Would a weight fluctuation of 5lbs affect the way you live your life?
- 0 (A) Not at all
 - 1 (B) Slightly
 - 2 (C) Moderately
 - 3 (D) Very much
50. Do you eat sensibly in front of others and splurge alone?
- 0 (A) Never
 - 1 (B) Rarely
 - 2 (C) Often
 - 3 (D) Always
51. Do you give too much time and thought to food?
- 0 (A) Never
 - 1 (B) Rarely
 - 2 (C) Often
 - 3 (D) Always
52. Do you have feelings of guilt after overeating?
- 0 (A) Never
 - 1 (B) Rarely
 - 2 (C) Often
 - 3 (D) Always

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

0 (A) Not at all

1 (B) Slightly

2 (C) Moderately

3 (D) Extremely

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

0 (A) 0-1

1 (B) 1-5

2 (C) 6-10

3 (D) 11-20

4 (E) 21+

APPENDIX C

Please rate the cookies according to the following dimensions by circling the appropriate number.

COOKIE A

		not very sweet					very sweet
1.	sweetness	1	2	3	4	5	
		not very moist					very moist
2.	moistness	1	2	3	4	5	
		not very crisp					very crisp
3.	crispness	1	2	3	4	5	
		not very rich					very rich
4.	richness	1	2	3	4	5	
		not very appealing					very appealing
5.	appearance	1	2	3	4	5	

COOKIE B

		not very sweet					very sweet
1.	sweetness	1	2	3	4	5	
		not very moist					very moist
2.	moistness	1	2	3	4	5	
		not very crisp					very crisp
3.	crispness	1	2	3	4	5	
		not very rich					very rich
4.	richness	1	2	3	4	5	

5.	appearance	not very appealing 1	2	3	4	very appealing 5
----	------------	-------------------------------	---	---	---	------------------------

COOKIE C

1.	sweetness	not very sweet 1	2	3	4	very sweet 5
----	-----------	---------------------------	---	---	---	--------------------

2.	moistness	not very moist 1	2	3	4	very moist 5
----	-----------	---------------------------	---	---	---	--------------------

3.	crispness	not very crisp 1	2	3	4	very crisp 5
----	-----------	---------------------------	---	---	---	--------------------

4.	richness	not very rich 1	2	3	4	very rich 5
----	----------	--------------------------	---	---	---	-------------------

5.	appearance	not very appealing 1	2	3	4	very appealing 5
----	------------	-------------------------------	---	---	---	------------------------

APPENDIX D

CONSENT FORM

My signature on this sheet indicates that I agree to participate in a study by Darlene Flood and Leanne Christiansen on taste sensitivity and the influence of a prior taste on a subsequent taste experience. It also indicates that I understand the following:

1. I am a volunteer and can withdraw at any time from the study.
2. There is no risk of physical or psychological harm.
3. The data I provide will be confidential.

I have received explanation about the nature of the study, its purpose, and procedures.

Signature of Participant

Date