This is to certify that the

dissertation entitled

PSYCHOLOGICAL LOSS AND NONCOMPLIANCE WITH DIETARY RESTRICTION

presented by

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has been accepted towards fulfillment
of the requirements for

Ph.D. degree in **Counseling, Educational Psychology, and Special Education**

Major professor

Date **October 26, 1989**

PSYCHOLOGICAL LOSS AND NONCOMPLIANCE WITH DIETARY RESTRICTION

By

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Counseling, Educational Psychology,
and Special Education

1989

ABSTRACT

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Obesity is a condition with serious medical, psychological, and social consequences. Dieting is an early recommendation in medical care, and a logical and frequent response by individuals needing to lose weight. Despite the advantages of diet over more radical weight-loss treatments, noncompliance with dietary restriction is common. Investigators have suggested that unknown obstacles are affecting motivation to comply and that these need to be identified.

Clinical studies have suggested that individuals experience a number of psychological losses relative to diet and weight loss, and psychological-loss theory describes a relationship between change and loss. Investigating the relationship between noncompliance with dietary restriction and psychological loss is seen as a potentially productive exploration to undertake, based on these observations and the identified need.

The purpose of this study was to develop an instrument, the Weight Loss Problems Questionnaire (WLPQ), which could identify and measure the types and intensity of psychological loss associated

with dietary restriction, and to explore the relationship between psychological loss and noncompliance with dietary restriction and the related failure to lose weight.

A sample of 192 individuals who were attempting to restrict food intake and who were seeking outside help for that purpose completed the WLPQ and a personal data sheet. Demographic characteristics and information concerning weight and weight-loss attempts and outcomes were obtained from the personal data sheet.

The results of correlational analyses indicated that the WLPQ is a highly reliable instrument, with a coefficient alpha of .97. An exploratory factor analysis tended to support the loss groupings originally conceptualized for the WLPQ. Loss scores on the WLPQ were significantly higher for individuals who were noncompliant with dietary restriction than for those who were compliant. In addition, loss scores were significantly higher for individuals who were noncompliant than for those who were compliant on the Approval/ Acceptance, Freedom/Control, and Comfort/Pleasure subscales. Although not significant, differences in scores on the Security, Identity, and Power/Impact subscales were higher for noncompliant than for compliant individuals. Caution was urged in the interpretation of these findings because loss scores tended, in general, to be relatively low.

ACKNOWLEDGMENTS

I wish to express my appreciation to Dr. William Hinds, chairman of my doctoral committee, whose direction and support guided me surely through the dissertation process. I am deeply grateful to him for his continued interest, involvement, and encouragement at every stage of this project. His help was essential to the successful completion of the study.

To the members of my committee, Dr. Richard Johnson, Dr. John Powell, and Dr. John Schneider, for their helpful suggestions and their frequent support.

To Rafa Kasim, for his willingness and ability to convey his knowledge of statistics, measurement, and design. His expertise was of invaluable assistance.

To Monica Brockmeyer, for running countless analyses on the computer and for her helpful suggestions and explanations.

To Susan Cooley, for her careful and timely attention to the completion of drafts. Her competence and composure throughout this often stressful period were especially appreciated.

To the individuals who participated in this study, for the generous gifts of their time and experience.

To Nancy Mikolaitis, my dear and special friend, for forging a path and for lighting my way. Her understanding, caring, and

sensitivity made the difficult journey a possible one and created a brightness that does not fade in recollection.

To my husband, Jon, for truly caring about my aspirations and my hopes, for encouraging me to pursue them and to prevail, and for doing all things necessary and possible to help me arrive at this successful and happy completion.

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CHAPTER I

INTRODUCTION

Statement of the Problem

Obesity, most generally defined as an excess of adipose tissue, or fat, is a condition often complicated by negative medical, psychological, social, and economic consequences. The obese, compared with people of normal weight, are at increased risk for many diseases, including cardiovascular disease, diabetes mellitus, and gall bladder and kidney disease, and they are at greater risk for complications during surgery and pregnancy (Brownell, 1982; Gilbert, 1986). Associations have also been made between obesity and appendicitis, menstrual and ovarian abnormalities, arthritis and gout, breathing difficulties, brain and general hemorrhage, cirrhosis of the liver, and lower back pain (Bray, 1979; Mahoney & Mahoney, 1976). Evidence suggests that obesity is associated with increased mortality (Bray, 1979; Brunzell, 1983). Obesity is now generally considered to be an independent risk factor and a disease in its own right (Altschul, 1987). Depression, low self-esteem, and poor body image are often found to be the result rather than the cause of obesity (Gilbert, 1986; Leon, 1982). It has been amply demonstrated that the obese are the subject of a variety of prejudicial and discriminatory attitudes and practices of

physicians, college admissions officers, and employers (Allon, 1982). Large amounts of money are spent for products and fees related to weight-loss efforts (Bruch, 1952; Gilbert, 1986).

In addition to the serious risks and problems associated with obesity, concern is heightened due to its high incidence in this society. The National Health and Nutrition Examination Survey (NHANESII) conducted between 1976 and 1980 reported that 26%, or approximately 34 million U.S. adults, ages 20 to 75 years, were 20% or more above their ideal weight. The National Center for Health Statistics reported similar findings: Of the 34 million adults who were at least 20% above their ideal weight, 12.4% were severely overweight (Van Itallie, 1985). Stern (1983) cited a 30% incidence of adult obesity in the United States, also defining obesity as 20% in excess of ideal weight.

Furthermore, and perhaps most relevant to this study, obesity is often found to be intractable and is always considered to be resistant to treatment (Brownell, 1982; Craddock, 1978). The prevalence of obesity attests to its intractable nature, as do poor outcomes and high attrition and noncompliance rates in dietary-management programs. Brownell (1982) noted that an individual is more likely to recover from most forms of cancer than to reduce to ideal weight and maintain that weight for 5 years. In 1959, Stunkard and McClaren-Hume reported that drop-out rates in dietary-management programs vary from 20% to 80%. These percentages have been duplicated in more recent estimates (Dunbar & Agras, 1980; Dunbar & Stunkard, 1979; Turk, Salovey, & Litt, 1986). Storlie and

Jordan (1984) reported that drop-out rates of more than 60% are not uncommon in programs treating obesity. Sackett and Snow (1979) reported that, on the average, only 50% of patients on long-term diets will comply with their programs. The same authors, reporting on 21 chapters of Take Off Pounds Sensibly (TOPS), found only a 29% compliance with weight loss up to 20 pounds, and only 8% compliance with weight loss to 40 pounds.

A related consideration is that often, even when compliance and significant short-term weight loss are reported, the weight loss is statistically but not clinically significant. The weight loss is not sufficient for an individual to have achieved goal weight (Gilbert, 1986; Greenwood, 1983).

Obesity is a serious, prevalent, and often intractable condition. Because of this, and because of its complexity, there is a growing body of multidisciplinary research investigating its cause, its nature and effect, and its treatment. The contribution of psychological concepts and methods to the study of obesity has developed rapidly in terms of etiological theories and of applications to treatments (Touyz & Beumont, 1985). There are a number of theoretical positions, documented with empirical studies, regarding the causes of overeating and obesity. These theories are discussed below. Most present research in the treatment of obesity has investigated the effects and success rates of various medical, psychological, and behavioral treatments, or combinations of these treatment approaches. Noncompliance studies have focused on

identifying those factors associated with failure to adhere to diets and lose weight. Attempts to predict individual response to treatment also have received some attention in the literature (Gilbert, 1986). However, very little research is being conducted specifically on why it is so difficult for people to successfully curtail their food intake.

The concept that reduction in food intake will lead to weight loss is simply and easily understood. However, there is much evidence suggesting that what is easily understood is very difficult to do (Bruch, 1952; Craddock, 1978; Touyz & Beumont, 1985; Van Itallie, 1986). As Gilbert (1986) stated:

> . . . A problem which still exists is that there remains a myth that dieting is easy, the solution to being overweight is merely to eat less. Yet dieting is a difficult exercise, alien to most people and often the cause of problems with control not previously experienced. (p. 194)

She urged that much more needs to be known about the difficulties inherent in changing or restricting food intake.

A needed perspective relative to this concern, and one that has not been empirically investigated, is the perspective of psychological loss as that relates to the difficulty in complying with dietary restriction. This perspective suggests the possibility that curtailing eating behavior is difficult, and often impossible, due to the psychological losses incurred or expected to be incurred in restricting food intake and in losing weight (Hinds, 1987; Ramsey, 1987).

Need for the Study

The dangers and prevalence of obesity, and the knowledge that reduced intake is necessary for weight reduction, make dieting a frequent and an early recommendation in medical care and a logical and frequent response by individuals needing to lose weight or maintain a weight loss (Altschul, 1987). A significant and growing number of people choose to diet or enter weight-loss programs (Brody, 1987; Gilbert, 1986). Reducing food intake is a much less radical and less dangerous approach to weight loss than by-pass and implantation surgeries, jaw-fixation procedures, or medication (Bray, 1979; Grunberg, 1982).

Despite the numbers of people attempting to diet, and the advantages of diet over other treatments, dieting often fails as an intervention because of the previously noted difficulty inherent in initiating and maintaining the dieting process. Weight loss is often insignificant or not maintained. Attrition from and noncompliance with weight-loss programs are high. Such failed attempts are costly in a variety of ways.

A great deal of money is spent for diet products, diet programs, and professional and nonprofessional fees (Bruch, 1952; Gilbert, 1986). It has been estimated that Americans, mostly women, are spending more than $20 billion a year on diets and diet products (Brody, 1987). In addition, there is the intangible cost in terms of individuals' unrealized commitment and hope. Depression and lowered self-esteem are the expected results of unsuccessful dieting (Allon, 1982; Ley, 1978).

Special medical risks, especially for those predisposed to metabolic disease, arise when weight is alternately lost and regained. In addition, such alterations usually result in greater amounts of stored fat, so that body weight actually increases above the original pre-diet weight (Altschul, 1987).

More generally, and most important, when attempts to diet are abandoned, the expected beneficial effects of normal weight are lost, leaving individuals at risk for the previously discussed harmful medical, psychological, and social consequences associated with obesity. The high incidence and the many costs associated with failed attempts to reduce intake and weight, or to maintain an initial, short-term weight loss, suggest an urgent need to better understand the nature of the difficulties associated with attempts at dietary management.

Motivation to initiate and continue with a treatment is as important as the content of treatment. Current evidence suggests that motivation to comply with and continue, perhaps even to initiate, a dietary-management program is being affected by unknown obstacles and difficulties, and that exploring motivation to change as opposed to how to effect change should well be the emphasized direction in the psychological treatment of obesity (Gilbert, 1986). Dietz (1985) discussed the problem in terms of compliance with treatment as opposed to the particular diet used. It can well be argued, then, that investigating the association between psychological loss and attempts to comply with a weight-loss regimen

becomes a valid exploration for the purpose of better understanding the difficulties and failures of dietary restriction and weight loss.

Although there is a growing emphasis on the physiological obstacles to weight loss and maintenance, there is a noticeable paucity of and need for studies addressing the psychological and emotional obstacles involved in curtailing food intake and losing weight. This need was addressed in this study. Touyz and Beumont (1985) noted that the high degree of weight loss in radical procedures casts doubt on the notion that physiological resistance plays a decisive part in the more limited weight-losing pattern of those on a more conservative dietary program. They surmised that the capacity for losing weight is greater than has previously been suggested and that psychological resistance plays a significant part. This study contributes new information regarding the emotional and psychological difficulties experienced by overweight individuals in restricting food intake and reducing body weight. It is hoped that this information is useful in enabling more successful outcomes for individuals needing and attempting to reduce food intake.

Theory

Theoretical considerations deemed relevant to an understanding of this study include (a) the physiological and psychological influences on eating behavior--or intake theory, (b) noncompliance theory, and (c) psychological-loss theory. These are discussed

below, preceded by some general background considerations and information.

General Considerations

Body weight is the result of a dynamic interplay and equilibrium of energy put into the body as food and energy expended from it as work or heat (Altschul, 1987; Booth, 1980). Energy balance and perfect energy balance are terms used to describe the condition that exists when energy input is equal to the energy output and storage requirements for the individual. Under conditions of energy balance, body weight remains stable, and except in the static phase of obesity, it remains normal (Coburn, 1987).

As already defined, obesity is a condition in which there is an excessive amount of body fat. Although overweight can result from excesses of bone, muscle, fat, or, more rarely, fluid, almost anyone who is more than 20% overweight is also overfat, and therefore obese.

Most obesity is not the result of organic disease. Only 5% of all obesity can be attributed to such underlying causes as brain damage, endocrine dysfunction, and hereditary diseases. The remaining 95% is obesity that has no primary etiology (Rodin, 1982). Research relevant to the pathogenesis of obesity has presented, in general, two different points of view. One has suggested that obesity arises from certain kinds of life style and from the chronic use of food for non-nutritive purposes (Bruch, 1957, 1973; Hamburger, 1951; Kaplan & Kaplan, 1957; Schachter, 1968; Slochower,

1983; Van Strien, Frijters, Roosen, Knuiman-Hijl, & Defares, 1985). The second has suggested that obesity is biologically determined, that there is a genetic and metabolic predisposition for excess fat (Hirsch & Knittle, 1970; Keesey, 1980; Nisbett, 1972).

Although investigators have emphasized one factor or the other, a hypothesis fairly well established and agreed on is that obesity is not a homogeneous condition and that there are no unitary explanations (Brownell, 1982; Greenwood & Pittman-Walker, 1988; Striegal-Moore & Rodin, 1985). Obesity is seen as multiply determined by a combination of genetic, psychological, and environmental factors (Rodin, 1982). No matter what the combination, however, for a person to become overweight, calorie input at some point exceeded calorie output (Gilbert, 1986). In this context it can be said that obesity is due to overeating--currently and/or during childhood (Rodin, 1982).

Intake Theory

Physiological considerations. Physiological controls regulate food intake by influencing hunger and satiety, and ideally, thereby support a normal body weight reflecting a state of energy balance. (See Coburn, 1987, for review of physiological literature related to the following discussion.) The limbic system, and particularly the hypothalamus, receives feedback signals from the body indicative of its nutritional and food-consumption status. The hypothalamus uses this information to facilitate both short-term and long-term control of food intake.

Short-term mechanisms, which are primarily satiety mechanisms, control the amount eaten during a meal and influence the length of the intermeal interval. These short-term controls are thought to be modulated by long-term control mechanisms responsive to the overall nutritional state of the body. Short-term control of food intake is affected by signals indicating the presence or absence of food, and its bulk, caloric density, and osmotic effects, in the alimentary canal; by oropharyngeal feedback, including the sensations associated with eating, such as tasting, smelling, chewing, swallowing, and salivation, which may meter the quantity of food eaten by making crude estimates of the number of calories being ingested; by gastric feedback of information relative to stomach contractions and stomach distention; and by intestinal feedback, provided by means of a hormonal transmitter that is released into the blood stream, causing satiety.

Feedback signals reflecting blood glucose levels and amounts of depot fat in the body are also sent to the hypothalamus. The glucostatic theory and the lipostatic theory explain these two processes thought to result in the long-term control of food intake.

Glucostatic theory posits that glucoprivation produces hunger. Because glucose is the exclusive fuel of the central nervous system (CNS), the brain is especially sensitive to fluctuations in glucose levels. In addition, glucose availability determines the rate at which fat and protein are metabolized, and therefore is central to the body's entire energy economy. A recent refinement of the theory suggests that the availability of glucose to the tissues rather than

a simple blood glucose level is the critical factor determining hunger and satiety. This is an important refinement as it explains why a diabetic experiences sensations of hunger despite a high blood glucose level: The absence of insulin in the diabetic prevents glucose from being taken up and used by the tissues. The tissues, not the blood, reflect a glucoprivation state.

The lipostatic theory maintains that control of feeding is exerted by the mass of depot fat. It has been posited that some metabolic product or multiple products of fat metabolism, interacting with other feedback signals, circulate in the blood in proportion to the amount of fat in the depots. Candidate feedback signals include free fatty acid, insulin, growth hormones, and one or more prostaglandins. Newer evidence indicates that glycerol may be the critical signal.

In addition to the specific physiological controls regulating food intake and body weight, it has also been theorized that genetic and metabolic factors influence body weight (Greenwood & Pittman-Walker, 1988; Nisbett, 1972; Vasselli & Maggio, 1988). Evidence, particularly from studies of adopted twins, has suggested that genes exert strong effects on weight independent of environment (Stunkard & Sorenson, 1986). The number of adipose cells and fat distribution may be genetically influenced. In addition, there appears to be a strong metabolic component of inherited familial obesity. Individuals who are prone to obesity have a subnormal rate of energy expenditure, associated with lower resting and basal metabolism

rates and subnormal thermogenic responses to food and other stimuli such as caffeine (Coburn, 1987). Set-point theory posits that individuals defend a stable weight and that this set-point is biologically determined (Keesey, 1980; Nisbett, 1972).

Although biological factors do influence food intake and body weight, it is to be noted that, except for the disease and disorder conditions cited above, which account for only 5% of obesity, neither genetic nor metabolic factors create a body weight that is impervious to weight-loss interventions (Booth, 1980; Coburn, 1987; Rodin, 1982). Although biologic factors can make dieting and weight control more difficult in that greater restraint may be called for to counteract physiological realities, body weight at any given time depends on the balance of forces that affect energy balance and on the amount of control a person has or is willing and able to exert (Altschul, 1987). Relative to the concept of set-point, Altschul (1987) cited a number of theorists who concurred with his doubts about the existence of an unalterable stable weight. Booth (1980) discussed regulation of body weight in terms of its control by the individual following rules about it, and he noted that rule following is a cognitive behavior. Garrow (1981) defined the set-point as the stable weight when no attempt is made to control energy balance. Morley and Levine (1983) discussed the "unsettling myth of set-points" and concluded that set-point is, at least, extremely labile. Van Itallie and Kisseleff (1983) noted that there is an absence of convincing evidence for a central nervous system

comparator and reference input, without which a set-point could not function.

Psychological considerations. The above considerations indicate that genetics and metabolism do not preclude a weight loss effected by behavioral control. Nor, on the other hand, do physiological controls guarantee normal and stable weight. Physiological systems regulating intake can be disrupted by an individual's eating behavior, which is influenced by emotional and psychological factors. A number of psychological theories address eating behavior.

Psychoanalytic and psychodynamic theory. Psychoanalytic formulations posit that overeating and overweight occur as a result of problems at the oral stage of psychosexual development, resulting from unmet dependency needs. Excessive eating is viewed as symptomatic of a fixation at, or a regression to, the oral stage of development (Alexander & Flagg, 1965; Fenichel, 1945; Jones, 1953, cited in Leon, 1982). This traditional psychoanalytic explanation of overeating and overweight has been expanded on by other psychodynamic theorists, who have suggested that overeating is an outcome of or a response to virtually any emotional conflict. Overeating and obesity are methods of dealing with, yet avoiding, underlying emotional problems. Eating behaviors are substituted for non-nutritional needs of which the individual may or may not be aware. Specific foods are sometimes interpreted as having specific meanings relative to the problem or conflict. Symbolic meanings are given to the act of eating and to a particular body size, which

function to help the individual cope with beliefs, feelings, problems, or conflicts (Brosin, 1954; Bruch, 1952, 1969, 1973; Hamburger, 1958, 1960; Kaplan & Kaplan, 1957).

Consistent with the above formulations is the position that eating and obesity are depressive equivalents. Eating allays depression, whereas restriction of intake and weight loss can lead to overtly expressed depression (Bruch, 1957; Stunkard, 1957). Stunkard and Rush (1974) enlarged on the idea of depressive equivalency and presented evidence indicating that a number of negative affects result when dieting is undertaken. Other researchers have pursued this line of investigation, citing a variety of behavioral and emotional disturbances that occur in association with weight loss (Kollar & Atkinson, 1966; Glucksman & Hirsch, 1968; Grinker, Hirsch, McCully, Barron, & Knittle, 1968; Kurland, 1967). Depression and other psychological disturbances emerging as a result of weight loss lend support to the psychodynamic theory of overeating and obesity.

Psychosomatic theory. Psychosomatic theory is related to psychodynamic theory in its postulation that eating is a behavior directed toward the reduction of anxiety. In psychosomatic theory, however, excessive eating is not viewed as a regression to earlier developmental stages, nor does eating or food take on symbolic meanings. Rather, it is a response to undifferentiated feelings, which are experienced as anxiety (Kaplan & Kaplan, 1957). Studies examining the effects of emotional arousal and the effects of eating

on mood states (Abramson & Wunderlich, 1972; Leon & Chamberlain, 1973a, 1973b; Lowe & Fisher, 1983; McKenna, 1972; Schachter, Goldman, & Gordon, 1968; Slochower, 1983; Stalonas, Perri, & Kerzner, 1984; Van Strien et al., 1985) are outgrowths of this theory.

Externality theory. Externality theory, advanced by Schachter and his colleagues in the late 1960s, differs from psychosomatic theory in positing that eating behavior is a response to external, and not to internal, cues. Obese people are believed to eat primarily in response to the immediate external cues associated with food, such as time of day, the visual prominence of food, and the sight of people eating (Gilbert, 1986). Schachter maintained that the obese follow eating patterns that are stimulus bound, reactive, and externally controlled (Schachter, 1968, 1971). Schachter's theory is much cited and has resulted in numerous studies based on his original work (Nisbett, 1968, 1972; Rodin, 1980, 1981; Rodin et al., 1977; Rodin, Herman, & Schachter, 1974; Slochower, 1983; Slochower & Kaplan, 1983).

Restrained eating theory. Restrained eating is a theory of overeating and obesity developed by Nisbett (1968, 1972), which posits that some obese individuals control eating through conscious, determined restraint rather than because of a natural desire to eat moderately. When restraint is broken, however, the individual eats large quantities of food. Nisbett's theory uses the concept of a biologically determined and defended set-point weight. When obese or normal-weight individuals eat in support of a weight below their

set-point, they are restraining their eating behavior and are actually food deprived. Accordingly, these individuals become particularly vulnerable to food and eating cues and engage in periods of unrestrained eating during which they eat large amounts. Herman and his colleagues (1975, 1976, 1977, 1980) and Ruderman and Wilson (1979) followed Nisbett's work with a number of studies based on this theory.

Learning theory. Learning-theory explanations of overeating and obesity defend the concept that eating is a highly overlearned habit that has generalized to a variety of environmental cues and states of emotional arousal (Booth, 1980). The theory posits that an association becomes established between diverse stimuli, unrelated to states of hunger, and the eating response. Research noted above in support of the psychosomatic and externality theories has illustrated these associations. Imitation learning or modeling is another important influence in learning eating behaviors and maintaining an obese state. Children may observe parental or family patterns of eating in response to certain cues unrelated to hunger, and the pattern may be maintained by parental reinforcement or social approval (Leon, 1982).

Cognitive theory. Finally, cognitive theory holds that eating patterns are influenced by an individual's cognitions about eating and about food. Cognitions include attitudes, beliefs, and perceptions about food, eating, and one's body, as well as an awareness of the nutritive or energy values of different foods

(Booth, 1980; Drewnowski, 1983). A decision to eat may be based on the perceived palatability of a given food or on its perceived caloric density. A decision to stop eating may be based on beliefs or perceptions of the amount of food eaten or length of time eating. Moreover, the long-term regulation of body weight has a cognitive component because the commitment to dieting and the regularity of exercise often depend on an evaluation of body image (Drewnowski, 1983).

Noncompliance Theory

Physiological and psychological theory address and attempt to explain food intake and eating behavior, especially among the obese. The literature of noncompliance deals with an individual's inability or unwillingness to follow medical or health advice relative to undergoing medical procedures, taking medications, following diets, or executing life style changes (Sackett & Haynes, 1976). In recent years, noncompliance has been identified as one of the most serious problems in the health care system (DiMatteo & DiNicola, 1982; Dunbar & Stunkard, 1979; Sackett & Snow, 1979; Turk, Salovey, & Litt, 1986). Noncompliance with dietary management is of particular relevance to this study.

General noncompliance considerations. Noncompliance has been considered one of the least understood and most guessed about topics in health care (Sackett & Haynes, 1976). There is no fully developed theory of noncompliance. The majority of work addressing this topic consists of studies that have investigated the correlates

of noncompliance in a variety of different settings ranging from, for example, noncompliance in obtaining chest X-rays to noncompliance with major and long-term life style changes. Gerber and Nehemekis (1986) pointed out that, although substantial research has occurred, few studies have dealt with a number of factors simultaneously. Becker and Maiman (1975) noted that studies have tended to focus on easily measured characteristics of the patient, the regimen, or the illness, which are usually neither predictive nor alterable. A number of authors have conducted reviews of the literature in attempts to look at noncompliance in a more unified manner (Baeklund & Lundwall, 1975; DiMatteo & DiNicola, 1982; Dunbar & Stunkard, 1979; Meichenbaum, 1987; Sackett & Haynes, 1976). Each has formulated categories of factors found to be associated with noncompliance. Although not exactly the same in each review, their various categories have overlapped to a large extent and generally have included categories organized around the characteristics of (a) the patient, (b) the clinician, (c) the clinic, (d) the regimen or treatment, (e) the disease or condition, and (f) the environment.

Only two theoretical models are presented in the literature. One is, in fact, a model of compliance, whereas the other is a model explaining relapse. The first, the Health Belief Model (HBM) formulated by Rosenstock in 1966 and developed by Rosenstock and by Becker and his colleagues in the 1970s and 1980s, posits that an individual's beliefs about disease and treatment are of primary importance in influencing health-related behaviors. The second is the Relapse Prevention Model proposed by Marlatt and Gordon (1985).

This model posits that relapse from abstinence or from the controlled use of a substance, including food, occurs as a result of inadequate preparation for facing high-risk situations and from the negative cognitions and mood states that occur following an initial slip. Experiencing negative emotions is in itself considered to be a high-risk situation. In weight control, a relapse can occur either during the weight-loss process, when someone who has made a commitment to a weight-loss program fails to comply with its dietary prescriptions and fails to lose weight, or after weight loss has occurred (Sternberg, 1985). These models are discussed in more detail in Chapter II.

Dietary noncompliance. Noncompliance with dietary restrictions has been investigated relative to a number of variables. A brief listing of these variables follows. A complete format of studies is reviewed in the following chapter.

Noncompliance has been investigated relative to the beliefs an individual has about the condition of obesity and its treatment (Becker, Maiman, Kirscht, Haefner, & Drachman, 1979; Ley, 1978; Rodin et al., 1977). Other variables considered have included high-risk situations, emotional arousal, and negative cognitions (Leon & Chamberlain, 1973; Rosenthal & Marx, 1981; Sjoberg & Persson, 1977; Stalonas et al., 1984). A number of studies have evaluated the role of personality factors in dietary noncompliance (Bjorwell, Edman, Rossner, & Schalling, 1985; Craddock, 1977; Gilbert & Garrow, 1983; Graf, 1965; Johnson, Swenson, & Gastineau, 1976; Pekarik, Blodgett,

& Wierzbicki, 1982; Rodin et al., 1977). Certain behaviors correlate significantly with success at weight loss (Holmes, 1984; Stuart & Davis, 1972; Jeffery, Wing, & Stunkard, 1978), and environmental factors, such as the presence or absence of support, relate to successful versus unsatisfactory compliance with dietary management (Neill, Marshall, & Yale, 1978; Rosenthal & Marx, 1981; Stuart, 1967). Finally, success or failure to comply with dietary restrictions and reduce weight can depend in large part on the meaning that weight reduction has for the individual (Bruch, 1952; Kalucy & Crisp, 1974; Gerber & Nehemkis, 1986; Glucksman & Hirsch, 1968).

Dietary restriction may mean sustaining psychological losses that occur in conjunction with weight-loss attempts. Loss of freedom, of comfort, of power, of protection, of pleasure, of approval, of identity, and predictability have all been cited in discussions of failed weight-loss attempts (Altschul, 1987; Bruch, 1952; Gerber, 1986; Montero & Ardalan, 1987; Stunkard, 1957; Touyz & Beumont, 1985). Hinds (1987) argued that health-promotion and life-change programs fail because they do not employ loss concepts in their interventions. A relationship between various losses and dietary noncompliance has been suggested but not empirically tested.

Psychological-Loss Theory

Loss is a universal experience. It is usually a profound and disturbing one. As such, it not surprisingly has a significant place in the psychological literature. Although much of the loss

literature relates to the loss of a loved person, there are other losses of significance.

Freud (1917), in addition to loss of a loved person, also mentioned loss of an abstraction such as fatherland, freedom, or other ideals. Engle (1962) discussed loss of valued persons and valued objects. Peretz (1970) suggested four types of losses as follows: (a) loss of a significant loved or valued person, (b) loss of some aspect of the self (such as loss of health or loss of symptoms that provided secondary gain and control over aspects of the environment), (c) loss of external objects (such as loss of money, home, country), and finally (d) loss that occurs in the process of human growth and development (such as loss of only child status or loss of gratifications associated with rudimentary abilities). Parkes (1972) investigated reactions to loss of loved ones and to parts of one's body through amputation. Marris (1975) discussed loss as resulting from changes in those entities or relationships that give life meaning and structure. Bowlby (1980) wrote about loss of an attachment bond to others, to objects, and to things purely symbolic. Schneider (1984) discussed the loss aspect inherent in change. Change can be either external (loss of relationship, object, particular environments) or internal (changes in self-concept or role changes). Peretz (1970), Marris (1975), and Schneider (1984) suggested that resistive behaviors and grief reactions occur even before change in response to anticipated loss.

Change and loss are interconnected. Although it is quite obvious that change results from loss, the converse is also true:

Loss results from change. Schneider (1984) noted that every change event has potential for loss, and unless the loss or losses are identified and grieved, the change event remains unresolved and a source of stress. Marris (1975), basing his investigations on a wide variety of changes, found that change events were anxious events, characterized by ambivalence. The anxiety and ambivalence inherent in change centers on the struggle to maintain or recover a meaningful (that is, a known and understood) pattern of relationships. Marris's formulation of the concept of a conservative impulse fully elaborates this tendency to resist change and avoid or recover losses. Earlier, Rochlin (1965) suggested that fears of uncompensated loss will bring on attempts of restitution and/or resistance to activity that heralds change. He saw a natural reluctance to relinquish present gratifications for dubious future gains. Blatt and Erlich (1982) discussed a fundamental resistance to change and growth. This resistance they saw as an expression of a basic wish to maintain well-established modes of adaptation that, even though limited and often painful, are at least familiar and predictable.

Dietary restriction and weight loss are obvious and documented change events. Change in eating habits was included as a life style change item in Holmes and Rahe's 1967 social readjustment rating scale. Ramsey (1987) described dietary change as representative of a life style change or as necessitating such a change. A reduced body weight is illustrative of a change in self-concept (Bruch, 1952; Gerber, 1986; Montero & Ardalan, 1987; Rochlin, 1965; Touyz &

Beumont, 1985). It can be expected that for many individuals such changes may result in a number of losses and in behaviors resistant to those changes and losses.

Summary

In light of the various theoretical perspectives presented above, food intake and body weight are seen as complex phenomena influenced and governed by physiological and psychological factors. Compliance with a dietary program to restrict food intake and reduce body weight is a documented difficult, if not impossible, undertaking for significant numbers of people. Noncompliance with dietary restriction is not yet well understood. The literature of psychological loss emphasizes that change and loss are interrelated. Restricting food intake and reducing body size represent changes that apparently entail psychological losses fearful to contemplate and experience. These losses, it is suggested, interfere with attempts to lose weight. Giving up habitual adaptive and defensive behavior, even if it results in painful outcomes, is difficult; the experienced or anticipated losses can be significant and prohibitive.

Purpose of the Study

The purpose of this study was to identify variables related to the difficulty in adhering to dietary restrictions and in losing weight. The perspective used was that of psychological loss, in this case identifying those psychological losses incurred in the process of curtailing food intake, maintaining a reduced or altered

pattern of food intake, and in losing weight. Because there has been no systematic empirical study of the variables of psychological loss associated with dietary management, the task of this research was also to develop an instrument, the Weight Loss Problems Questionnaire, which identifies and measures those loss variables. This purpose led to the following research questions.

Research Questions

1. Is the Weight Loss Problems Questionnaire (WLPQ) a reliable measure of psychological loss in weight-loss attempts?

2. Is the WLPQ a valid measure of psychological loss in weight-loss attempts?

3. Are issues of psychological loss associated with failure to comply with dietary restriction, and with the related failure to lose weight?

4. Do individuals in different diet status categories experience different types and/or intensities of psychological loss in weight-loss attempts?

Summary

This chapter introduced the desirability of identifying the psychological losses that correlate with attempts to lose weight and with weight loss, and the necessity of developing an instrument that can identify and measure these losses. Chapter II contains a review of the literature deemed relevant to an understanding of this study, including food-intake theory, noncompliance theory, and psychological-loss theory.

CHAPTER II

REVIEW OF THE LITERATURE

In this chapter, research relevant to overeating and obesity is reviewed. The three areas included are food intake, noncompliance, and psychological loss. Research on food intake has examined the eating behavior of obese individuals and the factors that influence it. Noncompliance research has investigated causes and correlates of an individual's unwillingness or inability to comply with recommended dietary restrictions. Finally, research relating psychological loss with dietary restriction and weight loss is discussed.

Literature on Food Intake

Studies Based on Psychoanalytic and Psychodynamic Theory

As noted in Chapter I, the traditional psychoanalytic explanation of overeating and obesity stresses the obese person's fixation at or regression to the oral stage of development. Resting on this assumption and expanding on it, psychodynamic theory holds that overeating and obesity result from unresolved emotional conflicts and that both are methods of dealing with, yet avoiding, underlying emotional problems. In this context, obesity has also commonly been viewed as a symptom of an underlying state of

depression or of a more complex emotional disorder, even when other symptoms are not evident.

Few empirical studies have been undertaken to test psychodynamic and psychoanalytic theories of eating behavior and body weight. Those that do appear in the literature are characterized by a variety of methodological problems. Nonetheless, they provide information helpful in understanding the eating behavior of obese individuals in terms of this theory.

Hamburger (1951) undertook a detailed psychiatric study of 18 obese patients seen in the medical and psychiatric clinics of a general hospital and in his own private psychiatric practice. The patients were selected because there had been adequate psychological study to reveal some of their motives for overeating. Most had been referred to the psychiatric clinic after medical examinations, either because of known emotional illness or because of their failure to lose weight with diet and drugs.

Hamburger found that the overeating of these 18 selected patients was (a) carried out in response to nonspecific emotional tensions; (b) a substitute gratification in reaction to an intolerable life situation; (c) a symptom of underlying emotional illness, especially depressions and hysteria; or (d) the result of an addiction to food. He found that even in the few instances in which biologic factors played a role, emotional elements contributed in large part to the overeating behavior and the overweight status. His study led him to the conclusion that obesity is a psychosomatic syndrome, the major symptom of which is overeating, and that the

eating symptom is indicative of oral preoccupation on the part of the patients. He credited the psychoanalytic concept of orality with providing the theoretical frame that made the clinical observations and conclusions of his study more meaningful and understandable.

Although Hamburger's sample in the above study was limited to psychiatric patients and his conclusions were in large part based on subjective interpretations, his case study does provide information suggesting a relationship between psychoanalytic and psychodynamic themes and obesity in some individuals. In a later study conducted with a bit more rigor, Hamburger (1958) studied the occurrence and meaning of dreams of food and eating in four of his patients. The patients were women; two were of normal weight, one was obese with gastrointestinal complaints and known food allergies, and one was bulimic.

Following a qualitative method of dream analysis consistent with established psychoanalytic method and the quantitative method of Alexander and Wilson, Hamburger concluded that, in all four cases, the dreams of food and eating had two meanings: (a) the fear of sexual urges and/or (b) the need for love, support, and succor. In the first case, Hamburger suggested that the eating drive was a substitution for the sexual drive, which was experienced as too threatening. In the second case, Hamburger suggested that eating was a substitute for longing to be cared for by a loving mother, which was no longer appropriate or possible. Gratification of these

longings occurred through the recollection of the food, which symbolically signified the mother's love. Hamburger posited that the first group of dreams, which substituted food and eating for the sexual drive, implied regression from genital levels of maturity. The second group, whose latent meaning referred more to dependency wishes, suggested, he believed, possible fixations in the earliest infant-mother relationship. He further speculated that the dreams that depicted active and voracious eating may have been expressions of oral fixations more than of regression.

Hamburger attempted to make the case that there were fewer food and eating dreams for the obese patient because she was acting out the eating behaviors as opposed to dreaming about them. However, the actual percentage of food and eating dreams in comparison to total dreams did not appear to be significantly different in the obese patient compared to the nonobese patients. Although this and other of his conclusions were drawn with yet insufficient rigor, Hamburger (1960) asserted that his findings as least suggested that:

> The uniquely developed cerebrum in man which allows for symbolization, substitution, displacement, and condensation allows for a psychic distortion in appetite of man's physiological and biochemical regulator of hunger. Thus the same act of eating or not eating may serve multiple hidden motives and needs which can be entirely non-nutritive in nature. (p. 584)

Hamburger continued his studies and in 1960 published a series of summary conclusions based on his work with obese patients over the preceding decade. Using the psychiatric interview, the Food and Eating Sentence Completion Test (which he and his colleagues developed and which he administered to his patients), and the

interpretation of food and eating dreams as reported by patients during psychoanalytic therapy, he concluded that:

1. Patients with under- and overeating symptoms usually are symptomatic in relation to emotional needs not otherwise satisfied at the time.

2. The use of the responses of eating and not eating as substitute activities for unexpressed emotional needs ranges from occasional to frequent to habitual.

3. There is a close relationship between under- and overeating, and both symptoms often appear in the same individuals at different periods in their lives.

4. Patients deal with a variety of feelings, drives, and conflicts through their substitutive eating behaviors. Feelings of depression, including boredom, loneliness, sorrow, blueness, helplessness, guilt, self-destructiveness, self-hate, and hopelessness most commonly motivate under- or overeating. Separation and loss events frequently precede under- or overeating and resulting weight changes.

5. Specific foods have psychologic significance to specific persons.

6. Distinctions can be made between oral urges and eating behaviors, and both from body weight. It is therefore important to study metabolic needs, oral urges, food intake, and eating behaviors separately in order to delineate separate components in the regulation of food intake.

Other theorists have concurred with and elaborated on the premise that eating and overweight may serve motives and needs that can be entirely nonnutritive in nature. Bruch (1952) suggested that overeating and obesity are based on the obese individual's yearning for greatness. Using data gathered from her clinical experience treating eating disorders, she found that obese patients in psychoanalysis revealed the common characteristic of feeling special, of being (or having to be) bigger and better than anybody else.

Often these patients, according to Bruch, thought they had been expected to compensate for the frustrations and unfulfilled ambition of their parents, and this demand led to a distorted understanding of their importance in the world. Bruch identified a desperate fear of nothingness underlying this need to be recognized as superior to others; although these individuals may have been gifted and competent, nothing they ever achieved could come up to the exaggerated image of what they thought they could do, or were expected to do.

Bruch found that the gulf between the impossibly high aspiration level and the person's ability to achieve the ambition created a tension and despair that was ultimately alleviated by eating. According to Bruch, overeating became the most important means of relieving this dissatisfaction. Although the eating did not give genuine or lasting satisfaction, it provided temporary relief, and the resulting increase in size fulfilled on a primitive, symbolic level the desire to be big. Hence, both overeating and

obesity served critical functions in the adjustment of that individual.

Continued work with obese patients led to further refinement of these observations and theories, and to a classification system based on etiological factors. Bruch (1973) differentiated between constitutional, reactive, and developmental obesity. In her formulation, constitutional obesity is not linked to psychological conflict or maladjustment, and occurs primarily because of metabolic or genetic predispositions. Reactive obesity is caused by overeating in response to environmental events in an attempt to allay uncomfortable emotional responses. This is the obesity usually occurring in adulthood and frequently develops in response to the death of a loved one, or when the fear of death or injury is aroused. Developmental obesity is the result of inadequate or incorrect feeding responses by the mother, and begins in childhood. Feeding may occur unrelated to the child's experience of hunger. A mother might use feeding to relieve conflicted feelings about having the child. Or a child's cries of discomfort might always be interpreted as a need to eat instead of a cue for more specific emotions or needs. Hence, the child fails to develop interoceptive awareness, its locus of control becomes external, and there is diminishment or failure of interpersonal trust. Bruch found that developmental obesity is associated with more severe emotional disorder than is true of the other types of obesity, and consequently the condition is more difficult and more dangerous to change.

Rottman and Becker (1970) also found that obesity can occur in response to traumatic loss experiences. Although their psychoanalytic interviews of 33 patients failed to yield a specific intrapsychic conflict across patients that could be etiologically connected with the onset of obesity, biographical data did indicate that the onset of obesity developed gradually or rapidly in one or several jumps after a significant and traumatic event or events in the lives of the 26 patients who had adult-onset obesity. Because the most frequently noted events were those involving separation from or loss of important objects, the authors concluded that eating was used as a defense against the unconscious affects of helplessness and hopelessness arising mainly in situations of object loss.

In 1978, Rand and Stunkard conducted a major and often-referred-to study on obesity and psychoanalysis. The researchers were testing whether the resolution of emotional conflict led to decreased food intake and to weight loss.

Seventy-two psychoanalysts collected information on 84 obese patients and on a control sample of 63 of their patients of normal weight using a detailed questionnaire developed by the authors assessing weight loss and progress in therapy as well as demographic and descriptive information. One hundred forty-seven questionnaires were returned. Eighteen months later, 70 of the analysts returned a shorter inquiry about each of the obese and nonobese patients, a return that comprised a follow-up on 98% or 144 of the patients.

Slightly more than half of the patients remained in treatment at that time. Patients had been in treatment for a median period of 31 months at the time of the first survey; the median period had risen to 42 months at the time of the second survey. The results of the second survey included patients still in treatment and those who had terminated. Only 6% of the obese patients reported overweight as their chief complaint. Sixty percent of both obese and control patients reported depression, anxiety, or both as their chief complaint.

Good weight-loss results occurred during psychoanalytic treatment, even though obesity, while present, was not the identified problem nor was its alleviation a main treatment goal. At the time of the first survey, 53% of the obese patients had lost more than 10 pounds, 26% had lost more than 20 pounds, and 8% had lost more than 40 pounds. At the time of the second survey, 64% of the obese patients had lost more than 10 pounds, 47% had lost more than 20 pounds, and 19% had lost more than 40 pounds. These losses compared favorably to weight losses reported in general medical practice and in behavior-therapy programs. The second survey showed 83% of the obese patients to be improved or much improved in their primary problems of anxiety and depression. It appeared that the psychoanalytic assumption was supported. However, although not contradicting this hypothesis, their data did not actually support it. Individual information that could show possible correlations between resolution of conflict and success at weight loss for any one patient was not provided.

On the other hand, the authors did find that psychodynamic constellations associated with weight change were reported very frequently among the obese patients--90% in association with weight gain, 83% in association with weight loss. There was, however, no single constellation associated with either weight gain or weight loss; the constellations differed markedly from patient to patient and seemed to be dictated by the events and concerns of the particular patient. The authors also found that many obese people overate when worried or upset. Obese patients reported increased eating during times of emotional stress. The analysts reported that 79% of the obese patients gained at least 10 pounds during periods of stress caused by marriage, divorce, occupational change, or death of a family member; they reported that only 7% of the normal-weight patients gained comparable weight during comparable events.

Finally, however, the authors acknowledged that the major unanswered question of the study was how patients lost weight, and that the surprisingly good results reported raised questions about their accuracy and therefore the study's validity. The use of self-reports of progress in therapy and weight loss by both the patients and their analysts doubled the source of error in these reports.

In general, the studies discussed above certainly suggest a relationship between overeating and obesity in some individuals and psychodynamic conflicts and solutions. They are not conclusive, however, in part because of the absence of carefully designed and rigorously executed studies. It can be noted, however, that these

studies do support the position that overeating and overweight can represent purposive adjustment behaviors and goals. It logically follows, then, that to restrict intake and/or to lose weight results in the loss of those meanings or goals that were consciously or unconsciously pursued.

Examining the effects of dieting and weight loss among obese populations offers an alternative method to evaluate the psychodynamic and psychoanalytic hypotheses. As noted earlier, the position that overeating and obesity are depressive equivalents is consistent with psychodynamic formulations. If dieting and weight loss result in overt symptomology, the psychodynamic theory of overeating and obesity is supported.

Stunkard (1957) undertook a detailed study of 25 dieting obese persons for the purpose of determining the incidence and nature of untoward responses to diet and weight reduction. These patients were seen as part of a special study clinic of the hospital where they had been sent from other departments because of the severity of their obesity or difficulty in its management. Vital statistics of the patients, the setting, and clinical characteristics of their illness (Stunkard's word to indicate the occurrence of untoward response) were identified by interview, observation, and weight measurement. Setting included any previous psychiatric diagnosis, the presence or absence of a night eating syndrome, the interpersonal situation of each, the duration of the diet before onset of symptoms, and the weight loss before onset of symptoms. Characteristics of their illness included the duration of illness,

the existence or absence of periods of elation and/or anxiety, and the specific characteristics of the period of depression.

Stunkard found that attempts at dieting were associated with severe emotional disorders in 9 of 25 patients. In each case a depressive-type disorder occurred, which was characterized by a short period of intense anxiety followed by a prolonged period of depression. These symptoms were often preceded by a period of elation during which the decision to diet was made. During these illnesses the patients experienced a profound disturbance in a major dependency relationship that was psychodynamically related to the attempt at weight reduction.

Stunkard did not use any controls, nor were his results subjected to any statistical analyses. It is not possible to conclusively attribute the obesity to underlying conflicts about dependency relationships, which became overt as dieting progressed. In fact, some of the responses noted by Stunkard were similar to symptoms of the physiological starvation syndrome experienced by normal-weight individuals under severe dietary restrictions. However, Stunkard's study was followed by others, many using more careful methodological techniques and analyses. Taken as a whole, these studies provide information generally supportive of Stunkard's work and the hypothesis in general.

Contrary findings were reported in a study by Kollar and Atkinson (1966), but a variety of considerations call several of their conclusions into question. They conducted a study of seven

adults with massive obesity who were hospitalized on voluntary, "open-door" psychiatric wards for 4 to 17 months in order to assess patient response to intermittent starvation for the treatment of obesity. Each patient gave histories of character disturbances and interpersonal difficulties. None had made a mature sexual or occupational adjustment. All had experienced episodes of mild to moderate depression. Four patients had been obese since latency, and two since preadolescence; only one had an adult onset.

Intermittent fasts were undertaken by all patients. They were encouraged to remain ambulatory throughout fasting periods. During hospitalization, each patient received individual and group psychotherapy. A structured milieu emphasized close patient-staff contact, group activities, work assignments, and recreational and occupational therapy. Detailed progress notes by staff residents and nurses documented the patient's course and significant events in relation to psychotherapy, diet, ward milieu, family contacts, and special situations. These observations were supplemented by the Phipps Clinic Nurses Behavior Chart, a checklist of 44 behavioral items. Medical checks were run each day. Patients' weight was monitored. Minnesota Multiphasic Personality Inventory (MMPI) profiles were taken at admission and at weight changes of 50 pounds.

Major weight reduction (75 to 206 pounds) occurred in six of the seven obese adults. Kollar and Atkinson found that neither food deprivation nor weight loss was demonstrated to be harmful to any of the patients. However, the authors themselves cautioned that at least three indicators suggested that qualifications be stated

concerning these findings: (a) covert eating took place during treatment and might have obscured or compensated for adverse responses that otherwise might have occurred; (b) MMPI data indicated a growing awareness of personal problems as manifested by an increase in irritability and expressions of hostility from the beginning to the middle stage of treatment--a period when all seven patients lost weight at a similar high rate; and (c) one of the seven patients became "psychologically dysphoric" and gained weight.

Perhaps an even more worrisome concern about this study is the fact that it was conducted in an extremely protective and supportive environment. The authors acknowledged that the psychological support offered by hospitalization was a major influence in successful weight loss without untoward psychological responses. No follow-up of these patients was carried out to determine whether the weight loss was sustained posttreatment. In a later study, Swanson and Dinello (1970) found that relapse followed hospitalization for other patients, suggesting that the hospital created a safe environment that could not be duplicated in the real world and that follow-up, therefore, is an important procedure relative to this area of investigation.

In 1967, Kurland conducted psychiatric evaluations of male patients hospitalized for weight reduction who were being treated with a variety of diets in attempts to find the diet that gave the most rapid weight loss without producing mental or physical impairments. The evaluation consisted of a psychiatric interview

and a battery of personality and intelligence tests, including the Shipley IQ, the Draw-A-Person Test, the Bender Motor Gestalt Test, the California Psychological Inventory, and certain scales of the Wechsler Adult Intelligence Scale. The emotional status of each dieter was observed daily by ward personnel and was recorded on a subjective medical inventory every 5 days. Slightly more than half of the patients were diagnosed as being personality disordered.

A comparison of the depression scores from three randomly assigned dietary periods, disregarding the type of diet, showed a progressive increase in depression. At the end of 2 months of dieting, patients functioned without intellectual impairment but were significantly more depressed. The depression was usually temporary and was alleviated when discharge from the diet was about to take place. Patients had significantly more symptoms of emotional disturbance when on one type of diet than when on the others. In addition, subjects reacted to different types of diets according to individual emotional schema. Reactions of patients to various diets were not necessarily related to the amount of weight loss.

Some symptoms associated with weight reduction have been found to be permanent and not to be physiologically related to a starvation syndrome. Glucksman and Hirsch (1968) clinically evaluated the behavior and psychodynamic processes of four hyperobese patients who were placed on a 600-calorie-per-day diet for 16 to 20 weeks. Three of these people had a lifelong history of obesity. As weight reduction progressed, each person exhibited

symptoms thought to be associated with semistarvation, including hunger, fantasies and dreams of food, emotional lability, and anxiety. They also, however, exhibited specific psychopathological reactions related to individual personality disturbances. Sufficient caloric intake following weight loss failed to alter these latter symptoms.

Glucksman et al. (1968) evaluated three male and three female nonpsychotic severely obese adult patients with childhood onset of obesity. The amount of weight lost over a 15-week period ranged from 41.8 to 108.9 pounds. The occurrence of increased hunger, hostility and aggression, ego boundary permeability, and concern with body-size alterations did not persist following weight loss. Other changes did persist and included increased depression and anxiety, sexual psychopathology, fantasies of food, and overestimation of body size.

Grinker, Hirsch, and Levin (1973) found that reactions to weight loss occurred among individuals who had juvenile-onset obesity but did not occur among adult-onset obese individuals. Anxiety and depression, measured by both objective rating and self-report ratings, did not increase with weight loss in five studied adult-onset patients. This study, while supporting the notion that obesity and overeating can be symptoms of underlying psychological disturbances and emotional conflicts in some individuals, also points out the need for more careful documentation of and attention to certain differing variables associated with weight loss and

obesity, such as the degree of overweight, pounds or relative weight lost, and age at onset of obesity.

In 1974, Rush and Stunkard provided a follow-up of Stunkard's (1957) dieting-depression study with a survey of the literature of responses to weight reduction for obesity. They found that (a) there was a high incidence of symptoms of emotional illnesses in outpatients treated for obesity; (b) such responses occurred also during prolonged inpatient treatment, whether by fasting or by caloric restriction; and (c) short-term fasting of inpatients was far less frequently associated with untoward responses. They found that three variables may affect the incidence of untoward responses: (a) persons with childhood onset of obesity seem more vulnerable than those with adulthood onset of obesity, (b) severe caloric restriction may produce symptoms more readily than total fast, and (c) outpatient treatment may be more stressful than inpatient treatment.

In general, the literature examining response to dietary restriction and weight loss presented a variety of findings. Studies were made potentially less meaningful due to their small sample sizes, the frequent use of patients with a psychiatric history, and the lack of control groups. Questionnaires, psychiatric interviews, and clinical observations are subjective tools that can result in biased findings, and they have been used extensively in this research. Descriptions of the research sometimes failed to identify specific instruments when objective tests were used as a part of the procedure. Degree of obesity,

amount of weight lost, age at onset, and other relevant variables were not always identified, and when they were, it was offered as descriptive rather than comparative or control information.

The methodological problems identified, however, do not negate the value of the studies, which, for the most part, lend support to the psychodynamic and depressive-equivalence theories. Neither does the research detract from the speculation that psychological losses occur when dieting and/or weight loss occurs; in fact, such possibilities are indirectly supported.

A summary can note that researchers have found emergent symptomology resulting from dieting and weight loss. Some symptoms have been found to be transient, whereas others have been of long-term duration. Age at onset, treatment setting, and type of diet may be factors related to the development of overt symptomology. Further research is needed to fully clarify whether, and in which individuals, overeating and obesity mask underlying emotional conflicts and problems. At present, it can be stated that this seems to be the situation in at least some of the cases.

Studies Based on Psychosomatic Theory

Psychosomatic theory is related to psychodynamic theory in its postulation that eating is a behavior directed toward the reduction of anxiety. Psychoanalytic and psychodynamic theorists consider personality pathology and emotional conflicts as central to overeating and obesity but also emphasize the link between emotional distress and overeating. This latter emphasis becomes the central

tenet of the psychosomatic theory of overeating and obesity. Psychosomatic theory refutes the notions that excessive eating is a regression to earlier developmental stages, that food has specific symbolic meanings, and that a specific psychodynamic constellation and specific emotional conflict cause overeating. In psychosomatic theory, overeating and obesity occur in response to emotional arousal.

Kaplan and Kaplan (1957), often cited as the originators of the psychosomatic theory of overeating and obesity, posited that overeating is a learned behavior occurring in association with distressing events and negative affects and is also often a means of reducing anxiety. They wrote:

> The desire for food is highly conditional and can come to be elicited by any number of visual, auditory, olfactory, and cognitive stimuli. . . . Since cognitive and affective cues as well as sensory stimuli can affect the feeding center, it is possible that hunger may come to be evoked by such distressing factors as fear, loneliness and feelings of unworthiness if such distressing situations have in the past been associated with hunger. (p. 190)

Kaplan and Kaplan also noted that anxiety can be directly reduced by a number of activities that interfere in a variety of ways with the anxiety, and that eating has been known to reduce fear and anxiety in experimental conditions. In their schema, eating is a behavior associated with the reduction of anxiety or motivated by the desire to do so.

Based on the Kaplan and Kaplan article, a number of studies have been undertaken to investigate the effects of emotional

arousal, anxiety, and fear on eating behavior, and the anxiety-reducing effects of eating. Studies have provided mixed evidence. Most have supported the association between emotional arousal and overeating; the hypothesis that eating reduces anxiety has been more controversial.

Schachter, Goldman, and Gordon (1968) studied the number of crackers eaten by obese and normal-weight male college students who were given either high-fear or low-fear instructions. Fear was manipulated by threatening a mild shock in the low-fear condition and a painful shock in the high-fear condition. The normal-weight subjects in the high-fear condition ate significantly fewer crackers than did the normal-weight subjects in the low-fear condition. However, there was no significant difference between the number of crackers eaten by obese subjects in the high-fear as compared to the low-fear condition, although there was a trend for the obese subjects to eat more in the high-fear condition.

The researchers argued that these results did not support the psychosomatic theory of obesity because anxiety did not produce increased eating among the overweight group. However, these negative conclusions are questionable because there were clear differences in eating between the obese and nonobese groups.

Abramson and Wunderlich (1972) continued testing the psychosomatic concept of obesity. Obese and normal-weight male college students were placed in either an interpersonal anxiety, an objective fear, or a control condition, with the dependent variable the number of crackers eaten. Interpersonal anxiety was

generated by giving falsified negative feedback about subjects' results on a personality inventory that they had taken earlier. Objective fear was induced by indications of upcoming electric shock. The groups were told that they were being tested on the relationship between interpersonal anxiety or fear and the sense of taste. Controls were given instructions to eat crackers as part of a taste-discrimination test.

Results indicated that there was no significant difference in the number of crackers eaten by obese and normal-weight subjects in the various conditions. The researchers concluded, therefore, that anxiety and fear had no effect on eating. However, the treatments succeeded in arousing anxiety in the obese subjects but not in the normal-weight subjects. Hence, the researchers further concluded that obese males were more reactive to anxiety-provoking stimuli than were their normal-weight counterparts. This finding lends support to the view held by both psychodynamic and psychosomatic theorists that obese individuals tend to be anxiety ridden, even though considerable doubt was cast on the succeeding proposition that eating represents a method of coping with this anxiety.

McKenna (1972) found that obese subjects did eat significantly more under a high-anxiety than a low-anxiety condition. Anxiety was generated by leading subjects to believe that they would be participating in various physiological measurements. Anxiety was manipulated by the expected pain of various procedures and by the obvious display of medical implements, such as hypodermic needles.

Normal-weight subjects in his study ate more in the low-anxiety condition. There were, however, no significant differences in reported anxiety reduction for those subjects who had the opportunity to eat, as compared to those subjects in the noneating high-anxiety condition.

Lowe and Fisher (1983) were concerned that the artificial conditions established by laboratory studies compromised generality outside the laboratory. They conducted a study comparing the emotional reactivity and emotional eating of normal and overweight female college students in the natural environment. Using self-monitored food-intake techniques and self-report of mood state, the researchers found that obese subjects were more emotionally reactive and more likely to engage in emotional eating than normals. Their findings applied to snacks only, not to meals.

Slochower (1983) also had reservations about various features of the laboratory studies, which she believed might have caused the inconclusive or negative findings in several of the studies. She noted that most of the studies used clear-cut, external environmental cues in an effort to alter an internal state, even though the kind of anxiety believed to result in overeating in both psychodynamic and psychosomatic theories is a diffuse anxiety, one whose source may not even be understood by the obese person. She hypothesized that the diffuseness of the affective response could be central in triggering overeating in the obese person and in making overeating an effective response.

In a first study, she made a comparison of the obese person's response to anxiety states that did or did not have a clear-cut external source, using a normal-weight group as a control. Slochower devised a high-arousal condition in which subjects heard heartbeats varying between 84 and 92 per minute and a low-arousal condition in which subjects heard beats varying between 66 and 74 per minute. Subjects in the high-arousal condition were told that the lab conditions tended to cause noise, which increased heartbeat. Low-arousal subjects received identical instruction, except that they were told that the noise would decrease their heart rate. Subjects in diffuse anxiety conditions received no information about cause and expected rate of heartbeat. Snack food was made available, although the purpose of the experiment was disguised as a thinking task.

Aroused obese subjects ate more than three times as much food in diffuse as in labeled arousal conditions. Those who did eat felt better; that is, they felt less anxious afterward. Normals' eating was unaffected by the labeled anxiety and was weakly and negatively related to their self-reported level of stress. Slochower concluded that these results supported the theories under discussion and clarified the results of earlier researchers.

A second study was undertaken by Slochower in which some subjects were led to believe that they could control their anxiety state. A sense of control reduced the overeating pattern of obese individuals. They overate only when they experienced anxiety that

they could not control or label. Eating in the latter situation also proved to be an effective means of controlling anxiety.

Slochower replicated her work in a third study in a naturalistic setting, hoping to prove her previous work also had external validity. To do this, she tested moderately obese and normal-weight students during and after college examinations. She considered this period to be a time of uncontrollable anxiety, owing to the unpredictable nature of the tests and their importance to the student. The obese students ate more than twice as much during the final examination period as when the examinations were over, and there was a significant correlation between self-reported anxiety, loss of control, and eating at both the sessions concurrent with and following the examination period. Normal-weight students did not show high reactivity to their anxiety state. Slochower concluded that there appears to be a robust relationship between anxiety, loss of control, and eating in obese persons.

In a much earlier set of studies, Leon and Chamberlain (1973a, 1973b) investigated the effect of emotional arousal on eating and whether eating affected mood state. In the first study, subjects' self-reports gave evidence that eating did occur in response to emotional arousal. The researchers next compared a group of overweight persons (mostly women) who had successfully maintained a weight loss over a 1-year period with persons who had failed to maintain a weight loss and a normal-weight group. Self-reports of both maintainers and regainers indicated that eating had occurred in response to negative or mixed emotions. In addition, the

researchers found that among these groups there was a corresponding tendency to report either that there was no change in their emotional state or that they felt worse after eating. The control group reported feeling better after eating. Although this finding suggests that food and eating did not allay negative or mixed mood states among overweight subjects, the authors suggested an alternative explanation: The cognitive process of feeling guilty, and hence worse, after eating by overweight persons is slower than the pleasurable visceral response occurring during food intake for both normal and overweight persons. Therefore, overweight persons may tend to report the later experience rather than reporting the more immediate positive responses.

In summary, it can be stated that the research based on the psychosomatic theory is generally in support of the theory. It has not always been shown that anxiety increases eating behavior or that eating reduces anxiety in obese people, and when differences have appeared between obese and normal patterns it has not been clear whether those differences were accounted for by the obese eating more or the normals eating less under conditions of anxiety. It is to be noted, however, that when the anxiety characteristics in the studies more closely approximated the nonspecific anxiety described by the theory, and when the artificiality of the experimental conditions was diminished or eliminated, results were highly supportive of both hypotheses. Studies based on individuals' reported experience also have supported the theory. Anxiety and

other emotions and stresses have often been cited as reasons for not being able to keep on a diet. Eating often is, at least initially, an effective antidote to negative emotions. It is interesting that the loss of pleasure and comfort, which eating is hypothesized to provide, could well function as a major obstacle in weight-loss attempts.

Studies Based on Externality Theory

Externality theory, developed by Schachter (1968, 1971), differs from psychosomatic theory in positing that eating behavior in obese humans is in response to external and not to internal cues of either hunger or emotional arousal. He described obese humans as externally controlled and stimulus-bound relative to their eating behavior as compared to normal-weight individuals, who respond to internal stimuli or hunger. He believed that obese people eat primarily in response to the immediate external cues associated with food and eating, such as the time of day; the sight, smell, and prominence of food; and the sight of people eating.

Schachter's hypothesis developed out of his study (1968) undertaken with Goldman and Gordon. In that study, obese male college students, when preloaded with roast beef sandwiches, ate just as many crackers afterwards as obese subjects who had not been preloaded. Threat of shock also had no effect on the amount eaten by the obese subjects. Schachter concluded that obese subjects were eating in response to external cues of food availability rather than to internal cues of satiety or internal emotional states.

Schachter and Gross (1968), in a study related to the one cited above, manipulated time to determine the effect of this external food-relevant cue on eating behavior. They found that the obese subjects ate significantly more crackers when they thought it was dinnertime than did the normal-weight subjects.

Nisbett (1968) examined the effects of taste on eating behavior. He reasoned that taste, like the sight and smell of food, is an external stimulus to eating. He added an underweight group to the experimental design, which also included an obese and a normal-weight group. Nisbett hypothesized that taste would have the greatest influence on the amounts eaten by obese subjects and the least on the amounts eaten by underweight subjects. He assumed that normal-weight subjects would eat an intermediate amount of food, based on taste.

In his study he found that when ice cream was labeled "fairly good" or better, the obese ate more than did normal-weight subjects. They, in turn, ate more than underweight subjects. When the ice cream was rated "not very good" or worse, the ordering of results tended to reverse. The underweight group ate more than either the normal weight or the obese. Nisbett concluded that the external cue, taste, did have differential effects on the eating behavior of normal-weight, underweight, and obese people.

Additional studies, however, have indicated problems with the theory. Rodin, Herman, and Schachter (1974) and Nisbett (1972) obtained data from a few greatly obese subjects indicating that they were no more responsive to food (or nonfood) external stimuli than

normal subjects. Rodin (1981) reported that, as a result of testing hundreds of subjects of all weights, she and others found that degree of overweight was not well correlated with degree of responsiveness to external cues and that people of normal weight may be as responsive to external food cues as are obese people. Rodin and Slochower (1976) demonstrated that when girls at a holiday camp were given free access to as much good food as they liked, externally responsive girls of normal weight began to increase their intake and to gain weight.

Slochower and Kaplan (cited in Slochower, 1983) considered the possibility of an interaction between the two effects of anxiety and external responsiveness. Anxiety was manipulated by telling people they were taking either a test of personality, which would include evaluating for severe pathological tendencies, or a test of personal taste. Both groups were informed that they could not control the outcome as the test would detect hidden traits. Salience of food cue was manipulated by putting candies in either opaque or clear containers.

The obese group ate more when anxious than when calm, and their response was most marked when they could see the food more clearly. The researchers concluded that, in studies that manipulated cue salience, obese subjects were more likely to respond to external cues under conditions of moderate to high anxiety. Slochower (1983) replicated this study using the natural setting of final examination periods. Previous findings were confirmed; obese subjects ate more

than normal-weight subjects under conditions of increased anxiety when cue salience was high.

A summary evaluation of the externality theory must point out that although it is intuitively compelling and early studies supported the hypotheses, further consideration brings several reservations to mind. As noted above, ancillary studies have indicated that external responsiveness can be characteristic of individuals in all weight categories. Other studies, also noted above, have suggested that responsiveness to external cues might occur only in combination with other effects, such as anxiety or arousal. Another problem, this one proposed by Rodin et al. (1977), is that external stimuli can affect internal stimuli, so that the two are not, in fact, as separate as might have first seemed to be the case. Their study showed that externally responsive individuals showed greater insulin response to the sight, smell, and sound of a grilling steak. Other intervening variables, for example cognitive ones, might contaminate the effect of external cues.

External cues have had a variety of operational definitions. Included among them have been taste, smell, visibility of food, appearance of other people eating, attractiveness of food, the effort required to obtain food, availability of food, and time of day or time between meals. Some may have very different properties and result in different findings, which depend on the cue rather than on the subject. Rodin (1982) argued that taste responsiveness reflects long- and/or short-term changes in the energy state of the

organism, whereas responsiveness to visual and cognitive cues is unrelated to the organism's energy state.

Leon and Roth (1977) noted problems inherent in the selection of generally minimally overweight undergraduate college males as the subject population from which to generalize. And with the exception of Slochower's work, which showed an interaction of effects, few studies have attempted to replicate their findings in natural settings, thereby threatening external validity.

In general, then, the hypothesis that obese persons overeat in response to external as opposed to internal cues and that they are externally controlled and stimulus-bound has received minimal support from the data at hand. Further research that controls for various interactions, pays closer attention to cue properties, and uses more diverse populations in more naturalistic settings will give a better indication of the validity of this theory.

Studies Based on Set-Point and Restrained-Eating Theory

Restrained-eating theory, introduced by Nisbett (1968, 1972) with important follow-up contributions from Herman and Mack (1975) and others, is based on the premise that some individuals exercise conscious restraint to control the amount of food they eat. Once such restraint has been broken, however, these same people who had successfully limited food intake, frequently eat in large quantities.

Nisbett's (1968) early work began with his observation that obese people tend to eat either very large or very small amounts.

On this observation he based the original hypothesis noted above. Nisbett (1972) developed his theory, relying heavily on set-point theory, which suggests that the body is biologically programmed to defend a certain weight. This weight at which the body stabilizes naturally is determined by the number of adipose cells in the body, which in turn may be genetically determined or is established early in life as a result of overfeeding during critical stages of growth. The number of fat cells is assumed to remain fixed, and weight loss occurs only through the depletion of existing fat cells. When such depletion occurs, however, the body sends messages to the brain, which results in the biologic promotion of weight gain.

Nisbett proposed that individuals, usually for sociocultural reasons, counter such an attempt by the body to gain weight by forcefully willing themselves not to eat. Consequently, these individuals are food deprived and, like victims of starvation, become vulnerable to external food and eating cues. Ultimately, this vulnerability leads to broken restraint, and overeating ensues.

Herman and Mack's (1975) study supported restrained-eating theory. These researchers devised a 10-point restraint scale that measures the amount of concern given to dieting, regulating weight, and controlling food intake. Using this scale they divided normal-weight female college students into restrained and nonrestrained eaters. They found that unrestrained eaters ate less ice cream after a preload milkshake than did restrained eaters. Restrained eaters ate even more ice cream after two milkshakes than they had

eaten following one milkshake. Herman and Mack hypothesized that once restraint was given up, these subjects ignored internal satiety and responded instead to external availability of ice cream. They applied the term "counterregulation" to this pattern of overeating following a preload. Herman and Mack also hypothesized that counterregulation was determined by degree of restraint and not by degree of overweight. Obese subjects, unintentionally a part of their study, were not significantly more or less restrained than the normal-weight subjects, lending support to this latter hypothesis.

A number of researchers have replicated the above findings. Hibscher and Herman (1977) divided male undergraduate students into three weight groups of restrained and unrestrained eaters. They found that restrained eaters counterregulated after a preload but that unrestrained eaters in all three weight groups compensated for the preload by eating less. It was the degree of restraint and not the degree of overweight that predicted eating behavior.

Herman and Polivy (1975) studied restrained and unrestrained normal-weight female subjects relative to psychosomatic theory. They found that restrained subjects ate somewhat more (but not significantly more) when anxious as compared to when they were calm. In the context of psychosomatic theory, unrestrained eaters may resemble normal-weight subjects (nonanxious eaters), whereas restrained eaters may resemble obese subjects (anxious eaters). Herman and Polivy suggested that anxiety may disrupt the restraint that during other times is kept in effect.

Depression has also been shown to have a disinhibiting effect on restrained eaters. Polivy and Herman (1976) studied 12 depressed subjects, categorized as either restrained or unrestrained eaters. They found that the former tended to gain weight in conjunction with their depression, whereas the latter tended to lose weight. They again concluded that emotions, in this case depression, will disrupt the chronic self-control of the restrained eater and increase consumption. In unrestrained eaters, for whom self-control is not an issue, the physiological correlates of emotional experience will inhibit appetite.

To study further the notion of disinhibition, Polivy and Herman (1976) carried out a series of studies in which disinhibition was operationalized as specifically as possible. They proceeded with the idea that, if a known disinhibitor such as alcohol was applied to restrained and unrestrained eaters, the restrained would eat more after drinking alcohol than would the unrestrained eaters. The caloric value of alcohol was expected to act as a brake on consumption in those for whom internal satiety cues were operative. The original hypothesis was qualified by the results in that alcohol acted as a disinhibitor only in those situations in which it was clearly labeled as alcohol, thus introducing the relevance of cognitive functions in disinhibition.

Polivy (1976) continued to examine the cognitive components of counterregulation. She found that restrained normal-weight male subjects, when led to believe that they had eaten a high-calorie preload, ate significantly more during the test period than did the

restrained normal-weight subjects, who believed their preload was low calorie. In fact, the calorie value was the same in both cases. Her study suggests that restrained eaters eat more when they believe that they have overeaten. Herman and Polivy (1984) more recently additionally hypothesized that once restrained eaters believe they have lost control over their eating, they have a difficult time reimposing that same control.

The restrained-eating theory has prompted a great deal of empirical work, most of which has been supportive of the theory. There is some indication, however, that the eating behavior of obese people is less responsive to experimental disinhibition than that of restrained eaters of normal weight. Ruderman and Wilson (1979) found that unrestrained obese regulated their food intake after a preload, but restrained obese ate considerably less than did restrained normals following a preload. In a more recent review, Ruderman (1986) again concluded that the eating behavior of the restrained obese is less responsive to experimental disinhibition than that of restrained eaters of normal weight. He therefore suggested that restraint may be a more appropriate construct for the analysis of disorders such as anorexia and bulimia.

It should also be pointed out that restrained-eating theory only indirectly supports set-point theory. Biologic tests and measures are needed before that theory can be conclusively accepted. Herman and Polivy (1980) noted that restraint is defined more in terms of effort expended toward weight suppression than in terms of

achieved success. They did not agree with Nisbett that it is necessarily being below set-point that produces the stress effects. These researchers suggested that it may well be that the effort to lose weight, successful or not, is itself a stressor. Herman and Polivy also pointed out that the relationship between the two is not unidirectional. Dieting may produce stress, and stress interferes with and ultimately increases the need for dieting.

The restrained eater, therefore, is in a very complicated situation: Success in dieting, and perhaps even the search for success, appears to contain within it the seeds of its own breakdown. Factors known to be associated with the practice of restrained eating, and the lack of certainty about the cause of the stress associated with dieting, again call attention to the need to understand better the underlying difficulties of the dieting process. The regulated loss of freedom and loss of control over eating habits and patterns implied in diet and restraint may be a significant factor related to noncompliance with dietary restriction and failure at weight loss for some individuals, especially if impulsivity and/or a need for self-jurisdiction is high.

Studies Based on Cognitive Theory

Many researchers have suggested that human eating habits come under cognitive as well as physiological control. For the purposes of this discussion, it is important to look at research on the relationship between cognitions and eating behavior and obesity, but it is also important to point out that there is no formally stated

cognitive theory of eating behavior and obesity. No one particular theorist is associated with the statement and development of such a theory. Areas of researchers' concern include those of perceived hunger, perceived satiety, palatability and taste preference, expectations and knowledge of the nutritive value and energy content of various foods, and body image.

Schachter (1971) reported that although rats establish the length of intermeal time relative to the size of the meal that preceded it, humans are more typically influenced by the time or the perceived time of day as to when they will again have a meal. Booth (1980) supported this observation and noted that, in general, hunger is not a spontaneous expression of an innate state but has a substantial cognitive or learned component.

Other studies have given evidence that humans are incapable of monitoring internal satiety signals and that satiation as well as appetite is under cognitive control. When sensory and cognitive cues are eliminated, internal satiety signals fail to lead eating behavior to a stable caloric intake.

Wooley (1972) conducted a study in which she gave 16 obese and nonobese subjects drinks containing 200 or 400 calories. Half the time they appeared to be rich milkshakes and half the time to be low-calorie diet drinks. Food intake after consumption of the drinks was measured for 4 consecutive days using a standardized test meal consisting of quarter sandwiches. She found that the actual number of calories consumed before the meal had no effect on intake but that subjects ate significantly less and reported feeling fuller

after consuming the drink that looked like a rich milkshake. She also found that all subjects ate large quantities of food at the meal, possibly because of the small size of the sandwiches offered. Appearance and beliefs about the richness and the amount of the food were more influential than was the actual calorie amount of the food ingested. Interestingly, she found no differences between obese and nonobese subjects.

Porikos, Booth, and Van Itallie (1977) conducted a study in which the sugar in the diet of hospitalized obese patients was secretly replaced with aspartame, causing a drop in the caloric density of the diet. Although the daily caloric intake dropped by 25%, the patients consumed the same volume of food, tested over a 6-day period. The researchers concluded that human subjects eat in accordance with what they know about the satiating properties of food and do not, perhaps cannot, monitor the internal satiety signals.

Cognitive as well as physiological factors appear to be involved in the estimation of taste preference. Rozin and Kalat (1971) demonstrated that although some taste preferences or aversions are innate, most are learned. Their study showed that even initially aversive stimuli may eventually become palatable. Keeping the proposed relationship between cognitive factors and taste preference in mind, it is interesting to note a number of studies that have suggested that the obese are hyperresponsive to palatable food. Nisbett (1972) found that the obese consume more

good-tasting than poor-tasting food. Wurtman and Wurtman's (1981) study showed that the obese crave sweets and desserts. Schiffman (1986) found that flavor enhancers and changes in eating habits, which increase the sensory effect of food, help obese patients remain on a diet and lose weight. Grinker (1978), although disagreeing that the obese are partial to sweet taste, and in fact who found them to like sweet solutions less than do normal-weight subjects, did suggest that the obese may be hyperresponsive to complex flavors of food, although not to sweet taste per se.

The above studies suggesting a cognitive component to taste preference and those suggesting that the obese are hyperresponsive to complex flavors and other sensory aspects of food raise interesting questions concerning whether the obese differ from normal-weight individuals in their learning capacity and cognitive structure as those relate to food choice.

Cognitive considerations in eating behavior and obesity extend into the area of body image. The concept of body image includes the mental image of one's physical appearance, as well as the attitudes and feelings of the individual toward his or her body. The body image is not necessarily consistent with anatomical appearance. Bruch (1973) pointed out that inaccuracies in body-image perception have been tied to eating disorders, including both obesity and anorexia nervosa. A number of other studies have addressed body image in various groups of people. Some groups are able to assess body size realistically, and some are not. For example, Glucksman and Hirsch (1968) found that dieting obese patients overestimated

their body size relative to controls because of a self-perception of having lost little or no weight. Grinker (1973) found that with juvenile-onset obese patients, overestimation of size continued even after the subjects viewed themselves in a mirror. Adult-onset patients were better able to give accurate estimations. Leon and Chamberlain (1973) found that reduced obese women were able to give realistic assessments and did not differ from normal-weight women in this regard. Stunkard and Mendelson (1967) suggested that body-image disturbances are found only in psychopathological cases of eating disorders.

The ability to realistically assess one's image, and particularly one's size, appears to be related to such factors as age at onset of obesity and the degree of emotional disturbance. In any event, Bruch (1973) suggested that those obese individuals who can alter their cognitive structure following weight loss instead of continuing to think of themselves as fat may be more able to maintain weight loss. She also suggested that an accurate perception of body image may be a prerequisite for recovery from anorexia nervosa. An accurate perception of body image thus seems important both during weight reduction and in the maintenance of optimal body weight. In addition, it is the perception of one's body weight, relative to the perceived ideal weight, that motivates weight control. Garrow and Stalley (cited in Drewnowski, 1983) found that conscious attempts at dieting often begin only when the perceived body size is no longer acceptable and shows a significant

deviation from the subjective ideal. In this context it can be said that the long-term regulation of body weight is under cognitive control.

In summary, then, it can be stated that human eating habits do come under cognitive as well as under physiological control. Booth (1980) suggested that this view allows that there may be individual differences in the learning of food-body relationships, and it is possible that the obese do differ either in their learning capacity or in their cognitive structure. Drewnowski (1983) noted that numerous studies have failed to establish any firm obese-normal differences in hunger ratings, caloric regulation, eating style, or the structure of meals. However, there is some agreement that obese individuals may differ in their hedonic taste functions and in their stated preference for different foods. Finally, an individual's evaluation of his or her body image influences the long-term regulation of body weight by motivating the initiation and commitment to diet and maintenance of an optimal weight.

Summary

The research discussed above has shown that psychological, as well as physiological, factors influence food intake and eating behavior. In some instances it has also been shown that psychological factors interfere with attempts at diet and weight loss. Noncompliance research has addressed the question: What factors are associated with the obese individual's inability or

unwillingness to comply with dietary regimen? A review of the research on dietary noncompliance follows.

Noncompliance Literature

Research Related to Specific Models

As noted in Chapter I, the Health Belief Model (HBM) developed by Rosenstock (1966) and Becker (1974) attempts to explain and predict compliance with health care recommendations. Central to this theoretical model is the role of beliefs held by individuals relative to their health and to a prescribed treatment. Building on Rosenstock's work, Becker proposed that individuals' compliance behaviors would be determined by (a) their belief that they were susceptible to a given disease, (b) their belief that the disease was serious and could have severe and negative consequences in their lives, (c) their belief that the preventive action prescribed would have a beneficial preventive effect, and (d) their belief that the physical, psychological, and financial costs of taking the action were outweighed by the benefits received from taking the action. It is this last consideration that is most relevant to the present study.

Although research on the early model showed mixed results, it provided the first major effort to introduce much-needed theory into a largely empirical field. Numerous studies were carried out, investigating a variety of health care recommendations. Becker's (1975) review of research to that date led him to conclude that although no single effort had provided absolute confirmation of the HBM, most studies had produced internally consistent findings in the

predicted direction. Taken together, these yielded relatively strong support for the HBM of compliance behavior.

Becker and Maiman (1975), Becker and Rosenstock (1984), and Rosenstock (1985) refined the original model, identifying several additional variables relevant to health care behaviors. These variables include (a) general health motivation (such as concern for health or, more specifically, the value placed on health), (b) evaluation of practitioner and medication care, (c) provider-patient relationship, (d) perceived susceptibility to recurrence of the illness, (e) structure of medication regimen, (f) cues (or reminders) to action and cues reinforcing the threat of the illness, and (g) belief in one's personal self-efficacy (relative to the capability of carrying out the health recommendation).

The addition of these variables has enhanced the model's validity but has also made it more unwieldy (DiMatteo & DiNicola, 1982). DiMatteo and DiNicola pointed out that variables have been added somewhat haphazardly and in many cases have been assessed with single measures. Based on their thorough review of the model and related research, however, they concluded that the HBM, taken in its original formulation in combination with the highly supported new variable of health motivation, functions as a very important component of a possibly broader picture of health-related behavior. They believed its major value lies in its excellent delineation of the important role of the patient's subjective perceptions.

Becker, Maiman, Kirscht, Haefner, and Drachman (1977) applied the HBM to the case of obesity. This study appears to be the only

one on obesity and the HBM, and it is surprising that the HBM has not been used as the basis for numerous obesity and diet studies. In this study, 182 mothers of children newly identified by clinic physicians as obese participated in a study conducted in a large ambulatory pediatric clinic at a major teaching hospital over a 2-year period. The mothers, all of whom were the primary caretakers of their children, were referred to the clinic dietitian for a weight-reduction plan. They were also instructed on individuals' health opinions and concerns, and then were interviewed concerning their own beliefs, concerns, and motives relative to health in general and to obesity in particular. The interview items were designed specifically to operationalize dimensions of the HBM. Participants were then randomly assigned to a high-fear or a low-fear motive-arousing intervention, or to a control group with no intervention. Data on weight change were obtained by the dietitian every 2 weeks for 2 months, or for four visits. Standardization across patients of different original weights and different weight-loss recommendations was achieved by using the ratio of weight change between visits to weight on initial visit as the major dependent variable in the study. Attendance at appointments was recorded, and personal demographic characteristics were also compiled.

Sixty-two percent of the study subjects completed all phases of the trial. The authors found the HBM useful in explaining and predicting a mother's adherence to a diet regimen prescribed for her

child, as well as in forecasting the likelihood that she would keep follow-up appointments made for the child. They found that variables significantly associated with a child's weight change were found in each major category of the model. Perceptions related to health motives, to threat (susceptibility and severity, whether general or weight-specific), and to benefits of and barriers to the diet showed positive relationships to weight loss, whereas appointment keeping was modestly associated mainly with the more general motivation and threat measures. Correlations declined in magnitude by the fourth follow-up visit but usually remained significant. The authors suggested this could indicate that health beliefs may be most important initially but that, with time and experience with the diet and weight-change outcomes, other variables may become important as well.

This study is somewhat unusual in that compliant behaviors were elicited from individuals other than dieters themselves: Mothers enforced their children's compliance. It may be easier to comply with a recommendation when a major effect of that compliance is not experienced directly, and this possibility may confound the researchers' findings. Another concern is that both the model in general and the study in particular identified correlates associated with compliance as opposed to noncompliance. The model and study could be interpreted as suggesting that noncompliance will result if the behaviors are in some manner too costly. Or it might be assumed from the model that noncompliance would be associated with a general lack of health motivation or with beliefs that obesity is not a

serious or threatening condition. However, information more specific to noncompliance is necessary.

Marlatt and Gordon (1985) developed a Relapse Prevention Model based on their inquiries into the relapse process of several addictive behaviors, including smoking, alcohol abuse, and heroin abuse. This model focuses on the failure to maintain a prescribed course of action and has already been used as a basis for analyzing failure to maintain dietary restrictions.

The Marlatt and Gordon model is closely allied with Bandura's notion of self-efficacy. The model assumes that the individual, while maintaining abstinence or controlled substance use, experiences a sense of control over the target behavior. This sense of control will continue until he or she encounters a "high-risk situation," which is one posing a threat to the individual's feeling of control over the behavior and one potentiating uncontrolled substance use. If the individual is able to execute an effective coping response, the probability of relapse decreases. The person will regain the feeling of control and, in addition, will have increased expectation of being able to control similar situations in the future. If the individual cannot execute an effective coping response, a decrease in self-efficacy, an increase in feelings of helplessness, and a decreased expectancy for being able to cope in the future occur.

According to the Marlatt and Gordon model, a coping response may not occur for two reasons. First, the person may never have

learned the required coping skills. Second, he or she may have the skills but be prevented from performing them by anxiety or fear. The first relapse episode is considered critical in determining whether the individual relapses entirely or returns to abstinence or to controlled substance use.

Marlatt and Gordon suggested a set of cognitive and affective reactions to the first relapse episode, which they labeled the abstinence violation effect. The first component is cognitive dissonance, brought about by the conflict between the person's self-image as a controlled substance user and his or her behavior. The second component is a tendency to attribute the cause of the relapse episode to internal weakness and personal shortcomings. Feelings likely to accompany these cognitions include guilt, anger directed against self, and depression. Marlatt and Gordon believed that, if these feelings occur, there is a high likelihood that the individual will respond to them by resuming uncontrolled use of the problem substance.

Marlatt and Gordon found that initial relapse episodes in smoking tobacco, drinking alcohol, and using heroin occurred in both intrapersonal situations (that is, when the person was alone) and in interpersonal situations (that is, when he or she was with others). Initial relapse episodes for smoking tobacco, drinking alcohol, and using heroin occurred most frequently when the individual was alone, experiencing and attempting to cope with negative emotions, particularly anxiety, boredom, or depression. Interpersonal conflicts and social pressures accounted for

significant numbers of initial relapse episodes in these three groups, although in each case the intrapersonal situation noted was the single highest cause of initial relapse.

Rosenthal and Marx (1981) investigated dietary relapse using the Relapse Prevention Model. They identified the circumstances in which relapse episodes of inappropriate eating behavior occurred between two groups of dieters. In the first group, 28 of 36 student subjects reported at least one relapse episode, of which 48% occurred when the individual was alone and 52% occurred in the company of others. In a second group of 50 subjects, 43 reported at least one relapse episode. Sixty-one percent of these had occurred when the individual was alone, and 38% had occurred in the company of others. The authors found that, within the intrapersonal category in both groups, two-thirds or more of the episodes were a result of the negative emotional states of anxiety, boredom, or depression, whereas in the interpersonal category the majority were a result of enhancement of positive emotional states.

Two studies that preceded publication of the Relapse Prevention Model conform to the model's explanation of relapse. In the first, Leon and Chamberlain (1973a) compared a group of overweight persons (mostly women) who had successfully maintained a weight loss over a 1-year period with persons who had failed to maintain a weight loss and a normal-weight group. Responses to questionnaire items by the members of each of the three groups indicated that there was a significant relationship between emotional arousal and failure to

maintain dietary restrictions. The regainers were the largest proportion of subjects choosing several arousal states as being related to eating. Positive mood states, such as happiness and excitement, were implicated as well as negative ones, including loneliness, anger, and boredom. Anxiety and nerves were also frequent reasons given by the regainers for food intake.

The second study, conducted by Sjoberg and Persson (1977), described reported cognitions and feelings of nine overweight individuals treated at a weight-reduction clinic in Sweden. On the basis of interviews conducted at various points during and up to 4 months following the start of treatment, the authors concluded that moods and emotional stress led to diet "breakdowns" and that these were preceded by distorted reasoning. None of the patients who lost significant amounts of weight reported feelings of guilt or self-blame or negative self-statements while they were dieting. They seemed to have high degrees of self-efficacy in relation to their weight-loss efforts. Unsuccessful dieters, on the other hand, reported feelings of depression and guilt as well as negative self-statements in regard to ability to control eating behavior and weight.

In a much more recent study, Stalonas, Perri, and Kerzner (1984) did a 5-year follow-up study of a 10-week behavioral weight-control program that involved both exercise and management of food intake. Thirty-six of the original 44 participants were interviewed in person or by mail, or reported their weights by phone. Most had gained back a major portion of the weight they had lost during

treatment; in fact, the average subject was 1.49 pounds heavier at follow-up than before participating in the weight-reduction program. Thirty-two subjects provided information on factors they believed influenced their eating behavior.

Four factors cited were (a) situational, (b) social, (c) emotional, and (d) number of diets or weight-control programs undertaken by the subject during the 5-year follow-up period. The only consistently positive influence was the number of diets and weight-loss programs attended. A significant negative relationship was observed between the number of diets and programs undertaken and the number of pounds gained during the follow-up period. The other factors influenced eating patterns in both directions but were predominantly a negative influence. Social gatherings; the workplace; interactions and relationships with family, friends, and co-workers; and negative affects were associated with relapse and weight gain.

The findings of the foregoing study are consistent with the assumptions of the Relapse Prevention Model. The research strongly suggests that certain high-risk situations, often in combination with associated emotions and cognitions, lead to relapse. Situational, social, and emotional factors influence noncompliance with dietary restriction.

In general, two features--one from each model--are particularly relevant to the present study. The first, from the Health Belief Model, is that the evaluation of costs, which can be psychological in nature, is an important factor related to compliance with health care recommendations. The second, from the Relapse Prevention

Model, is the importance of negative affects and negative cognitions relative to resumption of uncontrolled use of chemicals or food.

Research Related to Personality Characteristics

Noncompliance has also been investigated from the standpoint of the personality characteristics of the failed dieter. These studies have shown mixed findings and in general have not been supportive of a strong relationship between noncompliance and personality types or characteristics. The research findings may have been complicated by the variety of measures used, the variety of subject samples, and the number and even the vagueness of the characteristics investigated.

Bolding and Wilcutt (1970) found no statistically significant differences in comparing the MMPI profiles of 28 obese persons who completed a weight-reduction program with 22 obese persons who dropped out of that program. Similar findings were reported by Johnson, Swenson, and Gastineau (1976). They found no apparent differences in the success in achieving a loss of 10% or more of initial weight among the male and female obese subjects having normal or abnormal MMPI profiles.

A few studies have suggested a relationship between neuroticism and failure to comply with weight-loss instructions. Silverstone and Cooper (1972) studied 100 obese patients (at least 20% overweight) whose weight problem was refractory. They found that individuals with a low neuroticism score were more likely to benefit

from receiving simple dietary instruction at a weight-reduction clinic. However, the relationship was weak and not found to be a consistently significant predictor of weight loss. Craddock (1977) reported similar findings. Gilbert and Garrow (1983) did not find any relationship between neuroticism and success with compliance and weight loss.

Bjorvell, Edman, Rossner, and Schalling (1985) administered a Swedish personality test, the Karolinska Scales of Personality (KSP), to 107 obese subjects who had been referred to or had requested admittance to the Obesity Unit at the Karolinska Hospital in Stockholm. The group was composed of 81 women and 26 men. All women had a body-mass index of 29 or greater and all men had a body-mass index of 30 or greater, as well as somatic and/or psychological complications. The KSP consists of several self-report scales. The patients also answered some questions concerning family status, occupation, and cultural correlates. The obese patients were compared to a normal group of 200 men and women, randomly sampled from a suburb of Stockholm.

The obese patients had higher scores in somatic anxiety, muscular tension, impulsiveness, and monotony avoidance, and lower scores in socialization than did the control group. The authors argued that this pattern constitutes an impulsiveness syndrome, which is a personality syndrome characterized by irresponsibility and mental instability. Such traits, they pointed out, are commonly attributed to psychopaths and alcohol and drug addicts. The authors found that the personality pattern of the obese patients was in line

with the authors' clinical impressions that many severely obese subjects described their eating behavior as a food dependency and themselves as addicts similar to alcoholics. Although the authors were investigating personality characteristics associated with obesity and not with dietary noncompliance per se, they suggested that the characteristics of the impulsiveness syndrome exhibited by these obese patients could explain the common obesity history of repeated attempts to lose weight, with accompanying relapses and failure to lose weight. They did not, however, test this hypothesis in their study.

Pekarik, Blodgett, Evans, and Wierzbicki (1982) described characteristics of dropouts from a behavioral weight-loss program and distinguished dropouts from program completers. Fifty-two participants were chosen on a first-come basis from a pool of respondents to an advertisement for a free, university-based weight-control clinic. Various demographic characteristics were obtained, along with age at onset of obesity, participants' weight relative to their ideal weight, and number and quality of previous weight-reduction programs attended. Each subject participated in a structured interview and took a battery of tests assessing personality characteristics.

The program was divided into three phases, based on number of sessions. Dropout status was defined in terms of the number of sessions completed: Early dropouts completed the evaluation only (1 to 3 sessions); late dropouts completed the evaluation and

calorie control (4 to 7 sessions); and completers engaged in evaluation, calorie control, and exercise modification (8 to 12 sessions).

Of the 52 participants, 24 were completers, 19 were late dropouts, and 9 were early dropouts. Weight loss was greatest for completers; late dropouts lost more weight than did the early dropouts. Significant group differences were also noted on a variety of personality characteristics. Early dropouts were more depressed and had lower scores on tested dimensions of energy level, breadth of interest, organization, and responsibility. Late dropouts had lower anxiety scores than either early dropouts or completers. These findings compare to earlier ones of Graf (1965), who had noted the trend among individuals who were depressed to drop out of weight-loss programs after a few sessions. A much greater percentage of continuing participants were anxious.

Pekarik et al. investigated the dropout phenomenon relative to social class and noted that their results differed from earlier findings in mental health research, which showed a positive relationship between continuance and social class. Their results did, however, confirm a finding of no effect for social class variables in other weight-loss programs and in medical settings. On this basis the authors suggested that individuals attempting weight loss might be better conceptualized as health care patients than as mental health clients. This conclusion does not, on the other hand, correspond to the suggestion supported by their study--that a sizable proportion of people seeking weight loss may bring to

treatment psychological deficiencies that influence treatment outcome and that implementation of weight-loss programs without attention to emotional issues could contribute to program failure and client frustration.

In summary, most of the preceding studies are interesting relative to this present study in that the personality characteristics considered are those involving what might be described as neurotic features. As such, depression and anxiety figure prominently in the characteristics described, as do other features such as impulsivity, tension, and monotony avoidance. These characteristics are the same as those which are discussed relative to the psychodynamic and the psychosomatic theories of food intake, and which are implicated in overeating and obesity.

As noted, however, the research investigating the relationship between personality characteristics and noncompliance with diet programs and failure to lose weight has offered, at best, mixed findings. In general, support has not been strong for any personality variable's being consistently related to noncompliance. DiMatteo and DiNicola (1982) suggested that the limited strength of personality variables in predicting and explaining patient compliance may stem from the definition of personality as basic, unchangeable, deep-rooted, and primarily unconscious. They suggested that the concept of "social personality" may be needed. Within this frame, personality would be understood as a socially learned cognitive system. Values, beliefs, attitudes, and

expectations would become the relevant considerations and might prove more powerful correlates of behavior. This appears to lead the investigator back to Becker's Health Belief Model of compliance in health care behavior.

Research Related to Behavioral Patterns

It has been posited that behavior therapy is the most widely used formal treatment for obesity today, at least in the United States. Vast numbers of research studies and reviews of the literature are available (Frankle & Yang, 1988; Jeffery, Wing, & Stunkard, 1976; Stuart & Mitchell, 1980; Wilson, 1980; Wing & Jeffery, 1979). Stuart's 1967 study became the forerunner of numerous treatises on the theory and practices of behavioral techniques. A review of this literature is not within the scope of this study. It is mentioned here, however, to take appropriate note of the fact that various behaviors appear to relate significantly with initial weight loss and maintenance success.

Stuart and Davis's (1972) original treatment program included monitoring intake, modifying cues that signal inappropriate eating, modifying the act of eating itself, increasing exercise, and rewarding oneself for more appropriate behavior. Additional work over the years has led to more techniques based on learning theory. Frankle and Yang (1988) listed the five factors included in the behavioral control of weight as follows: (a) changing the act of eating, (b) nutrition training, (c) cognitive restructuring, (d) developing support systems, and (e) exercising. A study by Miller

and Sims (1981) concluded that a majority of successful weight-loss patients used (a) cognitive restructuring techniques, (b) exercise, (c) social skills, and (d) eating-style changes. Another study, looked at more closely below, suggested behavioral correlates of successful maintenance.

Holmes et al. (1984) did a follow-up study of 127 patients who had participated in a medical and behavioral weight-reduction program at the Wayne State University Obesity Clinic. The purpose of the study was to evaluate weight maintenance following a modified fasting phase of the program and to identify factors that differentiated more successful from less successful weight-loss maintainers. Each person was surveyed in person or by telephone during a time period ranging from 1 to 29 months following completion of the modified fasting phase of the program.

The modified fasting phase of the program was followed by a final phase during which a number of activities occurred: (a) food was reintroduced and weight maintenance was stressed, (b) blood pressure and body weight were measured weekly, (c) blood chemistries and physician examinations were done as needed, and finally, (d) patients were urged to attend weekly group behavioral sessions specifically oriented toward individuals in maintenance phases of weight loss. These sessions emphasized record keeping, exercise, calorie balancing, environmental control, alternative response training, attendance, and nutritional information.

Holmes and her colleagues found that three variables predicted maintenance success: (a) attendance at the follow-up weekly group

behavioral sessions, (b) record keeping, and (c) exercise. The authors suggested that attendance, record keeping, and exercise were each important in their own right, but they may also serve as good alternative behaviors to eating and to thinking about food. Using the criterion of regaining 10 or fewer pounds as indicative of success, the authors reported that 56.8% of the 127 patients were successful in maintaining their weight loss at the time of the follow-up survey.

Although this study and others similar to it noted above are helpful in identifying behaviors that are associated with weight-loss success, they do not seem to deal with the more complicated issue of why some individuals persist in these behaviors and why some do not. And although the reported lower attrition and higher success rates in behavioral programs have been attributed to the specific behaviors used, and these behaviors may themselves be motivating of success, which then promotes increased self-efficacy, it is important to point out that the reported attrition rates might be due to other factors. Many behavioral programs use a screening process and base selection to a behavioral program on the results of that screening. A group reported by Frankle and Yang (1988) required that (a) participants must lose at least 1 pounds per week for 2 weeks in the screening phase, and (b) they must complete daily food-intake forms for those 2 weeks. If these requirements were not satisfied, they were not granted permission to enter the group. Noncompliance and high attrition and failure to lose weight continue

to be worrisome problems even in the most successful programs of weight loss and weight control.

Summary

The research reviewed above pertaining to noncompliance with dietary restriction suggests that a number of factors are associated with inability to restrict food intake. Factors associated with noncompliance include high-risk situations; emotional arousal, including negative, and sometimes positive, mood states; negative cognitions; the influence of other persons, especially spouses and family members; and certain personality characteristics of the dieter. Most appear to be significantly related to the inability to comply with attempts to control food intake and body weight; personality characteristics show the weakest correlation with such failure. Beliefs and attitudes influence compliance or noncompliance, and certain behaviors seem to increase the likelihood of success with dietary compliance and weight loss. However, developing health-promoting beliefs and attitudes and undertaking and maintaining successful behaviors are not easily accomplished tasks and goals. Noncompliance and failure are frequent results.

It has been suggested that dietary restrictions and weight loss involve certain psychological costs or losses. For many individuals, the costs are prohibitively high, and noncompliance results. Losses of freedom, comfort, power, protection, pleasure, approval, identity, predictability, and control are concepts frequently discussed relative to dietary restriction and weight

loss. Although often cited as contributing to the difficulty in complying with weight-loss attempts, little empirical research has been conducted in direct investigation of the hypothesis that the threat or experience of psychological loss(es) is associated with dietary noncompliance and failure to lose weight. Studies relevant to this consideration are reviewed in the following section.

Loss Literature

Much that has been written about loss has dealt with the loss of an important person. A number of writers however, have emphasized that losses other than object loss are part of human experience.

Peretz (1970) classified loss into four categories. Two of these--loss of some aspect of the self and loss that occurs in the process of human growth and development--are important to the present discussion. Loss of some aspect of the self is exemplified by the loss of symptoms that provided secondary gain and/or control of aspects of the environment and by the loss of self-esteem. Loss of gratification associated with rudimentary abilities serves as an example of the second category.

Marris (1975) identified loss that results from changes in those entities or relationships that give life meaning and structure. His studies of bereavement in a group of London widows, slum clearance and rehousing in Nigeria and America, graduation of African students into an educated elite, American experiments in social reform, and the pioneering of new business ventures, also in

Africa, ultimately led him to articulate at least a partial theory of change. Although he had not chosen his research projects for this reason, Marris found that in each of the situations he studied a crucial change and transition had occurred for the individuals involved. Marris found that these change events were always anxious events, characterized by ambivalence. Even when the change was desired, it resulted in anxiety, ambivalence, and an internal conflict that seemed always to inhibit any straightforward adjustment. The anxiety and ambivalence inherent in change centered on the struggle to maintain or recover a known and understood pattern of relationships and to avoid inherent associated losses. Marris's formulation of the concept of a conservative impulse identified and explained this tendency to resist change and avoid or recover losses. He found the processes he studied remarkably similar to the working out of grief. Once the anxieties of loss were understood, both the "tenacity of conservatism and the ambivalence of transitional institutions became clearer" (p. 1).

Schneider (1984) also identified and discussed loss as inherent in change. Change can be either external, involving relationships, objects, or particular environments, or internal, involving a change in self-concept or role changes. Schneider believed that every change event has the potential for loss, and unless the loss or losses are identified and grieved, the change event remains unresolved and a source of stress.

Peretz (1970), Marris (1975), and Schneider (1984) found that resistive behaviors and grief reactions can and do occur even before

change in response to anticipated losses. Earlier, Rochlin (1965) had suggested that fears of uncompensated loss will bring on attempts of restitution and/or resistance to activity that heralds change. Blatt and Erlich (1982) discussed a fundamental resistance to change and growth, which they saw as an expression of a basic wish to maintain well-established modes of adaptation. These modes, even though limited and often painful, are at least familiar and predictable.

Dietary change, as previously noted, represents or necessitates a change in life style. In addition, a reduced body weight is associated with changes in body image, self-concept, and often self-expression and self-presentation. Often dietary change and decreased weight force a change in psychological adaptation. Marris and Schneider, and the other writers presented above, indicated a relationship between change and loss. This identified relationship, taken in conjunction with the identified changes implied in dieting and weight loss, provides a framework for considering diet and weight loss as changes and, therefore, as (psychological) loss events. The following studies identified or indirectly suggested the experience of psychological loss in association with dieting and/or weight loss.

Swanson and Dinello (1970) studied 25 superobese subjects who had been hospitalized and starved for an average of 38 days. They found that none of the subjects sustained their weight loss following discharge from the hospital. Only four achieved even

partial success. The patients experienced marked difficulty dieting after hospital release. Based on their observations, Swanson and Dinello concluded that the patients were more aware of their psychological problems since they had become thinner and that they had to devote great amounts of energy to dieting when they faced the stresses of daily life outside the hospital. The authors concluded that, for most patients, a return to obesity was more comfortable and tolerable than trying to fight with their problems in the presence of environmental demands. Loss of freedom, comfort, and protection from problems were apparently lost when these patients were thinner and dieting to maintain that weight loss. Noncompliance with continued dietary restraint resulted.

A series of studies by Crisp and his colleagues (1967, 1970, 1974, 1977) identified various psychological losses associated with weight loss; in some cases, a relationship between psychological losses and relapse was shown. These researchers worked with two populations. One population comprised patients in a medical outpatient obesity clinic who had undergone intestinal-bypass surgery. The researchers expected that this population would allow the investigation of the effects of decreased weight independent of changes in eating behaviors. The expected independence was contaminated, at least initially, by changes in eating habits that were caused by physical effects of the surgery, including such problems as nausea, diarrhea, and abdominal pain. In addition, decreased weight resulted in more activity for patients outside of their homes, and they found they were eating less as a result of

this. Although patients expressed positive reactions to this, they did express discomfort about not eating in certain situations. Thus, these patients experienced some change in dietary patterns as well as in body weight. The second study population of these researchers lost weight through dietary restriction. None were chosen on the basis of psychopathology.

Crisp (1967) and Crisp and Stonehill (1970) found that dieting and weight loss among the dietary-restriction patients were accompanied by a corresponding loss of the capacity to deny interpersonal problems. If these problems were severe and/or numerous, and personal relationships particularly barren, relapse rapidly ensued. Evidence suggested that there was a critical weight threshold below which such denial was no longer possible. This threshold appeared to be at about 25% above normal weight. Although relapse did not occur in every case, they concluded that the loss of a primary defense resulted in relapse and noncompliance for some patients. The patients no longer felt protected from their problems and could not manage them without their earlier protection.

Previously discussed studies by Kollar and Atkinson (1966), Kurland (1967), Rottman and Becker (1970), Glucksman and Hirsch (1968a, 1968b), and Robinson et al. (1973) provided supporting evidence that loss of defense and protection are involved in the attempts to lose weight and in weight loss. These studies, however, did not investigate for relapse following the weight loss.

Kalucy and Crisp (1974), in their research with intestinal-bypass patients, found that several patients after surgery and weight loss reported more persistent apprehension or uneasiness, especially in social situations, which related to loss of eating as an adaptive maneuver. Eating was identified by many to have been a form of comfort, sometimes acting like a sedative. Earlier, Bruch (1957) had suggested that loss of oral comfort seemed to characterize her patients who were attempting to lose weight. Because this study did not look at relapse patterns following surgery and weight loss, it cannot be determined whether the implied loss of comfort and defense led to relapse and noncompliance for some people. Nor did the researchers address whether patients were apprehensive because of smaller body size.

Crisp, Kalucy, Pilkington, and Gazet (1977) reported generally positive results and adjustment for most of the 44 patients whom they studied following intestinal-bypass surgery. They did find, however, that for patients who had achieved and sustained weight loss up to 2 years following surgery, marital and sexual adjustments were problematic. They also found that for those patients who did not lose weight, sexual and relationship issues appeared related to their reluctance and ultimate noncompliance. One woman, for example, feared that she would again become promiscuous as she had been in her teens. Another anticipated the return of despair that she had experienced when she married. Her overeating and her obesity had their onset at that time as well. Another woman, although she did lose weight and maintain the loss, became frigid in

response to her recognition that she was once again attractive to men. And similarly, although there was increased interest in sexuality for most patients, only two of the married couples reported an improvement in their sexual relationship. Instead, most married patients reported considerable relationship difficulties. Loss of identity is suggested by some of these patients' fears, and loss of approval and acceptance evidently had to be faced by others. These findings are reminiscent of Bruch's (1973) description of fears of loss of power and approval in the patients she described in her case work.

Stuart (1972) suggested that dieters often face sabotaging activities by spouses and worry about loss of approval and acceptance. He studied the specific interactional sequences between couples in which a partner was attempting to diet and lose weight and found that husbands were 7 times more likely than their weight-reducing wives to initiate food-relevant topics of conversation, 4 times more likely to offer food, and 12 times more likely to criticize their wives' eating behavior than to praise it. Although more men wished their wives would lose weight, less than half were willing to assist her, and almost a third were concerned that weight loss would lead to divorce or unfaithfulness. Stalonas et al. (1984), cited above, also reported the negative effect of family members and spouses on the attempts to lose weight. Apparently, family members, spouses, and sometimes even friends can have a vested interest in the weight-loss attempts and failures of those

close to them. Dieters can face loss of acceptance and approval if they continue to comply successfully with weight-loss regimes.

Neill, Marshall, and Yale (1978) studied 14 spouse pairs in which one of the partners had been obese and lost weight by undergoing an intestinal-bypass procedure. They found that marital and sexual problems followed, and concluded that the obesity had been a selective and stabilizing factor in the marriages. A major area of conflict occurred around the issue of spousal autonomy. Several of the female patients reported that their increased social activity provoked hostility and withdrawal in their mates. Fears of abandonment were prominent in both. It might safely be interpreted that several of these married subjects faced loss of approval and acceptance based on their weight-reduction efforts.

Based on the foregoing review, it is evident that some studies have identified psychological losses that occur in association with the process of losing weight. Loss of protection, comfort, freedom, identity, power, acceptance, and/or approval have been found or suggested as a result of the work of these various researchers.

It is also evident that very little, if any, research has been conducted to test empirically the relationship between the dieter's anticipated or experienced psychological losses incurred in the process of dieting and that individual's inability to restrict food intake and lose weight. This is especially interesting because changes in dietary habits and in body weight are considered to be major change events. As such, psychological losses and resistance

to incurring such losses would be anticipated. The resistance logically would occur as noncompliance with dietary restrictions.

Summary

In this chapter, research pertaining to the psychological theories of food intake, research on dietary noncompliance, and research on psychological loss and dietary and weight change was reviewed. The research strongly supported the hypotheses that eating is influenced by emotions and cognitions and may well be a purposive and meaningful behavior, the goal of which is to provide protection, comfort, and a method of coping with emotional distress and problems. These goals are achieved through the act of eating itself, or as a result of this eating behavior, namely obesity. Noncompliance research emphasized the effect of events, emotions, and cognitions on the inability or unwillingness to change eating behaviors and body weight and attempts to identify factors relevant to this phenomenon. Psychological-loss research provides a coherent context in which to understand noncompliant behaviors as these apply to dietary restrictions. The losses shown or suggested to be associated with restrictions on eating behavior and with weight loss are often more than individuals can tolerate, and noncompliance with dietary restriction and failure at weight loss are the results.

CHAPTER III

METHODOLOGY

The design of the study is presented in this chapter. The following sections are included: description of the research participants, the measures used and the procedures utilized in developing the Weight Loss Problems Questionnaire, operational definitions, data-collection procedures, research hypotheses, and design and data-analysis procedures.

Research Participants

The sample comprised 192 individuals who were attempting to diet for the purpose of losing weight or maintaining an acceptable body weight, and/or who were attempting to change a compulsive-eating pattern that had resulted in an overweight condition. Participants were recruited from nine separate sources and included: (a) members of Overeaters Anonymous (OA), a nationally organized self-help group that uses the principles of Alcoholics Anonymous in giving up compulsive overeating; (b) members of gastric surgery support groups, a number of independent groups in southern Michigan that have as their purpose the providing of mutual support for postsurgical adjustment, including changed eating patterns that promote weight maintenance and/or continued weight loss; (c) an

informal women's support group, which had developed for the purpose of mutual support in weight-loss attempts and body-image issues; (d) inpatients and outpatients in a university hospital obesity program, using a medically supervised low-calorie diet, nutritional information, exercise, and individual and group therapy to facilitate weight loss; (e) outpatients in a university hospital behavioral medicine clinic, providing nutritional information, dietary and exercise recommendations, and group and individual support; (f) patients in a private outpatient behavioral weight-loss clinic that emphasizes a medically supervised low-calorie diet in conjunction with behavioral management, education, and group support; (g) outpatients in a university-affiliated, city general hospital medical rehabilitation clinic; (h) individuals in an informal network known to one another through their various weight-loss attempts; and (i) individuals in an informal network who were also attending the same commercial weight-loss clinic.

These groups constituted the total sample of 192 participants. As would be expected, not every member of every group nor every individual contacted participated. Four hundred ten questionnaires were distributed to members of the various groups or to a contact person for that group. Distribution of questionnaires was as follows: (a) 170 questionnaires to OA, (b) 75 to gastric surgery support groups, (c) 10 to the informal women's support group, (d) 12 to the university hospital obesity clinic, (e) 36 to the university behavioral medicine clinic, (f) 52 to the private outpatient weight-loss clinic, (g) 10 to the rehabilitation clinic, (h) 20 to the

informal network, and (i) 25 to the network of people attending the same commercial weight-loss clinic. Of the 410 questionnaires distributed, 193 were mailed back to the researcher, representing a 48% return. Six of those had to be excluded from the study because they contained ambiguous responses that prevented their being categorized into diet status groups essential for the data analysis. Because the study was not intended to look at differences in success or failure based on type of weight-loss program attended, the number of responses received from each particular group was not recorded.

For this sample, the mean percentage overweight was 30.5%, and the mean percentage of weight lost was 18.2%. Caucasian women made up the majority of the sample. A majority of the sample was married. Mean income for the group was $40,554.29, and the mean number of years in school was 14.66 years. Just under half of the sample was characterized by childhood onset of obesity. Complete descriptive statistics for the sample are given in Table 3.1.

Measures Used

Weight Loss Problems Questionnaire (WLPQ)

The initial purpose of this study was to investigate noncompliance with dietary restriction and failure to lose weight from the perspective of psychological loss to determine whether there was an association between the two. A comprehensive review of the literature demonstrated that no measure was available that could directly assess the experience of psychological loss as experienced by individuals attempting to curtail food intake or change the

Table 3.1: Descriptive Statistics: Diet Status Variables, Life Status Variables, and Weight Status Variables

	N	Mean	SD	Freq.	%
Diet Category	192	--	--		
Currently successful				86	44.8
Currently unsuccessful				56	29.2
Relapse				39	20.3
Maintaining				11	5.7
Collapsed Diet Category	192	--	--		
Currently successful				97	50.5
Currently unsuccessful				95	49.5
Age	192	41.2	10.8		
18 or under				1	0.5
19 to 30				22	11.5
31 to 45				99	51.6
46 to 60				57	29.7
60+				13	6.8
Sex	192	--	--		
Female				170	88.5
Male				22	11.5
Ethnic Group	173	--	--		
Caucasian				168	97.1
Hispanic				3	1.7
Black				1	0.6
Other				1	0.6
Missing				19	
Marital Status	190	--	--		
Married				108	56.8
Single				45	23.7
Separated				37	19.5
Missing				2	
Income	165				
$ 0-11,999				13	7.9
$12,000-24,999				25	15.2
$25,000-49,000				73	44.2
$50,000+				54	32.7
Education	184	14.66	2.92		
Fewer than 12 years				11	6.0
12 years or GED				49	26.6
> 12 and < 16				49	26.6
16 or B.A. degree				25	13.6
> 16 or graduate degree				50	27.2

Table 3.1: Continued.

	N	Mean	SD	Freq.	%
Occupation	183	--	--		
Professional				81	44.3
Clerical, trades, domestic				60	32.8
Homemaker				25	13.7
Unemployed (students, volunteers, retired, not working)				17	9.3
Missing				9	
Helping Profession[a]	183	--	--		
No				111	60.7
Yes				72	39.3
Missing				9	
Age at Onset	175	--	--		
Childhood (0-12)				80	45.7
Teenage (13-19)				35	20.0
Young adult (20-29)				35	20.0
Adult (30-55)				23	13.1
55+				2	1.1
Missing				17	
Percentage Overweight	192	.305	.311		
Underweight or none				23	12.0
0 to 20%				61	31.8
21 to 30%				23	12.0
31 to 50%				46	24.0
51 to 75%				23	12.0
76 to 100%				6	3.1
100% +				10	5.2
Percentage Weight Lost	192	.182	.135		
None				14	7.3
0 to 20%				109	56.8
21 to 30%				31	16.1
31 to 50%				33	17.2
50% +					

Note. In some categories, percentages do not total 100% due to rounding.

[a]Helping professions include nurse, therapist, teacher, child-care/eldercare worker, and homemaker.

food-intake pattern in order to lose weight or to maintain a desired weight loss. Development of such an instrument therefore became a primary task of this study, and the Weight Loss Problems Questionnaire (WLPQ) was developed and used for that purpose.

Development of the WLPQ. Several steps were involved in the development of the WLPQ. An initial review of the literature had suggested that psychological loss was often associated with weight-loss attempts and with failure to lose weight or to maintain a desirable weight loss. A more careful perusal of the clinical literature was then undertaken to examine the reported weight-loss experiences and the types of psychological losses that were indicated.

Next, the researcher interviewed five individuals who identified themselves as overweight and attempting to lose weight. The interview focused on their diet and weight-loss experience, and was structured so that the dieters' commentaries could be used to verify whether psychological losses were experienced in association with weight-loss attempts. These interviews did confirm that losses were experienced by those attempting to diet and lose weight, and specific types of losses were identified from each interview.

Based on this review and interview process, the researcher identified 12 losses. The researcher and an Ed.D. counseling psychologist familiar with the process of change and loss identified clusters based on overlapping aspects of the losses identified, reducing the number of losses to six. The researcher then developed precise definitions for each category.

Item generation followed and was also a multistep process. The researcher developed items based on information from the literature review and from the interviews with dieters. The comments of the dieters themselves, as they discussed their experience, were of particular assistance in formulating items reflective of the loss experience. In addition, the researcher formulated items that intuitively reflected the type of loss being considered.

The defined loss categories and related items were then submitted to one Ed.D. and two Ph.D. counseling psychologists knowledgeable in the areas of health practices, obesity and weight-loss adjustment, the process of change and loss, and questionnaire design. These experts were asked to review and provide feedback on the inventory. Specifically, they were requested to indicate which items, in their opinion, accurately reflected the loss specified. Only those items that were validated by consensus of all three raters were included in the item pool. As a result of this review, changes were made in the wording of some of the items to insure that they were phrased in clear and understandable language. One definition was altered slightly.

A pilot study was then conducted with 10 individuals known by the researcher to have a history of weight-loss attempts or to be currently attempting to diet and lose weight. The researcher asked each person to share any reactions and to comment on any difficulties or suggestions for change. They were also asked to indicate the time taken to complete the inventory. Based on their feedback, minor changes were made in the wording of some of the

items. In addition, 16 items were deleted, based on the fact that they lacked sufficient response variability. Any item that had loadings on three or fewer adjacent response points on the scale was deleted.

In its completed form the WLPQ has 71 randomly ordered items, which are designed to measure, through self-report, individuals' experience of psychological loss in weight-loss attempts and/or in attempts to change eating patterns. The WLPQ comprises six subscales, each of which represents a separate psychological loss that might occur in conjunction with weight-loss attempts. These losses and their definitions are as follows:

1. Loss of Identity--Loss of established sense of self; loss of familiar self-image.

2. Loss of Security--Loss of protection from demands for competency, competition, sexuality, intimacy; loss of protection from achievement expectations; loss of safe harbor.

3. Loss of Freedom or Control--Loss of ability to govern aspects of one's life; loss of self-jurisdiction.

4. Loss of Power or Impact--Loss of ability to assert or intimidate; loss of status.

5. Loss of Comfort or Pleasure--Loss of a satisfying response to emotional distress; loss of physical enjoyment.

6. Loss of Approval or Affection--Loss of approval, affection, and acceptance by significant others or one's self; loss of relationships or some aspects of relationships with significant others.

Sample items from each subscale are as follows:

Loss of Identity (I)

"It bothers me that I don't know how I will act when I am normal weight."

"I believe that I lose an important part of me when I lose weight."

Loss of Security (S)

"When I diet or lose weight, I worry that people will expect more of me."

"I feel like I'm in a safe fortress when I am overweight."

Loss of Freedom or Control (FC)

"I don't like being told what to eat."

"It's hard to diet because I can't eat what I want."

Loss of Power or Impact (PI)

"I worry that people (will) ignore me when I lose weight."

"People listen more to me when I'm overweight."

Loss of Comfort or Pleasure (CP)

"After I eat, I feel better for awhile."

"I enjoy the physical sensations I feel when I eat."

Loss of Approval or Affection (AA)

"I worry that people I care about will reject me if I lose weight."

"When I am normal weight, no one knows and loves the real me."

The subscale designation of all WLPQ items is found in Table 4.1, Chapter IV.

Loss is measured by asking the participants to reflect on their own experience and indicate how much they agree or disagree with statements reflecting thoughts, feelings, and behaviors frequently

experienced in the process of dieting or changing a food-intake pattern or attempting to maintain a weight loss. These statements reflect various types of psychological loss. Items for the WLPQ are responded to on a 6-point continuum from "strongly disagree" to "strongly agree" and are scored on a 1-6 point scale. The higher the score on the item and total scale, the more intense the experience of psychological loss in the weight-loss attempt. The strength of the type of loss and the number of types is reflected in various subscale scores.

Ratings closer to 1 would indicate that loss item as not being very characteristic of the participant's experience. Ratings closer to 6 indicate the loss item as being much more characteristic of the participant's experience.

Personal Data Sheet

A personal data sheet was devised by the researcher to record information descriptive of participant characteristics, including age, sex, ethnic group, marital status, income, years of school completed, occupation, current weight and height measures (to determine percentage overweight), age at onset of overweight condition, highest weight, target weight, relapse or maintainer designations, and current diet status (successful or unsuccessful currently).

Operational Definitions

Age at onset. The age at which an individual first became obese, measured according to the individual's memory as to when he or she became obese.

Currently successful dieters. Individuals who are currently dieting to lose weight or to maintain ideal weight and are losing weight or maintaining the ideal weight.

Currently unsuccessful dieters. Individuals who are dieting to lose weight and who are staying the same weight, gaining weight, or unable to comply with their diet; individuals who are dieting to maintain weight but who are gaining or unable to comply with their diet.

Ideal weight (or normal weight). That weight indicated by the Metropolitan Life Insurance Table of Desirable Heights and Weights (1983) as being appropriate for an individual, based on that individual's gender, height, and body build. Designated ideal weight in this study is the highest weight allowable in the given weight range for that individual.

Maintainers. Individuals who have reached ideal weight, maintained that weight for at least 6 months, and who currently remain at ideal weight.

Obesity. The state of being at least 10% over ideal weight. Degrees of obesity are as follows: 10-20% over ideal weight, slight; 21-30%, mild; 31-50%, moderate; 51-75%, severe; 76-100%, massive; and 101% or more, morbid.

Relapsers. Individuals who have reached target weight but who are gaining weight.

Procedures for Data Collection

Participants were recruited from several eating and weight-loss support groups, a rehabilitative medical clinic, three obesity and

weight-loss clinics, and two small networks of individuals who were known to each other through their various weight-loss attempts. These groups were fully described in an earlier section.

The researcher gave an informal presentation about the research, voluntary participation and consent, and confidentiality to group members or clinic patients, or to a representative of the organization or network. The group representative or the researcher gave a packet of research documents to volunteers who expressed an interest in participating in the study. The packet contained a cover letter that reexplained the research, voluntary participant involvement and consent, and confidentiality. Information given in the cover letter conformed to the requirements of the Michigan State University Committee on Research Involving Human Subjects (UCRIHS) and was in accordance with the Ethical Principles in the Conduct of Research With Human Participants (APA, 1982). The WLPQ, the Personal Data Sheet, and a self-addressed, stamped return envelope were also included in the packet. To maximize response rate and a speedy return of the research documents, participants were offered an incentive of the chance to win $50 by returning the completed packet by a specified date. Two such prizes were given. Use of this incentive was approved by UCRIHS at Michigan State University and by the Michigan Lottery Board.

As noted earlier, 410 packets were distributed and 198 were completed and returned to the researcher. This represents a return of slightly more than 48%.

Research Hypotheses

The purpose of this study was twofold: to develop an instrument that would measure psychological losses that occur in relation to attempts to diet and lose weight, and to investigate the phenomena of psychological loss in individuals' successful and unsuccessful attempts at dietary restriction or change. The first set of hypotheses was developed to test the reliability and initial validity of the WLPQ.

Reliability of the WLPQ

Hypothesis 1a: The internal consistency of the total items of the WLPQ will be sufficiently high to infer homogeneity of the construct of psychological loss in weight-loss attempts.

Hypothesis 1b: The internal consistency of each of the six subscales of the WLPQ will be sufficiently high to infer that each subscale is measuring only one dimension of psychological loss in weight-loss attempts.

Hypothesis 2: The correlations between the total scale and the six subscales of the questionnaire will be sufficiently high to infer that the WLPQ is measuring a unidimensional construct.

Initial Validity of the WLPQ

Hypothesis 3: The content of the items on the WLPQ will be indicative of (the experience of) psychological loss in the context of attempts to lose weight and of weight loss.

Hypothesis 3 is not a testable hypothesis in the statistical sense. Its support is based on high interrater reliability among expert judges rating content as reflective of defined domain.

Hypotheses 4a and 4b were developed to test the primary research question regarding psychological loss in successful and unsuccessful dietary restriction and weight-loss attempts.

Hypothesis 4a: The total scale scores on the WLPQ will be significantly different for individuals in the successful and the unsuccessful diet status categories.

Hypothesis 4b: The subscale scores on the WLPQ will be significantly different for individuals in the successful and the unsuccessful diet status categories.

Preliminary analyses were conducted before testing Hypotheses 4a and 4b to investigate and assess the effect of secondary confounding variables. These variables included weight status variables and life status variables. Weight status variables included age at onset of obesity, percentage overweight, and percentage weight lost. Life status variables included age, sex, marital status, income, education, occupation, and whether the occupation was a helping profession or not. Ethnic group could not be considered because the sample was predominantly Caucasian. Helping professions included nurse, therapist, teacher, childcare/ eldercare worker, and homemaker. The weight status variables were defined in the definition section above.

Design and Data Analysis

The overall design of this study is descriptive. Empirical research relating the concept of psychological loss to noncompliance with dietary restriction and failure to lose weight had not previously been undertaken. Therefore, the purpose of the study was to attempt to identify and measure psychological losses incurred in the process of restricting food intake and losing weight, and to assess the relationship between the losses and failure to comply with dietary restriction; to develop an instrument to measure psychological loss among dieters and individuals attempting to

change their food-intake pattern; and to investigate the initial reliability and validity of this measure.

The WLPQ was developed and empirically tested. Descriptive statistics were calculated to describe both the sample characteristics and the psychometric properties of the WLPQ. One form of reliability, that of internal consistency, was investigated using Cronbach's alpha coefficient. The Pearson product-moment correlation was used to explore interscale relationships. An exploratory factor analysis of responses to the WLPQ was employed to determine whether the items would empirically cluster into the conceptual psychological losses included in the a priori method of scale construction. Methods designed to gain content validity for the WLPQ were also reviewed to evaluate the adequacy of domain sampling.

The second component of the design and data analysis consisted of an initial exploration of the phenomena of psychological loss as that relates to noncompliance with dietary restriction and failure to lose weight. The relationship between psychological loss, as measured by the WLPQ, and success or failure at compliance and weight loss was explored. Analyses were conducted to assess the effect of potentially confounding secondary variables. Statistical procedures used in this investigation included univariate and multivariate analyses of variance (ANOVA and MANOVA) and univariate and multivariate multiple regression procedures.

CHAPTER IV

RESULTS

Chapter IV contains the results of the data analysis based on the procedures described in Chapter III. The chapter includes initial descriptions and considerations of the data, discussion of the hypotheses addressing the reliability and validity of the WLPQ, discussion of the factor analysis, and discussion of the research hypotheses and preliminary analyses.

Initial Descriptions and Considerations

The WLPQ consists of 71 items. Items omitted by respondents were assigned the value of the average for that subscale for that individual. Table 4.1 presents all 71 items and their descriptive statistics.

Each subscale of the WLPQ consists of 10 to 13 items. To prevent subscales with larger numbers of items from having more weight in the total scale than those with fewer items, items for each subscale were averaged for each person. Subscale scores are discussed in terms of these averages. The six averaged subscales for each person were also averaged to achieve the total scale. Total scale scores are discussed in terms of this average so that the subscales and the total scales are within the same numerical

Table 4.1: WLPQ Items and Descriptive Statistics

Item	N	Sub-scale[a]	Mean	SD	Range
1. When I lose weight, I feel like a different person, and that's upsetting to me.	190	I	2.29	1.43	1.0-6.0
2. I worry that if I weighed less, members of the opposite sex would be more interested in me.	192	S	2.81	1.65	1.0-6.0
3. I resent the time it takes to select and prepare the right foods when I am on a diet.	192	FC	3.84	1.50	1.0-6.0
4. People listen more to me when I'm overweight.	190	PI	1.76	0.89	1.0-6.0
5. When people want me to lose weight, I think they don't like the real me.	192	AA	3.21	1.64	1.0-6.0
6. I worry that I will be (am) too much like everyone else when I am normal weight.	191	I	1.84	0.99	1.0-6.0
7. I prefer being overweight so that my significant other doesn't want sex more often.	181	S	1.62	1.07	1.0-6.0
8. I don't like being told what to eat.	191	FC	4.20	1.51	1.0-6.0
9. I won't be (I'm not) myself anymore when I lose weight.	191	I	2.05	1.29	1.0-6.0
10. Sometimes I eat something just to prove I can eat what and when I want.	190	FC	3.80	1.61	1.0-6.0

Table 4.1: Continued

Item	N	Sub-scale[a]	Mean	SD	Range
11. I worry that people (will) ignore me when I lose weight.	191	PI	1.74	0.99	1.0-6.0
12. Eating is an important way I have of comforting myself.	191	CP	4.76	1.38	1.0-6.0
13. When I am normal weight, no one knows and loves the real me.	188	AA	1.88	1.04	1.0-6.0
14. When people lose weight, they change in too many other ways.	191	I	2.71	1.49	1.0-6.0
15. Being overweight saves me from getting too involved or too friendly with others.	191	S	2.53	1.58	1.0-6.0
16. I enjoy the physical sensations I feel when I eat.	192	CP	4.21	1.47	1.0-6.0
17. It bothers me that I don't know how I will act when I am normal weight.	192	I	2.66	1.49	1.0-6.0
18. I worry that I (will) have to be as attractive as other men and women when I'm normal weight.	192	S	2.41	1.43	1.0-6.0
19. I believe that I'm the only person who should decide what I eat.	192	FC	3.92	1.48	1.0-6.0
20. When I'm feeling bad, eating makes the bad feelings disappear.	191	CP	3.74	1.56	1.0-6.0
21. I worry that people I care about will reject me if I lose weight.	192	AA	1.82	1.11	1.0-6.0

Table 4.1: Continued

Item	N	Sub-scale[a]	Mean	SD	Range
22. It bothers me that I don't know how I will feel when I am normal weight.	192	I	2.57	1.50	1.0-6.0
23. When I'm normal weight, I (will) have to worry more about what to wear and how I look.	190	S	2.64	1.52	1.0-6.0
24. It's hard to diet because I can't eat what I want.	190	FC	4.48	1.39	1.0-6.0
25. After I eat, I feel better for awhile.	191	CP	4.24	1.36	1.0-6.0
26. I feel more accepted by significant others when I'm overweight.	190	AA	1.78	0.98	1.0-6.0
27. I feel like I lose myself when I lose weight.	192	I	1.93	1.18	1.0-6.0
28. When I diet or lose weight, I worry that people will expect more of me.	189	S	2.61	1.52	1.0-6.0
29. I feel deprived and/or angry if I can't eat my favorite foods each day.	191	FC	3.50	1.48	1.0-6.0
30. I use my large size to back up my opinions.	191	PI	1.95	1.10	1.0-6.0
31. Significant others feel hurt when I don't eat like they want me to.	189	AA	2.98	1.60	1.0-6.0
32. I believe that I lose an important part of me when I lose weight.	192	I	1.91	1.08	1.0-6.0

Table 4.1: Continued

Item	N	Sub-scale[a]	Mean	SD	Range
33. Normal weight people are expected to work harder and get more done than overweight people.	191	S	2.41	1.46	1.0-6.0
34. I like to eat whenever I want to.	190	FC	4.77	1.01	1.0-6.0
35. Being overweight helps me do things that I'd be afraid to do otherwise.	191	PI	1.75	0.95	1.0-6.0
36. I don't like to have to turn down any food.	190	FC	3.77	1.52	1.0-6.0
37. I eat in order to feel better.	189	CP	3.99	1.46	1.0-6.0
38. Some people like me especially because I'm overweight.	190	AA	2.03	1.11	1.0-5.0
39. I worry that my friends won't (don't) recognize me when I'm normal weight.	192	I	1.89	1.06	1.0-6.0
40. I like that I don't have to compete so much with others when I'm overweight.	191	S	2.30	1.33	1.0-6.0
41. If I want to eat something, I'll eat it--and no one should try to stop me.	190	FC	3.75	1.49	1.0-6.0
42. Nobody pushes me around when I'm overweight.	191	PI	2.10	1.23	1.0-6.0
43. I gain weight when there are problems in my life that bother me.	189	CP	4.47	1.54	1.0-6.0

Table 4.1: Continued

Item	N	Sub-scale[a]	Mean	SD	Range
44. It scares me that I won't (don't) recognize myself when my body changes.	192	I	2.18	1.36	1.0-6.0
45. I like the feeling of protection and security I get from being overweight.	192	S	2.15	1.37	1.0-6.0
46. I have to give up too many important things in order to lose weight.	192	FC	2.88	1.42	1.0-6.0
47. When I'm overweight, I use my size as a weapon.	190	PI	1.92	1.14	1.0-6.0
48. When I can't say what I want to, it helps to eat.	191	CP	3.24	1.70	1.0-6.0
49. If I lose weight, significant others might not (don't) trust me.	188	AA	2.07	1.27	1.0-6.0
50. I get anxious thinking that everything about me changes when my body changes.	191	I	2.42	1.43	1.0-6.0
51. One advantage of being overweight is that I can hide inside my body.	192	S	2.78	1.69	1.0-6.0
52. I feel like I've lost control of my life when I can't eat what I want.	191	FC	2.63	1.40	1.0-6.0
53. I get even with others by being overweight.	189	PI	2.26	1.37	1.0-6.0
54. Eating fills the emptiness in my life.	189	CP	3.68	1.68	1.0-6.0

Table 4.1: Continued

Item	N	Sub-scale[a]	Mean	SD	Range
55. I eat when there are pressures in my life.	187	CP	4.61	1.35	1.0-6.0
56. Significant others won't be (aren't) as close to me if I am normal weight.	187	AA	1.95	1.04	1.0-6.0
57. I feel like I'm in a safe fortress when I'm overweight.	187	S	2.44	1.58	1.0-6.0
58. I feel I'll lose control of myself (emotions) if I can't eat what or when I want.	189	FC	2.68	1.42	1.0-6.0
59. I believe that I can punish someone with my size.	188	PI	2.05	1.30	1.0-6.0
60. I feel loved and cared for when I eat.	185	CP	2.90	1.53	1.0-6.0
61. My significant others don't want me to be normal weight.	184	AA	2.04	1.27	1.0-6.0
62. I have to be overweight in order to be noticed at all.	188	PI	1.61	0.82	1.0-6.0
63. I don't know what to do except eat when things aren't going well.	188	CP	3.22	1.59	1.0-6.0
64. Significant others in my life feel insecure when I lose weight.	187	AA	2.49	1.50	1.0-6.0
65. When I'm dieting, I feel like I've lost one of life's main pleasures.	188	CP	3.71	1.52	1.0-6.0

Table 4.1: Continued

Item	N	Sub-scale[a]	Mean	SD	Range
66. I worry that people I care about will think I'm trying to be better than they are when I lose weight.	189	AA	2.42	1.41	1.0-6.0
67. I miss my favorite foods when I'm dieting.	189	CP	4.61	1.24	1.0-6.0
68. Significant others in my life don't like to interact with me when I'm dieting.	186	AA	2.37	1.24	1.0-6.0
69. When I'm at normal weight, people may take advantage of me.	188	PI	2.00	1.09	1.0-6.0
70. One advantage of being overweight is that I don't have to be sexual with anyone.	186	S	2.12	1.35	1.0-6.0
71. My significant other might leave if I lose weight.	181	AA	1.73	0.98	1.0-6.0

[a]AA = Acceptance/Approval subscale
S = Security subscale
PI = Power/Impact subscale
CP = Comfort/Pleasure subscale
FC = Freedom/Control subscale
I = Identity subscale

range. The means, standard deviations, range, and frequency distribution for the total scale and the subscales are presented in Table 4.2.

Table 4.2: WLPQ Total Scale and Subscales: Descriptive Statistics and Frequency Distribution

	Descriptive Statistics				Frequency Distribution				
	N	Mean	SD	Range	[1,2]	[2,3]	[3,4]	[4,5]	[5,6]
WLPQ	192	2.73	0.73	1.45-4.95	29	103	57	9	0
AA	192	2.21	0.82	1.00-4.92	76	79	30	7	0
S	192	2.41	1.05	1.00-5.50	75	62	39	14	2
PI	192	1.91	0.73	1.00-4.60	106	74	8	4	0
CP	192	3.95	0.99	1.46-6.00	5	31	59	61	36
FC	192	3.68	0.86	1.42-5.83	4	32	80	60	16
I	192	2.23	0.92	1.00-5.10	82	76	24	7	3

Key: AA = Acceptance/Approval subscale
S = Security subscale
PI = Power/Impact subscale
CP = Comfort/Pleasure subscale
FC = Freedom/Control subscale
I = Identity subscale

Reliability

Hypothesis 1a: The internal consistency of the total items of the WLPQ will be sufficiently high to infer homogeneity of the construct of psychological loss in weight-loss attempts.

Estimates of reliability based on the average correlation among items within a test are said to concern the internal consistency. Coefficient alpha is the basic formula for determining the reliability based on internal consistency. It provides a good estimate of reliability in most situations since the major source of

measurement error is because of the sampling of content (Nunnally, 1978). Cronbach's alpha was used to assess the degree of reliability for the WLPQ. Coefficient alpha estimates the proportion of the instrument variance due to all common factors among the items. More specifically, it indicates how much the score depends on general and group, rather than item-specific, factors. The coefficient is determined by computing all the possible means of the split-half coefficients resulting from all possible random pairings (Cronbach, 1951). A value of at least .75 is considered necessary to judge a scale internally consistent and to infer homogeneity of test items. For research purposes an alpha coefficient of .65 is acceptable (Mehrens & Lehmann, 1978). Nunnally (1978) regards an alpha coefficient of .70 as acceptable for early stages of research.

A Cronbach's alpha coefficient of .97 was obtained for the total instrument. This indicates that there is good internal consistency for the total WLPQ.

> Hypothesis 1b: The internal consistency of each of the six subscales of the WLPQ will be sufficiently high to infer that each subscale is measuring only one dimension of psychological loss in weight-loss attempts.

An alpha coefficient was computed for each subscale of the WLPQ. Alpha coefficients ranged from .84 to .91 as follows: .89 for the Acceptance/Approval subscale, .91 for the Security subscale, .86 for the Power/Impact subscale, .89 for the Comfort/Pleasure subscale, .84 for the Freedom/Control subscale, and .90 for the Identity subscale.

These findings demonstrate that there is good internal consistency for each subscale. Findings overall suggest good internal consistency for both the total WLPQ and for the six subscales. Results of the reliability analysis on the WLPQ and the subscales of items are given in Table 4.3.

Table 4.3: Reliability Analysis (Cronbach's Alpha) for WLPQ and Subscales

Scale/Subscale	Cronbach's Alpha
WLPQ	0.965
Acceptance/Approval	0.888
Security	0.913
Power/Impact	0.857
Comfort/Pleasure	0.894
Freedom/Control	0.837
Identity	0.897

Hypothesis 2: The correlations between the total scale and the six subscales of the questionnaire will be sufficiently high to infer that the WLPQ is measuring a unidimensional construct.

The correlations between the WLPQ total scale and the six subscales were determined by computing a Pearson product-moment correlation matrix. The interscale correlations ranged from .44 between the Acceptance/Approval subscale and the Comfort/Pleasure subscale to .83 between the Identity and the Security subscales. The Pearson correlations between the total scale WLPQ and the six subscales ranged from .73 to .89. All interscale correlations were significant at the .0000 or .0001 alpha level. These correlations

between the total scale and the subscales suggest that the WLPQ is measuring a unidimensional construct. Results of the Pearson product-moment correlation are shown in Table 4.4.

Table 4.4: Correlations of WLPQ With Subscales and of Subscales With Each Other*

	WLPQ	AA	S	PI	CP	FC	I
WLPQ	1.000	0.836	0.885	0.858	0.732	0.740	0.871
AA	0.836	1.000	0.750	0.748	0.438	0.451	0.767
S	0.885	0.750	1.000	0.819	0.472	0.468	0.830
PI	0.858	0.748	0.819	1.000	0.964	0.504	0.744
CP	0.732	0.438	0.972	0.464	1.000	0.722	0.457
FC	0.740	0.451	0.468	0.504	0.722	1.000	0.490
I	0.871	0.767	0.830	0.744	0.457	0.490	1.000

Key: AA = Acceptance/Approval subscale
S = Security subscale
PI = Power/Impact subscale
CP = Comfort/Pleasure subscale
FC = Freedom/Control subscale
I = Identity subscale

*All values significantly different from zero at $p = .0001$.

Initial Validity

Assessment of validity is an important component in the development of an instrument designed to measure hypothesized psychological variables. Nunnally (1978) discussed three types of validity: predictive (often referred to as criterion), content, and construct. He described predictive validity in terms of the statistical relationship between the measure and a particular associated variable. Content validity, according to Nunnally, is

the adequate representation by the instrument of a specified universe of content. Construct validity indicates that the instrument is measuring the construct or the quality that it purports to measure. Both content and construct validity were investigated in the development of the WLPQ. Investigation of predictive validity relative to the WLPQ was not undertaken; the purpose of the present research was to develop an instrument that might later be used in predictive studies, and therefore investigations of a predictive nature were seen as premature. Content validity was addressed in the method of test construction. In addition, factor-analysis procedures were employed, which further addressed the question of validity, both content and construct. Finally, results of the hypothesis testing can be seen as beginning the process of accumulating evidence of construct validity for the WLPQ. Discussion of the factor analysis, the research hypothesis, and related analyses occurs below. A discussion of Hypothesis 3 follows immediately.

> Hypothesis 3: The content of the items on the WLPQ will be indicative of (the experience of) psychological loss in the context of attempts to lose weight and of weight loss.

No formal statistical test of the hypothesis was used to infer content validity. Instead, methods outlined by Nunnally (1978) were used to gain content validity. Nunnally noted that content validity is ensured by the plan and the procedures of the initial instrument construction when two major standards are satisfied. There needs to be (a) a representative collection of items and (b) a "sensible" method of test construction.

Instrument-construction procedures were discussed in detail in Chapter III. These procedures make it possible to infer that the WLPQ has sufficient content validity. The content domains were drawn from an extensive review of the literature on noncompliance with dietary restriction and on a review of clinical studies of individuals' responses to dietary restraint and weight loss. Content domains were also based on interviews with dieters. In addition, a team of expert judges in the areas of weight loss adjustment, health psychology and psychological loss, and research design reviewed item construction and content. Finally, a pilot test was conducted and refinements in the instrument were made based on the results.

Circumstantial evidence for content validity also was indicated from the reliability analysis. An instrument with content validity would also be expected to have at least a moderate level of internal consistency (Nunnally, 1978). The internal consistency coefficients for both the total scale and the subscales of the WLPQ met this requirement.

Factor Analysis of the Internal Structure of the WLPQ

According to Nunnally (1978), factor analysis is involved with questions of all three types of validity. In the case of this study, the factor analysis was used to address both content and construct validity.

An exploratory factor analysis of responses to the WLPQ was employed to determine whether items would empirically cluster

together in the six factors as theoretically conceptualized or whether another schema would emerge. All 71 items were included in the factor analysis. A varimax rotation was used to investigate six factors. A factor was retained if at least three items loaded on the factor with a loading equal to or greater than .30 and if items loading in that manner did not have higher loadings on another factor.

Using these criteria, five factors were retained. Of the 71 items, one item did not load significantly on any of the six factors and was dropped. A second item, which loaded significantly only on the two-item sixth factor that was discarded, was also dropped. Thirty-eight items loaded significantly on more than one factor. These items were allocated to a factor based on the strength of the loading relative to a factor and on the subjective assessment of conceptual fit with other items loading significantly on a particular factor. The 69 items and their factor loadings for the five-factor structure are presented in Table 4.5.

Table 4.6 lists the items that appeared to cluster together for each factor. Two of the new factors were composed of items from two of the original subscales; that is, new Factor 5 was composed of items that had all been in the Comfort/Pleasure subscale, and new Factor 4 was composed of items that had all been in the Acceptance/ Approval subscale. The other three new factors contained items from more than one of the original subscales. Nonetheless, the factors were similar in concept to the originally hypothesized groupings.

Table 4.5: Factor Loading for a Five-Factor Solution of WLPQ Items

Item #	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
I6	**.73**	.13	.11	.29	.07
I5	**.70**	.12	.17	.32	.04
S6	**.67**	.02	.21	.26	.06
S4	**.65**	.18	.31	.30	.01
I11	**.60**	.10	.31	.22	.19
I10	**.59**	.21	.44	.10	.12
S10	**.53**	.11	.30	.15	.38
S8	**.53**	.15	.44	.17	-.01
S5	**.53**	.14	.23	.08	.11
S3	**.50**	-.05	.35	.02	.29
S1	**.45**	.14	.18	.15	.08
PI10	**.44**	.11	.29	.21	.13
S11	**.43**	.20	.40	.26	.37
I2	**.42**	.14	.23	.32	-.06
I4	**.42**	.07	.32	.09	.17
AA1	**.40**	.28	.15	.09	.16
PI2	**.38**	.02	.33	.22	-.05
S7	**.36**	.05	.23	.24	.05
AA5	**.32**	.26	.15	.25	.05
I3	**.41**	.18	.41	.07	.16
FC6	.17	**.76**	.16	.15	.00
CP12	.06	**.72**	.18	.03	.07
FC8	.07	**.66**	.11	.01	.19
FC5	.04	**.63**	.03	.06	-.04
CP13	-.03	**.62**	.06	.00	-.01
CP5	.02	**.60**	.14	.03	.41
FC10	.14	**.60**	.28	.13	.14
CP1	.15	**.56**	-.05	.07	.27
FC7	.10	**.56**	.01	-.11	.00
CP4	.04	**.55**	-.05	.12	.21
FC1	.01	**.52**	.07	.12	-.06
CP3	.13	**.48**	.12	.05	.28
CP2	-.01	**.47**	.05	.00	.19
CP10	.29	**.42**	.17	.20	.24
FC2	.14	**.40**	-.03	.16	.16
FC12	.31	**.38**	.33	.18	.16
FC11	.30	**.38**	.29	.28	.15
FC9	.10	**.37**	.13	.01	.10
FC3	.17	**.36**	.04	-.01	.08
I8	.28	.19	**.65**	.27	.19
PI6	.29	.07	**.61**	.17	.12
PI3	.13	.23	**.55**	.28	.08
PI4	.14	.12	**.50**	.19	.11
PI5	.17	.12	**.50**	.15	.02
S12	.38	.00	**.47**	.15	.17

Table 4.5: Continued

Item #	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
I9	.40	.07	**.46**	.31	.14
I1	.35	.24	**.46**	.06	-.02
PI8	.27	.17	**.46**	.12	.12
PI1	.17	.11	**.45**	.11	.02
PI9	.22	.05	**.44**	.44	.18
AA2	.29	.14	**.42**	.19	.21
S2	.24	.12	**.37**	.29	.00
AA9	.12	.10	.14	**.80**	.07
AA10	.29	.04	.22	**.65**	.05
AA13	.12	.00	.19	**.63**	.08
AA8	.37	.12	.43	**.55**	.08
AA12	.28	.14	.23	**.55**	.11
AA7	.35	.08	.27	**.53**	.14
AA11	.44	.02	.14	**.51**	.10
AA6	.24	.12	.36	**.48**	.09
AA3	.39	.06	.35	**.45**	.08
AA4	.23	.07	.47	**.35**	.02
CP8	.19	.36	.17	.18	**.64**
CP9	.09	.41	.04	.06	**.58**
CP7	.18	.36	.18	.12	**.57**
CP11	.14	.50	.23	.08	**.50**
CP6	.15	.35	.08	.14	**.46**

Key: AA = Acceptance/Approval subscale
S = Security subscale
PI = Power/Impact subscale
CP = Comfort/Pleasure subscale
FC = Freedom/Control subscale
I = Identity subscale

Note 1. Two items were omitted: FC4 and PI7.

Note 2. Percentage variance for Factor 1 = 19.00, Factor 2 = 14.31, Factor 3 = 15.29, Factor 4 = 12.17, Factor 5 (comprising Factors 5 and 6 of rotation) = 13.18 (6.97 + 6.21).

Table 4.6: WLPQ Items in a Five-Factor Varimax Rotation Solution

Item #	Item
	Factor 1: Security--The Protected I (S-I)
I6	It bothers me that I don't know how I will feel when I am normal weight.
I5	It bothers me that I don't know how I will act when I am normal weight.
S6	When I diet or lose weight, I worry that people will expect more of me.
S4	I worry that I (will) have to be as attractive as other men and women when I'm normal weight.
I11	I get anxious thinking that everything about me changes when my body changes.
I10	It scares me that I won't (don't) recognize myself when my body changes.
S8	I like that I don't have to compete so much with others when I'm overweight.
S5	When I'm normal weight, I (will) have to worry more about what to wear and how I look.
S3	Being overweight saves me from getting too involved and friendly with others.
S1	I worry that if I weighed less, members of the opposite sex would be more interested in me.
PI10	When I'm normal weight, people may take advantage of me.
I2	I worry that I will be (am) too much like everyone else when I am normal weight.
I4	When people lose weight, they change in too many other ways.
AA1	When people want me to lose weight, I think they don't like the real me.

Table 4.6: Continued

Item #	Item
PI2	I worry that people (will) ignore me when I lose weight.
S7	Normal weight people are expected to work harder and get more done than overweight people.
AA5	Significant others feel hurt when I don't eat like they want me to.
I3	I won't be (I'm not) myself anymore when I lose weight.
S9	I like the feeling of protection and security I get from being overweight.
S10	One advantage of being overweight is that I can hide inside my body.
S11	I feel like I'm in a safe fortress when I'm overweight.
	Factor 2: Entitled, Instant Gratification (FC-CP)
FC6	I feel deprived/angry if I can't eat my favorite foods each day.
CP12	When I'm dieting I feel like I've lost one of life's main pleasures.
FC8	I don't like to have to turn down food.
FC5	It's hard to diet because I can't eat what I want.
CP13	I miss my favorite foods when I'm dieting.
CP5	I eat in order to feel better.
FC10	I have to give up too many important things in order to lose weight.
CP1	Eating is an important way I have of comforting myself.
FC7	I like to eat whenever I want to.

Table 4.6: Continued

Item #	Item
CP4	After I eat, I feel better for awhile.
FC1	I resent the time it takes to select and prepare the right foods when I'm on a diet.
CP3	When I'm feeling bad, eating makes the bad feelings disappear.
CP2	I enjoy the physical sensations I feel when I eat.
CP10	I feel loved and cared for when I eat.
FC2	I don't like being told what to eat.
FC12	I feel I'll lose control of myself (emotions) if I can't eat what or when I want.
FC11	I feel like I've lost control of my life when I can't eat what I want.
FC9	If I want to eat something, I'll eat it--and no one should try to stop me.
FC3	Sometimes I eat something just to prove I can eat what and when I want.
	Factor 3: Power/Impact--The Assertive I (PI-I)
I8	I believe that I lose an important part of me when I lose weight.
PI6	When I'm overweight, I use my size as a weapon.
I7	I feel like I lose myself when I lose weight.
PI3	I use my large size to back up my opinions.
PI4	Being overweight helps me do things that I'm afraid to do otherwise.
PI5	Nobody pushes me around when I'm overweight.

Table 4.6: Continued

Item #	Item
PI9	I have to be overweight in order to be noticed at all.
S12	One advantage of being overweight is that I don't have to be sexual with anyone.
S2	I prefer being overweight so that my significant other doesn't want sex more often.
I9	I worry that my friends won't (don't) recognize me when I'm normal weight.
I1	When I lose weight, I feel like a different person, and that's upsetting to me.
PI1	People listen more to me when I'm overweight.
AA2	When I am normal weight, no one knows and loves the real me.
PI8	I believe that I can punish someone with my size.
	Factor 4: Acceptance/Approval (AA)
AA9	My significant others don't want me to be normal weight.
AA10	Significant others in my life feel insecure when I lose weight.
AA13	My significant other might leave if I lose weight.
AA8	Significant others won't be (aren't) as close to me if I'm normal weight.
AA12	Significant others in my life don't like to interact with me when I'm dieting.
AA7	If I lose weight, significant others might not trust me.
AA11	I worry that people I care about will think I'm trying to be better than they are when I lose weight.

Table 4.6: Continued

Item #	Item
AA6	Some people like me especially because I'm overweight.
AA3	I worry that people I care about will reject me if I lose weight.
AA4	I feel more accepted by significant others when I'm overweight.
	Factor 5: Comfort for Emotional Distress (CP)
CP8	Eating fills the emptiness in my life.
CP9	I eat when there are pressures in my life.
CP7	When I can't say what I want to, it helps to eat.
CP11	I don't know what to do except eat when things aren't going well in my life.
CP6	I gain weight when there are problems in my life that bother me.

Key: AA = Acceptance/Approval subscale
S = Security subscale
PI = Power/Impact subscale
CP = Comfort/Pleasure subscale
FC = Freedom/Control subscale
I = Identity subscale

New Factor 1 includes 21 items, predominantly from the original Security and Identity subscales. An investigation of their content suggests that all cluster around the demand for and the fear of change and the unfamiliar, with body size (Identity) providing a protection and a way to hide from these demanding and feared changes. In concept, this is similar to the Security subscale.

New Factor 2 comprises 19 items. Eight of the items are from the original Comfort/Pleasure subscale, and 11 of the items are from the original Freedom/Control subscale. An investigation of the content of these items suggests eating to be an impulsive, hedonistic behavior in the service of generalized comfort and pleasure (emphasis on pleasure), which is deemed to be an individual right not to be interfered with.

New Factor 3 comprises 14 items, 7 of which are from the original Power/Impact subscale, with the remaining 7 items from other subscales. Their combined content, however, suggests the overall concept of power relative to large body size. As such, this new factor tends to affirm the meaning of the original Power/Impact subscale.

New Factor 4 comprises 10 items, all of which are from the original Approval/Acceptance subscale. An investigation of the content of these 10 items suggests a very strong other-orientation in terms of fears of rejection based on weight loss. This duplicates the meaning of the Approval/Acceptance subscale.

Finally, new Factor 5 comprises five factors, all from the original Comfort/Pleasure subscale. The content of these items

suggests eating to be a source of emotional comfort, but somewhat more specifically than that, an emotional comfort derived from eating used as an indirect way to solve problems that are emotionally distressing.

The new five-factor solution accounted for a substantial amount of the total variance. Factor 1 accounted for 19.00% of the variance, Factor 2 for 14.31%, Factor 3 for 15.29%, Factor 4 for 12.17%, and Factor 5, composed in the schema here described of both new Factors 5 and 6, for 13.18% (6.97% + 6.21%). New Factor 6 contained only two items and therefore had been dropped as a factor. One item was allocated by content fit to new Factor 5 and the other was dropped, as discussed above. In all, the new factor solution accounted for 73.95% of the variance.

Preliminary Analyses and the Research Hypotheses

Hypotheses 4a and 4b are concerned with the effect of the diet status variable on the experience of psychological loss in weight-loss attempts as measured by the total and the subscale scores of the WLPQ. These hypotheses address the major research concern of the study--whether issues of psychological loss are associated with failure to comply with dietary restriction or change, and with the related failure to lose weight.

Before testing the hypotheses on the effect of diet status on the total scale and subscale scores, a series of preliminary analyses of the secondary variables and of the independent variable of interest, diet status, was undertaken. The purpose of these

analyses was to better understand the effect of potentially confounding independent variables on the total and subscale scores. This series of analyses included (a) investigation of the effects on the total scale and subscale scores of each independent variable considered separately, (b) investigation of the main effects of each variable while controlling for the other variables, and finally (c) investigation of both the main effects and first-order interaction effects on the scores while controlling for each of the other variables. One-way ANOVAs and MANOVAs, and univariate and multivariate multiple regressions, were used for these analyses. Statistical tests for all preliminary analyses and for the final analyses were conducted at the .05 alpha level.

Secondary variables investigated included (a) the life status variables of sex, age, marital status, education, occupation, helping versus nonhelping profession, and income; and (b) the weight status variables of age at onset, percentage overweight, and percentage of weight lost. Review of the obesity and weight-loss literature had suggested that the incidence of obesity and the success or failure at weight-loss attempts might be affected by these variables.

The four-category diet status variable was condensed into a two-category variable. These two categories were (a) successful and (b) unsuccessful. The new successful category comprised the original currently successful category and the maintainer category. The new unsuccessful category comprised the original currently

unsuccessful category and the relapser category. When the four categories were condensed, the two groups were of almost equal ns (n = 97 for the successful category and n = 95 for the unsuccessful category).

Two considerations, one statistical and one nonstatistical, suggested taking this action. The original four categories were characterized by unequal ns. The new categories, with nearly equal ns, would have more equal variance. The condensation was logical by content as well. Individuals who had relapsed from a previous weight loss and those who were unable to comply with dietary restrictions currently could both be categorized as unsuccessful. Similarly, those individuals who had maintained a previous weight loss and those who were currently complying with dietary restrictions and losing weight could both be categorized as successful.

The first set of investigations in this series of preliminary analyses involved determining the effects of each separate independent variable on the total scale and subscale scores. One-way ANOVAs, one-way MANOVAs, regressions, and multivariate regressions were computed for the diet status, life status, and weight status variables. Only the diet status variable had a significant effect on the total scale scores. Diet status, age, education, and income showed a significant effect on the overall joint distribution of the subscale scores. Table 4.7 shows the results of these tests conducted on the total scale and subscale scores for each of the variables considered separately.

Table 4.7: Results of ANOVAs, MANOVAs, Regressions, and Multivariate Regressions of Diet Status, Life Status, and Weight Status Variables on Total Scale (Univariate Tests) and Subscales (Multivariate Tests)

Variable	Total Scale (ANOVAs and Regressions)					Subscales (Wilks) (MANOVAs and Multivariate Regressions)		
	N	R^2	F	df	p	F	df	p
Diet status	192	.03	5.00	1,190	.027	2.24	6,185	.042
Age at onset	175	.05	2.05	4,170	.090	1.29	24,577	.159
% overweight	191	.01	2.05	1,189	.154	.93	6,184	.473
% of weight lost	191	.00	.61	1,189	.434	1.43	6,184	.206
Sex	192	.00	.70	1,190	.403	.65	6,185	.680
Age	192	.01	2.86	1,190	.093	3.21	6,185	.005
Education	183	.00	.03	1,181	.868	4.06	6,176	.008
Income	164	.00	.82	1,163	.367	2.21	6,157	.045
Marital status	190	.02	1.44	2,187	.240	1.20	12,364	.284
Helping profes.	183	.00	.08	1,181	.775	.36	6,176	.906
Occupation	183	.03	1.78	3,179	.152	1.16	18,493	.288

Second, univariate and multivariate multiple regressions were conducted to examine for the possible combined effects of the diet status, life status, and weight status variables on the total scale and subscale scores. Main effects only were considered in this model. In this analysis, the effect of each variable was determined while controlling for each of the other variables in the model. The variables of diet status and education were significant within the model investigating effects on the total scale scores. Diet status and income were significant within the model investigating effects on the subscale scores. Results of this analysis are given in Table 4.8.

Table 4.8: Main Effects Model: Univariate and Multivariate Multiple Regressions

Variable	Total Scale--WLPQ[a]			Subscales (Wilks)		
	F	df	p	F	df	p
Diet status	4.40	1	.038	2.33	6,120	.037
Age	.49	1	.486	.92	6,120	.485
Sex	.34	1	.560	.43	6,120	.856
Education	4.23	1	.042	1.97	6,120	.075
Income	.01	1	.940	3.23	6,120	.006
Occupation	2.10	3	.104	1.14	18,340	.308
Helping profes.	2.52	1	.115	.67	6,120	.677
Marital status	.69	2	.504	1.02	12,240	.433
Age at onset	.68	4	.606	.76	24,420	.785
% overweight	1.07	1	.303	.81	6,120	.562
% of weight lost	1.16	1	.283	1.30	6,120	.263

[a]Overall: $N = 143$, $F = 1.37$, $df = 17,127$, $R^2 = .157$, $p = .163$.

The third preliminary analysis evaluated both main and interaction effects of the diet status, life status, and weight status variables on the total and subscale scores. As in the preceding analysis, each effect given reflected the effect of that variable while controlling for the effect of all other variables. To select the terms for this model, univariate and multivariate multiple regressions were computed on the total scale and subscales with all possible main effects and all first-order interaction effects. Any variable that appeared significant to the .10 level on any of these regressions was retained and put in the model. Results of the third preliminary analysis showed that age was significant within the model investigating effects on the total scale. Education and the interaction of age and education were nearly

significant within this same model. Age, education, and the interaction of age and education were significant within the model investigating effects on the subscales. Significant interaction effects were not put into the final model unless the separate terms had shown significance. Table 4.9 gives the results of this analysis.

Terms found to be significant in the three preliminary analyses as described above were included in the final model to be tested by Hypotheses 4a and 4b. Terms included in the testing of Hypotheses 4a and 4b were (a) diet status, (b) age, (c) education, and (d) age x education. Income was eliminated from the final model when a first testing of the hypothesis determined that it was not significant in either the multivariate or univariate analyses of the subscale scores. It had never shown significance in the analyses of the total scale.

> Hypothesis 4a: The total scale scores on the WLPQ will be significantly different for individuals in the successful and the unsuccessful diet status categories.

To test this hypothesis, a univariate multiple regression was performed on the total scale scores. Terms included in the regression model were diet status, age, education, and age x education. The regression procedure resulted in $F = 2.50$ with $p = .045$. Controlling for the effects of age, education, and age x education, the test for diet status resulted in an $F = 6.24$ with $p = .013$. Results are shown in Table 4.10. Means and standard deviations of the total scale and subscale scores for the diet status variable categories are given in Table 4.11. The mean total

Table 4.9: Main and Interaction Effects Model: Univariate and Multivariate Multiple Regressions

Variable	Total Scale[a]			Subscales		
	df	F	p	df	F	p
Diet status	1	0.00	.962	6,75	1.00	.431
Age	1	4.00	.049	6,75	2.89	.014
Sex	1	1.54	.218	6,75	0.90	.503
Education	1	3.53	.064	6,75	2.92	.013
Income	1	0.20	.655	6,75	0.49	.811
Occupation	3	0.11	.955	18,213	0.95	.519
Helping profession	1	0.17	.679	6,75	0.50	.807
Marital status	2	1.43	.244	12,150	0.56	.871
Age at onset	4	1.18	.327	24,263	1.10	.341
% overweight	1	0.03	.871	6,75	0.36	.903
% lost	1	2.13	.148	6,75	1.09	.374
% lost x sex	1	3.95	.050	6,75	1.27	.282
Education x helping prof.	1	0.06	.803	6,75	0.43	.858
Helping prof. x marital	2	0.81	.447	12,150	0.71	.744
% lost x marital status	2	3.69	.029	12,150	1.10	.363
Diet cat. x helping prof.	1	0.01	.917	6,75	0.95	.464
Age x income	1	0.05	.832	6,75	0.49	.816
Education x diet category	1	0.76	.385	6,75	0.77	.595
Sex x age at onset	3	0.45	.719	18,213	1.11	.343
% lost x age at onset	3	1.07	.365	18,213	1.66	.048
Age x diet category	1	0.81	.370	6,75	0.91	.496
Income x diet category	1	0.04	.835	6,75	0.73	.624
Diet category x marital	1	0.09	.910	12,150	0.91	.540
Age x education	1	3.87	.053	6,75	3.21	.007
Helping prof. x age at onset	3	1.33	.269	18,213	0.64	.862
Age x % lost	1	1.52	.221	6,75	1.34	.252
Age x % overweight	1	0.02	.895	6,75	0.15	.988
Income x % overweight	1	0.00	.951	6,75	1.40	.226
Diet category x sex	1	0.00	.956	6,75	0.08	.998
Sex x helping prof.	1	0.02	.902	6,75	0.71	.641
Income x marital status	3	1.02	.389	18,213	0.80	.698
Diet cat. x occupation	3	1.17	.326	18,213	0.98	.479
Income x occupation	3	0.50	.683	18,213	1.17	.292
Marital status x occupation	5	0.88	.501	30,302	0.89	.632

Note. Interaction terms were not included in final model unless main effects in that term were significant.

[a]Overall: $N = 143$, $F = 1.24$, $df = 62,87$, $R^2 = .49$, $p = .178$.

Table 4.10: Final Model: Univariate and Multivariate Multiple Regressions (Hypotheses 4a and 4b)

Variable	Total Scale[a]			Subscales		
	df	F	p	df	F	p
Diet status	1	6.24	.013*	6,173	2.68	.017*
Age	1	0.23	.631	6,173	2.15	.050
Education	1	0.81	.370	6,173	2.03	.064
Age x education	1	0.82	.367	6,173	1.98	.070

*Significant effect.

[a]Overall: $N = 183$, $R^2 = .05$, $F = 2.50$, $df = 4,178$, $p = .045$.

Table 4.11: Means of WLPQ and Subscales for Diet Status Variable Categories

	Diet Status Category 1: Successful		Diet Status Category 2: Unsuccessful	
	Mean	SD	Mean	SD
Total scale WLPQ	2.62	0.73	2.85	0.73
Subscales				
Acceptance/Approval	2.09	0.80	2.34	0.83
Security	2.35	1.03	2.46	1.07
Power/Impact	1.82	0.70	2.01	0.75
Comfort/Pleasure	3.76	1.00	4.15	0.94
Freedom/Control	3.55	0.85	3.82	0.86
Identity	2.13	0.93	2.32	0.91

scale score for the diet status variable successful category was 2.62 with a standard deviation of .73. The mean total score for the unsuccessful category was 2.85 with a standard deviation of .73.

Hypothesis 4a is supported by these results.

Means and standard deviations of the total scale scores for the secondary variables considered categorically are presented in Table 4.12. These are presented merely as a point of interest. These variables were treated as continuous variables, where possible, in the analyses.

Table 4.12: WLPQ Total Scale: Means and Standard Deviations of Total Scores for Secondary Independent Variables

Variable	Mean	SD
Sex		
Female	2.75	.75
Male	2.61	.62
Age		
<18	3.11	0 (n = 1)
19-29	2.70	.79
30-44	2.83	.75
45-59	2.64	.69
60+	2.40	.70
Marital Status		
Single	2.89	.82
Married or living together	2.69	.70
Separated/divorced/widowed	2.65	.75
Education		
<12	2.70	.74
12 or GED	2.73	.71
>12	2.78	.85
16 or B.A.	2.72	.53
> 16 or graduate degree	2.73	.72

Table 4.12: Continued.

Variable	Mean	SD
Occupation		
Professional	2.86	.73
Clerical, trade, domestic, homemaker	2.70	.83
Student, retired, unemployed	2.44	.71
Helping Profession		
Yes	2.76	.75
No	2.73	.74
Age at Onset		
0-12	2.90	.73
13-19	2.72	.65
20-29	2.65	.76
30-55	2.43	.76
56+	2.76	.70
% Overweight		
Underweight or normal weight	2.34	.53
0-20%	2.65	.65
21-30%	2.68	.75
31-50%	3.05	.80
51-75%	2.81	.65
76-100%	2.85	.78
101% +	2.55	1.00
% of Weight Lost		
0%	3.19	1.00
0-20%	2.61	.70
21-30%	2.74	.72
31-50%	2.87	.67
51-75%	3.07	.65

Hypothesis 4b: The subscale scores on the WLPQ will be significantly different for individuals in the successful and the unsuccessful diet status categories.

To test this hypothesis, a multivariate multiple regression was computed on the subscale scores. Terms included in the regression model were diet status, age, education, and age x education. An

inspection of the multivariate test criterion indicated that of the four variables considered in the model, only diet status had a significant effect on the joint distribution of all the subscales, although age and education were nearly significant. The test for diet status resulted in an $F = 2.68$ with $p = .017$. Results are given in Table 4.10. Univariate tests (one-way ANOVAs) computed on each of the subscales indicated that three subscales were significant: the Freedom/Comfort subscale ($F = 3.21$ with $p = .014$), the Comfort/Pleasure subscale ($F = 3.96$ with $p = .004$), and the Approval/Acceptance subscale ($F = 3.59$ with $p = .008$). Diet status, while controlling for the effects of the other variables within the model, was significant at $p = .008$ within the Freedom/Comfort subscale, $p = .001$ within the Comfort/Pleasure subscale, and $p = .016$ within the Approval/Acceptance subscale. Results of the regression procedures are shown in Table 4.13. Means and standard deviations for the successful and unsuccessful diet status categories for each of the subscales are shown in Table 4.11 with the means of the total scale scores for diet status categories.

Hypothesis 4b is supported by the results.

The implications of all the above findings are discussed in the following chapter.

Table 4.13: Univariate Tests of Significant Subscales: ANOVA and Univariate Multiple Regressions

Variable	FC Subscale[a]			CP Subscale[b]			AA Subscale[c]		
	df	F	p	df	F	p	df	F	p
Diet status	1	7.26	.008	1	10.70	.001	1	5.89	.016
Education	1	0.50	.479	1	5.61	.019	1	0.39	.532
Age	1	0.01	.935	1	3.65	.058	1	0.28	.596
Education x age	1	0.16	.692	1	3.90	.050	1	1.05	.306

[a]Overall: $N = 183$, $R^2 = .07$, $F = 3.21$, $df = 4,178$, $p = .014$.

[b]Overall: $N = 183$, $R^2 = .08$, $F = 3.96$, $df = 4,178$, $p = .004$.

[c]Overall: $N = 183$, $R^2 = .07$, $F = 3.59$, $df = 4,178$, $p = .008$.

CHAPTER V

SUMMARY AND DISCUSSION

Chapter V contains a brief summary of the study, a discussion of the findings, the study's limitations, and implications for further research.

Summary

Obesity is a condition associated with numerous serious health risks and with negative psychological and social consequences. It is a prevalent and an often intractable condition. The knowledge that reduced food intake is necessary for weight reduction makes dieting a frequent and an early recommendation in medical care and a logical and frequent response by individuals needing to lose weight or to maintain a weight loss. However, the rates of noncompliance with dietary restriction are high. Many individuals drop out of weight-loss programs. Of those who remain in such programs, the amount of weight lost is often insignificant, and/or the weight lost is regained within a short period of time. Although abundant research has been conducted on the causes and treatment of obesity, very little research has addressed what makes dietary restriction such a difficult undertaking for most individuals, and one that so frequently results in failure.

The general purpose of this study was to investigate factors associated with the difficulty inherent in restricting food intake and with the failure to comply with dietary restriction. More specifically, the purpose was to identify and measure psychological losses incurred in the process of restricting food intake and losing weight, and to assess the relationship between the losses and failure to comply with dietary restriction. Because there had been no systematic empirical study of the variables of psychological loss associated with dietary management, the purpose of the study also included developing a reliable and valid instrument that could identify and measure the loss variables associated with attempts to restrict food intake and lose weight.

The theoretical framework for this study was provided by food-intake, noncompliance, and psychological-loss theories. Eating and body weight are complex phenomena influenced by psychological as well as by physiological factors. Noncompliance with a recommendation can occur even when motivation is high if the costs of compliance are also high. Compliance with dietary restriction necessitates making a change in what for many individuals is a psychologically purposive and goal-oriented behavior and condition. Change involves loss, and both are commonly resisted. Losses unidentified and unresolved can result in failure to change. The combination of these conceptualizations led to the present study as described above.

To meet the two-fold purpose of the study, a self-report inventory, the Weight Loss Problems Questionnaire, was developed.

Reliability and validity information was obtained for the instrument. An exploratory factor analysis was conducted. In addition, the instrument was used to identify and measure psychological losses associated with attempts at dietary restriction and weight loss and to investigate and assess the relationship between psychological losses and noncompliance and failure to lose weight.

The WLPQ is a 71-item self-report inventory. An initial review of the literature on noncompliance with dietary restriction and on studies evaluating the effects on individuals of dietary restrictions had suggested that psychological losses were involved with attempts to diet and to lose weight. Interviews conducted with individuals attempting to restrict or change their food-intake pattern confirmed that loss experiences were a part of those attempts. Based on the review of literature and on the interviews, loss categories were identified and defined. These loss categories included (a) Loss of Approval and Acceptance--the loss of approval, affection, or acceptance by significant others or one's self; loss of relationships, or some aspects of relationships with significant others; (b) Loss of Security--the loss of protection from demands for competency, competition, sexuality, intimacy, loss of protection from achievement expectations, loss of safe harbor; (c) Loss of Power and Impact--the loss of ability to assert or intimidate, loss of status; (d) Loss of Comfort and Pleasure--the loss of a satisfying response to emotional distress, loss of physical

enjoyment; (e) Loss of Freedom and Control--the loss of ability to govern aspects of one's life, loss of self-jurisdiction; and (f) Loss of Identity--the loss of an established sense of self, loss of a familiar self-image. The six subscales of the WLPQ represent the six identified loss categories.

Items were generated for each of the subscales, based on the review of the literature, on the interviews, and on clinical experience. In addition, expert judges were asked to evaluate the items. Only those items accepted by all three judges as reflective of the loss specified were retained in the inventory. A pilot test was conducted and adjustments were made based on its findings.

Following the development of the WLPQ, 410 inventories were provided by the researcher, or by a group leader who had discussed the study with the researcher, to individuals who were attempting to restrict their food intake in order to lose weight or change food-intake patterns, and who were participating in weight-loss programs or support groups. One hundred ninety-eight of these were returned to the researcher, and 192 could be used to gather information about the respondents' psychological loss experiences relative to their attempts. Respondents also filled out a personal data sheet, which provided demographic information and additional information about their degree of overweight, the amount of weight they had lost, and their age at onset of their overweight condition.

Four hypotheses were developed and tested to explore the psychometric properties of the WLPQ and its relationships to other

relevant variables. The results of the reliability and validity analyses were as follows:

1. The WLPQ was determined to be internally consistent, with a coefficient alpha of .97.

2. The alpha coefficients for the six subscales ranged from .84 to .91, demonstrating high internal consistency for the subscales.

3. Significant correlations between each of the subscales and the total scale were obtained. Correlations ranged from .73 to .89, indicating that the WLPQ was measuring a unidimensional construct.

4. Content validity of the WLPQ was inferred from the method of instrument construction, which included a representative group of items and feedback from both experts and respondents.

5. Results of an exploratory factor analysis tended to confirm the hypothesized loss categories represented by the six subscales, providing measures of both content and construct validity and suggesting that the subscales represented separate aspects of the construct.

Results of the analyses exploring the relationships between loss scores and selected variables were as follows:

6. A significant relationship was observed between total scale scores on the WLPQ and the Diet Status variable. Loss scores were significantly higher for individuals in the unsuccessful category of the diet status variable versus those who were in the successful category of the diet status variable.

7. A significant relationship was observed between the overall joint distribution of the subscale scores of the WLPQ and the diet status variable. Loss scores were significantly higher for individuals in the unsuccessful category of the diet status variable versus those who were in the successful category of the diet status variable.

8. Scores were significantly higher on the Approval/Acceptance, Freedom/Control, and Comfort/Pleasure subscales for individuals in the unsuccessful than for those in the successful category of the diet status variable.

9. Score differences, in some cases, while statistically significant, were not conclusively meaningful. The means of the total scale scores for both diet status categories were below the number 3, indicating that respondents were "Slightly Disagreeing" that the losses reflected by the items were true of their experience. The mean for the Loss of Approval and Acceptance subscale for both groups was also below the number 3, indicating that respondents were "Slightly Disagreeing" that the losses reflected by items in that subscale were true of their experience. Score means for both categories of the diet status variable on the Comfort/Pleasure and Freedom/Control subscales were indicative of "Slightly Agreeing" that the loss experience reflected by the items was true of their experience. These findings will be addressed in discussion of Hypotheses 4a and 4b later in the chapter.

10. Education had a significant effect on the scores of the Comfort/Pleasure subscale. This effect, however, did not override the significance of the diet status effect.

Discussion of Results

This initial study of psychological loss and noncompliance with dietary restriction and failure to lose weight addressed two major research questions: (a) Can a reliable and valid measure be developed that identifies and measures psychological losses in the context of attempts at dietary restriction and weight loss? and (b) Are issues of psychological loss associated with failure to comply with dietary restriction, and with the related failure to lose weight?

The results of the present study supported a positive response to the first question and a cautious positive response to the second question. First, the WLPQ proved to be highly reliable, and it appeared to measure a unidimensional construct comprising several types of psychological loss within the context of attempts at dietary restriction. Second, issues of psychological loss were found to be significantly associated with failure to comply with dietary restriction and with the related failure to lose weight. Some ambiguity existed as to whether differences were meaningful as well as statistically significant for some differences observed.

Reliability of the WLPQ

In Hypotheses 1a and 1b, one type of reliability, that of internal consistency, was investigated for the WLPQ and the subscales.

> Hypothesis 1a: The internal consistency of the total items of the WLPQ will be sufficiently high to infer homogeneity of the construct of psychological loss in weight-loss attempts.
>
> Hypothesis 1b: The internal consistency of each of the six subscales of the WLPQ will be sufficiently high to infer that each subscale is measuring only one dimension of psychological loss in weight-loss attempts.

A coefficient alpha of .97 was obtained for the total scale WLPQ, and coefficients for the subscales ranged from .84 to .91. These results suggest that the instrument and subscales were minimally affected by random measurement error. Random measurement error includes errors due to the sampling of items and those due to chance situational factors (Nunnally, 1978). It therefore appears that the domain sampling and other test construction and administration methods used in this study were adequate.

According to Cronbach (1951), the coefficient alpha is also an index of homogeneity. The alpha level of .97 for the WLPQ indicates a high degree of item consistency, suggesting that the WLPQ is measuring a unidimensional construct. Correlations between the total scale and each of the subscales were high, also suggesting that the WLPQ is measuring a unidimensional construct.

A Pearson product-moment correlation matrix was computed to determine the degree of correlation between the total scale and each of the subscales, and between the subscales themselves.

Hypothesis 2: The correlations between the total scale and the six subscales of the questionnaire will be sufficiently high to infer that the WLPQ is measuring a unidimensional construct.

Correlations between the total scale and each of the subscales were significant, ranging from .73 between the Comfort/Pleasure subscale and the total scale to .89 between the Security subscale and the total scale WLPQ. These correlations are sufficiently high to infer that the WLPQ is measuring a unidimensional construct.

The correlations between the six subscales were all significant. The correlation between the Freedom/Control and Comfort/Pleasure subscales was .72. These subscales were less highly correlated with each of the other subscales, with correlations ranging between .44 and .50. These two subscales may together be measuring a single loss, and one that is more clearly differentiated from the other subscales. Correlations between the other subscales ranged from .74 to .83. In fact, the combination of the Freedom/Control and Comfort/Pleasure subscales emerged in the factor analysis as one factor, as described in Chapter IV. The Pearson correlation between these two subscales corroborates the factor analysis information.

Because there does not appear to be other empirical research identifying and measuring losses associated with dietary restriction or with other similar undertakings, such as abstinence from alcohol, it is not possible to relate these findings to those of similar studies. It must suffice to say that the reliability of this instrument is supported by the obtained results. Further research

with other samples and/or refinements of this instrument in the future could provide additional sources of comparison for this present instrument and administration.

Initial Validity of the WLPQ

Hypothesis 3: The content of the items on the WLPQ will be indicative of (the experience of) psychological loss in the context of attempts to lose weight and of weight loss.

The methods followed to ensure content validity as prescribed by Nunnally (1978) were described in Chapter III. It seems reasonable to infer that the WLPQ demonstrates adequate content validity based on the fact that the content domains were drawn from an extensive review of the literature of noncompliance with dietary restriction and of reactions to dietary restriction, from interviews with individuals who were attempting to restrict or change food intake, and from clinical experience. In addition, expert judges evaluated the items for inclusion, and a pilot test was used to make further refinements.

Factor analysis. With some qualifications and explanations, the factor analysis tended to support the six losses originally conceptualized for the WLPQ. The same loss concepts were upheld in a slightly rearranged format and with some subtle changes in meanings.

Two factors entirely comprised items from two subscales; that is, new Factor 5 had items from only the Comfort/Pleasure subscale, and new Factor 4 had items from only the Acceptance/Approval subscale. Other factors comprised items from more than one

subscale. The six new factors were reduced to five on the basis of factor loadings and conceptual fit with other items. However, the new five-factor solution was similar in concept to the originally hypothesized groupings. The six hypothesized losses, each of which was represented separately by a subscale in the WLPQ, continued to be represented in the new five-factor solution.

Factor 1 comprised items from the Security and Identity subscales. The meaning of protection from demands for change and competency was combined with the idea of body size (Identity) providing a protection and a way to hide from these demanding and feared changes. Factor 2 comprised items from the Freedom/Control and Comfort/Pleasure subscales. This new cluster combined the idea of eating as a form of instant need gratification, or as a hedonistic, impulsive behavior in the service of comfort and pleasure, with the belief that eating is an individual right not to be interfered with by outside forces. Factor 3 predominantly comprised items from the Power/Impact subscale combined with items from other subscales. The original meaning of the Power/Impact subscale is reflected in this factor, suggesting power relative to large body size (Identity). Factor 4 comprised 10 items, all of which were from the Approval/Acceptance subscale. Factor 5 comprised five items, all of which were from the Comfort/Pleasure subscale. This factor is differentiated from new Factor 2 in that it does not incorporate the hedonistic right to pleasure but rather suggests that eating provides a substitute comfort when problems or negative affects cannot be or are not solved or resolved in a direct

manner. Eating is a comforting, albeit a substitute, response. As noted above, Identity was incorporated into the "Protected I," who seeks security, and into the "Assertive I," who wields power and who can assert.

Almost 74% (73.95%) of the variance of the WLPQ was explained by the new factor solution. This high amount of variance explained suggests that the WLPQ items reflecting those meanings and dimensions of loss were able to capture the concept intended, lending support to both the content and the construct validity of the WLPQ. The high reliability of both the total scale WLPQ and the subscales, and the variance explained by the factor analysis, are complementary. In addition, the factor analysis confirmed that various aspects of loss can be differentiated from one another.

Amounts of variance explained by each factor differed, but no single factor accounted for the majority of the variance explained. Amount of variance accounted for by factors was as follows: Factor 1, 19.00%; Factor 2, 14.31%; Factor 3, 15.29%; Factor 4, 12.17%; Factor 5, 6.97%; and Factor 6 (items of which were allocated to other factors), 6.21%. This spread of the variance explained suggests that each factor was tapping into a different aspect of the construct investigated. Thirty-eight items shared significant loadings, although in most cases the loading values were not close in numerical value. This fact, taken in combination with the amount of variance explained by each factor, suggests that the factors were measuring different aspects of the same construct.

Psychological Loss in Successful and Unsuccessful Attempts at Dietary Restriction and Weight Loss

The second purpose of the present study was to conduct an initial investigation into whether psychological losses were associated with unsuccessful attempts at dietary restriction and weight loss, and to gather information about the types and intensity of the losses involved. Hypotheses 4a and 4b address these issues.

> Hypothesis 4a: The total scale scores on the WLPQ will be significantly different for individuals in the successful and the unsuccessful diet status categories.
>
> Hypothesis 4b: The subscale scores on the WLPQ will be significantly different for individuals in the successful and the unsuccessful diet status categories.

Based on food-intake, noncompliance, and psychological-loss theory, the investigator expected to find that scores would be significantly different on the total scale and on the subscales for individuals in different diet status categories. These expectations were confirmed by the results of hypothesis testing described in Chapter IV. Scores were significantly higher on the total scale for individuals in the unsuccessful diet status category, and scores were significantly higher on the overall joint distribution of the subscales. Three subscales showed significant differences in scores for the unsuccessful and the successful diet status categories. The scores on the other three subscales, although not significant, were higher for individuals in the unsuccessful than for those in the successful diet status categories.

As already suggested, a note of caution must be interjected. Although the scores of the total scale WLPQ and of three subscales were significantly different for the two diet status categories, the means of both groups on the total scale were slightly below the number 3, and on the Acceptance/Approval subscale, scores for both groups were slightly above the number 2. Number 3 on the instrument response scale is "Slightly Disagree" and number 2 is "Disagree." Therefore, in both cases, the difference may be statistically significant only and not meaningful because neither group was agreeing that the items reflecting various losses were true of their experience.

One explanation of this situation, which probably is premature at this early stage of research, is that in fact individuals in the process of dietary restriction do not experience losses related to their attempts, and that losses are not associated with failure. Arguing against this conclusion is the fact that scores on two other subscales showed significant differences between groups and were indicating higher agreement with the loss experience described by the items. Additional alternative explanations are also possible. The low scores may reflect a tendency on the part of the respondents to minimize or to deny their experience. Self-report instruments are vulnerable to the possibility of fake-good responses. Individuals who tend to deal with affects and problems in an indirect way may be more likely to minimize or deny their experience. In addition, the items in the WLPQ call for a relatively high degree of self-awareness, a limitation that is

discussed in a later section. It is possible that responses were rated lower than would be the case if the respondents were fully self-aware and psychologically sophisticated. Further, "Slightly Disagree" can be interpreted as an ambiguous response. Some reservations are implied by the qualifier. The fact that the scores were significantly different and that the unsuccessful category was higher than the successful category suggests that losses may have been occurring and that they were associated with noncompliance and failure to lose weight. Clearly, however, this question needs to be answered by further research.

It would be helpful if other studies were available to provide more information about this concern. Unfortunately, that is not the case. The absence of such studies makes it impossible to compare and contrast the findings of the present study with others similar to it.

In Hypothesis 4a, the assumption was made that individuals who were unable to comply with dietary restriction and/or who were unsuccessful in weight-loss attempts would either have more losses and/or experience losses with greater intensity than would those who had been able to comply with dietary restriction and lose weight. It was not assumed, however, that successful individuals had no losses at all. That assumption would run counter to loss theory. It can be, and was assumed, that individuals in the successful category of the diet status variable may have had fewer losses, may have experienced them less intensely, or were better able to cope

with and to resolve the losses than were those who maintained old eating patterns and maintained their overweight status. Based on the assumptions given, individuals who were unable to comply with dietary restriction and/or who were unsuccessful in weight-loss attempts should have significantly different scores on the total scale than would the individuals who had been able to comply with dietary restriction and were losing or had lost weight. Hypothesis 4a was confirmed. With age, education, and age x education controlled for, diet status had a significant effect on the total scale scores. Total scale scores for the unsuccessful category were significantly different from, and significantly higher than, scores for the successful category.

As already noted, the absence of studies similar to this one makes it impossible to compare and contrast these findings with findings of other studies. This was an initial and a first-of-a-kind study in which specific losses were identified and measured for successful and unsuccessful individuals relative to a specific behavioral undertaking. The present discussion needs, therefore, to center on the ways that the findings of the present study both are explained by the theories involved and provide empirical data in support of them. A few preliminary comments follow; more will be presented in the discussion following Hypothesis 4b.

At the most basic level, the findings support the contention of the various theories of food intake--that eating occurs for reasons in addition to nutritional need. The various theories suggest the

losses that might occur. More will be discussed about this relative to Hypothesis 4b.

The findings also appear to support the cost variable of the Health Belief Model, which posits that compliance with health-related behaviors depends in part on an individual's assessment or experience of the various costs that are incurred by the act of complying. In this study, the costs of compliance were represented by the psychological losses involved.

Findings of the present study reflect and support the concepts of loss theory, as well. Changes in behaviors and in established coping patterns generate losses. Both change and losses are resisted. Losses related to change appear to be associated with failures to succeed at attempts at dietary restriction and weight loss.

In Hypothesis 4b the same assumption was made regarding the loss experience of those noncompliant with dietary restriction and unable to lose weight, as compared to the loss experience of those individuals who were compliant with dietary restriction and successfully losing weight or maintaining a weight loss. Hypothesis 4b was confirmed. While controlling for the effects of age, education, and age x education, diet status had a significant effect on the overall joint distribution of the subscale scores. There were significant differences on scores for the successful and unsuccessful diet status categories occurring on the Comfort/ Pleasure, Freedom/Control, and Acceptance/Approval subscales. Scores on these subscales were significantly higher for the

unsuccessful category than for the successful category diet status variable.

Caution was indicated relative to the meaning of the findings for the Acceptance/Approval subscale. An additional note is made concerning the Freedom/Control and Comfort/Pleasure subscales, which also showed significant differences between the groups. Means for both the successful and the unsuccessful diet status categories on these two subscales can be rounded off to number 4, indicating that both groups "Slightly Agreed" with the loss items in those subscales. This response suggests that individuals in both groups, or individuals who are restricting food intake either successfully or not, experience losses as reflected by the items. Loss theory would suggest the same. This revelation need not detract from the fact that individuals in the unsuccessful category had significantly higher scores, and these higher scores can be seen in association with failure to comply and to lose weight.

Table 4.12 in Chapter IV offers some related information. Mean scores given for the percentage weight lost variable showed that, as higher percentages of weight were lost, score means increased. Although this might suggest that higher loss scores were associated with <u>success</u> at weight loss, the scores for individuals who lost no weight at all resulted in the highest mean of all. Although the percentage lost variable did not become significant in the analyses, the direction of the means sheds light on the complex nature of the weight-loss process as it is related to the experience of various

psychological losses. The information suggests that losses are experienced by both successful and unsuccessful individuals in this process, but that failure to comply and to lose weight is associated with higher loss scores. It can be argued that the higher scores are reflective of more or more intensely experienced losses.

Additional administrations of the instrument using a variety of samples are needed to determine whether the hypotheses are supported and whether different types of losses are found to be significant and for whom. At present, relative to the current findings, two areas of interest can be discussed. The first involves the appearance of specific losses of significance for individuals who are attempting to comply with dietary restriction, and which may be significantly related to failure to comply with dietary restriction. The second involves speculations about possible ways the significant losses are related to the theories that attempt to explain the psychological influences on food intake and on overeating, and how the findings of the study relate to the other theories as well.

First, as stated above, the significant subscales were those of Comfort/Pleasure, Freedom/Control, and Acceptance/Approval. Two of them represent losses that have to do with eating as a behavior, and the other has to do with body size. Although obviously related, the two are different. Comfort/Pleasure and Freedom/Control are losses incurred when one cannot eat or eat in a certain manner. Acceptance/Approval is a loss incurred when one's body size changes, or which one fears will be incurred when one's body size changes--in this case, if body size were to decrease.

The significance of Freedom/Control leads to an interesting question: Does this subscale reflect at face value the loss of freedom and control to do as one chooses relative to eating, or does it reflect lack of self-awareness, or both, or something else entirely? It is easy to know that one resents not being able to eat when and what one chooses, but it is more difficult to know that one resents not being able to eat because eating provides comfort or because eating ultimately may provide a way to feel big and powerful and to be assertive. The factor analysis has suggested that the Freedom/Control items more accurately reflect part of an impulsive demand and entitlement component for instant gratification in the pursuit of comfort and pleasure through eating.

Taking these considerations and previously stated cautions about significance and meaning into account, a tentative conclusion of this study is the emergence of these three losses--of acceptance and approval, of freedom and control, and of comfort and pleasure--as the losses significantly associated with failure to comply with dietary restriction and failure to lose weight.

Second, it can be posited that each of the food-intake theories is supported by the findings concerning these three subscales and the losses represented by them, and that the findings are supported by the theories. Psychoanalytic and psychodynamic theories suggest that overeating and obesity occur in response to painful emotions or as a way to indirectly solve conflicts and problems. Comfort is attained by eating and/or by being large, and problems and conflicts

involving issues of acceptance and approval (and, for that matter, power and impact, protection, and identity as well) are also "solved" by coping through eating or by having a large body. Psychosomatic theory suggests that eating is motivated by feelings of anxiety, or undifferentiated negative affect, and is used to quell anxiety and negative mood states. Within the context of restrained eating theory, the regulated loss of freedom and loss of control over eating habits and patterns implied in diet and restraint are seen as significant factors related to noncompliance with dietary restriction and failure at weight loss for some individuals, especially if impulsivity and/or a need for self-jurisdiction is high. Learned, habituated responses to internal nonhunger eating and food cues and to external food and eating cues, as formulated by the externality and learning-theory conceptualizations about eating, do not yield easily to demands for change. In fact, the demand for change can be, and for many individuals is, representative of a loss of freedom and control. Cognitions about palatable versus unpalatable food, whether it is time to eat or not, and whether one has eaten enough or not similarly resist demands for change and loss of control over what is eaten.

The results of this study also have several confirmatory implications for noncompliance and psychological-loss theories as well as the food-intake theory. Both are considered below.

The Health Belief Model (Becker, 1974) posits that costs are weighed against the advantages of any health-related action. If

costs are too high, the action will not be undertaken or complied with. The findings of the present study strongly support this portion of the theoretical model. Apparently the losses of comfort and pleasure, of approval and acceptance, and of freedom and control that were identified in this study are costs most associated with noncompliance with successful compliance with dietary restriction.

The Health Belief Model concerns health behaviors. Although dietary restriction is not always undertaken for health reasons, in the case of moderate to severe obesity, health considerations usually predominate. Even in slight to moderate obesity, there are health considerations of which most individuals are aware. Although respondents in the present study may or may not have been motivated by health concerns, it seems reasonable to assert that the cost-assessment or cost-experience portion of the Health Belief Model applies to and supports the current findings and is also supported by the findings of the present study.

Marlatt and Gordon's (1985) relapse model suggests, in part, that negative emotions and cognitions are themselves high-risk situations for relapse and that negative thoughts and affects often occur following a slip, making full relapse more likely. Rosenthal and Marx (1981) found that negative affects preceded a relapse to uncontrolled overeating. The findings in the present study of higher loss scores on the Comfort/Pleasure subscale for individuals in the unsuccessful diet status category offer support to and are suggested by the relapse model.

Although personality characteristics were not consistently found to be related to noncompliance, Bjorvell and his colleagues (1985) suggested that the impulsiveness (or the Impulsivity Syndrome) exhibited by the obese patients in their study might explain the common obesity history of repeated attempts to lose weight accompanied by frequent relapse, which resulted ultimately in the failure to lose weight. This impulsivity associated with repeated relapses and failure to lose weight is similar to the Comfort/Pleasure subscale, or perhaps even more closely similar to the related factor that emerged from the factor analysis. The loss of comfort and pleasure, the loss of an instant method of dealing with discomfort, is associated with failure to successfully comply with dietary restriction and failure to lose weight.

Compliance with dietary restriction and success at weight loss have been positively correlated with various behaviors (Holmes et al., 1984; Stuart, 1967). It has been less clear why these behaviors are difficult to undertake and to maintain. The results of the present study suggest that a loss of freedom and control implied by the imposition of new rules about and new patterns of eating behavior is associated with that difficulty and ultimately with the failure to comply with dietary restriction.

Psychological-loss theory posits that change and loss are interrelated. Change creates losses, and anticipated or unresolved losses prevent change. Losses are resisted, and old familiar modes of adaptation are retained, even if they themselves are painful. At least they are familiar. Changes in eating patterns and in body

weight were conceptualized in this study as major change events, and it was hypothesized that in order to make these changes, losses would be incurred, and that the changes and losses would be resisted, even to the point of failing to comply with dietary restrictions and failing to lose weight. Clinical studies had suggested that a variety of losses were experienced by individuals in the process of dietary restriction and weight loss and that these losses did, in fact, result in failure to comply, failure to lose weight, or failure to maintain an achieved weight loss. Again, the present study confirmed empirically an association between higher loss scores and failure to comply with dietary restriction and failure to lose weight, and suggested the losses of freedom and control, comfort and pleasure, and approval and acceptance were significantly related to noncompliance with dietary restriction.

Preliminary Analyses

As described in Chapter IV, preliminary analyses were conducted to identify relevant variables for the final model and to better understand the effects of potentially confounding independent variables. The variables whose effects remained significant following the preliminary analyses and that were included in the final model were diet status, age, education, and the age x education interaction. In the final analysis, only diet status had a significant effect on the total scale and on the overall joint distribution of the subscale score. Diet status had a significant effect in all three univariate tests of the three significant

subscales. Education remained significant in the univariate analysis of one of the three significant subscales, the Comfort/ Pleasure subscale. This effect did not override the significance of the diet status effect on that subscale score. It is interesting that so few independent variables had significant effects on the scores and that the relative significance of the variables repeatedly changed throughout the analyses.

The weight status variables had been selected on the basis that some clinical studies had suggested that age at onset, percentage overweight, and percentage of weight lost appeared to have relevance to the weight-loss process and an individual's reaction to it. Studies suggested that early age at onset was related to more serious emotional problems than was late age at onset, and that individuals characterized by early age at onset would have more difficulty losing weight and would be more negatively affected by the weight-loss process (Bruch, 1973; Grinker et al., 1973). Some authors observed that individuals in their clinical studies appeared to manage weight loss positively until they had passed below a threshold of approximately 25% overweight (Crisp & Stonehill, 1970; Glucksman & Hirsch, 1968). Implicit in most studies of obesity is the assumption that severe obesity is more resistant to treatment than lesser degrees of obesity (Crisp & Stonehill, 1970; Kollar & Atkinson, 1966; Kurland, 1967).

Results of this study do not support the clinical observations and assumptions in that they do not at least suggest any of these

variables have a significant effect on loss scores on the WLPQ. It is true that these variables may be related to factors other than psychological losses, which are separately related to difficulty with weight loss. These current results may reflect the fact that only 10 participants in the study were more than 100% overweight, none had lost more than 54% of their weight, and there were more childhood-age-at-onset participants than other ages. Problems of range and distribution, in other words, may have influenced less significant results. Age at onset might have shown more significance had it been treated as a continuous variable. The mean percentage overweight was 30.5%, which is above the threshold weight at which problems related to diet and weight loss are sometimes observed to occur. It would be helpful if there were more quantitative data available in the literature with which to make comparisons and on which to base additional speculations. Clearly, more administrations of the WLPQ with other samples is called for in order to gain additional information that would confirm or contradict the present findings.

Life status variables of sex, age, race, and poverty status are variables often discussed relative to the prevalence of overweight in the United States. Race could not be considered in this study because of the high percentage of Caucasians comprising the sample. For the other variables cited, statistics show that more American women are obese than are American men. Men between the ages of 25 and 55 show an increase in the prevalence of being overweight, which begins to decrease with increasing age. The population of white

American women becoming overweight increases until the age of 65. Adult women below the poverty line (including black women), including all age groups, show a propensity to be overweight. American men in all age groups have a slightly higher tendency to be overweight if they are above the poverty line than if they are below it (VanItallie, 1985, cited in Frankle & Yang, 1988).

Again, the results of the present study do not show the variables associated with the incidence of obesity as having significant effects on loss scores on the WLPQ. Marital status, occupation, and education (the latter with one exception) were not creating significant effects on the scores either. Although age, education, and income showed a significant effect on the loss scores in some of the preliminary analyses, in the final analysis, only the diet status variable had a significant effect on the loss scores. (As noted earlier, the one minor exception in the final analysis was a significant effect of education on the Comfort/Pleasure subscale score.)

Additional research is needed to investigate this matter further. More attention could be paid to the demographic variables that did occasionally reach significance, namely age, education, and income. In addition, more empirical research is needed to further investigate the relationships between the weight variables, the other demographic variables, and difficulty with dietary restriction and failure to lose weight. It seems unlikely that the various weight status and demographic variables would not have more

significance, either relative to the loss scores or to the more general difficulty with dietary restriction. On the other hand, the findings suggest the possibility that the loss experience is a universal experience relative to this and/or other change events, as is suggested by theory, and that it is relatively unaffected by differences in other variables.

Limitations of the Study

The fact that the significant difference between the scores of the successful and unsuccessful categories of the diet status variable on the total scale and on at least one of the significant subscales may be only statistically significant but not meaningfully so poses some problems, and as such represents a limitation of the study. Possible explanations for this were fully explored in the discussion section of this chapter. It appears that the situation can be clarified only through additional administrations of the instrument and through further research. In the meantime, although the present study can serve as a start to this research, the findings must be interpreted with caution in light of this limitation.

One explanation given earlier for low mean scores is that respondents may have minimized or denied negative experiences. The use of self-report can be seen as a related limitation of this study. Self-report is used both in the participants' responses to the items and in their reporting of facts about their weight and diet status, that is, current weight; amount of weight lost; and

whether they are gaining weight, losing weight, achieving goal weight, maintaining a weight loss, or not able to comply at all. It is not always easy to report difficulties and/or failure, and the study depends on accurate reporting.

As noted, responses to the items can be distorted as well. These distortions can be made either knowingly or unknowingly. The items of the WLPQ often call for a substantial degree of self-knowledge and self-awareness. For example, it requires self-awareness to be able to respond with accuracy to such statements as "I use my large size to back up my opinions" or "One advantage of being overweight is that I don't have to be sexual with anybody." As a result, items that might be highly reflective of that person's experience would not be indicated in the response. In addition, a high score on the Freedom/Control subscale might result: It is easier to recognize that "I like to eat whenever I want to" but harder to recognize that "I eat in order to feel better." The need for self-awareness and even a degree of psychological sophistication on the part of the respondent is a limitation of the study.

There may have been some confusion on the part of the respondents as to what time frame to have in mind as they responded to the items. The instructions on the instrument were vague as to whether the respondent should respond in the context of the present or of past attempts at dietary restriction.

Administration of the instrument was not consistent. In some cases the explanation of the research and requests for participation were made directly to potential respondents by the researcher, and

in some cases this presentation was given by a group leader who had spoken earlier to the researcher about the project. Respondents completed the instrument at their convenience so that conditions affecting each person's responses could have been different for each, possibly adding to the variance unexplained by the scores.

Another possible limitation, or at least a factor to be considered, involves the operational meaning of noncompliance. In the strictest sense, noncompliance with dietary restriction refers to the total abandonment of a particular dietary regimen or to the temporary or intermittent abandonment of the requirements of the diet regimen. Failure to lose weight is the expected result of noncompliance, but failure to lose weight is not always caused by noncompliance. In this study, failure to lose weight is regarded as indicative of noncompliance with dietary restriction. Justifications can be formulated. Although it is true that failure to lose weight might occur for reasons other than noncompliance with dietary restriction, it is also true that, for most people, consistent compliance with dietary restriction does result in weight loss. In addition, using failure to lose weight as indicative of noncompliance with the dietary regimen was one way of controlling for distortions in self-report. Although noncompliance with dietary restriction and the failure to lose weight can in certain cases be independent of one another, both are relevant to this study. For the purposes of this study, the unsuccessful diet status category comprised both individuals who were not able to comply with the diet regimen or who were not losing weight.

Another limitation that must be addressed is the composition of the successful diet status category groups. One way by which a respondent was designated a part of the successful category was based on whether or not the respondent was losing weight. Neither the amount of weight lost nor the time involved in the attempt was considered, so that someone who might be severely obese but losing a small amount of weight over a long period of time would be considered successful along with a person who had lost 45 pounds and had reached ideal or target weight in perhaps the same amount of time it had taken the other individual to lose 3 pounds. Although this designation can be justified on the basis that both were successful in that they were losing weight, the results based on more carefully comprised categories might be more precise and meaningful.

A related problem is that someone who is currently losing weight might be an individual who had relapsed before the currently successful attempt or who had a history of success followed by relapse. Once again, although it is justifiable to designate success based on losing weight currently, there is also reason to consider this person not successful due to the overall pattern of weight loss and weight gain.

Some limitations involve sampling and generalization. The sample was not randomly selected. Respondents were volunteers from a variety of settings, including structured and informal support groups, medical-rehabilitation and weight-loss-clinic settings, and

informal networks of individuals who were known to one another through their particular attempts at weight loss.

It is not certain what, if any, effect a volunteer sample would have on the results. Volunteers may, in general, be more positive about their attempts at dietary restriction. Or just the opposite might be the case. In any event, the scores may have been systematically different based on the volunteer status of the respondents.

The fact that the respondents were from a number of different settings may be a less important consideration than the fact that the respondents were all using outside resources of some sort to aid their attempts at dietary restriction. Individuals who use external resources may be very different from those who do not, and these differences may be reflected in the scores of the WLPQ. The help-seeking behavior may indicate that these individuals are having more difficulty in their attempts and are more vulnerable to psychological losses or are more failure prone than those who do not seek help. Or it could be that help-seeking is indicative of the ability to effectively solve problems, and therefore the diet process involved might be easier, with a related component that these individuals might be less vulnerable to experience psychological losses, and success would be the more likely result. In either case, the scores on the WLPQ could be affected by these factors.

The number of different settings did provide a larger sample, which was important for the regression procedures used. In

addition, the heterogeneity of the sample was increased by the inclusion of more groups and a larger N, which tends to prevent underreporting of the relationships obtained through regression analysis. Even though the sample contained substantial variability, it did tend to overrepresent some of the life status and some of the weight status characteristics. For example, the majority of the sample was female. Mean age was 41.2 years, indicative of a predominantly adult sample. Mean income was high, and for the most part it was a well-educated group of individuals. Most of the respondents were characterized by childhood age at onset. On the other hand, the mean percentage of weight lost was approximately 18%, with higher weight losses up to 54% quite well represented. The mean percentage overweight was 30.5%, representative of a moderate degree of obesity and indicative of a good range of obesity in the sample.

Nonetheless, sampling creates some problems for generalization and thus for external validity. Although heterogeneity and a good range hold true for several characteristics of the sample, it was predominantly a Caucasian, female, well-educated, high-income, help-seeking group. Although results could be applied to individuals outside of this description to include those who were also represented in the sample but in lesser degree, such as men or lower income or less educated individuals, it is with some peril that these generalizations be made.

A final limitation of the study is that so little of the variation of the score on the total scale and on the subscales was

accounted for by the independent variable, diet status. In the first preliminary analysis, when the diet status variable was considered separately, only 3% of the variation on the total scale score was accounted for by the diet status variable. In the final analysis, the regression model including the variables of age, education, and the interaction of age and education accounted for only 5% of the variation in the total score. Similar amounts of variation were explained by the model on each of the subscales considered separately. The limitations mentioned above may have contributed to the amount of unexplained variation. It remains true, although not entirely satisfying as an explanation, that the number of factors that combine to influence behaviors and outcomes are numerous and varied. It may be that future research will be able to identify additional independent variables of interest and/or ways of controlling for the influences that affect the variability of scores.

Implications for Research

The present study is an initial and exploratory investigation of an area in which, to the researcher's knowledge, no other empirical studies have been conducted. Further testing of the instrument and of the phenomenon of psychological loss in dietary restriction and in similar undertakings is needed.

Studies using samples similar to the one in the present study, which is characterized by at least a moderate amount of variability relative to life status (demographic) and weight status variables,

are needed to determine whether the findings of the present study are supported, both in terms of the instrument and in terms of the relationships between psychological loss and noncompliance and failure. Questions needing to be answered are whether the instrument continues to be reliable and valid, and whether the losses indicated to be significant in this study for this sample are the same for other similar samples.

In addition to attempts at replication, it would be interesting and informative to use more homogeneous samples. Samples similar in such characteristics as percentage overweight, percentage of weight lost, and age at onset, as well as more similar in terms of demographic characteristics, could provide comparative information about types of losses experienced by various groups, and whether these were the same or different for the various groups.

A third sample that should be included in additional administrations and analyses is one of individuals who are not seeking help with attempts at dietary restriction and with weight loss, and who are not all volunteer respondents.

In addition, it would be useful to have instruments developed and tested and studies conducted to investigate the relationship between psychological loss(es) and the failure to abstain from the use of tobacco, alcohol, and other drugs, or other addictive behaviors such as compulsive sexual behavior or compulsive gambling. An interesting question is whether similar losses are experienced by individuals attempting to restrict or stop consuming alcohol and

those attempting to restrict eating. It might be possible, and worth attention, to investigate the feasibility of developing an instrument that could be used interchangeably for these various behaviors. The investigation of psychological loss relative to change in addictive patterns of behavior could be useful information relative to the study of change and loss, and could perhaps contribute to the development of new ways to understand and treat various dependencies.

Additional research might investigate whether the losses identified and measured in the WLPQ represent the entire domain of losses that are associated with dietary restriction and with failure to succeed in the process. One way to investigate this would be to incorporate any additional losses identified by studies investigating failure to comply with abstinence from or controlled use of other substances or behaviors. Although the exploratory factor analysis completed and described for the present study tended to confirm the six loss categories as conceptualized, another analysis specifying a larger number of factors might be used to see if additional factors emerge. If more factors were suggested, additional work could focus on generating items reflecting these losses, and they could be incorporated into the instrument.

Future attention should be given to the instrument in yet another way. Additional criteria for success and failure categories need to be specified in order to more accurately determine an individual's actual success or failure status. This was mentioned previously in the limitations section. Directions could be more

specific in terms of whether the respondent should focus on the present dietary restriction attempt or should incorporate past experience as well. Some checks on self-report could be identified and used, and the problems identified earlier relative to the effects of lack of self-awareness could be investigated and ways found to avoid this limitation.

A final area for further research pertains to the potential use of the WLPQ in clinical settings, both in the actual clinical use of the instrument for diagnosis or indications of progress, and in treatment studies. After sufficient testing of the instrument has occurred, the feasibility of using it as a diagnostic instrument could be explored. The instrument as developed or as refined could be used to quickly identify what losses are being experienced or anticipated by someone involved in or considering a weight-loss attempt, in order to facilitate a less difficult process and a more successful outcome by dealing with the losses identified. Treatment studies could be undertaken in which weight-loss outcomes of treatments identifying and working toward resolution of identified losses could be compared to weight-loss outcomes of treatments that did not include a loss focus. Such studies could occur with or without the use of the WLPQ. In the former case, the WLPQ could serve as a useful tool in the treatment by identifying losses to be dealt with; in the latter case, the losses identified in other ways and the results of the treatment could serve to confirm or contradict the findings of the present study.

Responses to Questionnaire

In addition to completing the WLPQ, several individuals also wrote comments about certain items, the items in general, or their weight-loss experience. Their comments provide more information about ways that the instrument might be reviewed and/or used in the future.

A few individuals noted their opinion that the items seemed predominantly negative, or that they reflected too many fears and worries. For this reason, one respondent speculated that the researcher might have had a preconceived idea of the diet and weight-loss experience and was possibly introducing an outcome bias. Another respondent commented that she had trouble responding to "two-part items." For example, Item 1 reads: "When I lose weight, I feel like a different person, and that's upsetting to me." One respondent commented that she tended to overeat when she was happy, and no items reflected that experience. Attention should be given to these comments as refinement of the instrument continues so that the WLPQ gathers as full an accounting of the experience as possible, and does not generate an adversarial set on the part of the respondent.

Positive comments, which were, in fact, more numerous than the negative ones, reflected the respondents' sense that by taking the WLPQ they had learned something about their eating and their weight that they had not considered before. Although these learnings were challenging, even painful, they also seemed to convey a sense of hope that more could be understood and done that would, in turn,

have a positive effect on their attempts. One individual commented that taking the inventory helped her believe she could regain control of her eating. One individual recorded thanks for the opportunity to help express her opinions. Reading and responding to the items evidently helped her put previously unstated thoughts and feelings into words, and helped her dispel a feeling of aloneness and isolation. Many respondents indicated positive reactions to the fact that research was being conducted in an area that profoundly affected their lives. They verified the difficulty of their weight-loss process, and registered satisfaction that research was being conducted that might provide new insights into this problem. Respondents' comments suggest that the instrument could be used as a consciousness-raising activity for individuals entering a dietary program. Used in this way, the WLPQ might also increase motivation and perseverance based on the hope that issues which have been interfering with weight-loss attempts can be identified and resolved.

Finally, respondents' comments afford glimpses of the individual lives behind the circled numbers on a self-report inventory. These glimpses serve as reminders of the very real pain associated with obesity and of the difficulty inherent in changing that condition. These realities underline the need for continued work directed toward understanding this problem and developing effective treatment methods.

APPENDIX

SURVEY RESEARCH PACKET

1015 Ferdon Road
Ann Arbor, Michigan 48104
June 29, 1989

Dear Participant,

I am a doctoral student in Counseling Psychology at Michigan State University doing dissertation research on the difficulties involved in dieting and losing weight. The purpose of this research is to learn more about how people like yourself experience the diet process, and what feelings and thoughts you have as you attempt to diet and lose weight. The results of this study are expected to be useful in learning how to more helpfully assist people in their weight-loss attempts.

Your willingness to participate in this research will be appreciated and extremely helpful. Your participation, of course, is entirely voluntary; you may choose not to participate at all or not to answer certain questions without penalty. All responses will be anonymous and completely confidential. At your request, you can receive a summary or additional explanation of the research after its completion.

In this packet, you will find the Weight Loss Problems Questionnaire and the Personal Data Sheet along with a stamped and addressed return envelope. Filling out and returning the forms indicates your voluntary agreement to participate in the study. It will take between 20 and 30 minutes to fill out the forms.

Because it is important to receive your responses as soon as possible, you can become eligible to win $50 in a random drawing if you return the completed forms postmarked no later than July 18, 1989. The $50 prize will be awarded on July 21, 1989. If you would like to be included in the random drawing, please print your name and mailing address on this letter and return it with the research forms. I will immediately separate your name from the other forms so that your responses will remain confidential. You will be notified immediately by mail if yours is the name drawn on July 21, 1989.

I genuinely appreciate your willingness to help in this research. If you have any questions, please feel free to phone me at 313-665-5578 (home) or at 313-699-4212 (work). Thank you very much.

Sincerely,

Violet B. Heise

Weight Loss Problems Questionnaire

A number of statements are listed below. They describe many things which people think about, feel, or do when they are dieting, losing weight, or trying to maintain a weight loss. Read each statement and indicate how much you agree or disagree with it, by putting a circle around the appropriate number in the right margin.

There are six possible choices: (1) strongly disagree, (2) disagree, (3) slightly disagree, (4) slightly agree, (5) agree, and (6) strongly agree. Answer carefully, but do not spend too much time on any item. Please express your true opinions based on your own experience.

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1. When I lose weight, I feel like a different person, and that's upsetting to me.	1	2	3	4	5	6
2. I worry that if I weighed less, members of the opposite sex would be more interested in me.	1	2	3	4	5	6
3. I resent the time it takes to select and prepare the right foods when I am on a diet.	1	2	3	4	5	6
4. People listen more to me when I'm overweight.	1	2	3	4	5	6
5. When people want me to lose weight, I think they don't like the real me.	1	2	3	4	5	6
6. I worry that I will be (am) too much like everyone else when I am normal weight.	1	2	3	4	5	6
7. I prefer being overweight so that my significant other doesn't want sex more often.	1	2	3	4	5	6
8. I don't like being told what to eat.	1	2	3	4	5	6
9. I won't be (I'm not) myself anymore when I lose weight.	1	2	3	4	5	6
10. Sometimes I eat something just to prove I can eat what and when I want.	1	2	3	4	5	6
11. I worry that people (will) ignore me when I lose weight.	1	2	3	4	5	6
12. Eating is an important way I have of comforting myself.	1	2	3	4	5	6
13. When I am normal weight, no one knows and loves the real me.	1	2	3	4	5	6
14. When people lose weight, they change in too many other ways.	1	2	3	4	5	6
15. Being overweight saves me from getting too involved or too friendly with others.	1	2	3	4	5	6

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
16. I enjoy the physical sensations I feel when I eat.	1	2	3	4	5	6
17. It bothers me that I don't know how I will act when I am normal weight.	1	2	3	4	5	6
18. I worry that I (will) have to be as attractive as other men and women when I'm normal weight.	1	2	3	4	5	6
19. I believe that I'm the only person who should decide what I eat.	1	2	3	4	5	6
20. When I'm feeling bad, eating makes the bad feelings disappear.	1	2	3	4	5	6
21. I worry that people I care about will reject me if I lose weight.	1	2	3	4	5	6
22. It bothers me that I don't know how I will feel when I am normal weight.	1	2	3	4	5	6
23. When I'm normal weight, I (will) have to worry more about what to wear and how I look.	1	2	3	4	5	6
24. It's hard to diet because I can't eat what I want.	1	2	3	4	5	6
25. After I eat, I feel better for awhile.	1	2	3	4	5	6
26. I feel more accepted by significant others when I'm overweight.	1	2	3	4	5	6
27. I feel like I lose myself when I lose weight.	1	2	3	4	5	6
28. When I diet or lose weight, I worry that people will expect more of me.	1	2	3	4	5	6
29. I feel deprived and/or angry if I can't eat my favorite foods each day.	1	2	3	4	5	6
30. I use my large size to back up my opinions.	1	2	3	4	5	6
31. Significant others feel hurt when I don't eat like they want me to.	1	2	3	4	5	6
32. I believe that I lose an important part of me when I lose weight.	1	2	3	4	5	6
33. Normal weight people are expected to work harder and get more done than overweight people.	1	2	3	4	5	6

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
34. I like to eat whenever I want to.	1	2	3	4	5	6
35. Being overweight helps me do things that I'd be afraid to do otherwise.	1	2	3	4	5	6
36. I don't like to have to turn down any food.	1	2	3	4	5	6
37. I eat in order to feel better.	1	2	3	4	5	6
38. Some people like me especially because I'm overweight.	1	2	3	4	5	6
39. I worry that my friends won't (don't) recognize me when I'm normal weight.	1	2	3	4	5	6
40. I like that I don't have to compete so much with others when I'm overweight.	1	2	3	4	5	6
41. If I want to eat something, I'll eat it– and no one should try to stop me.	1	2	3	4	5	6
42. Nobody pushes me around when I'm overweight.	1	2	3	4	5	6
43. I gain weight when there are problems in my life that bother me.	1	2	3	4	5	6
44. It scares me that I won't (don't) recognize myself when my body changes.	1	2	3	4	5	6
45. I like the feeling of protection and security I get from being overweight.	1	2	3	4	5	6
46. I have to give up too many important things in order to lose weight.	1	2	3	4	5	6
47. When I'm overweight, I use my size as a weapon.	1	2	3	4	5	6
48. When I can't say what I want to, it helps to eat.	1	2	3	4	5	6
49. If I lose weight, significant others might not (don't) trust me.	1	2	3	4	5	6
50. I get anxious thinking that everything about me changes when my body changes.	1	2	3	4	5	6
51. One advantage of being overweight is that I can hide inside my body.	1	2	3	4	5	6
52. I feel like I've lost control of my life when I can't eat what I want.	1	2	3	4	5	6

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
53. I get even with others by being overweight.	1	2	3	4	5	6
54. Eating fills the emptiness in my life.	1	2	3	4	5	6
55. I eat when there are pressures in my life.	1	2	3	4	5	6
56. Significant others won't be (aren't) as close to me if I am normal weight.	1	2	3	4	5	6
57. I feel like I'm in a safe fortress when I'm overweight.	1	2	3	4	5	6
58. I feel I'll lose control of myself (emotions) if I can't eat what or when I want.	1	2	3	4	5	6
59. I believe that I can punish someone with my size.	1	2	3	4	5	6
60. I feel loved and cared for when I eat.	1	2	3	4	5	6
61. My significant others don't want me to be normal weight.	1	2	3	4	5	6
62. I have to be overweight in order to be noticed at all.	1	2	3	4	5	6
63. I don't know what to do except eat when things aren't going well.	1	2	3	4	5	6
64. Significant others in my life feel insecure when I lose weight.	1	2	3	4	5	6
65. When I'm dieting, I feel like I've lost one of life's main pleasures.	1	2	3	4	5	6
66. I worry that people I care about will think I'm trying to be better than they are when I lose weight.	1	2	3	4	5	6
67. I miss my favorite foods when I'm dieting.	1	2	3	4	5	6
68. Significant others in my life don't like to interact with me when I'm dieting.	1	2	3	4	5	6
69. When I'm at normal weight, people may take advantage of me.	1	2	3	4	5	6
70. One advantage of being overweight is that I don't have to be sexual with anyone.	1	2	3	4	5	6
71. My significant other might leave if I lose weight.	1	2	3	4	5	6

PERSONAL DATA SHEET

Today's Date _____

Age ____ Sex _____ Ethnic Group _____

Marital Status _____ Household Income _____

Years of School Completed ____ Occupation _____

Height ____ Weight _____ Body Build (Small, Medium, Large) ____

Date/Age of onset of overweight condition _____

Most ever weighed _____lbs.

Your target weight _____lbs.

1. Have you reached your target weight? (Circle one) Yes No

2. If you reached your target weight, have you maintained that weight for at least 6 months? (Circle one) Yes No

3. How much more than your target weight do you weigh now? ____lbs.

4. If you are currently dieting, what is the reason? (Circle the correct letter) a. to lose weight b. to maintain weight

5. If you are currently dieting, what is happening now? (Circle the correct letter)

   a. Dieting but remaining at same weight

   b. Dieting but gaining weight

   c. Dieting and losing weight

   d. Unable to comply with diet regimen

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