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Dietary Restraint and the Salience of Visual Food Cues

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DIETARY RESTRAINT AND THE SALIENCE OF VISUAL FOOD CUES

by
Jeanine Elaine Kotschwar

Master of Arts, University of North Dakota, 1977

A Dissertation

Submitted to the Graduate Faculty

of the

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in partial fulfillment of the requirements

for the degree of

Doctor of Philosophy

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1986

This dissertation submitted by Jeanine Elaine Kotschwar in partial fulfillment of the requirements for the Degree of Doctor of Philosophy from the University of North Dakota has been read by the Faculty Advisory Committee under whom the work has been done, and is hereby approved.

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This dissertation meets the standards for appearance and conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

A. William Johnson 7/24/86
Dean of the Graduate School

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ABSTRACT

A review of the literature reveals significant changes which have oc-
cured in the role posited for dieting. Once considered a simple solu-
tion for weight loss, dieting has more recently been seen as playing a
causal role in the development of eating disorders. Similarly, the
characteristics and behaviors once thought to be attributable to obesity
have more recently been said to be by-products of dieting-induced hun-
ger. Several authors have pointed to the influence of cognitive factors
in initiating and maintaining dieting and, conversely, in abandoning re-
straint in eating.

The purpose of this study was to explore the influence of dietary re-
straint on cognition as demonstrated by performance on a visual recogni-
tion task. It was hypothesized that visual cues for eating, in the form
of food pictures, would be more salient for high dietary restrainers.
Specifically, it was predicted that high dietary restrainers would (a)
correctly identify food pictures they had seen previously and (b) incor-
rectly report recognition of food pictures they had not seen previously.

Two series of color slides of food and nonfood pictures were present-
ed to female undergraduate psychology student volunteers. During a sec-
ond series of slides, subjects marked anser sheets to indicate whether
or not they recognized the pictures from the first series of slides.

Results of the study showed that restrainers and nonrestrainers alike made more correct responses to food pictures and made more correct responses on pictures which had not been shown before than on those which were repeats. The results did not support the two specific hypotheses. However, a number of other findings were consistent with results reported in the literature.

LITERATURE REVIEW

Introduction

Dietary restriction (dieting) has long been considered a simple solution to obesity. However, more recent evidence has been presented which suggests that dieting is ineffective at best, and dangerous at worst, as an approach to weight regulation. Nevertheless, the pervasive perjorative attitudes toward obesity are so strong that people may severely restrict their dietary intake in an effort to achieve or maintain a slim body form. These social attitudes are often internalized as a fear of obesity, especially among women for whom the weight standards are most exacting, and may end in eating disorders, such as anorexia and bulimia. Some authors have argued that, although eating disorders are prompted by social attitudes, dietary restriction itself contributes to the the development and exacerbation of these problems.

Central to the progression of ideas about dietary restraint in the literature was an internal/external dichotomy proposed by Schachter (1971) in which obese subjects were characterized as overly responsive to external stimuli. Nonobese subjects, in contrast, were characterized as responsive to internal stimuli. Obesity was thought to result from eating behavior which was under control of external stimuli rather than internal cues of satiety.

Later, Nisbett (1972b) argued, as did Herman and Mack (1975), that externality was not characteristic of obese people but was a result of dieting which is prevalent among the obese. Parallels between semi-starved volunteers and obese (dieting) subjects on the one hand and ano-rexics on the other suggest that dietary restriction leads to similar behavioral and cognitive changes. One such similarity between semi-starved volunteers and eating disorder patients is binge eating; another is preoccupation with food.

Although a laboratory equivalent of binge eating has been demonstrat-ed by researchers, and the role of cognition in restraint has also been studied in relationship to eating behaviors, the effect of food preoccu-pation remains relatively unexplored. Food preoccupation may represent a cognitive set which heightens the salience of food cues, and, thus, produces a higher external responsiveness among diet restrictors.

In the remainder of this chapter, the ideas presented above will be discussed more fully, leading to a presentation of the purpose of the study, namely, to explore the role of cognitive factors in dietary re-straint as it is evidenced in non-eating behaviors.

The Consequences of Oppressive Stereotypes

Aberrations in eating (such as obesity, anorexia, and bulimia) are of particular concern due to their health- and/or life-endangering sequelae (c.f., Arenson, 1984; Garfinkel and Garner, 1982, Kiell, 1973a). Anorexia and bulimia are characterized by obsessive fear of fatness or

weight gain, pursuit of thinness, and a commitment to or a belief in the necessity and the desireability of severe dietary restriction. Although binge eating and purging (through use of laxatives or self-induced vomiting) are usually associated with bulimia, these patterns are also known to affect some subsample of anorexics. Chronic obesity is also commonly associated with restriction of diet and constant awareness of weight.

The health problems linked to eating disorders can range from mild discomfort or complications (e.g., erosion of dental enamel from stomach acids) to death (e.g., cardiac arrest due to electrolyte imbalances). Even without the health dangers, eating disorders present significant threats to emotional well-being (c.f., Allon, 1973; Arenson, 1984; Garfinkel and Garner, 1982; Hirsch, 1973; Kiell, 1973a). Isolation and intense guilt, shame, and self-disgust are just a few of the concomitants commonly experienced by people with eating disorders. In order to intervene effectively in cases of eating disorders, it is important to understand both the physiological mechanisms of weight regulation and the role of psychosocial factors associated with dieting.

Some of the psychological and physical health problems found in individuals with eating disorders are the result of a state of self-induced semistarvation. However, many problems seem to have their origins in the oppressive social attitudes about appearance, which are overwhelmingly directed toward women (Garner, Rockert, Olmsted, Johnson, and Coscina, 1985). Social attitudes toward obesity are negative and severe (Allon, 1973; Cahnman, 1968, cited in Rodin, 1981; Garner et al., 1985;

Kiell, 1973a). In our society, overweight is considered disgusting (Kiell, 1973a) and associated with ugliness, laziness, self-indulgence, poor impulse control, subnormal emotional functioning (Allon, 1973; Garner et al., 1985), and even sinfulness (Kiell, 1973a). "It has been suggested that 'public derision and condemnation of fat people is one of the few remaining sanctioned social prejudices. . . allowed against any group based solely on appearance' (Fitzgerald, 1981, p. 223)" (Garner et al., 1985, p. 520). At the same time, thin body form is consistently equated with beauty, goodness, success, happiness, and wealth, for women particularly (Bruch, 1973b; Hirsch, 1973; Orbach, 1978).

The popular media document these social attitudes toward body weight mentioned above. Furthermore, the media seem not only to reflect but also to modify social opinions about cultural ideals. Based on an analysis of media trends, it appears that the social demands placed upon women to attain thinness are becoming more stringent and are increasingly unrealistic to attain. In fact, "the prevailing shape standards do not even remotely resemble the actual body shape of the average woman consumer" (Garner et al., 1985, p. 516). Beauty pageants and magazines such as Playboy probably help set public standards of ideal feminine appearance. Over the past two decades (and especially in the past ten years), national pageant winners and centerfold models have become increasingly and significantly thinner. In the same period, the number of diet articles in popular women's magazines has increased significantly (Garner, Garfinkel, Schwartz, and Thompson, 1980, cited in Garfinkel and Garner, 1982). As people of exceptional appearance are presented by the media as the norm, and as the social, even moral, pressure to achieve

the norm intensifies, the exceptional becomes the minimum level of acceptability. It is not surprising that concern about weight, and attempt at weight/diet control have become endemic in the American way of life (c.f., Garner et al., 1985; Orbach, 1978).

The consequences of these societal attitudes cannot be underrated. According to Dickstein (1985), "sociocultural factors may be responsible for the increase in the prevalence of eating disorders" (p. 1088). Current cultural attitudes may well have stigmatized the obese and terrorized even some individuals into severely restricting their food intake. In this way, the individual's appraisal of her or his own appearance relative to the cultural ideals contributes to the development of eating disorders (Allon, 1973; Bruch, 1973a, 1973b; Garfinkel and Garner, 1982; Hirsch, 1973; Orbach, 1978).

The influence of social attitudes concerning weight, obesity, and dietary regulation extend beyond popular culture and effects on the general public. They affect physicians (Arenson, 1984; Kiell, 1973a) and other professionals (Garner et al., 1985), such as social scientists. One commonly held attitude among such professionals is that obesity results merely from the failure to adopt the "simple solution," (viz., to exert self-control in eating). Such an attitude is implied in assertions such as the one made by Schachter and Rodin (1974a):

> Of all human frailties (emphasis added), obesity is perhaps
> the most perverse. The penalties are so severe, the gratifi-
> cations so limited, and the remedy so simple that obesity
> should be the most trivial of aberrations to correct. Yet it
> is among the most recalcitrant. Almost any fat person can
> lose weight; few can keep it off (p. 1).

Many of the social/moral indictments that accompany these social stereo-
types about obesity and dietary regulation infiltrate professionals' at-
titudes and their interventions with people seeking help (c.f., Garner
et al., 1985).

Researchers and physicians are not only affected by social values,
but they, in turn, modify social attitudes. Their opinions, even if
based on biases, are highly respected and sometimes even seen as Truth.
Ingrained biases can affect conceptualization and implementation of both
research and clinical strategies. Although it is common to suspect that
experimenter bias may exist in the interpretation of research results,
the selection of methodology may also reflect unstated erroneous assump-
tions. Further, the quality of the interaction with subjects or pa-
tients, as well as treatment decisions may reflect the professional's
bias. For example, such biases have influenced the implementations of
drastic weight loss strategies, such as intestinal bypass surgery, which
have resulted in iatrogenic disorders. A number of studies cited by
Garner et al. (1985) concluded that "the fervor of treatment efforts re-
flects our prejudice rather than a realistic response to the risks in-
herent to the condition" (p. 520).

The Problems with Dieting

One popular but simplistic belief held by professionals and by the
general public has been that weight regulation can be easily achieved by
dieting (e.g., Schachter and Rodin, 1974a). Purportedly, once the de-
sired weight loss is attained, the dieter can be considered to be normal

again. Therefore, he or she can eat like a person of normal weight. The ex-dieter's weight would be regulated normally by maintaining a balance between expenditure and intake of energy.

Unfortunately, dieting is not this simple. Body weight has been shown to be an extremely stable variable over time. Even when weight loss has been achieved, success is not long lived. "Of the small proportion of patients who do lose weight, almost none maintain their weight loss for more than a year" (Jordan and Levitz, 1975). A longitudinal study by Sohar and Sneh (1973, cited in Jordan and Levitz, 1975), showed little weight fluctuation among obese patients who had lost between 9 and 138 pounds. After 14 years, 19 of the 27 patients weighed within 10% of their weight fourteen years earlier; 2 had gained over 15%, and only 5 maintained their weight loss. Further, other studies show that after semistarvation or after forced weight gain, subjects returned to normal weight (Bray, 1969, Keys, et al., 1950, Sims, Goldman, Gluck, Horton, Keller, and Rowe, Miller and Mumford, 1967, all cited in Jordon and Levitz, 1975). Finally, no weight loss program to date has been shown to produce stable, consistent results (Garner, et al., 1985; Howard, 1975; Jordan and Levitz, 1975; Kiell, 1973a; Stunkard and McLaren-Hume, cited in Jordan and Levitz, 1975). Rather, patients are "likely to run the gamut of various therapeutic measures, managing to lose a few pounds but inevitably regaining them" (Kiell, 1973a, p. xiii). Dieting simply has not been shown to be effective for long term weight loss.

Contrary to common belief, dieting behavior may actually be counter-productive (Striegel-Moore, Silberstein, Rodin, 1986); that is to say, "dieting itself may be a critical factor in promoting the maintenance of overweight," (Rodin, 1981, p. 362). Paradoxically, this means that ardent dieting (self-control, self-restraint), and not self-indulgence, promulgates the very problem it is intended to cure. Some authors (Polivy and Herman, 1985, Rodin, 1981) have reported that there are homeostatic processes which interact to thwart dieting as a simple prescription for weight loss. For instance, a major decrease in calorie intake is interpreted by physiological mechanisms as a signal that the organism must be faced with starvation or famine; metabolic rate slows to save energy, thereby diminishing weight loss. With each effort at dieting, these mechanisms swing into action more quickly. Relative to weight loss efforts, increased dieting leads to greatly diminished returns.

Another reason that dieting is counterproductive is that "health benefits of slenderness have been profoundly overemphasized, with little attention ...to the harmful effects of dieting" (Garner et al., 1985, p. 515). (See Garner et al., 1985, for a review of the evidence which questions the presumed relationship between overweight and health damage.) For example, hyperemotionality, overresponsiveness to external stimuli, and distractibility have been attributed to obese subjects; Herman and his co-workers argued that these are side-effects of dieting which would disappear with the cessation of dieting (Herman and Polivy, 1980).

Dieting may be further contraindicated because it may precipitate the onset of maladaptive, starvation-like reactions. In the extreme, severe dietary restriction can initiate eating disorders and will exacerbate existing symptoms in most cases (Garfinkel and Garner, 1982; Herman and Polivy, 1980; Rodin, 1981; Wardle, 1980). This position is supported by the marked similarity between many behaviors which characterize patients with anorexia nervosa and the behaviors observed in studies of semi-starved volunteers (Keys, Brozek, Herschel, Michelsen, and Taylor, 1950, cited in Garfinkel and Garner, 1982).

Among the parallel behaviors demonstrated by individuals in these two groups--the semistarved and anorexics--are preoccupation with food, pe-culiar eating habits, acquisitivenss, indecisiveness, concentration dif-ficulties, narrowing of interests, social withdrawal, and loss of sexual interest. Some subjects even demonstrated binge eating, followed by guilt. During the refeeding period, semistarved volunteers experienced intense hunger after eating a large meal. Only after weight normaliza-tion had been achieved did the semistarved volunteers returned slowly to their previous level of psychological functioning. These outcomes par-allel phenomena commonly seen during the treatment of eating disorders. For anorexics, the experience of intense hunger after eating may height-en their fears that eating will lead to loss of control, to an inability to stop eating, and, thus, to weight gains (Garfinkel and Garner, 1982). These parallels seen in experimental semistarvation studies and clinical observations of anorexics cannot be easily dismissed.

The side-effects of severe dietary restriction interact with other predisposing traits of the anorexic, such as an obsessive need for self-control. For example, anorexics may have difficulty concentrating as a result of semistarvation. They may then attempt, erroneously, to regain control (of their thinking) by exerting greater self-control (over their bodies) through more stringent dietary restriction (Garfinkel and Garner, 1982). In other cases, Garner and assosicates (1985) reported that "bulimia may become a problem in psychologically normal individuals after a period of intense caloric restriction" (p. 516). Polivy and Herman (1985) concluded that "dieting precedes binging more strongly than...the converse," (p. 195). Together, these problems add support for the conclusion that the standard view of dieting as a means of weight regulation may be dangerously simplistic.

Determinants of Weight Regulation

The challenges to conventional wisdom about dieting reviewed above highlight the conclusion that weight regulation is a complex matter. The model of weight regulation which simply posits a balance between calorie input and energy output appears to be outdated and misleading. Indeed, the search to discover the factors controlling eating and re-straint from eating has led already to a voluminous multidisiplinary literature which cannot reasonably be brought into one "coherent overall 'explanation'" (Herman and Polivy, 1980, p. 209). (The extent of the literature may be inferred from the bibliography of one edited text--consisting of 42 pages, Kiell, 1973b.)

Nevertheless, Schachter (1971, cited in Herman, 1978), did propose a general system of grouping the stimuli controlling eating into:

(a) external stimuli (characteristics of food or of the environment which must be cognitively or perceptually processed, such as taste or passage of time) or

(b) internal stimuli (physiological processes, such as gastric constrictions or blood sugar levels).

This external/internal distinction provided a theoretical framework for studying psychological factors in weight regulation. The dichotomy led intially to research which supported the view of obesity as a failure of weight regulation. However, subsequent research has presented serious challenges to this explanation of obesity.

Schachter's Stimulus-Binding Hypothesis

During the 1970's, one popular line of research on weight regulation focused on the external/internal distinction. This research exemplified a general approach to weight regulation studies in which normal and obese subjects were compared. Presumably, the rationale for this methodology includes the following assumptions: (a) that the obese evidence a failure of weight regulation and (b) that studying such failures in the weight regulation system will provide information about normal functioning.

Schachter and his associates (e.g., Nisbett, 1972a; Rodin, 1973; Schachter, 1971; Schachter and Rodin, 1974b) proposed a stimulus-binding theory of weight regulations. They concluded that normal weight sub-

jects were responsive to <u>internal</u> cues of satiety or hunger (e.g., gastric constriction or distension). Obese subjects, on the other hand, were not responsive to such internal cues, according to these researchers. <u>External</u> stimuli--such as qualities of food (e.g., sight, smell, or taste) or aspects of the environment (e.g., apparent passage of time)--triggered eating behavior among the obese. In other words, normal weight people were thought to eat only when it is biologically appropriate to eat, and, thereby, regulate their weight successfully. Obese subjects, on the other hand, purportedly overeat as a result of their internal unresponsiveness and external sensitivity; their eating was triggered by stimuli independent of physiological need.

Although the external/internal responsiveness distinction between obese and nonobese subjects was most clearly demonstrated in regard to eating behavior, Schachter was convinced that this dimension applied across other behaviors as well. For example, studies seemed to indicate to Schachter that obese subjects were more distractible than normal weight subjects. From the results of their experiments, Schachter and his group concluded that evidence of externality could be found in many aspects of the functioning of overweight people (e.g., in regard to visual stimuli, to distraction, etc.); externality in eating is merely a specific case of the general phenomenon. In other words, based on a consideration of the external/internal dimension, obese subjects were seen to be generally deviant from normal weight subjects.

The "stimulus-binding" hypothesis (an alternative characterization of the external/internal difference) has been popular and was quickly in-

corporated into many weight loss progams (Rodin, 1980, 1981). For exam-
ple, dieters have been urged to keep food out of sight and to reduce the
number of cues associated with food by eating only in one place, only at
specific times, and with only one set of utensils. The advice to the
obese to reduce the number of external cues associated with food has
come directly from the research on the stimulus-binding theory.

The problems with the stimulus-binding theory. Unfortunately, the
application of the stimulus-binding (externality) theory of obesity may
have been premature. Despite the amount of research findings accrued in
support of the theory (Drewnowski, Brunzell, Sande, Iverius, and
Greenwood, 1985; Schachter, 1967, 1968, cited in Schachter, 1971;
Schachter and Rodin, 1974b), other research results and attempts at rep-
lication have been inconsistent (e.g., Cheung, Barnes, and Barnes, 1980;
Grinker, 1973; Levitz, 1973; Nisbett and Storms, 1974, cited in
Ruderman, 1986; Rodin, 1981; Ruderman, 1986; Shaw, 1973, cited in
Ruderman, 1986; Wooley, 1972).

The stimulus-binding (externality) hypothesis as it relates to obesi-
ty has been severely criticized on several key points (e.g., Rodin,
1981). Research has not always shown non-obese subjects to be better at
regulating their weight on the basis of internal cues; further, obese
subjects have shown regulation to internal cues; finally, nonobese sub-
jects have been shown to be influenced by cognitive components (external
factors).

The findings of studies of long- and short-term caloric regulation
are in direct contradiction to the premise that normal weight subjects

are internally responsive or, at least, more internally responsive than obese subjects (Jordan, 1973; Spencer and Fremouw, 1979; Wooley, 1972; Wooley and Wooley, 1973, 1975). For instance, similar patterns of long-term intake regulation have been demonstrated for both obese and non-obese subjects. Furthermore, neither group is adept at short-term regulation in the absence of cognitive cues.

The main premise of the stimulus binding (externality) theory--that obese are externally responsive whereas the nonobese are are internally responsive--has been brought further into question by evidence that there are internally and externally responsive people in both those weight groups (Rodin, 1981). Also, significantly, obese people have been found regularly to eat less and consume fewer calories than normal weight individuals, (Katahn 1982; Katahn 1980, Garrow 1978, both cited in Katahn 1982; Pertschuk, Crosby, and Mullen, 1983, cited in Polivy and Herman, 1975; Remington, et al., 1983; Storky, Marks, Kalevy and Criop, 1977, cited in Polivy and Herman, 1975), a finding that subverts the externality explanation of obesity from yet another, perhaps even more fundamental, angle. One can hardly claim that obese people fail in successful weight regulation through overresponsiveness to external cues if that overresponsiveness does not translate into "eating" and/or excessive calorie intake.

Another criticism of Schachter's theory is that the dichotomy between internal and external cues is artificially simplistic and erroneous. Ruderman (1986), however, noted in her review of restraint theory that good definitions of salience and external responsiveness have not been

established. The categorization of external and internal stimuli has become blurred (Ruderman, 1986). Whereas taste was originally considered to be an external cue, this designation is no longer so clear. There are also problems in defining restraint. Restraint has been operationally defined in the past by scores on the Restraint Scale (RS). This scale may improperly categorize subjects as restrainers. Such problems with definitions result in inconsistent sampling (Rodin, 1981, cited in Ruderman, 1986). Taste perception may be influenced by the state of the organism (Drewnowski, Brunsell, Sande, Iverius, and Greenwood, 1985; Simon, Schlienger, Sapin, and Imler, 1986; Spitzer and Rodin, 1981, cited in Ruderman 1986; Rodin, 1981).

More recent research by Herman and his associates (e.g., Herman and Mack, 1975) and by Nisbett (1972b) has indicated that the external/internal dimension is more likely to relate to chronic dieting than to obesity per se. According to these authors, the obese/nonobese differences, as well as the inconsistent results, can be explained by that fact that a preponderance of obese people are also chronic dieters.

Nisbett's Set-Point Theory

Nisbett (1972b) has presented an alternative to the notion that obesity is evidence of a failure in weight regulation of the simple calorie-input/energy-output imbalance sort. In this alternative theory, known as the set-point theory, obesity is believed to be maintained by successful physiological weight regulation.

Nisbett asserted that each person has a unique, biologically deter-
mined set-point for weight which is based on number of adipocytes (or
fat cells) (e.g., Hirsch and Knittle, 1968, and Bjorntorp, Bergman, and
Varnauskas, 1969, both cited in Nisbett, 1972b) and which is homeostati-
cally protected. This set-point reflects the ideal weight for the indi-
vidual, regardless of how that weight compares to population norms or
cultural ideals. If the adipocytes are depleted below the set-point, a
relative state of deprivation is created and homeostatic mechansims are
triggered. Therefore, the weight of an obese person would be physiolog-
ically defended with the same vigor as the weight of nonobese individu-
als. The homeostasis may be regulated through action of the ventromedi-
al hypothalamus. In this view, the weight regulation system of obese
people (just like nonobese people) is functioning appropriately: Obese
people merely have a higher set-point for normal body weight.

From this position, Nisbett (1972b) hypothesized that the apparent
connection between external responsiveness and overweight is mediated by
chronic, physiological hunger. Abnormal hunger is created by weight re-
duction below the ideal weight (or set-point). In other words, Nisbett
postulated that the findings of externality among the obese were really
by-products of relative starvation in the obese, brought on by chronic
dieting. Nisbett attributed the obese/nonobese differences found by
Schachter to be related to the high percentage of obese subjects who are
dieting in response to social pressure to lose weight. This is seen es-
pecially often among the upper- and middle-classes. Dieters, in turn,
are chronically hungry because they keep their weight below a natural
set-point. As a result, the dieting obese may be statistically over-

weight yet simultaneously be physiologially deprived or "starving all the time" (Nisbett, 1972b, p. 435). Therefore, the association between obesity and externality is actually mediated by hunger stemming from chronic dieting by the obese.

In summary, according to the set-point theory, externality is not related to obesity per se. Instead it may relate best to the suppression of weight into a range at which the homeostatic efforts of the regulatory system are triggered. As Stunkard (1981) put it, "It is not that they are too fat, but that they are not fat enough that accounts for their behavior" (p. 243).

There are some problems for the set-point theory. For instance, according to Rodin (1981), responsiveness to external food- and nonfood-relevant stimuli do not differ as a result of weight loss (based on pre- and post-test data) (Rodin, Slochower, Fleming, cited in Rodin, 1981). Specifically, external style of responding did not increase with weight loss.

Further, Herman and Polivy (1980) reported that subsequent research (e.g. Kirtland and Gorr, 1979, cited in Ruderman, 1986) contradicted the premise that the number of fat cells is unchangeable after adolescence. They conceeded that this finding alone did not dispute the set-point theory; however, Herman and his colleagues have insisted that a critical role must be postulated for volition in dieting, because dieting occurs in direct opposition to such strong physiological forces. This introduces a new element (viz., voluntary control) into the explanatory system--an element which is not simply based on physiological or sensory control--an element which is a cognitive, mentalistic, concept.

Herman and Mack's Dietary Restraint

Herman and Mack (1975) developed a theory based on their assertion of a central role for the psychological control of dieting which they designated "dietary restraint." Like Nisbett (1972b), Herman and his associates (e.g., Herman and Mack, 1975; Hibscher and Herman, 1977) asserted that the obese versus nonobese differences found by Schachter were best explained as dieting versus nondieting differences. Herman and Mack (1975) expanded this concept further. They observed that, not only are overweight people likely to be dieters (as Nisbett, 1972b, demonstrated), but there are also a sizeable percent of dieters whose weight is within the normal range. Normal weight and obese dieters were identified by a self-report scale regarding dieting practices, developed to operationally define high and low dietary restraint (Restraint Scale) (Herman and Mack, 1975).

The Laboratory Restraint Paradigm

Some of the initial efforts to extend the obese/nonobese findings to dieters and nondieters involved a series of taste test studies. The "taste test" is a design originally employed by Schachter and his colleagues to study obese/nonobese differences (e.g., Schachter, Goldman and Gordon, 1968, cited in Schachter, 1971). This design has been repeated in subsequent research substituting restrained/unrestrained subjects. In this paradigm, subjects are given the impression that they are to rate food on various taste properties. Some of the subjects are first requested to ingest a caloric preload (or a high calorie preload). The remaining subjects have no preload (or a low calorie preload).

Next, subjects are given free access to another type of food which they are asked to rate. Actually, it is the amount of food consumed under free-feeding conditions which is measured rather than taste ratings. Comparisons are made between levels of consumption between obese and nonobese, or restrained and unrestrained, subjects. (Although the preload was originally used to vary hunger levels, later the preload itself became a variable of interest.)

Restrained and unrestrained subjects showed striking differences in such taste test situations. These differences paralleled those seen in the obese and nonobese subjects studied by Schachter and his associates (e.g., 1971). As one might predict, unrestrained eaters (nondiet restrictors) regulated their caloric intake in the experimental situation; in other words, nonrestrainers compensated for their intake during the taste test by eating less after high-calorie preload than they did after having no preload or low calorie preload. Contrary to the usual idea of weight regulation, restrained eaters, counterregulated. As the name implies, counterregulation refers to a process which is the reverse of regulation. Not only did the diet restrictors fail to eat less, they actually ate more after the high calorie preload than after the low calorie preload. At low preload values, restrained eaters ate the same or somewhat less than unrestrained eaters.

Counterregulation was considered an important finding by both Schachter's and Herman's teams. Counterregulation was interpreted by Schachter's colleagues as support for the idea that the (external) characteristics of food were more potent cues for eating than the internal

cues of satiety. Herman and his associates disagreed, proposing instead that counterregulation was an indication that the caloric preload somehow disinhibited the dieter's state of self-imposed restraint (Herman and Polivy, 1980). That is, counterregulation occured "when normally restrained eaters suspended their self-imposed restraint, {and} they came face to face with a state of chronic deprivation. Having given up hope of staying within the caloric limits they had imposed upon themselves, they suffered 'motivational collapse' and gave in to the demands of the hunger which they had been suppressing" (Stunkard, 1981, p. 244).

Variables Studied in Relationship to Dietary Restraint

Dietary restraint has been studied as it affects eating behavior and non-eating behavior. The effect of dietary restraint on counterregulation, which is an eating behavior, has been studied through the taste test experiments described above. Variables affecting counterregulation will be discussed below. The effect of dietary restraint on non-eating behavior will also be discussed below. In studies in which eating behavior was observerd, variables which strengthen or weaken dietary restraint have been manipulated. These, too, will be described below.

Disinhibitors of Dietary Restraint

One primary hypothesis of restraint theory is that disruption of restraint (loss of control) leads to counterregulation (overeating), (Ruderman, 1986). Disruption of dietary restraint is said to have oc-

cured when restrainers counterregulate in the taste test situation. Among the disinhibitors of restraint which have been studied are: a) forced caloric preloads, b) anxiety, c) depression, d) alcohol, e) taste, f) preloads believed to be highly caloric (Baucom and Aiken, 1981; Frost, Goolkasian, Ely, and Blanchard, 1982; Herman and Mack, 1975; Herman and Polivy, 1975; Herman, Polivy, and Silver, 1979; Hibscher and Herman, 1977; Kirschenbaum and Tomarken, 1982; Polivy, 1976; Polivy and Herman, 1976a, 1976b, 1976c; Polivy, Herman and Warsh, 1978; Polivy, Herman, Younger, and Erskine, 1979; Ruderman, 1983a, 1985a; Ruderman and Christensen, 1983; Ruderman and Wilson, 1979; Woody, Costanzo, Leifer, and Conger, 1981).

Disruption of dietary restraint and emotion. Several studies have explored the relationship between dietary restraint and anxiety (Polivy, Herman, and Warsh, 1978) or depression (Baucom and Aiken, 1981; Frost, et al., 1982; Ruderman, 1985b; Polivy and Herman, 1976a; Zielinski, 1978, cited in Frost, et al., 1982). One diagnostic indicator of clinical depression is weight loss and many self-report depression assessments include questions about weight loss (Frost, et al. 1982).

Strongly negative emotions have been thought to disinhibit restraint, draining the motivation of restrainers to diet (Ruderman, 1986). However, weight gain has been noted as a feature of clinical depression as well. Low restraint, depressed patients have been shown to report weight loss whereas high restraint, depressed patients report weight gain (Polivy and Herman, 1976a; Zielinski, 1978, cited in Frost, et al., 1982). Dieting obese and nonobese subjects ate more when depressed than

nondieters (in a study where dieting status was determined simply by di-
chotomous self-acknowlegement) (Baucom and Aiken, 1981). High re-
strained eaters also ate more than low restrained eaters when dysphoric
mood had been induced (Ruderman, 1985a). Frost, et al. (1982), however,
found only a marginally significant interaction between depression and
restraint though results were in the expected direction.

Dietary restraint and alcohol. According to Ruderman's (1986) re-
view, alcohol has long been considered a general disinhibitor of the
constraints and defenses that govern behavior, Polivy and Herman (1976a,
1976c) found that alcohol is only a disinhibitor of restraint among di-
etary restrainers when these subjects knew or believed that they had
been given alcohol to drink. When cognitive cues were minimized and
subjects were blind to alcohol condition), unrestrained eaters ate more
and restrained eaters ate less. These findings are in keeping with the
view that much of disinhibition of behavior by alcohol is culturally and
socially determined. Gelles (1974), for one, has suggested that intox-
ication offers people a socially accepted "time out" from normal behav-
ior.

Enhancement of Dietary Restraint

After demonstrating the ability to induce disinhibition of restraint,
Herman, Polivy, and Silver (1979) decided to attempt to enhance dietary
restraint. Earlier, Nisbett and Storms (1972, cited in Levitz, 1973)
had found obese/nonobese differences to social cues which were associat-
ed with increased or decreased eating. Herman, Polivy, and Silver

(1979) reasoned that since social factors may lead to an individual's attempt to restrain in the first place, perhaps increasing self-consciousness induced by the presence of an observer during the taste test might counteract the tendency to counterregulate.

As predicted, the physical presence of the experimenter did not affect unrestrained eaters. Restrained eaters in the absence of the experimenter counterregulated (ate more after preload), whereas restrained eaters in the presence of the experimenter compensated for the preload (Herman, Polivy, and Silver, 1979). Restrained/unrestrained differences were not found regarding eating behavior when a confederate modeled behavior; both restrained and unrestrained subjects overate when the confederate overate and counterregulated when the confederate identified herself as a dieter but went on to overeat (Polivy, Herman, Younger, and Erskine, 1979). Social factors were, also, considered important by Merola (1984) who studied the effect of privacy in the eating situation. In keeping with previous results, in the public condition only high-restraint/normal weight subjects counterregulated. In the private condition, all subjects, except the low-restraint/overweight subjects, counterregulated.

The Relationship of Dietary Restraint to Noneating Behaviors

Dietary restraint has an obvious impact on eating behavior. However, restriction may affect other aspects of an individual's functioning as well. There are few studies which have explored the relationship of dietary restraint to non-eating behaviors such as emotionality, reaction

time, and distractibility. Restrained eaters, in comparison to unres-
trained eaters, have been reported to demonstrate exceptional reactivity
to external stimuli in situations unrelated to food (Herman and Polivy,
1975; Herman, Polivy, Pliner, et al., 1978; Polivy, Herman, and Warsh,
1978).

Emotionality. In an earlier section, emotional state was discussed
as an independent variable affecting dietary intake. In this section,
emotional overresponsiveness is discussed as a specific example of over-
responsiveness to external stimuli, or, alternatively as a by-product of
dietary restriction.

Whereas Schachter and Rodin (1974b) considered heightened emotional
responsiveness (also known as emotionality), as well as overeating, to
be a specific case of general external overresponsiveness, Herman and
his associates argued that both externality and the hyperemotionality of
the obese are side-effects of the stress of dieting (Hibscher and
Herman, 1977; Herman and Polivy, 1980). To support their position,
Herman and his co-workers noted that dieters have been found to have
high blood levels of free fatty acids, shown to be related to both hun-
ger and stress.

Congruent with a theory that dieting is stressful and supported by
information about free fatty acids (Hibsher and Mack, 1977; Yaremko,
Fisher and Price, 1975, both cited in Herman, Polivy, Pliner, et al.,
1978), restrained compared to unrestrained eaters have been shown to be
more highly aroused. Polivy, Herman and Walsh (1978), cited in Ruderman
(1986), had restrained and unrestrained eaters to rate emotionally

arousing slides. Restrainers gave more extreme ratings than nonres-
trainers. However, when subjects were given caffiene, the results were
reversed. There is "little lingering doubt as to the elevated emotional
responsiveness of obese and dieting subjects, although there is still
some debate as to the exact nature and dynamics of such elevated emo-
tionality" (Herman, Polivy, Pliner, Threlkeld, and Munic, 1978, p.
545-546).

Performance and Restraint by Food Preoccupation

Reaction times and distraction. Another non-eating aspect of func-
tioning which has been considered evidence of externality in the obese
is distractibility (e.g. Rodin, 1974). Herman, Polivy, Pliner, et al.
(1978) designed an experiment to parallel Rodin's (1974) investigation
of reaction times and distraction, using dietary restriction rather than
obesity as the independent variable. Herman and his colleagues main-
tained that there were positive effects of distraction on the perform-
ance of the normal weight subjects which had been seen in those earlier
studies and which the stimulus-binding hypothesis could not explain.

According to Herman and his colleagues, early research has shown that
the relationship between arousal and performance (presumably on a vari-
ety of tasks) can best be described as an inverted U curve. In keeping
with the premise that dieting is a stressor, Herman and his colleagues
postulated that restrictors would tend to show a higher arousal level
than nonrestrainers and would therefore show better performance. Herman
and his co-workers found that unrestrained eaters who were neither dis-

tracted nor anxious had the lowest performance. The presence of either anxiety or distraction was associated with increase toward optimal performance of unrestrained eaters. When added together, arousal seemed to exceed the optimal level and performance was somewhat lower than for either alone. An opposite pattern was found for restrained eaters for whom the addition of anxiety and/or distraction appeared related to decreased performance. These results were consistent with the premise that baseline arousal among restrained eaters was already near optimal levels.

Dietary Restraint and Cognitive Factors

Cognitive factors have been posited to be integral to dietary restraint, both in the decision to diet and in counterregulation. As mentioned earlier, Herman and his associates speculated that in the face of strong homeostatic processes which oppose weight loss (e.g., biological set-point), it would be unlikely that dieting restriction is simply under the control of physiological stimuli (Herman and Polivy, 1980). Instead, there seems to be strong agreement that people diet in response to external stimuli, namely social forces--stimuli which are cognitively interpreted. Assuming such cognitive factors affect the decision to restrict one's diet, it would be logical to assume that these cognitive factors could control the continuation or interruption of dietary restraint. Finally, the phenomenon of counterregulation appears to be influenced by cognitive factors. For example, if a restrainer eats to much, he or she may conclude "I've blown it...I might as well continue to eat," (Ruderman, 1986, p. 249).

Support for the role of cognitive factors in dietary restriction and in disruption of restraint has been found in studies which diminish or alter cognitive cues. If normal weight nonrestrainers regulate their consumption and thus their weight by internal responsiveness, then cognitive factors should not influence their patterns of consumption.

However, even normal weight subjects appear to use cognitive cues to regulate eating (Kirschenbaum and Tomarken, 1982; Merola, 1984; Polivy et al., 1979, cited in Ruderman, 1986; Polivy, 1976; Spencer and Fremouw, 1979; Woody et al., 1981). For example, counterregulation occurred only when the subjects believed they had been given alcohol (Polivy and Herman, 1976a, 1976c).

In addition, the beliefs about the caloric level of the preload (when the manipulation was successful) has been shown by some researchers to be more influential in producing counterregulation than the actual caloric level (in post hoc analyses by Polivy, 1976; Spencer and Fremouw, 1979; using obese subjects, Wooley, 1972, cited in Woody et al., 1981; Woody, et al., 1981) but not by others (Ruderman and Wilson, 1979, cited in Woody et al., 1981).

Also, restrained eaters who "perceived" dieting in an "all or nothing" fashion responded to a violation of their diets with disinhibition. Researchers have interpreted this behavior as motivated by cognitions which permits the dieter to continue to eat (Ruderman, 1986, p. 250). Counterregulation occured in studies when subjects had merely been led to believe that participation would involve a violation of dietary restraint (post hoc analysis by Ruderman and Wilson, 1979; Ruderman,

Belzer, and Halperin, 1985, cited in Ruderman, 1986; Kirschenbaum and Tomarken, 1984, cited in Ruderman, 1986).

Social cues (e.g., the presence of another person), which must be interpreted cognitively, have been shown to be related to increased or decreased restraint (Merola, 1984; Herman, Polivy, and Silver, et al., 1979; Polivy, Herman, Younger, et al., 1979). Finally, cognitive factors, as shown below, have been shown to have some effect on food intake regulation, although the results have been inconsistent. The aspects of the regulation of food intake which have been studied include long-term versus short-term regulation, liquid versus solid food intake, and internal versus cognitive cues.

Cognitive appraisal of intake regulation. Schachter's and Herman's research suggests that caloric intake is regulated by the nonobese and by unrestrained eaters. Differential compensation in food intake has been shown by obese and nonobese subjects in free feeding situations and in response to experimentally altered loads of intake. For example, differences in compensation were found between "weight regulators" and "obese" subjects (Pudel, cited in Stunkard, 1981). In a free-feeding situation, weight regulators, but not obese subjects, slowed their rate of consumption during a 20-minute test meal (Pudel, cited in Stunkard, 1981). Normal weight and non-diet-restraining subjects also compensated for food intake during one part of an experiment by reducing intake during another part of the study. But results were not always so clear cut. For example, normal weight subjects demonstrated compensation in response to solid and liquid preloads whereas obese subjects showed com-

pensation to liquids but not to solids (Pliner, 1974, cited in Polivy, 1976). These studies suggest at least a partial impairment in responsiveness to internal cues for initiating and/or terminating food intake among the obese.

All this would seem to suggest that restrainers and nonrestrainers regulate differentially. However, the differences in regulation become much less apparent if cognitive cues are controlled. For example, other researchers have found no internal/external pattern of differences in caloric regulation, especially when caloric values were unknown (Wooley, 1972; Wooley, 1971, and Wooley, Wooley, and Dunham, 1972, both cited in Polivy, 1976).

Short-term vs. long-term regulation of consumption. The inconsistencies in results which are found in studies of regulation of consumption may be attributable to a clouding of distinctions between short-term and long-term regulation. Some believe that short-term regulation may be under cognitive control (e.g., Wooley, 1972). Currently, there is evidence that all subjects will achieve long-term internal regulation, albeit incomplete (Jordan, 1973). For example, Jordan (1973) studied long- and short-term weight regulation, primarily using oral or intragastric intake of liquid meals. With oral intake (normal eating or drinking), there are cues which may be interpreted cognitively, (visual cues, amount of chewing, swallowing, etc). In intragastric feeding, such cognitive cues are minimized. In short-term weight regulation, volume was a more important factor than caloric values in determining food intake. However, over a period of days, all subjects began to show

weight regulation by compensation for changes in food intake, though it was not perfect regulation.

Cognitive factors, restraint and eating disorders. Cognitive aspects of dietary restraint appear to be especially relevant for understanding eating disorders. The importance of cognitive factors is supported by clinical, anecdotal, and experimental observations of people who restrict their diets. One striking parallel between patients with eating disorders and the starving volunteers is the intense preoccupation with food which both share (Garfinkel and Garner, 1982; Garner, et al., 1985). Clinical observations and case reports of anorexics and bulimics reveal that these patients spend inordinate amounts of time thinking about food, planning meals, shopping for food, cooking for others, collecting cookbooks, and so on. The semistarved volunteers were also observed to show these preoccupations. After the volunteers were returned to a normal diet, many of these behaviors persisted; some subjects even changed professions to allow themselves to work with food (three became chefs and one went into agriculture). Among dietary restrictors, the preoccupation with food is often maladaptive; thoughts of food and eating regularly consume the attention and take over the person's day. Herman and Polivy (1984, cited in Ruderman, 1986) have expanded their idea of dietary restraint by proposing a boundary model of weight regulation. This model postulates ranges of tolerance of hunger/satiety and can be used to explain counterregulation, binge eating, and anorexia (Ruderman, 1986).

Statement of the Problem

If food related ideas figure prominently in the cognitions of people
who restrict their diets, then one might suspect that food-relevant cues
from the environment would be more salient to restrainers who, in other
words, could be considered externally responsive to cues of eating.
More specifically, one might further predict that attention and memory
would be affected by such salient stimuli; for example, it might be ex-
pected that individuals who were dieting would be more susceptible to
the influence of food advertisements on television or more tempted to
stray from their diet by the sight of someone else eating.

The present study was designed to explore the role of cognition in
dietary restraint and to test the assumption that visual, food-relevant
cues are particularly salient for dietary restrainers. That is, because
of their salience, it was expected that visual food stimuli would affect
the quality of visual recognition among dietary restrainers.
Specifically, it was hypothesized that on a picture recognition task in
which subjects were presented with food and nonfood stimuli, high res-
trainers would (a) correctly recognize more food-related stimuli which
they had seen before (RPs, repeated pictures), and (b) would incorrectly
respond to food-related pictures which they had not seen before (NPs,
new pictures).

The study was designed to avoid the possible interaction of internal/
external stimuli which arise with actual food intake so as to isolate
better the cognitive factors involved in restraint. The study was also
planned to investigate the possibility of non-eating behavior which
would be analogous to counterregulation.

The picture recognition task involved two series of slides, a first (Input) series and a second (Test) series. In the seond (Test) slide show, subject were shown either a repeated picture (RP) which had been shown in the first (Input) series or a new picture (NP) which had not been shown in the initial (Input) series. As illustrated in Table 1, subjects could make correct responses in two ways: (a) They could correctly claim that they had seen a repeated picture (RP) they had actually seen before, which will be referred to as "Hits"; or, (b) they could correctly deny that a new picture (NP) was a picture they had seen previously (i.e. refrain from claiming that they have seen the NP before),

Table 1

Response Categorization

	TEST PICTURES	
Subject Response	RP	NP
Yes	Hit	False Alarm
No	Response Failure	Correct Rejection

Note. RP = repeated picture, NP = new picture.

which will be referred to as "Correct Rejection." There are also two

kinds of errors possible: Subjects could fail to report recognition of a RP ("Response Failure") or they could falsely claim recognition of a NP ("False Alarm").

Performance will be discussed, unless otherwise noted, as a percentage of correct or incorrect to total possible per category. For instance, hits on food items (food hits) are calculated as: Food hits = (number of correct avowals to food pictures) divided by (the total number of food RPs).

The specific hypotheses of this study can be summarized by the prediction that high diet restrainers would make more food hits and more food false alarms than nonrestrainers. The predicted higher rate of food false alarms was conceptualized as a parallel to counterregulation in studies which are based on the consumption of food.

METHODS

Overview:

In order to test the hypothesis that dietary restrainers are more responsive to external cues (which, by definition, are cognitively processed) for eating, a visual recognition test was developed using photographic slides of food and nonfood pictures. Small groups of volunteers who had been screened for dietary restraint were asked to watch a series of slides and were then tested for visual recognition of these pictures through a second slide series.

Subjects scoring high on measurements of dietary restraint were expected to be overly inclusive in their responses to food pictures during the second (test) slide presentation compared to subjects classified as nonrestrainers. (Note: For convenience and to reduce monotonous redundancy, the term "high restrainer" will be used interchangeably with "restrainer"; "low restrainer" will be used interchangeably with "nonrestrainer.") That is, high restraint subjects were expected to report recognition of a higher number of food-related slides. This higher recognition rate was expected to reflect both a greater number of correct responses to the identical food slides and a greater number of errors on food slides not included in the original presentation. It was further hypothesized that overresponsiveness would be limited to the food-related slides; recognition of nonfood pictures was expected to be similar for restrainers and nonrestrainers.

Subjects:

Female college undergraduates (N=115) at the University of North Dakota were volunteers in this study. Only female subjects were included in the present study because of the over-representation of women in the eating disorder populations. Mean age of subjects was 19.9 years ($\underline{sd}$ = 3.315).

Participation in the visual recognition task was contingent upon completion of a packet of five questionnaires distributed early in the semester as part of a screening procedure. Students were told that completing the screening packets would make them eligible (but would not obligate them) to participate in other research experiences. Female subjects who had indicated a willingness to be contacted about other studies were recruited by telephone for the picture recognition experiment. As incentives to participate, potential subjects were offered course credit and an opportunity to win one of five cash prizes (one fifty dollar first prize, one twenty-five dollar second prize, and three pairs of discount movie passes, the equivalent of six dollars, as third prizes).

To summarize, participation in this study involved two steps, separated in time by about 14 weeks: the screening procedure for subject selection, followed by the picture recognition task.

Subject Selection: Screening Materials and Procedures

Subject were selected for the study through a screening process. Screening packets were distributed to students enrolled in undergraduate psychology courses. Students who completed the questionnaires contained in these packets were given class credit for their participation and the opportunity to participate in the picture recognition task. These aspects of subject selection are elaborated below.

Screening Packet Materials

Each screening packet consisted of: (a) a consent form, (b) the Anorexia and Bulimia Inventory (ABI), (c) the Bulitt (another bulimia inventory), (d) the Restraint Scale (RS), (e) the DMS Restraint Scale, (f) a background demographic information sheet, and (g) two standard General Purpose NCS answer sheets (form no. 4521) for computerized scoring. (See Appendix A for copies of screening materials.)

Two of the five questionnaires (RS and DMS) were selected as the designated restraint scales. However, the Bulitt and the ABI were used to secure information about eating disorders (viz., anorexia and bulimia); items from each were selected as two separate restraint subscales (ABI-RS and Bulitt-RS). As an additional measure, the background questionnaire included an item regarding whether or not the respondent was currently dieting. Each measures was used to elicit information previously related to maladaptive eating and/or dieting, including data on: eating habits, attitudes, behaviors, feelings, and personal background.

The decision to use more than one measure of restraint stemmed from recent criticisms of the Restraint Scale, which, nevertheless, is the most widely used measure of dietary restriction (Blanchard and Frost, 1983; Drewnowski, Riskey, and Desor, 1982; Lowe, 1984; Ruderman, 1983b). Some authors have demonstrated that the Restraint Scale loads on two factors: (a) concern with dieting and (b) weight fluctuation. Weight loss (or fluctuation) leads to a higher overall score on the Restraint Scale. This second factor may falsely identify obese nonrestrainers as restrainers since the obese can show large weight fluctuations without dieting. (See, for example, Ruderman, 1985b, for further details). On the other hand, Lowe (1984) reported that normal weight dieters were four times more likely than normal weight nonrestrainers to have been overweight at one time. The face valid items on the DMS Restraint Scale appear to address some of these complaints. However, to date, the DMS has not been subjected to psychometric analyses.

Other subscales of the ABI were coded for later use to control extraneous characteristics. In particular, the Depression, Anxiety, and Obsessiveness subscales were examined. Also, one subset of items selected from the ABI, Bulitt and RS was designated as a Preoccupation with Food (Preocc) subscale based on the face validity of the items.

Along with information about the procedures, the opportunity to learn more about the study and assurance of confidentiality, the initial screening packet consent form included the request for a local telephone number so that subjects could be called and given the opportunity to volunteer for further studies later in the semester.

Screening Packet Distribution Procedures

The screening packets described above were distributed in large introductory psychology classes, primarily within the first six weeks of the spring semester. (The exception to this was a second screening of a smaller upper level psychology course which took place later in the semester.)

The researcher or an assistant took the packets to the classes, explained briefly the nature of the questionnaires in the packet, the approximate time needed to complete them (estimated at one hour), the amount of research credit to be earned (if any), and the procedure for returning the completed answer sheets. Packets were circulated for both male and female students. After receiving packets, students were asked to read, sign, and return the consent form immediately if they wished to participate in the screening task. When the consent forms from volunteers were collected, volunteers were directed to take the packets with them and to return the completed answer sheets and background sheet during the next class period or to a receiving box outside the researcher's office door.

As mentioned above, one hour of research credit which translated into credit in a psychology course was offered in exchange for participation. Subjects who did not fully complete some aspect of the study were offered a pro-rated amount of research credit commensurate with the amount of time volunteered.

Picture Recognition Task: Materials and Procedures

The first section below reviews the materials and the procedures used to create the two Input and Test series of slides for the picture recognition task. The second section deals with setting and equipment for the slide presentations. The final section reviews the procedures followed during the picture recognition task and the physical measurements data collection.

Materials

Food pictures were chosen as visual cues of eating; nonfood pictures were chosen for comparison. Color slides of magazine pictures were produced to allow the presentation of standarized, high quality visual images and to allow for group presentation. (A video-taped series of food/nonfood images was considered but rejected because sufficiently large and high quality images could not be reproduced with available equipment.)

Stimulus Selection

To create the color slides, large (range approximately 6.5" x 9" to 8" x 11") high quality color photographs were collected from National Geographic Magazine, Better Homes and Gardens, and Bon Appetit. Pictures were selected on the criteria that they be extremely attractive or interesting and that they contain no legible print. Pictures were categorized by content as "food" or "nonfood." Only nature, garden, in-

terior, or other miscellaneous scenes with no food or eating content were allowed in the "nonfood" category. Food pictures featured edibles prominently. They were often close-ups or food displays from advertisements or food magazines. Only food scenes without people, animals, legible print or other apparently distracting features were allowed in the "food" category. Categorizing pictures into food/nonfood groups was straightforward with 100% reliability between two judges.

The study required two series of slides--an "Input Series" through which subjects received their first view of the slides and a "Test Series" through which recognition was tested. Relevant literature indicated that visual recognition ability in normal subjects is astonishing. One study (Haber, 1970) demonstrated a 85 to 95 percent correct recognition rate on 2500 pairs of slides. The author extrapolated that, barring fatigue, 25,000 slide pairs could be recognized. The slide pairs in that study were shown side by side with instructions to note which slide had been seen before. Taking these findings about the facility of visual recognition into account but keeping in mind the greater difficulty of the current task, as well as financial and other practical limitations, a series of 160 slide pairs was chosen. (One practical limitation, for example, was that the projection equipment used in the study required slide carousel trays which held 80 slides each; although larger slide trays are available, they are unreliable: slides frequently jam in the smaller slots.) Results from a small informal pilot study (N=12) with this number of slides had suggested that the task was neither too difficult nor simple, indicated by a 72.69 percent accuracy rate by pilot subjects.

Half the slides (80) in the Test Series were duplicates of slides in the Input Series, i.e. "repeated pictures" (RPs); the remaining half were pictures not included in the Input Series, i.e. "similar but new pictures" (NP). Also, the picture recognition task required a sufficient number of food slides to allow a range of scores without biasing results by cuing subjects as to the food/nonfood dichotomy. Therefore, 50 of the 160 slides in each series were selected from the food category whereas the remaining 110 slides were selected from several nonfood categories such as nature, garden, home interiors, and a miscellaneous category that included people, ariel views, and so forth. The various content areas of nonfood were introduced to further reduce the possibility that subjects' responses would be altered by recognition of the focus on food cues.

To create the Input Series and Test Series of slides (two trays of 80 slides per series), approximately 200 magazine picture were each paired with a similar picture in its category. (Some pictures were nonoverlapping halves of a two-page reproduction in the magazine; others were not as closely related to each other but were subjectively judged to be similar in content, color, and complexity.)

Subsets (i.e. food, nature, garden, etc.) of pictures pairs were ordered haphazardly. A coin toss determined whether the first pair of the subset would be a NP or an RP pair. Alternating every other pair in the rest of the subset, pairs were designated RP or NP. It was then determined by coin toss whether the first member of the NP pair would be presented in the Input Series or the Test Series; the remaining member was

assigned to the opposite series. Similarly, a coin toss determined which member of a designated RP pair would be rejected and which would be selected to be retained, duplicated, and assigned to both the Input and the Test Series.

The process of selecting NP and RP pictures for the picture recognition task from the matched pairs continued until 50 food pictures had been evenly divided into RPs and NPs, and 110 nonfood pictures had been evenly divided between RP and NP designations.

Stimulus Reproduction

The magazine pictures selected as described above for the Input and Test Series were photographed using a 35mm Nikon camera with a 52mm lens on a copy stand using ASA 64, professional film with two 250 watt tungstun photoflood bulbs. Mattes were used to achieve controlled size and quality slides. Each member of the NP pair was photographed once; each RP was photographed twice to produce identical slides. Slides were commercially developed, and individual slides were checked for flaws or identifiable variations.

Order of Presentation

Order of presentation of slides was determined in the following way: Using a random number table, positions in the Input slide trays were assigned as food or nonfood and as RP or NP. Slides were then assigned randomly (with non-replacement) to these positions until a proportionate

number of food and nonfood pictures existed in each quartile of the slide series. The second member of the pair was assigned to the Test Series randomly using the random number table, with one limitation: mates of slides in Input Trays #1 and #2 were assigned to Test Trays #1 and #2 respectively. (See Appendix B for randomized slide lists.)

To summarize, the Input Series included 50 food slides and 110 non-food slides semi-randomly ordered. The Test Series included 50 food slides and 110 nonfood slides, half of each category were identical, or repeated (RP), to slides in the Input Series and half were new (NP). Each of the four slide trays included 40 RP and 40 NP.

Setting and Equipment

Subjects were tested in small groups (N = 3 to 11). All test sessions took place in the same conference room (Room 140 in Corwin-Larimore Hall, UND) where subjects seated themselves around a long table. The slide projection equipment was set at a fixed distance from the screen (178 inches). A small portable lamp (120 v., 2 cp), which did not directly illuminate the screen was used during two sessions of the Test Series to provide adequate light for subjects to mark their answer sheets. For the remaining sessions, light provided by the projector was sufficient. (Natural light was difficult to control; although the conference room had blinds, outside light seepage did change conditions somewhat at different times of the day.)

Equipment included a Lafayette Projection Tachistoscope, Model 41010 which was used to present the Input Series of slides; exposure duration equalled two seconds with two-second interslide intervals. The Test Series was shown using a Kodak Ektagraphic Slide Projector, Model AF-2; exposure duration for each slide in the Test Series was 6 seconds, including the interslide interval. Slides in the Test series were timed and advanced automatically by a Telex Sync Recorder Model #C130 which provided also a recorded voice announcement of the slide number to guide subjects to the proper line of the answer sheet as the slides advanced.

Procedures

After their arrival, subjects were seated in the conference room. Subjects were first asked to read and sign a consent form to indicate willingness to participate. These consent forms specified that the subjects' participation was voluntary and that they could terminate at any time. The forms also indicated the nature of the tasks to be completed including physical measurements to be taken and the type of compensation (viz., research credit) for full or partial participation. In addition, the consent forms reminded subjects that they could request more information about specific aspects of the study during the semester following participation.

In order to control for the effects of mood, subjects were next requested to complete a Multiple Affect Adjective Checklist. The MAACL is an alphabetical listing of 132 mood adjectives. Subjects were instructed to mark each word which applied to how they felt that day. The MAACL

is broken down into three subscales--anxiety, hostility, and depression. Subscale scores are comprised of two types of responses: a) marking words which indicate dysphoric feelings, and b) failure to mark words which indicate positively-toned feelings. For example, marking "anxious" and failure to mark "calm" would each contribute a point toward the anxiety subscale total. In addition, the total number of responses is tallied (TotalR). (See Appendix C for copies of consent form and script used in these sessions; copyright and test secrecy considerations prevent reproduction of the MAACL.)

After the MAACLs were collected, subjects were instructed that they would be shown a series of rapidly-paced slides which they were to watch carefully, remembering all the detail about them they could. To illustrate and clarify the instructions, the researcher showed a short sample run of one RP and one NP pair of slides at the experimental pace, and in reverse at a slower pace. (Each subject group saw the same RP and NP pairs for this sample run; these slides were not used in the actual picture recognition series.)

The two 80 slides trays of the Input Series were then shown using the tachistoscope. When the Input Series had been shown, subjects were given instructions for marking their answer sheets. The two trays (80 slides each) of the Test Series were then shown using the slide projector with automatic advance and recorded voice announcement as described above.

Following completion of the Test Series of slides, subjects were asked to read and sign a final consent form indicating willingness to

allow the experimenters to take certain measurements of body weight and size. Subjects were then taken to a nearby classroom where the measurements were taken. Each subject's weight was measured by a standard bathroom scale and recorded silently. Each subject's elbow measurement was obtained with calipers; body frame size was determined from this elbow measurement by reference to Metropolitan Life Insurance Company tables. Height was obtained by self-report at that time or from the background information sheet. Finally, subjects were given tickets to complete for the cash prize drawing and a printed form explaining the procedures for the drawing and the announcement of prizes. (See Appendix D for copies of consent form, recording sheet, ticket, and printed information form.)

RESULTS

Overview

After discarding data which were found to be unrepresentative of the
subject pool, the data were analyzed to establish sample descriptors, to
test the hypotheses of the study and to examine ways the study could of-
fer leads for further research. Results did not support the hypotheses,
that compared to nonrestrainers, restrainers would make more hits and
more false alarms on food pictures. In fact, all subjects made more
hits and fewer false alarms on food pictures than on nonfood pictures.

Sample Characteristics

Sample Restriction

This analysis was based on data obtained from 115 of the 146 subjects
who completed the picture recognition task. Data for 31 subjects were
discarded: two subjects had not completed the screening procedure prior
to viewing the slides; twenty more subjects had failed to fully and cor-
rectly complete the screening packet questionnaires; another subject did
not see the slides in a group setting. The final eight omitted subjects
had been selected from a small second screening of an upper division
class late in the semester. In other words, only the data from the 115

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subjects who had successfully completed and returned the screening pack-
et data sheets during the early screening were used in the analysis.

The decision to omit data was based on a comparison of subjects in
the picture recognition sample (volunteers) and female subjects from the
screening pool who did not participate in the recognition study (nonvo-
lunteers). Significant differences were found between volunteers and
nonvolunteers which were apparently attributable to variations in the
subcategories: completed first screening (C1), second screening (C2),
and incomplete first screening (C3). Using (a) background questionnaire
data (age, self-reported weight, college grade point average, family
history--including subject--of treatment for overweight or underweight,
and specifics of family member(s) treated for overweight) (b) restraint
scores (RS, DMS, Bulitt-RS, ABI-RS, and self-avowed dieting status), (c)
mood scores (MAACL subscores and ABI Depression, Anxiety, and Obsessive-
ness subscores), and (d) the subcategories of subjects (C1, C2, and C3),
subjects could be categorized as volunteers or nonvolunteers by discrim-
inant analysis $\{\chi^2 (21) = 45.207, \underline{p} < .0016\}$. However, when the data
from C2 and C3 were omitted, volunteers and nonvolunteers could no long-
er be differentiated: $\{\chi^2 (20) = 26.522, \underline{p} < .1493\}$.
Similarly, using only volunteer data, membership in the C1 or C2 catego-
ries could be predicted by discriminant analysis $\{\chi^2 (18) = 30.879, \underline{p} <$
.0297$\}$, as could membership in the C1 or C3 groups $\{\chi^2 (18) = 39.321, \underline{p}$
$< .0026\}$.

Mean Age, Height, Weights of Subjects

Mean age, self-reported height, self-reported weight, and measured weight are reported for the sample and by high and low restraint in Table 2. (Note: high and low will be defined as one sd or more above or below the mean unless otherwise indicated.) The mean age of the subjects was 19.9 years. It is important to note that although ages ranged from 18 to 38 years, 94% of subjects were under 23 years of age. No significant differences were found in the ages or heights between high and low restrainers (measured by the RS and the DMS), based on t test results.

The mean self-reported weight (taken from background questionnires) was 62.4 kg (137.2 pounds). The mean weight of subjects measured on the day of the picture recognition task was 65.6 kg (145.9 pounds). Although these weights are highly correlated (r = .94, p < .001), the 3.3 kg difference nevertheless represents a significant increase over self-reported weight (Sample: t (100) = -7.75, p < .001, two-tailed); High RS: t (17) = -2.60, p = .018; Low RS: t (16) = -3.21, p < .005; High DMS: t (17) = -2.76, p = .013); Low DMS: t (14) = -4.39, p < .001. As might be expected, mean weights were significantly different between restraint levels, with high restrainers weighing more (RS: t (26.57) = 2.47, p = .020; DMS: t (21.74) =-2.41, p = .025). However, the differences in self-reported weights between high and low restrainers were not significant at the .05 level.

Table 2

Mean Age, Height and Weights by Sample and

High and Low Restraint Subsamples

Sample		Age	HGT	WGT1	WGT2
	Mean	19.9	65.3	62.4	66.3
	sd	3.3	2.7	12.6	15.2
	Range	18-38	59-72	48-145	41-158
	(N)	(114)	(115)	(101)	(115)
Subsample					
RS					
High					
	Mean	20.5	66.5	68.0	70.4
	sd	4.2	3.0	20.6	16.6
	Range	18-37	61-72	52-145	55-132
	(n)	(19)	(19)	(18)	(19)
Low					
	Mean	19.1	65.1	58.3	59.8
	sd	1.0	2.2	5.2	8.4
	Range	18-22	61-68	48-67	41-80
	(n)	(19)	(19)	(17)	(19)
DMS					
High					
	Mean	19.7	65.8	67.6	70.2
	sd	2.0	2.8	23.8	21.1
	Range	18-26	62-72	51-145	54-132
	(n)	(19)	(19)	(18)	(19)
Low					
	Mean	19.1	64.8	55.7	57.9
	sd	.8	2.3	4.6	6.7
	Range	18-20	61-68	48-64	43-72
	(n)	(18)	(18)	(15)	(18)

Note. WGT1 = weight in kgs at screening,
WGT2 = weight in kgs at picture recognition session,
HGT = height in inches by self-report,
Age = age in years.

Picture Recognition Performance

Performance scores for the total sample are presented in Table 3.
Overall accuracy on the picture recognition task was 70.9%. Results of
two-tailed t tests for paired samples demonstrated that, for all sub-
jects, accuracy was significantly higher for food pictures compared to
nonfood pictures, both in terms of hit rates and correct rejections.
The false alarm rate (the inverse of correct rejections) was lower for
food pictures than for nonfood pictures for all subjects.

To test the hypothesis that high restrainers' performance on food
hits and food false alarms would distinguish them from low restrainers,
a discriminant function analysis was performed. The results indicated
that membership in the high and low restraint groups could not be relia-
bly predicted by only these two performance scores.

Post hoc discriminant analyses were computed to determine whether
high and low restrainers could be differentiated in some other way. No
discrimination between high and low restrainers could be made, using
eleven performance scores as predictor variables, although near signifi-
cance $\{\chi^2 (4)= 9.0095$, $p = .0609$ was seen for RS restrainers divided by
a mean-split and and for high and low ABI-RS restrainers $\{\chi^2 = 8.3516$,
$p = .0795\}$.

However, when of high and low restrainers were subgrouped by level of
preoccupation with food, differences emerged. For example, within the
high preoccupation with food subsample, the ABI-RS Bulitt-RS, and mean-
split RS restraint groups could be predicted by these eleven performance

Table 3

Picture Recognition Performance Scores

Scores	PERCENTAGE
CORRECT	
Total Correct	70.9%
Food	75.6%
Nonfood	68.8%
Hits	
Total	61.6%
Food	68.6%
Nonfood	58.4%
Correct Rejections	
Total	80.2%
Food	82.5%
Nonfood	79.1%
INCORRECT	
False Alarms	
Total	19.8%
Food	17.5%
Nonfood	20.9%

COMPARISON			
	Mean Difference	t values(df)	p values
Food minus Nonfood			
Total	6.8%	9.40 (114)	.001
Hits	10.2%	7.99 (114)	.001
Cor. Rej.	3.4%	3.14 (114)	.002
False Alarms	-3.4%	-3.14 (114)	.002
Hits minus Correct Rejections			
Total	-18.5%	11.16 (114)	.001
Food	-13.9%	-7.03 (114)	.001
Nonfood	-20.7%	-11.30 (114)	.001

scores (ABI: $\{\chi^2$ (4) = 14.532, $\underline{p}$ = .0058; Bulitt-RS: $\{\chi^2$ (4) = 10.393, $\underline{p}$ = .0343; mean-split RS: $\{\chi^2$ (4) = 13.362, $\underline{p}$ = .0096),

Further, within the low preoccupation with food group, high or low (mean split) RS groups could also be predicted from the eleven performance scores $\{\chi^2$ (4) = 13.362, $\underline{p}$ = .0096), but DMS or RS restraint groups could not be predicted.

Similarly, restrainers could not be reliably categorized by discriminant analysis by mood subscores. When subgrouped by high food preoccupation, however, high and low DMS restrainers could be reliably categorized by mood scores $\{\chi^2$ (4) = 17.755, $\underline{p}$ = .0131) as could the mean-split RS restrainers $\{\chi^2$ (4) = 10.439, $\underline{p}$ = .0337).

In most cases, differences between high and low RS or DMS restrainers could not be tested within the low preoccupation with food subsample because there were no subjects falling into that category; low preoccupation with food and the extremes of the high and low restraint range appear to have been mutually exclusive. The change in discriminatory ability reported above was not simply due to high and low levels of preoccupation with food; differences in levels of preoccupation with food could not be reliably categorized by using food hits and food false alarms. Mean food preoccupation scores were significantly different for high and low (RS or DMS) restrainers (RS: $\underline{t}$ (36) = -4.13, $\underline{p}$ < .001, two-tailed; DMS: $\underline{t}$ (35) = -4.33, $\underline{p}$ < 001, two-tailed).

Restraint and Mood Measures

A correlation matrix was generated to obtain estimates of association among restraint measures, among mood variables, and between mood and restraint and other variables. Finally, associations between performance on picture recognition task and these variables were examined. Successive stepwise multiple regression coefficients were computed to determine variables with the best predictive ability in regard to performance. To control for other variables, semipartial correlation coefficients were calculated for each significant multiple correlation. In the following section, the results of these analyses will be presented.

Restraint measures included (a) the questionnaires which assess dietary restriction in context with diet-related attitudes, and (b) a self-report question regarding actual dieting behavior. As can be seen in Table 4, the various restraint measures were significantly correlated with each other and with self-avowed dieting status (as reported on the background questionnaire). Correlations ranged from .46 (dieting status with Bulitt) to .91 (Bulitt with its own subscale, the Bulitt-RS).

An association between dysphoric mood and restraint (or loss of restraint) has been reported in the literature. Mood measures were included to allow for statistical control of mood. The mood measures can be classified as either (a) subscales of the MAACL or (b) subscales of the ABI. The subscales, within inventories, were highly and significantly correlated (Table 5): Correlations among MAACL subscales ranged from .73 to .82; the correlation between ABI Depression and ABI Anxiety

Table 4

Significant Correlations Between Restraint Mesasures

Restraint Measures	DMS	Bulitt	ABI-RS	Bulitt-RS	DietS
RS	.79 ***	.84 ***	.80 ***	.81 ***	.56 ***
DMS	---	.72 ***	.76 ***	.73 ***	.65 ***
Bulitt		---	.85 ***	.91 ***	.46 ***
ABI-RS			---	.84 ***	.50 ***
Bulitt-RS				---	.50 ***
DietS					---

Note. DietS = dieting status

*** ($p < .001$)

Table 5

Significant Correlations Between Mood Variables

Mood	MAACL				ABI	
Measures	Anx.	Dep.	Hos.	TotalR	Anx.	Dep.
MAACL						
Anx.	---	.82 ***	.73 ***	-.50 ***	.26 ***	.31 ***
Dep.		---	.75 ***	-.58 ***	.33 ***	.36 ***
Hos.			---	-.50 ***	.26 **	.25 **
TotalR				---	- ns	- ns
ABI						
Anx.					---	.79 ***
Dep.						---

Note. Anx. = anxiety, Dep. = depression, Hos. = hostility,

TotalR = total responses.

** (p < .01), *** p < .001),

ns = nonsignificant at .10 level.

was .79. Subscales were significantly correlated across the scales as well, though to a lesser degree: MAACL Anxiety and ABI Anxiety were significantly correlated (r = .31). MAACL Depression and ABI Depression were also correlated (r = .33). Interestingly, the MAACL subscores were negatively correlated with the total number of responses (TotalR) to the MAACL (ranging from -.50 to -.58).

Associations between mood subscales and restraint measures were also found, but the pattern was less uniform than the results just presented. Significant correlations betwen mood and restraint can been seen in Table 6. Although the ABI and MAACL anxiety and depression subscales were correlated with various of the devised restraint measures, none of the mood subscales were significantly related to avowed dieting status, with the exception of MAACL Anxiety (r = .16). Hostility was related neither to dieting status nor to the restraint measures. Specifically, the ABI Anxiety and Depression subscales were correlated with the five devised restraint measures, whereas the MAACL Anxiety and Depression subscales were correlated with the Bulitt-RS and the ABI-RS, and the MAACL Depression subscale was also correlated with the Bulitt.

As mentioned previously, MAACL mood subscores and totals can be subdivided into two kinds of responses: the avowal of dysphoric feelings and the omission of ackowledgement of positively-toned feelings. Closer inspection of the MAACL subscores (shown in Table 7) reveals an interesting pattern in the way these components of the subscores are related to hits and correct rejections in different ways. Nine out of nine avowals and hits were significant but negatively correlated whereas

Table 6

Significant Correlations Between Mood and Restraint Measures

| Mood Measures | RESTRAINT MEASURES | | | | | |
	RS	DMS	Bulitt	Bul-RS	ABI-RS	DietS
MAACL						
Anx.	- ns	.14 a	.25 **	.27 **	.19 *	.16 *
Dep.	- ns	- ns	.19 *	.22 **	.17 *	- ns
Hos.	- ns	- ns	- ns	.14 a	- ns	- ns
TotalR	- ns	- ns	- ns	- ns	- ns	- ns
ABI						
Anx.	.16 *	.19 *	.28 ***	.27 **	.31 ***	- ns
Dep.	.21 *	.20 *	.34 ***	.30 ***	.36 ***	- ns

Note. Anx. = anxiety, Dep. = depression, Hos. = hostility,

TotalR = total responses.

* (p < .05), ** (p < .01),*** (p < .001)

a = p < .10)

ns = nonsignificant at .10 level

avowals and correct rejections were unrelated. Likewise, seven out of nine omissions and correct rejections were significantly but negatively correlated whereas one out of nine omissions was negatively correlated to hits.

Other Measures: Restraint, Preoccupation with Food, and Weight

Responses to the Preoccupation with Food and the ABI Obsessiveness subscales, self-reported weight, and measured weight were also chosen for analysis. Table 8 shows the significant correlations between restraint and and these associated other variables.

ABI Obsessiveness was chosen as a possible variable for typing restrainers. Many eating disorder patients have been said to be perfectionistic and obsessive. In this study, obsessiveness was not related to devised restraint scales, actual dieting or self-reported weight but was negatively correlated with measured weight. Self reported weight and measured weight were also chosen for analysis because of the suggestion that obesity is related to externality.

The Preoccupation with Food subscale was included because one underlying assumption of this study was that restraint results in preoccuption with thoughts of food. Indeed, significant correlations were found between Preoccupation with Food subscale and the five restraint measures plus dieting status, self-reported weight, and measured weight. Self-reported weight (at screening) was related to all but one restraint measure.

Table 7

Significant Correlations Between MAACL Subscores Components, Performance Scores and Picture Recognition Session

MAACL Subscores	Performance						Session
	Hits			Correct Rejections			
	Total	Food	Non-Food	Total	Food	Non-Food	
Avowals †							
Anx.	-.1733 (.032)	-.1631 (.041)	-.1555 (.049)	-	-	-	-
Dep.	-.1837 (.025)	-.1848 (.024)	-.1592 (.045)	-	-	-	-.1538 (.050)
Hos.	-.2440 (.004)	-.2124 (.011)	-.2270 (.007)	-	-	-	-
Omissions							
Anx.	-	-	-	-.1718 (.033)	-.1623 (.042)	a	-.1741 (.03)
Dep.	a	a	-	-.1963 (.018)	-.1579 (.046)	-.1844 (.024)	-.2408 (.005)
Hos.	-	-.1665 (.030)	-	-.1656 (.039)	-	-.1844 (.024)	.1759 (.030)
Total							
Anx.	a	a	a	a	a	-	a
Dep.	-.1694 (.035)	-.1769 (.029)	a	a	-	-	-.2447 (.004)
Hos.	a	-.1904 (.021)	-	-.160 (.043)	-	-.1988 (.017)	-.1856 (.024)
TotalR	-	-	-	.2167 (.010)	-	.1907 (.021)	.1940 (.019)

Note. Anx. = anxiety, Dep. = depression, Hos. = hostility, TotalR = total responses, Subsc. = subscales, Session = picture recognition task group.
† Numbers in parentheses () indicate probability levels.
a = ($p < .10$)

Table 9 depicts the relationships of these same variables--Preoccupation with Food, Weight, and Obsessiveness--to ABI and MAACL mood subscales. As to restraint as shown above, Preoccupation with Food was related to ABI-Anxiety (r = .17) and ABI Depression (r = .25) but not to ABI Obsessiveness nor to the three MAACL mood subscales. Self-reported weight was not shown to be related to other mood subscales nor to preoccupation with food.

Multiple Regression Analyses--Mood, Restraint, Performance

Restraint and Performance

Restraint measures were not strongly correlated with hits on picture recognition trials. (See Table 11.) In fact, Dieting Status was the only restraint measure significantly correlated with type of hit score.

Several of the restraint measures were significantly correlated with nonfood correct rejections, but one (RS) was correlated with food correct rejections. This is in direct contradiction to the hypothesis that most restrainers would make more false alarms on food pictures.

To determine the best predictors of performance on the picture recognition task, successive stepwise multiple regression coefficients were computed for each of the ten performance scores entering the following 20 variables: age, self-reported weight, measured weight, five mood variables (MAACL Anxiety, Hostility, Depression and ABI Anxiety and De-

Table 8

Significant Correlations Between Restraint, Obsessiveness, Preoccupation
With Food, Weight and Picture Recognition Session

	RESTRAINT MEASURES						WEIGHT		SESSION
	RS	DMS	Bulitt	Bul-RS	ABI-RS	DietS	WGT1	WGT2	
Preocc	.47 ***	.46 ***	.46 ***	.48 ***	.57 ***	.29 **	– ns	– ns	– a
WGT1	.29 ***	.30 ***	.22 **	.14 a	.27 **	.26 **	---	.94 ***	– ns
Obsess	– ns	– ns	– ns	– ns	– ns	– ns	– ns	-.20 *	– ns
Session	– ns	– ns	– ns	– ns	– ns	– ns	– ns	– ns	---

Note. WGT1 = self-reported weight at screening,

WGT2 = measured weight at picture recognition session,

DietS = dieting status,

Preocc = preoccupation with food,

Obsess = obsessiveness,

Session = picture recognition task group.

* ($p < .05$), ** ($p < .01$), *** ($p < .001$)

a = ($p < .10$)

ns = nonsignificant at .10 level

pression), the six restraint measures (RS, DMS, Bulitt, Bulitt-RS, ABI-RS, Dieting Status), Obsessiveness (ABI subscale), Preoccupation with Food, ordinal position of experimental session, time of day of experimental session, number of subjects per experimental session and grade point average. (See Tables 12, 13, 14.)

Age, measured weight, and MAACL depression were significant predictors of Hits (food, nonfood, and total) and of Total Correct. The ABI-RS was the best predictor of nonfood and total false alarms. No significant variable was found for food false alarms. Measured wight and MAACL Depression were the best predictors of comparison scores. MAACL Anxiety and Hostility were second best false alarm predictors. Age and time of day were second best predictors for comparison scores.

Semipartial correlations were calculated for each of these variables and for the groups of mood and restraint variables to assess the importance of each when the contributions of the remaining variables were statistically removed. These results are summarized in Tables 15 and 16.

As may be seen in these tables, results do not confirm the hypotheses regarding the predicted that high restrainers would make higher hit and false alarm rates on food picture trials. When the contribution of the other variables was removed, the following relationship were found. None of the variables were uniquely and significantly related to food false alarms and age was the only significant semipartial correlation with food hits (and to nonfood and total hits, for that matter). The ABI-RS was significantly and negatively related to nonfood false alarms

Table 9

Significant Correlations Between Mood, Obsessiveness, Preoccupation With Food, and Weight

Controlled Variables	MAACL				ABI		
	Anx.	Dep.	Hos.	TotalR	Anx	Dep.	Obs.
Preocc	- ns	.13 a	- ns	- ns	.25 **	.17 *	- ns
WGT1	-.17 *	- ns	- ns	- ns	-.15 a	- ns	- ns
WGT2	- ns	- ns	- ns	- ns	-.19 *	-.18 *	-.20 *
Obs.	- ns	- ns	- ns	- ns	.56 ***	.50 ***	---

Note. Anx. = anxiety, Dep. = depression, Hos. = hostility,

TotalR = total responses, Obs. = obsessiveness,

Preocc = preoccupation with food,

WGT1 = weight at screening, self-reported,

WGT2 = measured weight at picture recognition session.

* (p < .05), ** (p < .01), *** (p < .001)

a = (p < .10)

ns = nonsignificant at .10 level

and total false alarms. Significant partial correlations were found be-
tween the five mood variables as a group and both nonfood false alarms
and the difference between nonfood hits and false alarms. The ABI De-
pression was positively correlated with the difference between food
hits and false alarms. Time of day was negatively related to the dif-
ference between food and nonfood hits.

Table 10

Correlations between Performance, Preoccupation with

Food, and Weight

	HITS			CORRECT REJECTIONS		
	Total	Food	Nonfood	Total	Food	Nonfood
WGT1	- ns	- ns	- a	- ns	- ns	- ns
WGT2	-.16 (.042)	-	-.21 (.013)	- ns	- ns	- ns
Preocc	- ns	- ns	- ns	- ns	- ns	- ns

Note. WGT1 = self-reported weight,

WGT2 = measured weight,

Preocc = preoccupation with food.

a = (p < .01)

ns = nonsignificant at .10 level

Table 11

Correlations Between Performance and Restraint

| | PERFORMANCE | | | | | |
| | HITS | | | CORRECT REJECTIONS | | |
Restraint Measures	Total	Food	Nonfood	Total	Food	Nonfood
RS	- ns	- ns	- a	.22 **	.16 *	.23 **
DMS	- ns	- ns	- a	- ns	- ns	- ns
Bulitt	- ns	- ns	- ns	- a	- ns	.17 *
Bulitt-RS	- ns	- ns	- ns	- a	- ns	.17 *
ABI-RS	- ns	- ns	- ns	.23 **	- ns	.26 **
DietS	- a	- ns	-.16 *	- ns	- ns	- ns

Note. DietS = dieting status.

* (p < .05), ** (p < .01)

a = (p < .10)

ns = nonsignificant at .10 level.

Table 12

Stepwise Multiple Correlations Between Performance and

Predictor Variables: Hits and Total Correct

Step Var.		HITS			TOTAL CORRECT
		Total	Food	Nonfood	
Step 1					
Age:	R	.21	-	-	-
df(1,113)		5.09			
	p	(.026)			
Age:	R	-	.23	-	-
df(1,113)			6.21		
	p		(.013)		
WGT2:	R	-	-	.21	-
df(1,113)				5.22	
	p			(.024)	
M-DEP:	R	-	-	-	.22
df(1,113)					5.64
	p				(.019)
Step 2					
Age,M-Dep:	R	-	.30	-	-
F(2,112)			5.42		
	p		(.006)		
WGT2,A-DEP:	R	-	-	.27	-
F(2,122)				4.64	
	p			(.012)	
M-DEP,Age:	R	-	-	-	.28
F(2,112)					4.26
	p				(.009)
Step 3					
WGT2,A-DEP,Age:R		-	-	.33	-
F(2,112)				4.50	
	p			(.005)	

Note. Var. = variable, WGT2 = measured weight, M-DEP =
       MAACL Depression, A-DEP = MAACL Anxiety

Table 13

Stepwise Multiple Correlations between Performance

and Predictor Variables: False Alarms

		FALSE ALARMS		
Step	Variables	Total	Food	Nonfood
Step 1:				
	ABI-RS: R	.23	-	-
	F(1,113)	6.32		
	p	(.013)		
	ABI-RS: R		-	.26
	F(1,113)			8.10
	p			(.005)
Step 2				
	ABI-RS,M-ANX: R	.29	-	-
	F(2,112)	5.32		
	p	(.006)		
	ABI-RS,M-HOS: R	-	-	.34
	F(2, 122)			.715
	p			(.001)

Note. M = MAACL, ANX = anxiety, HOS = hostility.

Table 14

<u>Stepwise</u> <u>Multiple</u> <u>Correlations</u> <u>Between</u> <u>Performance</u> <u>and</u>

<u>Predictor</u> <u>Variables</u>: <u>Comparison</u> <u>Scores</u>

Step	Variable	COMPARISON SCORES			
		D1	D2	D3	D4
Step 1					
	WGT2: R	.21	-	-	-
	F(1,113)	5.24			
	p	(.024)			
	M-DEP: R	-	.21	-	-
	F(1,113)		5.06		
	p		(.026)		
	M-DEP: R	-	-	.22	-
	F(1,113)			5.72	
	p			(.018)	
	M-DEP: R	-	-	-	.198
	F(1,113)				4.61
	p				(.034)
Step 2					
	WGT2,Time: R	.30	-	-	-
	F(2,112)	5.57			
	p	(.005)			
	M-DEP,Age: R	-	-	-	.27
	F(2,112)				4.37
	p				(.015)

<u>Note</u>. Var. = variable, Time = time of day of session,
        M-DEP = MAACL Depression, WGT2 = measured weight,
        D1 = food hits minus nonfood hits,
        D2 = food hits minus food false alarms,
        D3 = total hits minus total false alarms,
        D4 = nonfood hits minus nonfood false alarms.

Table 15

Semipartial Correlations With Hits and Total Correct

| Var. | | CORRECT | | | |
| | | HITS | | | TOTAL |
		Total	Food	Nonfood	
Age	r	.24	.22	.23	.20
	t(20)	2.64	2.33	2.50	2.16
	p	(.010)	(.022)	(.014)	(.034)
M-DEP	r	-	.09	-	.06
	t(20)		-1.07		.63
	p		ns		ns
A-DEP	r	-	-	-.10	-
	t(20)			-1.13	
	p			ns	
WGT2	r	-	-	-.15	-
	t(20)			-1.65	
	p			ns	
Restr.	r	.18	.20	.18	.23
	F(6,100)	.70	.77	.66	1.08
	p	ns	ns	ns	ns
Mood	r	.24	.23	.24	.29
	F(5,99)	1.41	1.30	1.50	2.17
	p	ns	ns	ns	ns

Note. Var. = variable, M-DEP = MAACL Depression,

A-DEP = ABI Depression, WGT2 = measured weight,

Restr. = all restraint measures.

Table 16

Semipartial Correlations With False Alarms and Comparison Scores

Var.		FALSE ALARMS			COMPARISONS			
		Total	Food	Nonfood	D1	D2	D3	D4
ABI-RS	r	-.17	-	-.21	-	-	-	-
	t(20)	1.94		-2.32				
	p	(.055)		(.022)				
M-HOS	r	-	-	.13	-	-	-	-
	t(20)			1.42				
	p			ns				
M-ANX	r	.16	-	-	-	-	-	-
	t(20)	1.12						
	p	ns						
Time	r	-	-	-	-.19	-	-	-
	t(20)				-2.00			
	p				(.048)			
WGT2	r	-	-	-	.06	-	-	-
	t(20)				.62			
	p				ns			
ABI-DEP	r	-	-	-	-	.20	.06	-
	t(20)					1.67	.67	
	p					a	ns	
Restr.	r	.29	.24	.29	.19	.22	.23	.25
	F(6,100)	1.80	1.25	1.89	.75	1.01	1.09	1.30
	p	ns	ns	ns			ns	ns
Mood	r	.30	.26	.32	.23	.26	.30	.30
	F(5,99)	2.29	1.69	2.67	1.26	1.70	2.05	2.24
	p	ns	ns	(.05)	ns	ns	ns	(.05)

Note. Var. = variable, HOS = hostility, ANX = anxiety,
        M = MAACL, WGT2 = measured weight,
        Restr. = all restraint measures,
        D1 = food hits minus nonfood hits,
        D2 = food hits minus food false alarms,
        D3 = total hits minus total false alarms,
        D4 = nonfood hits minus nonfood false alarms.

DISCUSSION

The results of this study did not support the two specific hypotheses: Restrainers were no more likely than nonrestrainers to be overly responsive to visual food stimuli on a recognition task. Rather, all subjects made more correct food than nonfood responses and more correct rejections than hits on both food and nonfood trials. Differences were found, however, between high and low restrainers on other aspects of recognition performance and in relationship to mood variables. The reader is cautioned as to the post hoc nature of most of the results and the investigative approach taken here.

Types of Restrainers

Results showed that high levels of restraint were related to performance, although not in the predicted way and that this relationship was observed within subsamples based on food preoccupation level. However, no clear results were found to directly link food preoccupation with performance. As reported above, when considered merely as a uniformly dichotomous variable, high and low levels of restraint could not be reliably categorized by picture recognition scores. Yet, differences emerged between high and low restrainers when subgrouped by food preoccupation group. The ABI-RS, the restraint measure most highly correlated with the Preoccupation with Food scores, was also the only restraint

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measure determined to be significantly predictive of picture recognition performance (on nonfood false alarms and total false alarms). These findings are certainly consistent with the prediction that preoccupation with food would affect performance.

Of course, looking at restraint and performance within food preoccupation subsamples did not uncover support for the stated hypotheses regarding food hits and false alarms on food picture trials. An attempt to uncover other subtypes of restrainers using the ABI Depression and Obsession subscales which would demonstrate the predicted scores was unsuccessful. This does not rule out the possibility that such a variable was overlooked; other subgroups of restrainers might demonstrate the predicted pattern of recognition performance.

Restrainers and Dieters

The results suggest that this sample was comprised of different types of dietary restrainers. Rodin (1981) and Ruderman (1986) have both speculated that some of the inconsistencies in results reported in the literature reflect problems in sampling. Ruderman has concluded that the differences may be based on problems of categorizing overweight subjects as restrainers on the restraint scales. Consequently, she has attempted to restrict her samples to normal weight restrictors to avoid such problems. The results presented here suggest that the variation found among restrainers might be attributable to other characteristics as well as or instead of weight.

Although restraint was correlated with self-avowed dieting, approximately 75% of the variance remained unexplained. The RS (Restraint Scale) has been analyzed to reveal both a Concern with Dieting and a Weight Fluctuation factor (e.g., Ruderman, 1983b). Perhaps the Concern with Dieting factor is more highly related than the total RS score to actual dieting status. On the other hand, items on the restraint measures may tap pro-dieting attitudes and intentions to diet which are not necessarily related to actual dieting.

Even in the case of actual dietary restriction, the degree of physiological deprivation may not be consistent. Frequently, dietary restraint can be accompanied by periods of severe restriction which are interspersed with normal or excess caloric intake. Consequently, there may be sample inconsistencies which vary across levels of actual physiological hunger accompanying restraint.

Actual hunger could mediate food preoccupation through physiological reactions or operantly conditioned responses to deprivation or other psychological processes. One might speculate that while high restrainers are generally more preoccupied with food, hungry (dieting) high restrainers would be even more susceptible to the salience of food cues. These results underscore the problem with viewing high restrainers as a homogeneous group; different subtypes of restrainers may not respond similarly in all situations.

Related to this discussion of sampling is the problem with definitions in the field of restraint theory. As Ruderman (1986) noted, definitions of externality have been somewhat arbitrary. Unclear or varying

definitions of restraint (regardless of the Weight Fluctuation factor) could also contribute to inconsistent results. It is possible that defining high and low restrainers based on median splits or other ways relative to the sample rather than to a normative sample could blur distinctions which exist between the two groups. Since this sample could not be compared to a standardization group, it is unclear whether there was adequate representation of high and low restrainers. A truncated range of restraint scores could result in Type I errors.

The ages of the subjects fell primarily within a narrow range which represents a period of socialization in which social pressure to diet is very high. Perhaps the majority of young college women exercise some level of restraint. This could mean that relatively low restrainers from this group might have been be moderately high restrainers in a different study.

The opposite situation is also possible. Although the data selected for analysis from volunteers were found not to be significantly different from the data obtained from the nonvolunteers, it is conceivable that the entire screening pool of potential subjects could have been biased with regard to dietary restraint. Whereas the relative definitions above point out the possibility that the screening pool may have been comprised of high restrainers and not-quite-so high (instead of low) restrainers, anecdotal reports have led the author to wonder whether the sample might be biased in the opposite direction. Individuals who would represent the extreme highs in dietary restraint might find the screeninig materials (full of questions about eating) to be highly aversive.

Therefore, such subjects may have refused to complete the questionnaires or to return them, thus removing themselves from the subject pool. Further, during the interim between screening and the picture recognition testing, some restrainers may have changed eating habits and become nonrestrainers.

There are notable differences in methodology between this study and research presented in the literature. For example, subject completed the restraint questionnaire prior to signing up for the picture recognition portion. This allowed for early attrition by self-selection which was not a problem in other restraint studies. Prior studies often requested subjects to complete the RS following participation. (Of course, the practice of defining level of restraint in subjects just after they have indulged/overindulged in ice cream or some kind of preload may be questionable). Participation in the present study was contingent on completion of a rather lengthy battery of questionnaires which would have required the restrainers to reflect on and report their odd food habits, whereas most restraint studies have been billed as taste test---(free food!)--without foreknowledge of the threat of self-awareness. Another obvious difference between this study and other counterregulation studies was the lack of food consumption. It may be that externality among dieters, if it exists at all, may be limited to eating behaviors, as Rodin (1981) has argued.

The Picture Recognition Task

Performance on the recognition task and the pattern of relationships to recognition rates strongly suggests that there were inherent differ-

ences between the two types of responses. Rejection of a NP appears to have been easier than acceptance of an RP. The scores reflected by the two types of responses are by definition mutually exclusive, and it appears that the variables which are related to these kinds of performance are different. Correct rejections may be easier because the first unique detail may trigger realization of the difference between the input and test stimuli. In comparison, hits may require more searching for the (nonexistent) unique differences.

It should be remembered that food pictures were chosen to be outstanding in their appeal (as were nonfood pictures). This selection decision may have created a situation in which it was impossible for food pictures not to be salient for all subjects. Compounding this possibility, it is likely that advertisements of food are so much more common than (e.g.) National Geographic landscapes, that they are significantly more salient simply through repetition. For such reasons, a ceiling effect may have been introduced preventing any distinction between groups from being observed.

It may well be that picture recognition was not an adequate test of a theory which postulates a crucial role for cognition. Although perception and cognition are undoubtedly inextricable (Neisser, 1967), picture recognition, especially with clear and distinctive stimuli, may involve a something closer to iconic memory and therefore be less influenced by subject bias than other kinds of memory tasks which utilize more ambiguous stimuli. This argument is strengthened by the findings reported elsewhere that by adolescence, mentally retarded individuals can recognize as many pictures as a normal adults (Hunt, 1978).

Significant Weight Differences

The significant difference obtained between self-reported and meas-
ured weight could either represent a a shift in weight over the semester
(approximately 14 weeks) or else a tendency to self-report a more so-
cially desireable weight (regardless of direction of error). The weight
discrepancies raise at least some question regarding the conclusions of
those who have argued that self-reported weights tend to be valid
(Ruderman, 1983b). Since discrepancies were observed, there would be a
clear advantage to take actual physical measurements in studies of the
present type unless further research demonstrates that, when obtained
more closely in time, self-reported and measured weights are more simi-
lar. Although the difference seems relatively small, subjects in stud-
ies which define obesity as 15% above the midpoint of actuarial ideal
ranges could be frequently improperly categorized. It is interesting to
note that Ruderman (1986) has utilized self-reported weight and she has
failed to find obese/restrainer similarities.

It must also be noted that there is a trade-off in taking actual
measurements; one may achieve more accurate weight records, but knowl-
edge of impending measurement procedure may have contributed to sub-
jects' dysphoric moods at the picture recognition sessions. (See dis-
cussion of MAACL below.) Anticipated consumption has been shown to
disrupt restraint. Perhaps, analogously, anticipation of weight meas-
urements could result in disruption of food preoccupation.

Measures.

The data here offers evidence of construct and concurrent validity for the restraint measures. Dieting status was related to restraint measures. Furthermore, preoccupation with food was shown to be related to dieting status as well as restraint measures.

Mood and Performance Relationships

The relationship of MAACL mood subscores with performance scores is puzzling. As reported, the MAACL subscores are comprised of avowals and omissions. For example, marking "anxious" and failing to mark "calm" are two scored responses, each of which contribute to the total anxiety score. The negative correlation between TotalR (number of responses on the MAACL checklist) and dysphoric mood on the mood subscales suggests that some "failure to respond" factor may have contributed to the high scores. Perhaps, this is a kind of non-response bias which carries across performance on the mood and restraint measures and on the picture recognition task. This negative bias might reflect a tendency to restrict responses in general which in turn could account for a higher MAACL subscores.

A non-response bias would be consistent with depression and in both depression and some expressions of hostility, individuals may reduce the number of responses they make to the environment (e.g the lethargy of depression). In a forced choice situation, some kind of restrictive response bias may be translated into a negative ("false"/ "no") response

because that may be construed by subjects as the path of least interaction.

Dietary restraint similarly involves a restriction of responses: It involves saying "no" to oneself and the environment. Perhaps both restraint and dysphoric mood can be conceptualized as a parallel to the signal detection used to categorize picture recognition scores--marking avowal (of recognition) or failing to mark avowal by marking non-avowal. A negative bias in such a task would lead to more correct rejections and more hits because fewer "yes" responses would be offered.

The breakdown of the MAACL subscore components very neatly follows this pattern, up to a point. The number of avowals to the MAACL is related to hits and the number of omissions is related to correct rejections. At the same time, avowals are not related to correct rejections and omissions are not related to hits. This is where the proposition breaks down: these correlations are negative.

A simpler explanation is that dysphoric mood is negatively associated with performance. However, this explanation does not explain the difference in performance by hits and false alarms.

Mood and Restraint Relationships

Mood was significantly correlated with restraint but inconsistently so and rather modestly and weakly. Within the food preoccupation subgroups, however, mood scores could predict high and low restraint levels. Such correlations are inconclusive support for the notion (met

previously in the literature) that restraint is associated with hypere-motionality or dysphoric mood. The results of this study do not clarify whether dietary restraint leads to negative mood, as suggested in recent literature (e.g. Garner et al.), which could, in turn, lead to poor per-formance or whether dysphoric mood is interpreted as hunger (c.f. Bruch, 1973a). In other words, dietary restraint might cause negative mood, leading to poor performance. On the other hand, dietary restraint might be caused by low self-esteem which is reflected in depression and anxie-ty and (independently) in poor performance. That is, low self-esteem may impair performance directly due to low self-expectations (rather than through depression); it may at the same time predispose one towards dietary restraint.

Suggestions for Further Research

If the role of cognition, or specifically food preoccupation, is to be studied further, the actual level of current deprivation, (such as time since last meal) or anticipated deprivation could be manipulated as well as simply pro-dieting attitudes and self-avowed dieting which are presumed to indicate deprivation.

If visual salience is studied, it is recommended that more room for cognitive distortion be allowed. This could be accomplished by using less distinctive pictures or by asking for recall rather than recogni-tion.

At this point, because there were differences found between restrainers and nonrestrainers on visual recognition performance and mood in the subsample based on food preoccupation, it seems premature to dismiss the more basic assumptions which led to the formation of this research project. Further research along the lines of food preoccupation and its effect on behavior is recommended. If no effect is found in subsequent research, then one might conclude that, although dieters and patients with eating disorders experience a preoccupation with food, this cognitive focus may be set aside when the situation demands the restrainers' attention and therefore does not affect their performance.

In conclusion, this study of visual recognition among female undergraduates did not successfully demonstrate greater salience of food-related pictures for women scoring higher on measures of dietary restraint as assessed by higher food hits and false alarms. However, other differences between restrainers and nonrestrainers were observed but are not yet understood. Food preoccupation seems to be an important variable in understanding visual recognition performance of high and low restrainers. Further research is recommended to study these differences systematically, especially in relation to food preoccupation. The data of this study give sufficient indication supporting the view that some differences between restrainers and nonrestrainers exist to make one cautious about viewing the failure to support the hypothesis a challenge to the basic premises of restraint research.

APPENDIX A: SCREENING PACKET MATERIALS

This appendix contains copies of the printed materials which made up
the Screening Packet distributed to students. Copies of materials are
ordered here as they appeared in the packet except that in the packet
one General Purpose NCS (National Computer Systems, Inc.) Answer Sheet
form number 4521 followed both the ABI and the Bulitt.

The Screening Packet included:

(a) the Student Screening Consent Form,

(b) a "Health and Development Questionnaire," otherwise designated
the Anorexia and Bulimia Inventory for females (ABI-F),

(c) the JCCP52 Bulitt (revised),

(d) the RS restraint questionnaire,

(e) the DMS restraint questionnaire, and

(f) The College Demographics RES1-86 background information sheet.

(a) Student screening consent form:

Student Screening Consent Form

The purpose of this study is to gather information from adolescents and young adults of all ages about their beliefs, feelings and behaviors regarding a number of health and development issues. The study will take about an hour. We would like for you to complete the scales attached to this form, and a demographic face sheet.

Please do not put your name on the test materials or answer sheets. This will help us maintain confidentiality. We would also like you to answer each question as honestly as you can. We are interested only in group data, not that of an individual subject.

Also, we would like to possibly contact you again for another study that involves a brief interview dealing with health and development issues, a special taste acuity experiment which involves sampling many different flavors of ice cream, or a memory study. While we are interested in studying many special groups of students, all students have about an equal chance of being invited to help with later studies (as a control subject). Fill in your phone number after signing the consent form, so that we may contact you later for another study. PUT YOUR LAB TA'S NAME (FOR INTRO. TO PSYCH.) OR YOUR INSTRUCTOR'S NAME (ALL OTHER PSYCH. COURSES) AT THE BOTTOM OF THE FORM.

I understand that I may withdraw my consent to participate at any time and that my involvement is strictly voluntary. If I have any questions, I may ask the research assistant, Jeanine Kotschwar, who will answer them or refer me to the research supervisor. All data that is collected will be number-coded so that subjects cannot be identified. I can find out more about the exact nature of this study and results, at the end of the semester. I will receive extra credit for this class if I participate, in accordance with prior agreement with the instructor.

Signed:_____ Phone number_____
                                    TA/Instructor_____

HEALTH AND DEVELOPMENT QUESTIONNAIRE (ABI-F)

Rate each of the statements below on a scale from 1 to 4 as they describe how you <u>feel, act or believe</u> at present. The rating should identify whether or not the statement generally describes you at the present time.

1 = I NEVER <u>think, feel, or act</u> this way.
2 = I RARELY <u>think, feel, or act</u> this way.
3 = I OFTEN <u>thin, feel, or act</u> this way.
4 = I VERY OFTEN <u>think, feel, or act</u> this way.

<u>RATING</u>

01. My grades at school are/were below average.

02. It's easy to get friends to do what I want them to do.

03. I tire easily.

04. My friends became interested in the opposite sex before I did.

05. I think that a successful, respected woman would not be fat.

06. I abstain from certain activities to prove to myself that I have self-control.

07. My body bounces back easily from illnesses or abuses.

08. I spend a lot of time each day planning what and when I will eat next.

09. I feel that it is more important to maintain self-control than to give in to inner feelings.

10. I panic when I have nothing to do.

11. I often found myself in the middle of parental disputes.

12. I look younger than my actual age.

13. I wonder if the things I worry about would seem silly to other people.

14. My family/friends would like me to look more feminine.

15. I think that people should not use make-up or other artificial means of making themselves attractive.

16. Compared to other people, I have a greater sensitivity to the needs and feelings of others.

17. I have temper outbursts that almost get out of control.

18. I think that a lot of times, it is better to be lucky than smart.

19. I tend to question whether doctors really know what they're doing.

1 = I NEVER think, feel, or act this way.
2 = I RARELY think, feel, or act this way.
3 = I OFTEN think, feel, or act this way.
4 = I VERY OFTEN think, feel, or act this way.

RATING

20. When I see someone who is overweight, I worry that I am or will be like them.

21. When I throw-up, I feel less anxiety about gaining weight afterwards.

22. I feel isolated and alone.

23. I am especially energetic for someone my size.

24. In order for me to like myself, I must show more self-discipline.

25. I often have mood swings.

26. If I eat a sweet roll, my body will likely convert it to fat.

27. I wish others weren't so preoccupied with my appearance.

28. I have periods of sadness that last for days.

CHECK YOUR BLUE ANSWER SHEET. YOU SHOULD HAVE JUST MARKED ITEM #28.

29. I can compete with the best of them.

30. I wonder whether I am inferior to others.

31. Little aches and pains seem to come and go.

32. I would say that it's better to be self-indulgent than self-sacrificing.

33. As far as sex goes, I can take it or leave it.

34. I feel bloated and stuffed after eating most meals.

35. I think that a person aware of fitness will exercise vigorously.

36. I often feel hollow and empty inside.

37. I think that you can't make someone do something they don't want to do.

38. I do things that are inconsistent with my inner emotions.

39. I enjoy thinking about sex.

40. I often have sore throats.

41. I am healthiest when I eat three full meals a day.

42. It is hard for me to make decisions in many areas.

43. I am confident that I will be successful in any career I choose.

1 = I NEVER think, feel, or act this way.
2 = I RARELY think, feel, or act this way.
3 = I OFTEN think, feel, or act this way.
4 = I VERY OFTEN think, feel, or act this way.

RATING

44. The more weight I lose, the better I feel.

45. I sometimes experience many emotions at once and can't tell how I really feel.

46. If I go on an eating spree, I feel sad or guilty afterwards.

47. I worry about my health.

48. I dislike eating in front of others.

49. Certain thoughts repeat in my mind over and over again.

50. I dislike strenuous exercise.

51. Even though I feel hungry, the thought of eating is not appealing to me.

52. It is hard to identify what emotion I'm feeling.

53. Within the last month or so, I've thought about suicide.

54. My body seems to have matured earlier than friends my age.

55. If I start eating, I won't be able to easily stop.

56. Anyone can be overweight, but it takes someone special to be thin.

57. I would say that I fear becoming fat more than I fear a loss of control when I start eating.

58. I am aware of how my body is functioning from moment to moment.

59. I don't like to be touched by a member of the opposite sex.

60. Others know me better than I know myself.

CHECK YOUR BLUE ANSWER SHEET. YOU SHOULD HAVE JUST MARKED ITEM #60.

61. I regularly alternate between dieting, and eating sprees.

62. My preoccupation with dieting is unreasonable.

63. If I give in to an urge, it means that my self-discipline has failed.

64. The food I eat is rapidly converted to fat.

65. My bedroom is neat and tidy.

66. I think that it's o.k. to treat yourself to a sweet or snack.

67. I am rarely at a loss for words for describing how I feel inside.

1 = I NEVER <u>think, feel, or act</u> this way.
2 = I RARELY <u>think, feel, or act</u> this way.
3 = I OFTEN <u>think, feel, or act</u> this way.
4 = I VERY OFTEN <u>think, feel, or act</u> this way.

RATING

68. My feelings are easily hurt.

69. I work a bit more slowly than others but feel a great need to make sure the job is really done right.

70. I would say that being very overweight is a reflection of a deeper, inner weakness of character.

71. I wonder if my body chemistry is in balance.

72. To be perfect in all areas is an unrealistic goal.

73. My sleep is fitful and disturbed.

74. My worries keep me from getting other things done.

75. My overall health is as good as it has ever been.

76. Others seem to block my attempts to get something done.

77. My family exercises little control over me.

78. I feel healthier when I skip a meal.

79. Others tend to be overconcerned about my health.

80. If I were to have sex with someone, I would feel dirty.

81. I feel like giving up.

82. It takes extra effort to get started doing something.

83. Weekends and holidays should be like any other day to a person who is serious about regular exercise and fitness.

84. For no apparent reason my heart will pound or race and I will feel on edge.

85. People who are overweight risk rejection by loved ones.

86. Others are as understanding and sympathetic of me as I would like them to be.

87. My body sometimes gives me false feedback about my true health.

88. I think about food all the time.

89. When I look in the mirror, I see little room for improvement.

90. If I cheat on my diet, I might as well go off of it completely.

91. When I need to concentrate, my mind seems to wander.

92. I've been ill a lot in the past.

PLEASE CHECK YOUR BLUE ANSWER SHEET: YOU SHOULD HAVE JUST MARKED #92.

1 = I NEVER <u>think, feel, or act</u> this way.
2 = I RARELY <u>think, feel, or act</u> this way.
3 = I OFTEN <u>think, feel, or act</u> this way.
4 = I VERY OFTEN <u>think, feel or act</u> this way.

RATING

93. Sometimes I feel like I just can't stop moving.

94. I should punish myself more for not meeting my goals.

95. I feel dominated by the desires of others.

96. Thin people are the happiest people.

97. I would like to weigh myself several times a day.

98. If I did poorly in school, it would not be taken lightly by my parents.

99. To gain personal control over my life has been a great struggle for me.

100. I would easily recognize if something was wrong with my health.

101. It is hard to know who you can count on.

102. If I let myself gain 2 lbs., I'll likely go on to gain 15 lbs.

103. I wish I knew how to be more independent of my parents.

104. I know more about what is best for my body than most doctors I know.

105. I never argued with my parents.

106. Sex appeal in men is very overrated.

107. I rarely get hungry.

108. A person should not worry much about his/her body size.

109. [Skip if you have not started your periods yet.]
My menstrual periods are very regular.

110. I have frequent headaches.

111. To look like a dancer is an important goal for me.

112. I often feel restless and unable to sit still.

113. I cut my food into small pieces.

114. It was/is nearly impossible to change my parents' mind about something.

115. I get dizzy and feel faint.

116. If you get into heavy petting with a guy, you might as well go all the way.

117. If I eat too much, I just can't hold it down.

118. Butterflies or jitters in the stomach are with me most of the day.

1 = I NEVER <u>think, feel, or act</u> this way.
2 = I RARELY <u>think, feel, or act</u> this way.
3 = I OFTEN <u>think, feel or act</u> this way.
4 = I VERY OFTEN <u>think, feel or act</u> this way.

RATING

119. I have eating sprees where I consume enough food for several people in a short time.

120. Even though I've carefully checked my work, I continue to feel the urge to recheck it again.

121. I am frequently constipated.

122. Sometimes, I wish I could be a little girl again.

123. Others would prefer if I ate more.

124. When my emotions get too strong, I try to keep busy or ignore them.

CHECK YOUR BLUE ANSWER SHEET: YOU SHOULD HAVE JUST MARKED ITEM #124.

125. Laxatives are a regular part of my diet.

126. Most of the time, it was/is useless to try to get my way at home.

127. I would like to have a shapely figure.

128. The smallest amount of food fills me up.

129. One of the nicest things that can happen to a woman is having a baby.

130. I can eat enough food for several people when I'm feeling lonely, sad or nervous.

131. [Skip if your periods have not started yet.]
I was upset when my period first started.

132. The activities that usually bring me joy don't make me happy these days.

133. I feel the urge lately to stuff myself with sweets or snacks.

134. My parents always encouraged my independence.

135. If I gain two more pounds, I won't be able to comfortably wear a bathing suit.

136. Despite all of my efforts to seek help, no doctor has adequately assessed my medical problem.

137. I take longer than others to finish a meal.

138. I never felt I had to prove myself to my parents.

139. My body shape is embarrassing.

140. My parents are/were overprotective.

1 = I NEVER think, feel, or act this way.
2 = I RARELY think, feel, or act this way.
3 = I OFTEN think, feel or act this way.
4 = I VERY OFTEN think, feel or act this way.

RATING

141. I often feel that people are unfriendly or dislike me.

142. Pleasing myself is more important than pleasing my parents.

143. I feel a shortness of breath at times, even when not physically active.

144. If I fail in my diet, I must be a weak person.

145. It takes time to unwind or relax.

146. I sometimes become preoccupied with the many tiny details of a task and overlook the big picture.

147. I think most people don't realize the sacrifice and dedication involved in getting the job done right.

148. I feel especially guilty about my weaknesses and failures these days.

149. Each day, I keep thinking about how my body should be trimmer.

150. I think about all the calories I will burn up when I exercise.

151. I have attacks of anxiety where I feel something terrible may happen.

152. My hands and feet are cold much of the time.

153. I feel irritable, or impatient.

154. I am careful about what I eat because many foods make me ill.

155. For no apparent reason, my vision or hearing sometimes fail to function properly.

CHECK YOUR BLUE ANSWER SHEET. YOU SHOULD HAVE JUST COMPLETED #155.

156. My weight goes up and down a lot.

157. I would say that when things just seem to get worse and worse, there is little you can do to change them.

158. Four-leaf clovers are rare; I think that if you find one, it may bring you good luck.

159. If you study hard enough, you can do well in any subject.

160. Lately, it seems like food is controlling my life.

161. I have frequent diarrhea.

162. I would like to take something to speed up my rate of burning calories.

163. No one that I know wants to cause trouble for me.

164. I feel I need more affection.

1 = I NEVER think, feel, or act this way.
2 = I RARELY think, feel, or act this way.
3 = I OFTEN think, feel, or act this way.
4 = I VERY OFTEN think, feel, or act this way.

RATING

165. I hate to sleep more than 6 or 7 hours a night, since more inactivity than that may make me fatter.

166. I wish my nerves would calm down.

167. I have a distressing fear that most people would not understand.

168. I feel restless if I am unable to be active after eating a meal.

169. I follow personal rules or routines that most others think are silly, but that I feel I must do.

170. I would say that being able to really get close to someone you like has a lot to do with being as thin and attractive as possible.

171. My brothers/sisters always want to argue or right with me.

172. Throwing-up is a convenient way to avoid too many calories.

173. I tend to have a greater number of friends than other people my age.

174. My family expects me to be far above average in all activities.

175. I have to keep fighting myself to keep from giving in to the urge to eat.

176. I feel more comfortable keeping my thoughts to myself than talking with others about them.

177. I frequently eat rapidly, to the point of feeling so full that I can't continue.

178. I think that low moods or depression may run in my family.

179. My friends say I am too thin; however, I really feel quite fat.

180. In public, I eat sensibly; but when alone, I will quickly eat enough food for several people.

181. Nothing I ever do seems quite good enough for me.

182. Sisters/brothers in my family try to compete with me in most things.

183. Other people seem less sad than me.

184. The more I struggle to keep my weight down, the more I seem to have eating sprees.

1 = I NEVER <u>think, feel, or act</u> this way.
2 = I RARELY <u>think, feel, or act</u> this way.
3 = I OFTEN <u>think, feel, or act</u> this way.
4 = I VERY OFTEN <u>think, feel, or act</u> this way.

RATING

185. No one really knows me.

186. I have to fight to convince people that I don't need as much food as others to function well.

CHECK YOUR BLUE ANSWER SHEET. YOU SHOULD HAVE JUST MARKED #186.

JCCP52/BUILT

Answer each question on the following pages by filling in the appropriate circles on the computer answer sheet. Please respond to each item as honestly as possible; remember, all of the information you provide will be kept strictly confidential.

1. Do you ever eat uncontrollably to the point of stuffing your-self (i.e., going on eating binges)?
   a. Once a month or less (or never)
   b. 2-3 times a month
   c. Once or twice a week
   d. 3-6 times a week
   3. Once a day or more

2. I am satisfied with my eating patterns.
   a. Agree
   b. Neutral
   c. Disagree a little
   d. Disagree
   3. Disagree strongly

3. Have you ever kept eating until you thought you'd explode?
   a. Practically every time I eat
   b. Very frequently
   c. Often
   d. Sometimes
   e. Seldom or never

4. Would you presently call yourself a "binge eater"?
   a. Yes, absolutely
   b. Yes
   c. Yes, probably
   d. Yes, possibly
   e. No, probably not

5. I prefer to eat:
   a. At home alone
   b. At home with others
   c. In a public restaurant
   d. At a friend's house
   e. Doesn't matter

6. Do you feel you have control over the amount of food you consume?
   a. Most or all of the time
   b. A lot of the time
   c. Occasionally
   d. Rarely
   e. Never

7. I use laxatives or suppositories to help control my weight.
   a. Once a day or more
   b. 3-6 times a week
   c. 2-3 times a month
   d. Once a month or less (or never)

8. I eat until I feel too tired to continue.
   a. At least once a day
   b. 3-6 times a week
   c. 2-3 times a month
   d. Once a month or less (or never)

9. How often do you prefer eating ice cream, milk shakes, or pudding during a binge?
   a. Always
   b. Frequently
   c. Sometimes
   d. Seldom or never
   e. I don't binge

10. How much are you concerned about your eating binges?
    a. I don't binge
    b. Bothers me a little
    c. Moderate concern
    d. Major concern
    e. Probably the biggest concern in my life

11. Most people I know would be amazed if they knew how much food I can consume at one sitting.
    a. Without a doubt
    b. Very probably
    c. Probably
    d. Possibly
    e. No

12. Do you ever eat to the point of feeling sick?
    a. Very frequently
    b. Frequently
    c. Fairly often
    d. Occasionally
    e. Rarely or never

13. Sometimes I am afraid to eat anything for fear that I won't be able to stop.
    a. Always
    b. Almost always
    c. Frequently
    d. Sometimes
    e. Seldom or never

14. I don't like myself after I eat too much.
    a. Always
    b. Frequently
    c. Sometimes
    d. Seldom or never
    e. I don't eat too much.

15. How often do you intentionally vomit after eating?
    a. 2 or more times a week
    b. Once a week
    c. 2-3 times a month
    d. Once a month
    e. Seldom or never

16. Which of the following describes your feelings after binge eating?
    a. I don't binge eat.
    b. I feel O.K.
    c. I feel mildly upset with myself.
    d. I feel quite upset with myself.
    e. I hate myself.

17. I eat a lot of food when I'm not even hungry.
    a. Very frequently
    b. Frequently
    c. Occasionally
    d. Sometimes
    e. Seldom or never

18. My eating patterns are different from eating patterns of most people.
    a. Always
    b. Almost always
    c. Frequently
    d. Sometimes
    e. Seldom or never

19. I have tried to lose weight by fasting or going on "crash" diets.
    a. Not in the past year
    b. Once in the past year
    c. 2-3 times in the past year
    d. 4-5 times in the past year
    e. More than 5 times in the past year

20. I feel sad or blue after eating more than I'd planned to eat.
    a. Always
    b. Almost always
    c. Frequently
    d. Sometimes
    e. Seldom or never, or not applicable

21. When engaged in an eating binge, I tend to eat foods that are high in carbohydrates (sweets and starches).
    a. Always
    b. Almost always
    c. Frequently
    d. Sometimes
    e. Seldom, or I don't binge

22. Compared to most people, my ability to control my eating behavior seems to be:
    a. Greater than others' ability
    b. About the same
    c. Less
    d. Much less
    e. I have absolutely no control

23. One of your best friends suddenly suggests that you both eat at a new restaurant buffet that night. Although you'd planned on eating something light at home, you go ahead and eat out, eating quite a lot and feeling uncomfortably full. How would you feel about yourself on the ride home?
    a. Fine, glad I'd tried that new restaurant.
    b. A little regretful that I'd eaten so much.
    c. Somewhat disappointed in myself
    d. Upset with myself
    e. Totally disgusted with myself

24. I would presently label myself a "compulsive eater" (one who engages in episodes of uncontrolled eating).
    a. Absolutely
    b. Yes
    c. Yes, probably
    d. Yes, possibly
    e. No, probably not

25. What is the most weight you've ever lost in 1 month?
    a. Over 20 pounds
    b. 12-20 pounds
    c. 8-11 pounds
    d. 4-7 pounds
    e. Less than 4 pounds

26. If I eat too much at night, I feel depressed the next morning.
    a. Always
    b. Almost always
    c. Frequently
    d. Sometimes
    e. I don't eat too much at night

27. Do you believe that it is easier for you to vomit than it is for most people?
    a. Yes, it's no problem at all for me
    b. Yes, it's easier
    c. Yes, it's a little easier
    d. About the same
    e. No, it's less easy

28. I feel that food controls my life.
    a. Always
    b. Almost always
    c. Frequently
    d. Sometimes
    e. Seldom or never

29. I feel depressed immediately after I eat too much.
    a. Always
    b. Frequently
    c. Sometimes
    d. Seldom or never
    e. I don't eat too much

30. How often do you vomit in order to lose weight?
    a. Less than once a month (or never)
    b. Once a month
    c. 2-3 times a month
    d. Once a week
    e. 2 or more times a week

31. When consuming a large quantity of food, at what rate of speed do you usually eat?
    a. More rapidly than most people have ever eaten in their lives
    b. A lot more rapidly than most people
    c. A little more rapidly than most people
    d. About the same rate as most people
    e. More slowly than most people (or not applicable)

32. What is the most weight you've ever gained in 1 month?
    a. Over 20 pounds
    b. 12-20 pounds
    c. 8-11 pounds
    d. 4-7 pounds
    e. Less than 4 pounds

33. Females only: My last menstrual period
    a. Within the past month
    b. Within the past 2 months
    c. Within the past 4 months
    d. Within the past 6 months
    e. Not within the past 6 months

34. I use diuretics (water pills) to help control my weight.
    a. Once a day or more
    b. 3-6 times a week
    c. Once or twice a week
    d. Once a month or less (or never)

35. How do you think your appetite compares with that of most people you know?
    a. Many times larger than most
    b. Much larger
    c. A little larger
    d. About the same
    e. Smaller than most

36. Females only: My menstrual cycles occur once a month:
    a. Always
    b. Usually
    c. Sometimes
    d. Seldom
    e. Never

37. My weight has changed a lot in the past 6 months because of my inconsistent eating and poor willpower to diet steadily.
    a. Very true of me
    b. Quite true of me
    c. Only somewhat true of me
    d. Generally not true of me
    e. Not at all like me

RS Inventory

For each of the following questions, darken a response on the same
blue answer sheet you marked for the Bulitt inventory. Choose the
response that best describes you. Turn your blue answer sheet over
to "Side 2" and begin marking at item #101.

101. How often are you dieting?
     a. Never b. Rarely c. Sometimes d. Usually e. Always

102. Which best describes your behavior after you have eaten a "not
     allowed" food while on your diet?
     a. Return to diet.
     b. Stop eating for an extended period of time in order to
        compensate.
     c. Continue to splurge, eating other "not allowed" foods.

103. What is the maximum amount of weight you have ever lost within
     one month?
     a. 0-4 lbs b. 5-9 lbs c. 10-14 lbs d. 15-19 lbs e. 20 or more

104. What is your maximum weight gain within a week?
     a. 0-1 lbs b. 1.1-2 lbs c. 2.1-3 lbs d. 3.1-5 lbs
     e. more than 5

105. In a typical week, how much does your weight fluctuate (max. to
     min.)?
     a. 0-4 lbs b. 5-9 lbs c. 10-14 lbs d. 15-19 lbs e. 20 or more

106. Would weight fluctuation of 5 lbs affect the way you live your
     life?
     a. Not at all b. Slightly c. Moderately d. Very much

107. Do you eat sensibly in front of others and splurge when alone?
     a. Never b. Rarely C. Often d. Always

108. Do you give too much time and thought to food?
     a. Never b. Rarely c. Often d. Always

109. Do you have feelings of guilt after overeating?
     a. Never b. Rarely C. Often d. Always

110. How conscious are you of what you're eating?
     a. Not at all b. Slightly c. Moderately d. Extremely

111. How many pounds over your desired weight were you at your
     maximum?
     a. 0 lbs b. 1-5 lbs c. 6-10 lbs d. 11-20 lbs
     e. more than 21 lbs

DMS RESTRAINT

<u>Directions</u>: Read each statement and decide which <u>one</u> of the answers describes you best <u>at the present time</u>. Find number 151 on the same Blue Answer Sheet that you used for marking the <u>Bulitt</u>. Mark the best response by blackening the correct circle with pencil.

151. Do the sights and smells of good food seem to tempt you so strongly that you end up ruining a weight loss diet?

1	2	3	4	5
never	rarely	sometimes	often	I don't diet

152. Are you envious of the types of food others can allow themselves to enjoy?

1	2	3	4
never	rarely	sometimes	often

153. Do you spend time during the day daydreaming about your favorite foods?

1	1	3	4
never	rarely	sometimes	often

154. What describes your dieting pattern in the last two years?

1	2	3	4
never on	rarely	sometimes	often
diet	on diet	on diet	on diet

155. How likely are you to fail to stay on a weight reduction diet?

1	2	3	4	5
never fail	rarely fail	sometimes fail	often fail	I don't diet

156. When you have eaten slightly more than your limit of calories, are you able to keep from eating any more at that moment?

1	2	3	4
almost never	rarely	sometimes	usually

157. Do you make yourself take small helpings of food as a way of controlling your weight?

1	2	3	4
never	rarely	sometimes	often

158. When you start eating, how able are you to stop?

1	2	3	4
almost unable	rarely able	sometimes able	usually able

159. If you are on a diet and eat a food that is not allowed, do you eat less for a period of time to make up for it?

1	2	3	4
never	rarely	sometimes	often

160. Do you control the urge to eat at means in order not to gain weight?
    | 1 | 2 | 3 | 4 |
    | never | rarely | sometimes | often |

161. If you go on an eating spree or binge, do you feel guilty afterwards?
    | 1 | 2 | 3 | 4 |
    | never | rarely | sometimes | often |

162. Do you get distracted from enjoying a special meal with someone because you are busy adding up all of the calories?
    | 1 | 2 | 3 | 4 |
    | never | rarely | sometimes | often |

163. In a typical week, how much does your weight to up and down (maximum weight minue minimum weight)?
    | 1 | 2 | 3 | 4 |
    | 0 pounds | 1-3 pounds | 4-6 pounds | more than 7 pounds |

164. How often do you go out of your way to shop for low calorie foods?
    | 1 | 2 | 3 | 4 |
    | never | rarely | sometimes | often |

165. Do you eat sensibly in front of others, and then have eating sprees when you are alone?
    | 1 | 2 | 3 | 4 |
    | never | rarely | sometimes | often |

166. How often do you purposely eat less food than you really want?
    | 1 | 2 | 3 | 4 |
    | never | rarely | sometimes | often |

167. Which one of the following applies to you best?
    1. I always eat whatever I want, whenever I want it.
    2. I usually eat whatever I want, whenever I want it.
    3. I usually do not eat what I want, whenever I want it.
    4. I always limit what I eat, and when I eat it.

168. When you are on a diet and have eaten slightly more than your limit of calories, what do you usually do?
    1. cut back on food for a long time to make up for it.
    2. just stop eating and go back to the regular diet.
    3. tell myself I will diet tomorrow; and eat a bit more.
    4. consume at least several more helpings, and promise myself I will do better tomorrow.
    5. this question does not apply to me since I never diet to lose weight.

College Demographics RES1-86

Directions: Please fill in the following blansk as they apply to you.

1. What is your age? _____

2. What is your sex? _____Male _____Female

3. How much do you weight now? a)_____lbs b)_____Don't know

4. How tall are you? a)_____feet_____in b)_____Don't know

5. How many inches have you grown in the last two years?_____

6. What is the most you have weighed in the last two years (not counting pregnancies)?

   a)_____lbs b)_____Don't know

   c) When did you first discover you weighed this amount?

   _____months ago

7. What is the least you have weighed in the past two years?

   a)_____lbs b)_____Don't know

   c) When did you first discover you weighed this amount?

   _____months ago

8. At the time you weighed the least in the last two years, did you ever skip your periods?

   _____yes _____no _____haven't begun periods yet

   (If yes, what is the largest number you ever skipped in a row?_____

9. How did you feel about your weight when you were between ages 6-12?

   _____I felt extremely thin.
   _____I felt somewhat thin.
   _____I felt I was of normal weight.
   _____I felt somewhat overweight.
   _____I felt extremely overweight.

10. Are you currently on a diet to lose weight? _____yes _____no

    If yes, how much are you trying to lose all together? _____lbs

11. Have you ever been teased about your weight?_____yes _____no

    If yes, was it about being:

    a) _____overweight b) _____underweight c) _____both

12. What has been your grade point average since beginning college?
    (where 4.0 = A; 3.0 = B etc.)

    My grade point average is _____.

13. Are you involved in any clubs, or activities, such as dance, music, karate lessons, etc., weight programs, varsity sports (football, hockey, basketball, gymnastics, wrestling, and so on), or clubs or organizations at school or church? Please list:

In high school_____

In college_____

14. Please put a check mark in the boxes that best describe the education of these people:

	mother	father	step-mother	step-father	other guardian
8th grade or below					
grade 8-12					
high school degree					
college degree					
masters or doctorate degree					

15. Have you or anyone in your family ever visited a clinic because he/she weighed too little?

____yes ____no   If yes, who (you, sister, father, etc.)

_____

16. Have you or anyone in your family ever visited a clinic because he/she weighed too much?

____yes ____no   If yes, who (you, sister, father, etc.)

_____

APPENDIX B: RANDOMIZED SLIDE LISTS

Random number tables were used to fix categories for each of the
slide tray positions in the Input and Test trays. Specifically, an
even/odd random number table was used to determine if a position in the
Input tray was food or nonfood, then RP (repeated picture) or NP (new
picture). These determinations are listed below; F = food; letters N
(nature), I (interior), T (terrace), A (ariel), G (garden), P (people),
all indicate nonfood categories. The number in parentheses represent
the determination, by 1/80 random number table, of where the second mem-
ber of the pair would be placed in the Test tray.

First randomized category list: Input tray #1 (Test tray #1)

1. N/RP (71)	21. P/NP (8)	41. N/RP (80)	61. F/RP (50)
2. F/RP (77)	22. F/RP (5)	42. F/NP (6)	62. F/NP (11)
3. I/NP (79)	23. F/RP (22)	43. N/RP (31)	63. N/RP (35)
4. F/RP (55)	24. F/NP (21)	44. P/NP (63)	64. T/NP (61)
5. N/RP (24)	25. G/NP (43)	45. F/RP (59)	65. N/NP (29)
6. F/NP (65)	26. I/RP (27)	46. G/NP (25)	66. N/NP (57)
7. N/NP (37)	27. N/RP (20)	47. A/NP (67)	67. N/NP (23)
8. N/RP (15)	28. N/NP (40)	48. F/RP (74)	68. I/RP (45)
9. I/NP (71)	29. F/NP (13)	49. N/RP (14)	69. A/NP (76)
10. G/RP (46)	30. F/RP (42)	50. N/NP (72)	70. P/RP (60)
11. F/NP (69)	31. I/RP (62)	51. I/NP (47)	71. F/RP (28)
12. F/RP (36)	32. N/NP (54)	52. I/RP (49)	72. N/NP (64)
13. P/RP (56)	33. N/NP (73)	53. F/RP (30)	73. G/NP (51)
14. F/RP (68)	34. A/NP (17)	54. A/NP (75)	74. A/RP (1)
15. N/NP (41)	35. F/NP (52)	55. F/RP (32)	75. N/RP (58)
16. A/NP (16)	36. A/NP (12)	56. T/RP (3)	76. F/NP (2)
17. A/RP (34)	37. N/NP (44)	57. I/RP (18)	77. I/RP (33)
18. N/NP (10)	38. N/RP (38)	58. F/RP (48)	78. F/RP (53)
19. F/NP (26)	39. T/NP (19)	59. N/NP (4)	79. G/RP (70)
20. T/NP (66)	40. N/RP (39)	60. N/NP (9)	80. F/RP (78)

Second randomized category list: Input tray #2 (Test tray #2)

1. P/RP (80)	21. N/NP (50)	41. F/NP (7)	61. N/NP (8)
2. F/NP (6)	22. F/RP (11)	42. F/RP (77)	62. F/NP (5)
3. F/NP (31)	23. N/NP (35)	43. N/NP (79)	63. I/RP (22)
4. F/RP (63)	24. P/RP (61)	44. T/RP (55)	64. F/NP (21)
5. G/RP (59)	25. F/NP (29)	45. N/RP (24)	65. N/NP (43)
6. I/NP (25)	26. G/RP (57)	46. N/RP (65)	66. F/RP (27)
7. N/NP (67)	27. A/RP (23)	47. N/RP (37)	67. N/RP (20)
8. N/RP (74)	28. F/NP (45)	48. I/NP (15)	68. N/NP (40)
9. F/RP (14)	29. N/NP (76)	49. A/RP (71)	69. I/RP (13)
10. F/NP (72)	30. N/RP (60)	50. P/NP (46)	70. G/NP (42)
11. I/NP (47)	31. I/RP (28)	51. F/NP (69)	71. F/RP (62)
12. N/RP (49)	32. I/NP (64)	52. N/RP (36)	72. F/NP (54)
13. N/RP (30)	33. F/NP (51)	53. G/RP (56)	73. P/NP (73)
14. A/RP (75)	34. A/RP (1)	54. A/NP (68)	74. F/NP (17)
15. F/RP (32)	35. F/NP (58)	55. N/NP (41)	75. N/RP (52)
16. A/RP (3)	36. T/NP (2)	56. F/RP (16)	76. A/RP (12)
17. N/RP (18)	37. I/NP (33)	57. I/NP (34)	77. A/NP (44)
18. N/NP (48)	38. F/NP (53)	58. F/NP (10)	78. N/RP (38)
19. T/RP (4)	39. N/RP (70)	59. G/NP (26)	79. F/RP (19)
20. N/NP (9)	40. N/RP (78)	60. F/NP (66)	80. T/RP (39)

Slide Lists

Each developed slide was given an identifying label: a letter to des-
ignate category (F, N, I, T, G, P, A, M, etc.), a numeral to indicate
number in the category, and a "A", "B", or "AB" to indicate whether the
slide was the first member of a NP, the second member of a NP, or one of
an RP pair, respectively. Slides were distributed to the trays accord-
ing to the randomized number series above; the following lists reflect
that ordering. The reference for magazine picture from which the slide
was made follows the label.

Input Tray #1

```
 1. N1AB    -- National Geographic, February, 1983, p. 147.
 2. F2AB    -- Bon Appetit, July, 1983, p. 49.
 3. I2A     -- Better Homes and Gardens, June, 1985, p. 105.
 4. F4AB    -- Bon Appetit, April, 1985, p. 61.
 5. N3AB    -- National Geographic, April, 1982, p. 450.
 6. F1A     -- Bon Appetit, December, 1984, p. 59.
 7. N2A     -- National Geographic, November, 1979, p. 668.
 8. N5AB    -- National Geographic, September, 1983, p. 339.
 9. I4A     -- Better Homes and Gardens, June, 1984, p. 104.
10. GIAB    -- National Geographic, July, 1979, p. 133.
11. F3A     -- Bon Appetit, November, 1984, p. 64.
12. F6AB    -- Better Homes and Gardens, December, 1976, p. 76.
13. P1AB    -- National Geographic, October, 1980, p. 129.
14. F8AB    -- Better Homes and Gardens, October, 1983, p. 129.
15. N4A     -- National Geographic, December, 1979, p. 803.
16. A2A     -- National Geographic, September, 1980, p. 311.
17. A1AB    -- National Geographic, April, 1979, p. 579.
18. N6A     -- National Geographic, June, 1978, p. 762.
19. F5A     -- Bon Appetit, June, 1985, p. 68.
20. TA1     -- National Geographic, July, 1980, p. 54.
21. P2A     -- National Geographic, January, 1982, p. 96.
22. F10A    -- Bon Appetit, February, 1986, p. 73.
23. F12AB   -- Bon Appetit, June, 1980, p. 113.
24. F7A     -- Bon Appetit, June, 1984, p. 46.
25. G2A     -- Better Homes and Gardens, July, 1984, p. 69.
26. I1AB    -- Better Homes and Gardens, November, 1983, p. 45.
27. N7AB    -- National Geographic, December, 1983, p. 724.
28. N8A     -- National Geographic, July, 1983, p. 111.
29. F9A     -- Bon Appetit, November, 1984, p. 67.
30. F14AB   -- Better Homes and Gardens, July, 1985, p. 41.
31. I3AB    -- Better Homes and Gardens, May, 1984, p. 43.
32. N10A    -- National Geographic, January, 1981, p. 108.
33. N12A    -- National Geographic, May, 1982, p. 660.
34. A4A     -- National Geographic, March, 1983, p. 317.
35. F11A    -- Better Homes and Gardens, September, 1983, p. 119.
36. A6A     -- National Geographic, March, 1979, p. 429.
37. N14A,,  -- National Geographic, September, 1980, p. 420.
38. N9AB    -- National Geographic, March, 1978, p. 311.
39. TB1     -- National Geographic, May, 1979, p. 702.
40. N9.5AB  -- National Geographic, January, 1981, p. 34.
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Input Tray #1 (continued)

41. N11AB -- National Geographic, May, 1983, p. 680.
42. F14A -- Bon Appetit, July, 1983, p. 68.
43. N13AB -- National Geographic, February, 1979, p. 164.
44. P4A   -- National Geographic, August, 1978, p. 261.
45. F16AB -- Better Homes and Gardens, December, 1983, p. 73.
46. G4A   -- National Geographic, May, 1980, p. 697.
47. A8A   -- National Geographic, May, 1980, p. 706.
48. F18AB -- Bon Appetit, December, 1983, p. 78.
49. N15AB -- National Geographic, August, 1981, p. 190.
50. N16A -- National Geographic, June, 1981, p. 810.
51. F6A   -- Better Homes and Gardens, October, 1983, p. 116.
52. I5AB -- Better Homes and Gardens, August, 1984, p. 67.
53. F20AB -- Bon Appetit, March, 1984, p. 75.
54. A10A -- National Geographic, November, 1980, p. 609.
55. F22AB -- Bon Appetit, February, 1985, p. 89.
56. TA.51/2- National Geographic, May, 1982, p. 685.
57. I7AB -- Better Homes and Gardens.
58. F24AB -- Bon Appetit, February, 1985, p. 77.
59. N18A -- National Geographic, August, 1980, p. 254.
60. N20A -- National Geographic, July, 1983, p. 121.
61. F26AB -- Bon Appetit, November, 1984, p. 98.
62. F15A -- Bon Appetit, June, 1984, p. 58.
63. N17AB -- National Geographic, February, 1979, p. 184.
64. TD1   -- National Geographic, November, 1979, p. 623.
65. N22A -- National Geographic, July, 1980, p. 16.
66. N24A -- National Geographic, February, 1982, p. 158.
67. N26A -- National Geographic, August, 1983, p. 69.
68. I9AB -- Better Homes and Gardens, April, 1984, p. 45.
69. A12A -- National Geographic, December, 1981, p. 767.
70. P3AB -- National Geographic, January, 1982, p. 129.
71. F28AB -- Bon Appetit, September, 1984, p. 46.
72. N28A -- National Geographic, October, 1978, p. 494.
73. G7A   -- National Geographic, May, 1978, p. 721.
74. A3AB -- National Geographic, March, 1979, p. 319.
75. N19AB -- National Geographic, September, 1981, p. 400.
76. F17A -- Better Homes and Gardens, July, p. 73.
77. I11AB -- Better Homes and Gardens, June, 1985, p. 102.
78. F30AB -- Better Homes and Gardens, February, 1980, p. 127.
79. G3AB -- National Geographic, July, 1979, p. 137.
80. F32AB -- Bon Appetit, February, 1986, p. 85.

Input Tray #2

 1. P5AB   -- National Geographic, January, 1983, p. 122.
 2. F19A   -- Bon Appetit, January, 1984, p. 67.
 3. F21A   -- Better Homes and Gardens, July, 1976, p. 97.
 4. F34AB -- Bon Appetit, January, 1985, p. 60.
 5. G5AB   -- National Geographic, July, 1979, p. 6.
 6. I8A   -- Better Homes and Gardens, November, 1983, p. 51.
 7. N30A   -- National Geographic, February, 1978, p. 258.
 8. N21AB -- National Geographic, July, 1978, p. 14
 9. F36AB -- Better Homes and Gardens, July, 1984, p. 100.
10. F23A   -- Bon Appetit, June, 1985, p. 44.
11. I9A   -- Better Homes and Gardens, August, 1985, p. 65.
12. N23AB -- National Geographic, January, 1978, p. 5.
13. N25AB -- National Geographic, February, 1978, p. 234.
14. A5AB   -- National Geographic, March 1979, p. 434.
15. F38AB -- Better Homes and Gardens, June, 1984, p. 116.
16. A7AB   -- National Geographic, May, 80, p. 602.
17. N27AB -- National Geographic, February, 1981, p. 188.
18. N32A   -- National Geographic, August, 1981, p. 259.
19. TC1/2 -- National Geographic, December, 1980, p. 80.
20. N34A   -- National Geographic, December, 1978, p. 850.
21. N36A   -- National Geographic, May, 1980, p. 587.
22. F40AB -- Better Homes and Gardens, November, 1984, p. 153.
23. N38A   -- National Geographic, February, 1979, p. 242.
24. P7AB   -- National Geographic, October, 1981, p. 471.
25. F25A   -- Bon Appetit, September, 1985, p. 93.
26. G7.5AB-- National Geographic, November, 1979, p. 608.
27. A9AB   -- National Geographic, April, 1982, p. 486.
28. F27A   -- Bon Appetit, October, 1984, p. 132.
29. N40A   -- National Geographic, July, 1978, p. 101.
30. N29AB -- National Geographic, October, 1981, p. 438.
31. I13AB -- Better Homes and Gardens, August, 1980, p. 78.
32. I10A   -- Better Homes and Gardens, October, 1983, p. 113.
33. F29A   -- Bon Appetit, October, 1983, p. 53.
34. A11AB -- National Geographic, February, 79, p. 213.
35. F31A   -- Better Homes and Gardens, February, 1985, p. 117.
36. TF1   -- National Geographic, December, 1983, p. 178.
37. I14A   -- Better Homes and Gardens, October, 1982, p. 115.
38. F33A   -- National Geographic, March, 1983, p. 399.
39. N31AB -- National Geographic, June, 1982, p. 700.
40. N33AB -- National Geographic, September, 1978, p. 321.

Input Tray #2 (continued)

41. F35A   -- Bon Appetit, February, 1986, p. 67.
42. F42AB   -- National Geographic, June, 1978, p. 811.
43. N42A   -- National Geographic, December, 1981, p. 746.
44. TE1/2   -- National Geographic, March, 1978, p. 401.
45. N37AB   -- National Geographic, February, 1983, p. 182.
46. N39AB   -- National Geographic, July, 1982, p. 47.
47. N41AB   -- National Geographic, February, 1978, p. 671.
48. I16A   -- Better Homes and Gardens, October, 1982, p. 118.
49. AM1AB   -- National Geographic, May, 1982, p. 641.
50. P6A   -- National Geographic, January 1982, p. 19.
51. F37A   -- Better Homes and Gardens, September, 1983, p. 40.
52. N43AB   -- National Geographic, May, 1978, p. 614.
53. G9AB   -- Better Homes and Gardens, July, 1984, p. 93.
54. APO2B   -- National Geographic, March, 1979, p. 409.
55. N44A   -- National Geographic, December, 1981, p. 712.
56. F44AB   -- Bon Appetit, November, 1984, p. 101.
57. I18A   -- Better Homes and Gardens, October, 1983, p. 45.
58. F39A   -- Bon Appetit, April, 1985, p. 48.
59. G8A   -- National Geographic, June, 1980, p. 658.
60. F43A   -- Bon Appetit, October, 1984, p. 134.
61. N44.5A-- National Geographic, July, 1978, p. 10.
62. F45A   -- Bon Appetit, Sepember, 1984, p. 60.
63. I15AB   -- Better Homes and Gardens, October, 1982, p. 116.
64. F47A   -- Better Homes and Gardens, September, 1984, p. 99.
65. NPO4A   -- National Geographic, June, 1979, p. 741.
66. F46AB   -- Bon Appetit, June, 1984, p. 44.
67. N45AB   -- National Geographic, October, 1981, p. 463.
68. PO6A   -- National Geographic, June, 1978, p. 648.
69. I17AB   -- Better Homes and Gardens, August, 1984, p. 2.
70. G10A   -- Better Homes and Gardens, February, 1985, p. 40.
71. F48AB   -- Bon Appetit, March, 1984, p. 37.
72. F48A   -- Bon Appetit, October, 1984, p. 105.
73. P8A   -- National Geographic, June, 1978, p. 805.
74. F51A   -- Better Homes and Gardens, June, 1984, p. 118.
75. PO1A   -- National Geographic, August, 1978, p. 265.
76. AM3AB   -- National Geographic, January, 1978, p. 87.
77. APO12A-- National Geographic, November, 1979, p. 615.
78. NPO3AB-- National Geographic August, 1981, p. 193.
79. F50AB   -- Better Homes and Gardens, December, 1983, p. 69.
80. TG1/2   -- National Geographic, January, 1983, p. 5.

Test Tray #1

1. A3AB   -- National Geographic, March, 1979, p. 319.
2. F17B   -- Better Homes and Gardens, August, 1984, p. 78.
3. TA.5AB-- National Geographic, May, 1982, p. 685.
4. N18B   -- National Geographic, August, 1980, p. 255.
5. F10AB   -- Bon Appetit, February, 1986, p. 73.
6. F13B   -- Bon Appetit, October, 1984, p. 88.
7. N1AB   -- National Geographic, February, 1983, p. 147.
8. P2B   -- National Geographic, January, 1982, p. 97.
9. N20B   -- National Geographic, July, 1983, p. 120.
10. N6B   -- National Geographic, June, 1978, p. 763.
11. F15A   -- Bon Appetit, January, 1984, p. 45.
12. A6B   -- National Geographic, March, 1978, p. 419.
13. F9B   -- Bon Appetit, January, 1985, p. 84.
14. N15AB   -- National Geographic, August, 1981, p. 140.
15. N5AB   -- National Geographic, September, 1983, p. 339.
16. A2B   -- National Geographic, December, 1980, p. 837.
17. A4B   -- National Geographic, April, 1981, p. 478.
18. I7AB   -- Better Homes and Gardens.
19. TB2   -- National Geographic, May, 1979, p. 703.
20. N7AB   -- National Geographic, December, 1983, p. 724.
21. F7B   -- Bon Appetit, March, 1984, p. 39.
22. F12AB   -- Bon Appetit, June, 1980, p. 113.
23. N26B   -- National Geographic, September, 1980, p. 288.
24. N3AB   -- National Geographic, April, 1982, p. 450.
25. G4B   -- National Geographic, August, 1980, p. 801.
26. F5B   -- Bon Appetit, June, 1985, p. 69.
27. I1AB   -- Better Homes and Gardens, November, 1983, p. 45.
28. F28B   -- Bon Appetit, September, 1984, p. 46.
29. N28B   -- National Geographic, July, 1980, p. 17.
30. F20AB   -- Bon Appetit, March, 1984, p. 75.
31. N13AB   -- National Geographic, February, 1979, p. 164.
32. F22AB   -- Bon Appetit, February, 1985, p. 89.
33. I11AB   -- Better Homes and Gardens, June, 1985, p. 102.
34. A1AB   -- National Geographic, April, 1979, p. 579.
35. N17AB   -- National Geographic, February, 1979, p. 188.
36. F6AB   -- Better Homes and Gardens, December, 1976, p. 76.
37. N2B   -- National Geographic, November, 1979, p. 669.
38. N9AB   -- National Geographic, March, 1978, p. 311.
39. N9.5AB-- National Geographic, January, 1981, p. 34.
40. N8B   -- National Geographic, July, 1983, p. 110.

Test Tray #1 (continued)

41. N4B   -- National Geographic, December, 1979, p. 802.
42. F14AB -- Better Homes and Gardens, July, 1985, p. 41.
43. G2B   -- Better Homes and Gardens, July, 1984, p. 91.
44. N14B   -- National Geographic, July, 1980, p. 417.
45. I9AB   -- Better Homes and Gardens, April, 1984, p. 45.
46. G1AB   -- National Geographic, July, 1979, p. 133.
47. I6B   -- Better Homes and Gardens, November, 1984, p. 128.
48. F24AB -- Bon Appetit, February, 1985, p. 77.
49. I5AB   -- Better Homes and Gardens, August, 1984, p. 67.
50. F26AB -- Bon Appetit, November, 1984, p. 98.
51. G7B   -- National Geographic, May, 1978, p. 720.
52. F11B   -- Better Homes and Gardens, September, 1983, p. 121.
53. F30AB -- Better Homes and Gardens, February, 1980, p. 127.
54. N10B   -- National Geographic, January, 1981, p. 109.
55. F4AB   -- Bon Appetit, April, 1985, p. 61.
56. P1AB   -- National Geographic, October, 1980, p. 535.
57. N24B   -- National Geographic, February, 1982, p. 159.
58. N19AB -- National Geographic, September, 1981, p. 400.
59. F16AB -- Better Homes and Gardens, December, 1983, p. 73.
60. P3AB   -- National Geographic, January, 1982, p. 129.
61. TD2   -- National Geographic, November, 1979, p. 622.
62. I3AB   -- Better Homes and Gardens, May, 1984, p. 43.
63. P4B   -- National Geographic, August, 1978, p. 260.
64. N28B   -- National Geographic, February, 1980, p. 214.
65. F1B   -- Bon Appetit, December, 1984, p. 53.
66. TA2   -- National Geographic, July, 1980, p. 55.
67. A8B   -- National Geographic, February, 1978, p. 654.
68. F8AB   -- Better Homes and Gardens, October, 1983, p. 129.
69. F3B   -- Bon Appetit, December, 1983, p. 51.
70. G3AB   -- National Geographic, July, 1979, p. 137.
71. I4B   -- Better Homes and Gardens, November, 1983, p. 49.
72. N16B   -- National Geographic, June, 1981, p. 811.
73. N12B   -- National Geographic, May, 1982, p. 661.
74. F18AB -- Bon Appetit, December, 1983, p. 78.
75. A10B   -- National Geographic, February, 1978, p. 655.
76. A12B   -- National Geographic, April, 1979, p. 571.
77. F2AB   -- Bon Appetit, July, 1983, p. 49.
78. F32AB -- Bon Appetit, February, 1986, p. 85.
79. I2B   -- Better Homes and Gardens, February, p. 101.
80. N11AB -- National Geographic, May, 1983, p. 680.

Test Tray #2

 1. A11AB   -- National Geographic, February, 1979, p. 213.
 2. TF2   -- National Geographic, December, 1983, p. 779.
 3. A7AB   -- National Geographic, May, 1980, p. 602.
 4. TC1/2   -- National Geographic, December, 1980, p. 489.
 5. F45B   -- Bon Appetit, September, 1983, p. 57.
 6. F19B   -- Bon Appetit, September, 1983, p. 44.
 7. F35B   -- Bon Appetit, April, 1985, p. 86.
 8. N44.5B -- National Geographic, July, 1978, p. 9.
 9. N34B   -- National Geographic, December, 1978, p. 851.
10. F39B   -- Bon Appetit, April, 1985, p. 46.
11. F40AB   -- Better Homes and Gardens, November, 1984, p. 153.
12. AM3AB   -- National Geographic, January, 1978, p. 87.
13. I17AB   -- Better Homes and Gardens, August, 1984, p. 2.
14. F36AB   -- Better Homes and Gardens, July, 1984, p. 100.
15. I16B   -- Better Homes and Gardens, September, 1982, p. 43.
16. F44AB   -- Bon Appetit, November, 1984, p. 101.
17. F51B   -- Bon Appetit, October, 1984, p. 135.
18. N27AB   -- National Geographic, February, 1981, p. 188.
19. F50AB   -- Better Homes and Gardens, December, 1983, p. 69.
20. N45AB   -- National Geographic, October, 1981, p. 463.
21. F47B   -- Better Homes and Gardens, November, 1984, p. 149.
22. I15AB   -- Better Homes and Gardens, October, 1982, p. 116.
23. A9AB   -- National Geographic, April, 1982, p. 486.
24. N37AB   -- National Geographic, February, 1983, p. 182.
25. I8B   -- Better Homes and Gardens, August, 1982, p. 41.
26. G8B   -- National Geographic, June, 1980, p. 659.
27. F46AB   -- Bon Appetit, June, 1984, p. 44.
28. I13AB   -- Better Homes and Gardens, August, 1980, p. 78.
29. F25B   -- Bon Appetit, September, 1983, p. 92.
30. N25AB   -- National Geographic, February, 1978, p. 234.
31. F21B   -- Better Homes and Gardens, July, 1976, p. 102.
32. F38AB   -- Better Homes and Gardens, June, 1984, p. 116.
33. I14B   -- Better Homes and Gardens, October, 1982, p. 112.
34. I18B   -- Better Homes and Gardens, May, 1984, p. 41.
35. N38B   -- National Geographic, February, 1979, p. 243.
36. N43AB   -- National Geographic, May, 1978, p. 614.
37. N41AB   -- National Geographic, February, 1978, p. 671.
38. PO3AB   -- National Geographic, August, 1981, p. 192.
39. TG1/2   -- National Geographic, January, 1983, p. 5.
40. PO6B   -- National Geographic, August, 1981, p. 271.

Test Tray #2 (continued)

41. N44B -- National Geographic, December, 1981, p. 711.
42. G10B -- Better Homes and Gardens, June, 1980, p. 99.
43. PO4B -- National Geographic, June, 1979, p. 742.
44. PO12B -- National Geographic, September, 1979, p. 407.
45. F27B -- Bon Appetit, February, 1986, p. 77.
46. P6B   -- National Geographic, January, 1982, p. 18.
47. I9B   -- Better Homes and Gardens, August, 1984, p. 38.
48. N32B -- National Geographic, August, 1981, p. 257.
49. N23AB -- National Geographic, January, 1978, p. 5.
50. N36B -- National Geographic, January, 1981, p. 28.
51. F29B -- Bon Appetit, December, 1983, p. 100.
52. NPO1AB-- National Geographic, August, 1978, p. 265.
53. F33AB -- Bon Appetit, June, 1985, p. 57.
54. F44B -- Bon Appetit, February, 1986, p. 63.
55. TE1/2 -- National Geographic, March, 1978, p. 401.
56. G9AB -- Better Homes and Gardens, July, 1984, p. 93.
57. G7.5AB-- National Geographic, November, 1979, p. 608.
58. F31B -- Better Homes and Gardens, August, 1984, p. 83.
59. G5AB -- National Geographic, July, 1979, p. 6.
60. N29AB -- National Geographic, October, 1981, p. 438.
61. P7AB -- National Geographic, October, 1981, p. 471.
62. F48AB -- Bon Appetit, March, 1984, p. 37.
63. F34AB -- Bon Appetit, January, 1985, p. 60.
64. I10B -- Better Homes and Gardens, October, 1982, p. 113.
65. N39AB -- National Geographic, July, 1982, p. 47.
66. F43B -- Bon Appetit, October, 1984, p. 102.
67. N30B -- National Geographic, April, 1983, p. 430.
68. APO2A -- National Geographic, December, 1978, p. 793.
69. F37B -- Bon Appetit, February, 1986, p. 93.
70. N31AB -- National Geographic, June, 1982, p. 700.
71. AM1AB -- National Geographic, May, 1982, p. 641.
72. F23B -- Bon Appetit, June, 1984, p. 49.
73. P8B   -- National Geographic, June, 1978, p. 804.
74. N21AB -- National Geographic, July, 1978, p. 14.
75. A5AB -- National Geographic, March, 1979, p. 434.
76. N40B -- National Geographic, July, 1978, p. 146.
77. F42AB -- National Geographic, June, 1978, p. 811.
78. N33AB -- National Geographic, September, 1978, p. 321.
79. N42B -- National Geographic, April, 1981, p. 440.
80. P5AB -- National Geographic, January, 1983, p. 122.

APPENDIX C: PICTURE RECOGNITION SESSION FORMS

This appendix includes copies of the available printed materials used
during the picture recognition task sessions; thus, the appendix con-
tains:

   (a) the Slide Show Consent Form, and

   (b) the Instructions given to subjects for the picture recognition
   task.

The MAACL--Multiple Affect Adjective Check List, which was also used
during the picture recognition task-- can not be reproduced here due to
copyright restriction and test security considerations.

(a) Slide show consent form:

Slide Show Consent Form

This reseach project will involve viewing two sets of color slides.
Your task will be to indicate which slides in the second set you
recall from the first set. Also, you may be asked to write answers
to questions about your moods or attitudes, and have some physical
measurements taken. This experiment will take about an hour, for
which you will receive an hour of research credit.

You are under no obligation to participate in any part of this
study. Also, if you should decide to end your participation prior
to completing the study, you will be given extra credit in line
with the amount of time you have spent to that point.

All of the results of this study will be kept confidential. Your
name will not be associated with your answers. All of your respon-
ses will be number-coded so that you cannot be identified. Also,
your data will be pooled with that of other subjects; as the
project is not concerned with the responses of any particular indi-
viduals per se. Thus, individual results will not be available.
You may request a full explanation of the exact nature and purpose
of the study (plus copies of consent forms you have signed), at the
end of the summer. For this information, you should contact the
supervisory experimenter, Dr. Stein (ext. 4495).

I have read the statements above and give my consent to participate
in this study.

Name _____Date_____

Your lab TA (to contact for your extra credit points)

is:_____.

(b) Instructions

Material enclosed in parentheses () below was not spoken these segments are descriptions of conditions.

"Hello. Are you here for the Picture Recognition Study? (Affirmative response.) Will you go ahead and find a seat at the table? (Researcher welcomed subjects; waited until 5-7 minutes past the scheduled time to begin the session to allow as many subjects as possible to arrive before the procedures began. Researchers distributed packets with consent form, MAACL, and answer sheet.)

"Please read this consent form and sign on the line to indicate your willingness to participate; put your TA's name in the place indicated. If you don't know your TA's name, put the name of your Psychology instructor. When you have finished, we will start. (Consent forms finished, collected by researcher.)

"I want to ask that from now on you please not talk to each other or make comments aloud since it might influence the responses that others make. First, please turn over the white sheet which is an adjective checklist. Mark all the words that apply to how you are feeling today. When you have finished, please turn the sheet face down and we will collect them from you." (MAACL is completed by each subject; researcher or assistant collect them.) "Now please direct your attention to the blue answer sheet. Do not put your name on the answer sheet." You are probably familiar with these answer sheets, but I want to direct your attention to the po-

sition of #101 on the sheet; the light will be dim when you must turn your answer sheet over to find #101, so I would like you to make sure you find it now. If you turn over the answer sheet as if you were turning a page in a book, it will be correctly positioned." (Pause while subjects find #101.) "Now, I will describe the slide show. This is a picture recogntion task. You will see two slide shows. There will be two trays of slides in each slide show. In the first slide show, we will present two trays of pictures to you very quickly. Please watch each one very carefully and try to remember all the detail about it you can. During the second slide show, you will be asked to look at two more trays of slides. For each slide you will decide whether it is a new slide or whether you just saw it in the first show. Any questions so far?" (Pause for questions.) "First I will show you an example of two slides that are the same and two that are different; this is also the speed at which the slides will be shown." (Dim lights and show sample RP and NP sets; repeating them twice with designations.) "Any questions?" (Pause for questions; lights were then turned off and Input Series of 160 slides was shown. After the Input Series was completed, lights were turned on again while instructions for the Test Series of 160 slides were given.)

"Now, we will show you the second slide show. Some of the pictures are <u>exactly</u> the same pictures you saw in the first presentation and some are new. Each slide will be shown for about five seconds. While it is being shown, your job is to decide whether or not you saw that slide in the first show in either of the two trays

of slides. If you decide that the picture is <u>exactly</u> <u>the</u> <u>same</u> as one from the first show, mark <u>A</u> (<u>or</u> <u>1</u>) on your answer sheet. However, if the picture is <u>new</u>, mark <u>B</u> (<u>or</u> <u>2</u>) on your answer sheet. Remember for each slide you will have five seconds in which to decide and mark your answer sheet. So, A is for the same; B is for ones you haven't seen before. I'll play a tape with numbers so you don't lose your place on your answer sheet. Any questions?" (Researcher paused for questions, turned on small reading lamp to illuminate area of the table on which subjects were marking answer sheets, dimed lights, proceeded to show the Test Series of 160 slides. At the conclusion of the Test Series, researcher picked up answer sheets, distributed new consent forms for the physical measurements.) "Here is a final consent form. We would like to record your weight and body frame size. I'd like you to read the consent form and sign it to indicate that you are willing to participate. You will notice that there are two pages; the bottom one is the one on which we will silently record body meausrements. Take both pages to room 103 at the end of the hall where we will record this data. When this data has been recorded, we will give you a ticket to complete for the cash drawing.

Also, I'd like to ask that you not tell other students all about the experiment before next semsester. You can tell them it is a picture recognition study, but please don't talk about the specifics of the experiment because you might influence their responses. As you remember from your consent forms, you can find out more about the study next semester from Dr. Stein." (Researcher accom-

panies subjects to room 103; researcher and assistant take weight and elbow readings, ask subjects for height, give subjects entry ticket for drawing and information sheet explaining date and procedure for the drawing and how results will be announced, thank subjects.) End Session.

APPENDIX D: PHYSICAL MEASUREMENT SESSION FORMS

This appendix includes copies--retyped and photocopied on standard-size paper--of the printed materials used in the taking of physical measurements after the picture recognition task.

(a) the consent form used to authorize the taking and recording of physical measurements after the picture recognition study, (the plain one-third sheet of paper with matching date-stamp, on which measurements were recorded, is not included here),

(b) the information sheet which described the procedure for the drawing and for the announcement of prizes, and

(c) a ticket ($50 facsimile) filled out by subjects to enter the cash prize drawing.

These materials are included below in the order listed.

(a) Physical measurements consent form:

As a final step in this project we would like to assess your body frame size by taking your weight and height and by measuring your elbow with calipers. These measurements will be coded with an identification number to keep the information confidential. Remember that you are not obligated to comply with this or any research request and that you can obtain information about the purpose of the study next semester from the research supervisor, Dr. Stein. Thank you.

I hereby give permission to the experimenter to make these measurements mentioned above.

_____

(Name)   (Date)

(b) Information sheet describing procedures for cash prize drawing:

PICTURE RECOGNITION STUDY - - - PRIZES

THANK YOU FOR PARTICIPATING IN THIS STUDY; YOUR HELP IS GREATLY
    APPRECIATED.
THE DRAWING FOR THE CASH PRIZES (and movie passes) WILL TAKE PLACE
ON MONDAY, MAY 12th IN THE MORNING. AFTER WE EMPTY THE TICKET BOX
INTO A LARGE PAPER BAG AND SHAKE IT FOR AT LEAST A MINUTE, PROF.
ROBERT TILL, CHAIRMAN OF THE PSYCHOLOGY DEPARTMENT, WILL CHOOSE THE
WINNERS.

1ST PRIZE - - $50 2ND PRIZE - - $25 3RD PRIZES - movie passes

WE WILL CONTACT YOU AS SOON AS POSSIBLE IF YOU ARE A WINNER.
PLEASE DO NOT CALL THE PSYCHOLOGY DEPARTMENT. WE WILL GIVE A LIST
OF THE WINNERS TO THE MEMORIAL UNION INFO DESK --777-4231-- SO THAT
YOU CAN CALL THEM ANYTIME AFTER THE DRAWING TO SEE IF YOU HAVE WON
A PRIZE. WE WILL ALSO POST THE WINNERS NAMES ON THE OUTSIDE DOORS
OF CORWIN-LARIMORE. THANK YOU AGAIN.

(c) Ticket for cash prize drawing:

Address: (May 11-30th)

_____

_____

_____

Telephone: _____

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