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THE UNIVERSITY OF ALBERTA

WEIGHT LOSS AMONG ADOLESCENT GIRLS: PRACTICES AND PERCEPTIONS

BY

(C)

BEVERLY STURTON MITCHELL

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

DEPARTMENT OF SECONDARY EDUCATION

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled WEIGHT LOSS AMONG ADOLESCENT GIRLS: PRACTICES AND PERCEPTIONS, submitted by Beverly Sturton Mitchell in partial fulfillment of the requirements for the degree of Master of Education in Secondary Education.

V. LeFebvre

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Date: October 16, 1986

ABSTRACT

The purpose of this study was to explore the dietary practices and perceptions of adolescent girls, particularly with regard to weight loss. Based on a review of the literature, the researcher's interests, and a pretest, a questionnaire was developed. The sample was 151 female grade 10 level physical education students enrolled with the Edmonton Public School Board in Edmonton, Alberta. The questionnaires were administered by the researcher, coded, and analyzed using the SPSSX (Statistical Package for the Social Sciences) computer programme at the University of Alberta. Data analysis included frequency counts and chi-square.

A high percentage (78.8%) of the survey respondents indicated that they would like to lose weight, and 70.2% reported that they have at some time gone on a diet to lose weight. Exercise, cutting calories, skipping one meal a day, and fasting or starving were the most frequently cited weight loss methods.

Being thin was important to 84.1% of the respondents. However, when various nutritional issues were ranked according to mean values, being healthy, being the right weight for age, height, and bone structure, and eating nutritious foods received higher priority than being thin.

"Pigging out" was reported by 115 (76.2%) of the respondents, and 30 (26%) of these individuals felt that they are caught in a pattern of often pigging out and then starving themselves in order to lose weight or stay the same weight. Negative feelings accompany this binging behaviour.

About 60% of the respondents acknowledged worrying about their eating habits. Concerns include overweight, poor nutrition, and future health. Most respondents (72.2%) reported that they eat a variety of foods from the four food groups in Canada's Food Guide, although only half stated that following the Guide is important to them.

Based on Barker's (1953) Somatopsychological Theory of Adolescence, five null hypotheses related to dietary attitudes and behaviours were tested for significance at the 0.05 level using chi-square. The hypotheses could not be rejected.

ACKNOWLEDGMENT

The writer is sincerely indebted to many people for their assistance in this study: Dr. Verna Lefebvre, my advisor, for her continual guidance, encouragement, and interest; the members of my committee, Dr. Nelma Fetterman and Dr. Wallie Samiroden, for their contributions of time and advice; and Chuck Humphrey, for his invaluable help with the computer and [illegible]. The cooperation of all the teachers and students who made this study possible is also gratefully acknowledged. Finally, sincere appreciation to my husband, Blair, and my parents for their support and encouragement.

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CHAPTER I

Potentially dangerous practices, including fasting, fad diet regimens, binging, and vomiting, have been disclosed in surveys of dietary practices of the teenage population. Researchers have uncovered and documented adolescent females' food attitudes and behaviours and have indicated the need for more effective and meaningful nutrition education. However, many of these studies lack the perspective of the female adolescent. How does she really feel about her dietary practices? Is she concerned? Does she care if her intake satisfies well-known nutritional guidelines? Do other concerns and priorities override the issue of healthful eating for adolescent girls at the high school level?

If nutrition education efforts are to address the nutritional problems revealed in the literature, then more must be known about the pressures and needs that impinge on adolescent dietary patterns and food-related behaviours. In other words, we need to know how high school age female adolescents perceive their behaviour in terms of reaching nutritional goals, and their perception of how successful their current nutritional behaviour patterns are in meeting their needs. Without a clear understanding of these phenomena, it is difficult to plan nutrition education

programmes that are effective in bringing about change in the way adolescents make decisions about food choices.

Statement of the Problem

The purpose of this study is to explore the question of how adolescent females perceive their own eating habits, particularly with regard to weight loss practices. This focus will provide information about teenage dietary practices and perceptions which may give educators a realistic starting point for planning and implementing more effective nutrition education programmes. We need to know what nutrition and food issues students are truly concerned with in order to stimulate dialogue and provide programmes which are meaningful and relevant to students as individuals. Teenage girls often seem to eat very poorly, and they probably know it. However, without analysis of factors which underlie food habits, attitudes, and body perceptions, teenage attitudes and behaviours will not change.

Research Questions and Hypotheses

Based on Barker's Assumption 1 (see page 27), the following questions were raised:

Do teenage girls employ experimentation in establishing reducing food regimens?

More specifically, the following questions will be explored:

1. What is the age of first diet among girls?
2. How many girls have gone on a diet to lose weight?
3. How many teenage girls are currently dieting?
4. How often do teenage girls go on a diet?
5. Do teenage girls eat very differently when dieting, and if so, how?
6. What changes in eating habits, if any, do dieting girls anticipate once desired weight loss is achieved?
7. Why do teenage girls end weight loss diets?
8. What weight loss methods do teenage girls report having used, and what weight loss methods have friends or classmates of these girls used?
9. Do teenage girls follow Canada's Food Guide?

Based on Barker's Assumption 3 and congruence - overlapping antagonistic situation (see pages 28-29), the following hypotheses were formulated:

For the female adolescents in this study:

1. Level of body satisfaction is unrelated to:
   a) the priority given to dieting
   b) the priority given to losing weight at the expense of a nutritious diet
   c) concern about eating habits
2. Perceived importance of being thin is unrelated to the:
   a) perceived importance of eating nutritious foods
   b) pattern of binging and starving to lose weight.

Based on Barker's potency aspect, the following question was raised:

What priorities do adolescent females have with regard to the following dietary concerns: following Canada's Food Guide; weight loss; being healthy; being thin; being the right weight for age, height, and bone structure; eating nutritious foods; eating foods suggested by parents; eating with friends on social occasions; receiving positive comments from friends about their figure?

Definition of Terms

For the purpose of this study, the following general and operational definitions were used. Some definitions were measured by responses to selected items from the questionnaire (Appendix B).

Anorexia nervosa: a syndrome characterized by the relentless pursuit of thinness (Bruch, 1978); overcontrol of eating for weight reduction (Levenkron, 1983).

Binge eater: one who carefully plans and organizes the consumption of large quantities of food (Hooker & Convisser, 1983).

Bulimia: a cycle of binge-eating followed by purging through self-induced vomiting, intense fasting, or the abuse of laxatives or diuretics (Hodges, 1985).

Compulsive eater: one who uses food as a constant coping mechanism, independent of biological hunger (Hooker & Convisser, 1983).

Concern about eating habits: is defined as the degree to which the respondent agrees or disagrees with the statement "I worry about my eating habits" (item 15 of the questionnaire).

Dieting: an eating regimen intended to induce weight loss.

Disordered eating habits: extremes in eating behaviours, including bulimia, anorexia nervosa, binge-eating, extreme dieting, and chronic overeating.

Eating habits: an individual's pattern of food intake.

Importance of being thin: is defined as the degree to which the respondent feels that being thin is important (item 7 of the questionnaire).

Importance of eating nutritious food: is defined as the degree to which the respondent feels that eating nutritious foods is important (item 9 of the questionnaire).

Junk food: any food with low nutritional quality, including those with high sugar or fat content (e.g., chocolate bars, soft drinks, potato chips).

Level of body satisfaction: is defined as the degree to which the respondent agrees or disagrees with the statement "I am happy with my body shape" (item 16 of the questionnaire).

Obesity: a state in which an individual is greater than 120% of his or her ideal body weight (Hodges, 1985).

Overeating (Pigging out): is defined as an affirmative response to item 34a of the questionnaire "Do you ever pig out? (i.e., eat until you feel uncomfortable)."

Pattern of binging and starving: is defined as an affirmative response to the question "Do you feel that you are caught in a pattern of often pigging out and then starving yourself in order to lose weight or stay the same weight?" (item 34d of the questionnaire).

Priority for dieting: is defined as the degree to which the respondent agrees or disagrees with the statement "I am almost always on a diet" (item 17 of the questionnaire).

Priority for losing weight at expense of a nutritious diet: is defined as the degree to which the respondent agrees or disagrees with the statement "I am more concerned about losing weight or maintaining my weight than about eating nutritious foods" (item 31 of the questionnaire).

Set point: a body control system whose function is to maintain a given "set" amount of fat on the body (Bennett & Gurin, 1982).

Social eating with friends: partaking in a meal or snack with one or more peers.

Society's idealized lean figure: the slim silhouette commonly portrayed in popular magazines and books.

Delimitations

This study was delimited to an assessment of perceived body image and eating behaviours, as outlined in the questionnaire "Dietary Practices and Perceptions," Appendix B, page 109. No attempt was made to use other types of established tests such as Rotter's (1971) Internal-External Control Scale (locus of control), Witkin, Dyk, Faterson, Goodenough, and Karp's (1962) Rod and Frame Test for Field Dependence, or Fisher and Cleveland's (1968) Body Boundary Index to assess the accuracy of the student's response. In addition, no attempt was made to assess the student's level of cognitive knowledge of nutrition, nor the degree of exposure to such knowledge.

The study was, therefore, limited to the self-reported behaviours and attitudes as students perceived them and were able to report them in questionnaire format. The survey instrument was constructed such that it could be completed in 30 minutes.

Limitations

The sample for this study was drawn from a defined population, namely, adolescent senior high school girls registered in grade 10 with the Edmonton Public School

Board, and participating in the compulsory physical education programme for the province of Alberta, during the February - June period of 1986. Though intact grade 10 physical education classes were randomly selected, the findings may not apply to all adolescent girls in the city, nor adolescent girls at the grade 10 level in other school systems within the city or province. In all, seven schools and eight intact classes participated in the study. One school was withdrawn from the study because arrangements could not be made for delivering the survey. In this sense, the sample was purposive.

Assumptions

Responses to the questions on the survey instrument were honest and accurate.

CHAPTER II

REVIEW OF THE LITERATURE

Many research efforts have focused upon the dietary practices and nutrition status of adolescents and young adults (Dwyer, Feldman, & Mayer, 1967; Dwyer & Mayer, 1970; Kaufmann, Poznanski, & Guggenheim, 1974; Crowther, Post, & Zaynor, 1985; Greenberg, 1986; Killen, Taylor, Telch, Saylor, Maron, & Robinson, 1986; Miller, Coffman, & Linke, 1980; Eisele & Light, 1985; Grunewald, 1985; Macdonald, Wearring, & Moase, 1983; Storz & Greene, 1983; Carter & Duncan, 1984; Hooker & Convisser, 1983; Palmer, 1979; Steele, 1980; Kagan & Squires, 1984; Singleton & Rhoads, 1982; Martin, 1984; Willmuth, Leitenberg, Rosen, Fondacaro, & Gross, 1985; Rosen, Leitenberg, Fisher, & Khazam, 1986; Nelson, 1982). This profusion of research devoted to dietary patterns reflects the concern of nutritionists and others in education, health, and psychology professions regarding adolescent food related behaviours. Results from A Nutrition Needs Assessment of Edmonton Adolescents (Edmonton Local Board of Health, 1980) indicate that 17% of teenagers have an inadequate intake from three of the four food groups: meat and alternates, milk and milk products, and fruits and vegetables. Stare and McWilliams (1977) found that the diets of American adolescents are sometimes

low in calcium, ascorbic acid, and vitamin A, and female teenagers often have an inadequate intake of iron, which can result in anemia. Plass and Mapes (1981) reported similar observations of an adolescent population and suggest that females' intake of protein, vitamin A, ascorbic acid, calcium, and iron may often be inadequate. Martin (1984) cites other concerns about adolescent food habits: adolescence is a period of accelerated growth, causing high nutritional requirements; undernutrition disorders are replacing overnutrition; physical activity among teenagers has decreased due to increased mechanization; and pregnant teenagers with nutritional deficiencies have increased chances of complications during pregnancy as well as premature and low birth weight infants. Other potentially dangerous practices, including fasting, fad diet regimens, binging, and vomiting, are found among the teenage population. Researchers have documented females' food attitudes and behaviours and have indicated the need for more effective and meaningful nutrition education (Hodges, 1985; Eisele & Light, 1985; Grunewald, 1985; Storz & Greene, 1983; Nelson, 1982).

This review of the literature will focus on the distorted body image of female adolescents, cultural expectations for thinness, negative aspects of female adolescent diets, concerns of professionals regarding teenage eating habits, adolescents' perceptions of

their eating habits, and an overview of Barker's somatopsychological theory of adolescence.

Body Image and Cultural Pressures to Achieve Thinness

As indicated in the literature previously cited, there is a generalized feeling of concern over the quality of adolescent females' diets; many of the studies have documented undesirable practices and nutritional deficiencies. However, probably more important to the teenager than good nutritional status, is body image. Kagan and Squires (1984), Macdonald et al. (1983), Plass and Mapes (1981), Storz and Greene (1983), Grunewald (1985), Miller et al. (1980), and Eisele and Light (1985) have all studied the relationship between food intake and body image. According to Plass and Mapes (1981), the major factor which often shapes food choices in early adolescence is concern over body image, and "the fad dieting and dietary restrictions that many adolescent females follow in their relentless pursuit of thinness, seem psychologically motivated, and at the extreme, lead to the condition known as anorexia nervosa" (p. 248).

The findings of Macdonald et al. suggest that shortly after puberty, girls experience an increased awareness of body image that generally lasts throughout adolescence. It

seems that a relationship exists between body image and a decline in the quality of dietary intake during the teen years. Dissatisfaction with body image may lead to dieting. Lowered self-esteem, the perception of being obese, and lethargic behaviour are all associated with dissatisfaction with body appearance and dieting (Macdonald et al., 1983).

Garner, Garfinkle, Schwartz, and Thompson (1980) document the shift toward a thinner ideal shape for females in our culture; they blame the cultural pressures on women to be thin for serious eating disorders such as anorexia nervosa, a syndrome characterized by overcontrol of eating for weight reduction. Findings from a study of trends relating to Playboy centrefolds, Miss America Pageant contestants, portrayal of fashion models, and numbers of articles for reducing diets in popular magazines suggest that, especially during the last decade, there appears to be a shift in the idealized female shape from the fuller, curved figure to the angular, lean look.

Hodges (1985) cites the term "body cult" which is used to describe society's increasing obsession with body image. Many professionals believe that the prevalence of adolescent eating disorders is a reflection of this obsession. Hodges points to the stigma that is attached to overweight. Studies cited by Hodges indicated that overweight people are considered less worthy, less

competent, and less desirable than normal weight individuals. As Hodges states, the popularity of dieting in our society would suggest that many average weight individuals have a negative body image.

According to Steele (1980), obese individuals, because of the stigma attached to overweight, encounter strong pressures to lose weight. However, she says that obese people may not realistically appraise the actual dieting process, or have a clear sense of what being slim will involve for them. "Loss of weight may be endowed with considerable magical thinking in that obese individuals sometimes view becoming thin as resolving all problems or difficulties" (p. 824).

In a study of 203 adolescent females, ages 14 to 18, Storz and Greene (1980) found that 83% of the subjects wanted to lose weight, despite the fact that most of them were within, or under, the average range for body weight. Grunewald (1985) found, in her study of 166 young college women, that dieting behaviour is more dependent on perceived need by the individual than on actual degree of overweight, since dieting behaviour was practiced by many students who were not obese.

Eisele and Light (1985), Huenemann, Shapiro, Hampton, and Mitchell (1966), Kaufmann et al. (1974), Dwyer et al. (1967), Dwyer and Mayer (1970), Miller et al. (1980), Haar (1983), and Storz and Greene (1983) reported similar

findings. Their studies have shown a large degree of dissatisfaction with body image among normal weight female adolescents and college students, and indicate that a significant number of these individuals want to lose weight and are likely to have tried reducing diets. In Eisele and Light's (1985) study of girls ranging in age from 12 to 14 years old, the older adolescents had the highest drive for thinness and greatest body dissatisfaction. This could indicate an increasing pressure, as teenagers get older, to have the "perfect" body as portrayed by the media.

Negative Aspects of Female Adolescent Diets

Findings such as those of Nelson (1982) suggest that a nutritious diet generally has a low priority for teenagers. Since they are preoccupied with immediate concerns, adolescents are understandably shortsighted regarding the long-range results of various eating habits. Examples of inadequate or unhealthful adolescent dietary practices or conditions include overeating, fasting, chronic dieting, severe restriction of caloric intake (which in extreme forms is manifested as anorexia nervosa), eating only certain kinds of foods, adherence to fad diets, use of diet pills and supplements, skipping meals, a

preoccupation with food and food-related activities, and a binge-and-starve or binge-and-purge syndrome, which could lead to bulimia (defined as a continuous cycle of binge-eating followed by purging through self-induced vomiting or the abuse of laxatives or diuretics). According to Nelson (1982), there is a strong need for emotional defenses as the teen emerges from childhood to adulthood. Anorexia nervosa and some cases of obesity may be examples of food being used as a defense against an uncertain or uncomfortable reality. Compulsive eating may also be used as a defense mechanism.

As previously noted, many studies indicate that significant numbers of young women and adolescents seem to have an ongoing preoccupation with dieting to lose weight. In A Nutrition Needs Assessment of Edmonton Adolescents (Edmonton Local Board of Health, 1980), results indicate that almost half of the surveyed teenagers were trying to lose weight. Dwyer et al. (1967) also found a high incidence of dieting behaviour in their study of senior high school girls. Of the 446 girls interviewed, 61.4% said they had been on reducing diets at some time in their lives and 37.0% reported they were on diets on the day they were questioned. The average age at which dieting had first begun was between 14 and 15. The most common dietary practices were cutting out certain foods (78%), cutting out privately consumed snacks (76%), cutting out snacks eaten

with others (59%), exercising more (44%), and skipping meals (43%). Only 24% of the girls stopped dieting because they had reached their desired weight. Boredom, hunger, and failure to lose quickly enough were major reasons given for ending their last diets.

Eisele and Light (1985) found that the girls who scored significantly higher on the drive for thinness and body dissatisfaction subscales were also less likely to eat meals together with their families. The authors suggest that snacking and junk foods may be replacing regular meals, thus contributing to adolescents' dieting problems.

These studies and others, including those by Grunewald (1985), Martin (1984), Macdonald et al. (1983), and Huenemann et al. (1966), indicate that there are many chronic or periodic dieters. Their low success rate could be due to a variety of factors, including a repeated cycle of binging and subsequent restriction, which is nutritionally unsound and potentially hazardous.

Kagan and Squires (1984) discuss the theme of constraint and regulation with regard to both obesity and disordered eating. "Disordered eating habits" was defined by the authors as binging, emotional eating, purging, or highly restrictive dieting. They found that the most frequently cited period for the onset of eating disorders was early adolescence.

> This theme has occurred on both figurative (psychological) and literal (physical) levels: (a) Because obesity is a potent social stigma, the aversive social consequences of obesity constrain the physical (eating) behavior as well as the psychological behavior (self-image) of individuals; (b) case studies of bulimics and anorexics were filled with power struggles - the inability of an adolescent to deal with constraint in the form of developmental standards of performance; (c) several researchers have suggested that some bulimic behavior may be caused by periods of severe caloric constraint - attempts to maintain body weight below a biological "set" point. (p. 16)

Set point refers to a body control system which maintains a given "set" amount of fat on the body. Garner et al. (1980) state that various symptoms such as irritability, poor concentration, anxiety, depression, and fatigue may occur to some extent in individuals who chronically diet to hold their weight below their set point. Greenberg (1986) found in her study that dietary restraint and depression are the two characteristics which are most commonly associated with binge eating behaviour in both bulimic and nonbulimic women. She, too, believes that "bulimia and/or binge eating episodes may be a reaction to depression in women who are in a state of physiological

depression because of their restrained eating habits" (p. 280).

Hodges (1985) states that by dieting, bulimics may be inadvertently setting themselves up for a cycle of binging and purging. Extreme calorie restriction causes intense hunger which leads to binging. The severe guilt that ensues is purged through vomiting, diuretics, laxatives, or extreme exercise and eventually dieting, which begins the cycle again.

Carter and Duncan (1984) surveyed 421 female high school students; of this group, 38 (9%) identified themselves as vomiters. Half of the vomiters felt that binge-eating was a problem in their lives, and 23% indicated that the practice of purging interfered with their social life on occasion. Almost half of the individuals were 13 years old when they began the habit of vomiting.

Palmer (1979) suggests adoption of a new term, dietary chaos syndrome, to describe the disordered eating behaviour of individuals who may remain at normal weight and thus appear outwardly to have no food-related problems. The characteristics are identified as: (a) a very disordered pattern of eating including some or all of self-induced vomiting, periods of abstaining from food for a day or more, bulimia, and secret eating; (b) a preoccupation with food and eating, and sometimes with

weight, and a feeling of being out of control with regard to food; and (c) large fluctuations in body weight over a period of hours or days in response to the balance of input and output, but the range remaining within or above normal limits for the subject. According to Hooker and Convisser (1983), many women may use eating as a means of coping with unsatisfactory aspects of their lives, but the binging ultimately causes them to become more depressed and angry with themselves.

Concerns of Professionals Regarding Adolescent Dietary Behaviour

Nutritionists and educators stress the need for effective nutrition education, but no one seems to have a proven, effective programme. Skinner and Woodburn (1984) voice this exact dilemma, stating that teenagers are identified as a group in acute need of accurate nutrition education, but that they have been resistant to many nutrition education efforts. Hertzler (1984) points out that students' attitudes are sometimes given as the reason for a programme not succeeding:

> The "poor attitude" of the students is considered the reason they did not want to change. In reality, this reason is often a scapegoat for explaining poor

> results because the educator has not managed to design programs relative to student needs, understandings, and lifestyles. (p. 164)

Many echo Storz and Greene's (1983) belief that since dissatisfaction with body weight and propensity to try fad diets is common among female adolescents, then these girls should be a targeted audience for nutrition education, particularly with regard to weight control. Martin (1984) stresses the importance of teaching decision-making skills to students in order that they can make informed choices in selecting foods from the wide variety available. According to A Nutrition Needs Assessment of Edmonton Adolescents (Edmonton Local Board of Health, 1980), discussion about the quality of adolescent dietary practices needs to be individualized if the teenagers are to relate the discussion to their own habits because generalized discussions are not likely to be perceived as applicable to the individual. The Edmonton study also suggests the need for nutrition education which deals with the principles of healthy weight reduction methods. In support of this, Huenemann et al. (1966) found that 93% of the grade 10 girls in their study were "somewhat" or "very" interested in learning more about methods of developing and maintaining a good figure. However, researchers (Hochbaum, 1981; St. Pierre, 1982; Winikoff, 1980; Anderson & Cines, 1979; Singleton & Rhoads, 1982) all caution that nutrition

education has very little effect on changing nutrition-related behaviours. For most people, the goal of improved health is too intangible and too remote to motivate them to change their eating behaviours, while the benefits of eating various foods are concrete and immediate. As Singleton and Rhoads (1982) point out:

> Merely teaching facts does not change behavior; these facts must be relevant to the students' daily life. Therefore, as part of the process of motivating students to apply nutrition knowledge, educators must be cognizant of the existing dietary patterns of students. (p. 529)

Adolescents' Perceptions of Their Eating Habits

Educators, researchers, nutritionists, and the public have had much to say about teenage eating habits, but very few studies have focused on how adolescents perceive their own dietary practices. The literature that does exist suggests that many adolescent girls are not very concerned with the nutritional soundness of their eating habits.

Lindholm, Touliatos, and Wenberg (1984) hypothesize that young adolescents may try to exhibit increased independence and reduce parental control, possibly using food as one means of expressing their feelings and testing

adult restrictions. The authors also note the influence of peers and the pressure to conform, both of which may affect food selection and habits.

In A Nutrition Needs Assessment of Edmonton Adolescents (Edmonton Local Board of Health, 1980), the majority of teenagers who did have food consumption problems did not perceive themselves as having poor eating habits. Similarly, Huenemann et al. (1966) found that most of the ninth grade students surveyed rated their own diets as fair, good, or excellent. However, when asked if they believed that teenage diets in general were often nutritionally inadequate, almost half of the students responded affirmatively. Those who agreed mentioned such factors as time pressures, peer group influence, and poor motivation. The leanest girls tended to be more critical of teenage eating practices than those who were obese.

In summary, awareness of body image generally increases among girls during adolescence. This new concern is influential with regard to dietary behaviours and attitudes. Efforts to lose weight are common among teenage girls, and often take precedence over a nutritious diet. Nutrition education efforts seem to be fairly unsuccessful in doing more than increasing nutrition knowledge. Attitudes and behaviours remain resistant to change (Hochbaum, 1981; St. Pierre, 1982).

Barker's Somatopsychological Theory of Adolescence

While the concern about harmful or questionable dietary practices of adolescent girls is well documented and the failure of nutrition education in changing behaviour is noted, discussions related to explanations for these phenomena are less frequent. In view of this, it may be timely to move out beyond the literature of adolescent food habits, to reach a broader understanding of adolescents in general, and to then return to the original problem, relating theoretical concepts about adolescent development to the problem of adolescent food habits. Barker, Wright, Meyerson, and Gonick's (1953) somatopsychological theory of adolescence provides one such framework for focusing a study which relates the current profession and health-related concern of inadequate nutrition in adolescence with an understanding of how changes in "adolescent physiological structure" may influence coping strategies for dealing with problems in general.

Barker et al. (1953) employ field theory to illustrate the effects of physiological changes on behaviour during adolescence. Field theory (Shaw & Costanzo, 1982) is an attempt to describe the present situation, or field, in which individuals participate or behave. Barker et al. developed hypotheses to explain how

physiological changes influence behaviour. Muuss (1968) summarizes the assumptions on which these hypotheses are based:

1. Adolescents are moving toward the social status, physical maturity, strength, and motor control of adults. But they are not yet adults; they are in an intermediate position between adults and children. . . .
2. Body dimensions, physique, and endocrinological changes occur at an accelerated speed, as compared to the preadolescent years.
3. The time and speed of changes in physique vary greatly among individuals and these differences are more noticeable than during any other period of development.
4. There are great differences within a given individual in the degree of maturity attained by different parts of the body. (pp. 97-98)

Barker et al. (1953) state that as a result of these physical changes, new psychological situations will arise during adolescence, sometimes overlapping with each other. Muuss (1968) describes the assumptions and behavioural characteristics related to new psychological situations. Only those relevant to the present research are included here:

Assumption 1: In a new psychological situation, the course of action to be followed to reach a certain goal is unknown. This means that a given individual cannot accurately predict what behavior will bring about the desired goal. . . . (p. 98)

Behavioural characteristics:

a) The behavior will not be parsimonious as it was in the familiar situation where the direction was known and the individual responded by habit, selecting the simplest route to his goal. In the new and unknown situation, he again must respond by exploration and trial and error to reach his goal. He will pursue a course of action until he finds that it does not bring him closer to the goal. Then he will begin another course of action and repeat this trial-and-error process until he reaches his goal. . . .

b) Since a person cannot foresee the consequences of a course of action, frequent errors will make him cautious. But, in addition to caution, this exploratory situation also produces a tendency toward radical and extreme moves. The discrepancy in adolescence between ideals and aspirations on the one hand and actual achievements on the other has been reported frequently. . . . (p. 99)

Assumption 2: has not been included for this study.

Assumption 3: In an unknown situation, "the perceptual structure is unstable," the psychological dynamics which result from an unknown situation are unclear, indefinite, and ambiguous. Small changes in the perceptual field of a given individual may change the total field. (pp. 98-99)

Behavioural characteristics:

a) Behavior will depend on the perception of the situation. Since the adolescent's perceptual structure is unstable, his behavior will be unstable and vacillating. The first adolescent realization of the contradictions between the values taught by adults and the failure of adults to live and succeed by their own beliefs presents a new psychological situation that may change the child's outlook toward life, since he cannot easily reconcile a discrepancy between the ideal and the real.

b) The less stable the situation, the more the individual depends upon small and sometimes unimportant cues. Behavior can be influenced easily; the adolescent has little resistance to suggestions. This is especially true for suggestions coming from the social group he wants to belong to. . . . The high degree of uniformity

observed among adolescents can be explained as an attempt to structure the field. . . . (p. 100)

According to Barker et al. (1953), adolescents are often caught in an overlapping situation between childhood and adulthood. Unpredictable adolescent behaviour may be caused by a lack of consistency in value orientation, since it is often determined by both childhood and adult values and expectations.

The three aspects of the overlapping situation are congruence, potency, and valence. There are two areas of congruence where adolescents often find themselves. One is the overlapping interfering situation, where behaviour necessary to reach one goal interferes with, but does not completely disrupt, behaviour required to attain another goal. In the overlapping antagonistic situation, behaviour necessary to reach one goal is incompatible with that to reach another goal. The concept of potency "represents the relative influence a particular factor or goal in a given psychological field has upon behavior, as a result of an overlapping situation" (Muuss, p. 102).

Summary

The vast amount of research related to female adolescent dietary habits and nutritional status indicates

widespread concern and interest in this area. Research leads us to believe that a significant number of teenagers employ questionable practices, often in pursuit of an ideal body image. Nutrition education has had little success with improving adolescent dietary behaviours and nutritional status.

The somatopsychological theory of adolescence of Barker et al. (1953) would seem to be a useful framework for a study to examine the particular way in which female adolescents perceive their own eating habits as a means to specific ends. A clearer understanding of adolescent perceptions could form the basis on which to build nutrition education programmes that are effective for this age group.

CHAPTER III

RESEARCH METHODOLOGY

Sample Selection

For this research, the group selected for study was female grade 10 level students in Edmonton, Alberta. Senior high students were chosen for this study since they are more likely than younger adolescents to be dissatisfied with body image (Eisele & Light, 1985), and more likely to have tried a reducing diet. Dwyer et al. (1967) found that the average age at which dieting had first started was between 14 and 15, while Grunewald (1985) found that 16.2 years was the average age of first diet.

As of September 30, 1985, 2179 female grade 10 students were enrolled with the Edmonton Public School Board. The study is meant to be representative of this population. According to Orlich (1978), a sample size of 322 is appropriate for a population of 2000. However, Fowler (1985) states that precision increases fairly steadily up to sample sizes of 150 to 200, but after that point, there is a much more modest gain to increasing sample size. For this reason, a sample size of 200 was chosen for this research.

It was planned that eight classes would participate in the study on the assumption that there would be approximately 25 individuals per class. Eight schools were randomly chosen from among the Edmonton Public Senior High Schools: Strathcona, Eastglen, Harry Ainley, Old Scona, Queen Elizabeth, Ross Sheppard, Bonnie Doon, and J. Percy Page. It was planned that one grade 10 girls' physical education class from each school would complete the research questionnaire; this class would be selected by school personnel. Grade 10 physical education classes were specifically selected for this study for two reasons: 1) physical education is a required course for all grade 10 students, thus a representative sample of grade 10 level adolescent girls would be drawn, and 2) since physical education classes are not usually coeducational, a mixed class would not be disrupted by asking females only to complete the questionnaire. Home economics classes were not considered because they are optional courses and therefore a representative sample of adolescent girls might not be drawn, and because students might feel obligated to provide "expected" or "correct" responses based on the knowledge gained in such courses.

Design of the Survey Instrument

A questionnaire was identified as the most appropriate means for gathering data. Interviews were considered. However, due to the personal nature of the questions to be explored, it was decided that a questionnaire would provide individuals with a greater perception of anonymity and thus elicit more accurate responses. Furthermore, use of a questionnaire allows a greater sampling size and thus allows for a broader sampling of responses.

The questionnaire was designed specifically for this study, since no previous study found in the literature has dealt with the current research questions. Questions were developed from a review of the relevant literature, as well as from various questionnaires from other studies. In accordance with the suggestions of a University of Alberta Computing Services research consultant, the questionnaire items were branched so as to most effectively guide dieters and non-dieters through relevant questions. The researcher personally administered all of the questionnaires.

Pretesting

The questionnaire was pretested at Archbishop O'Leary High School with 26 female senior high school home

economics students, and then revised according to student feedback. After the pretest, the students were asked to comment on the suitability of the questions, the need for additional items, the ambiguity of any questions, and the ease of completing each question.

The questions on the pretest were structured with fixed-alternative responses, with the exception of one open-ended question. Several fixed-alternative questions included the option "other" with room for individuals to explain their responses. In the final questionnaire, all of the "other" responses were replaced by answers supplied in the pretest.

Completion time was noted in the pretest; the final questionnaire was constructed such that it could easily be completed in 30 minutes.

Validity

Kerlinger (1986) defines content validity as "the representativeness or sampling adequacy of the content - the substance, the matter, the topic - of a measuring instrument" (p. 458). Validity in this study was demonstrated by the ability of the survey instrument to elicit female adolescents' perceptions about body image and food behaviours. Comments and feedback were solicited

from 26 teenage girls who studied the survey instrument. Suggestions from this panel of experts were included in a revised instrument, thus increasing validity.

Reliability

Kidder (1981) states that a reliable instrument will give similar results from one measurement instance to the next. In order to measure the reliability of the survey instrument, items 6-13 inclusive, of the questionnaire were grouped to represent a "Health Scale" and analyzed using the alpha coefficient. Carmines and Zeller (1979) state that, in most situations, alpha provides a conservative estimate of a measure's reliability. They say that it is difficult to specify a single level of reliability that should apply in all situations, but as a general rule, reliabilities should not be below Ø.8Ø for widely used scales. At the Ø.8Ø level, correlations are attenuated very little by random measurement error. Carmines and Zeller believe that the most important thing is to report the reliability of the scale and how it was calculated, and then let other researchers decide for themselves whether it is adequate for any particular purpose. The alpha correlation of the "Health Scale" is Ø.5786, and the standardized item alpha is Ø.6ØØ2.

Data Analysis

The students participating in this study provided their responses to the questionnaire items directly on the questionnaire. These answers were subsequently coded and transcribed by the researcher onto OMR data coding sheets. These coding sheets were optically scanned by the University of Alberta Computing Services. The data were analyzed using the SPSSX (Statistical Package for the Social Sciences) (Norusis, 1983) computer programme at the University of Alberta.

A frequency count was used to initially analyze all of the questionnaire items. The frequency counts thus also included analysis of the following questions which were based on Barker's Assumption 1:

Do teenage girls employ experimentation in establishing reducing food regimens? More specifically, the following questions were explored:

1. What is the age of first diet among teenage girls? (item 5b of the questionnaire)
2. How many girls have gone on a diet to lose weight? (item 5a of the questionnaire)
3. How many girls are currently dieting? (item 5g of the questionnaire)
4. How often do teenage girls go on a diet? (item 5c of the questionnaire)

5. Do teenage girls eat very differently when dieting, and if so, how? (items 5d and 5e of the questionnaire)
6. What changes in eating habits, if any, do dieting girls anticipate once desired weight loss is achieved? (item 5h of the questionnaire)
7. Why do teenage girls end weight-loss diets? (item 5f of the questionnaire)
8. What weight loss methods do teenage girls report having used, and what weight loss methods have friends or classmates of these girls used? (item 3 of the questionnaire)
9. Do teenage girls follow Canada's Food Guide? (items 26, 27, 28, 29, & 30 of the questionnaire)

Orlich (1978) states that chi-square is used to compare observations and to determine the strength of relationship between response categories of two or more questionnaire items. Chi-square treatment in contingency tables is a nonparametric test often used for significance. Orlich cautions that two basic assumptions must be met in order to use the test: 1) there must be a dichotomy or clear division of categories, and 2) there must be a continuum of responses - at least two choices or a Likert-type scale.

Sample size must also be adequate when using chi-square. According to Fitz-Gibbon and Morris (1978), there must be a possibility of a minimum of five expected counts per cell. A 25-cell table would require a sample size of at least 125. The sample size of the present study is thus adequate at 151.

Cross-tabulation and chi-square were used to analyze the following hypotheses based on Barker's Assumption 3 and congruence-overlapping antagonistic situation:

For the female adolescents in this study:

1. Level of body satisfaction (item 16 of the questionnaire) is unrelated to:
   a) the priority given to dieting (item 17 of the questionnaire)
   b) the priority given to losing weight at the expense of a nutritious diet (item 31 of the questionnaire)
   c) concern about eating habits (item 15 of the questionnaire)
2. Perceived importance of being thin (item 7 of the questionnaire) is unrelated to the:
   a) perceived importance of eating nutritious foods (item 9 of the questionnaire)
   b) pattern of binging and starving to lose weight (item 34d of the questionnaire).

In order to analyze the following question which is based on Barker's potency aspect, items were ranked according to mean values:

What priorities do adolescent females have with regard to the following dietary concerns: following Canada's Food Guide; weight loss; being healthy; being thin; being the right weight for age, height, and bone structure; eating nutritious foods; eating foods suggested by parents; eating with friends on social occasions; receiving positive comments from friends about figure? (items 6-13 of the questionnaire)

Items were weighted so that the response made by individuals with the most favourable attitude would have the highest positive value, and those with the least favourable attitude towards the item would have the lowest value.

The level of significance for testing the hypotheses was set at 0.05 and a two-tailed test was used.

CHAPTER IV

RESEARCH RESULTS

Description of the Sample

Questionnaires were completed in April 1986 by a total of 151 female grade 10 students in physical education classes at seven Edmonton Public Senior High Schools: Strathcona, Eastglen, Harry Ainley, Old Scona, Ross Sheppard, Bonnie Doon, and J. Percy Page. Students from Queen Elizabeth Composite High School did not participate, as originally planned. For some questionnaire items, not all individuals responded, thus the total number of responses for each item was not always 151.

All respondents (Table 1) were between the ages of 13 and 18, with most being either 15 (91, or 60.3%) or 16 (43, or 28.5%).

Desired Weight Change

In response to items 2a and 2b of the questionnaire, regarding desired weight change, 119 (78.8%) of the girls indicated that they would like to weigh less than they do

Table 1

Age of Respondents (n=151)

Age	No. of respondents	Percent
13	1	.7
14	2	1.3
15	91	60.3
16	43	28.5
17	11	7.3
18	3	2.0
Total	151	100.0

now, 26 (17.23) are happy with their present weight, and 6 (4.0%) would like to weigh more. Table 2 gives a further breakdown of desired weight changes.

Weight Loss Methods

Weight loss methods which respondents have tried, and methods which they know have been used by friends or classmates (item 3 of the questionnaire) are listed in Table 3. The self-reported behaviours, in order of frequency, are: exercise, cutting calories, skipping one meal a day, fasting or starving, popular diets from books or magazines, diet pills, liquid formula diets, vomiting, diet programmes prescribed by a doctor, diet clinics, laxatives, and diuretics.

Dieting behaviours of friends or classmates, which respondents know about, are, in order of frequency: skipping one meal a day, fasting or starving, exercise, popular diets from books or magazines, cutting calories, diet pills, vomiting, diet clinics, diet programmes prescribed by a doctor, liquid formula diets, laxatives, and diuretics. Diet programmes prescribed by a doctor which were mentioned are: Weight Watchers (2 individuals), Diet Centre (1), Metabolic Clinic (1), and "eating habits" (1). Organized programmes in a diet clinic mentioned are:

Table 2

Respondents' Desired Weight Change in Kilograms/Pounds (n=151)

Desired weight change kg(lb)	No. of respondents	Percent
gain >7.0 (15)	1	.7
gain 5.0-7.0 (11-15)	0	.0
gain 2.6-4.9 (6-10)	3	2.0
gain 0.5-2.5 (1-5)	2	1.3
lose 0.5-2.5 (1-5)	25	16.6
lose 2.6-4.9 (6-10)	47	31.1
lose 5.0-7.0 (11-15)	18	11.9
lose >7.0 (15)	27	17.9
no response*	28	18.5
Total	151	100.0

*This category includes those who are happy with present weight (n=26), and those who did not indicate desired weight change (n=2).

Table 3

Weight Loss Practices of Teenagers: Self-Reported Behaviour and Behaviour of Friends/Classmates (n=151)

Weight loss practice	Self-reported behaviour		Behaviour of friends/ classmates	
	#	%	#	%
exercise	136	90.1	78	51.7
cut down on calories consumed	95	62.9	69	45.7
skip 1 meal each day	74	49.0	92	60.9
fasting/starving	46	30.5	84	55.6
popular diets from books/magazines	34	22.5	73	48.3
diet pills	17	11.3	69	45.7
liquid formula diet	14	9.3	44	29.1
vomiting	11	7.3	58	38.4
diet programme prescribed by doctor	10	6.6	47	31.1
diet clinic programme	6	4.0	50	33.1
laxatives	1	0.7	34	22.5
diuretics	1	0.7	30	19.9

Weight Watchers (16 individuals) and Diet Centre (3). Several individuals checked off the options "diet clinics" or "diet programmes prescribed by a doctor" as weight loss methods, but did not provide the programme name.

Concerns About Eating Habits

Respondents were asked what, if anything, concerns them about the way they eat (item 4 of the questionnaire). Overweight is the most common concern. Two individuals who checked off "overweight" wrote in that they are worried about "overweight in future" and "becoming overweight." The next most common concerns are poor nutrition and future health (Table 4).

Age of First Diet

In response to item 5a of the questionnaire, 106 (70.2%) of the students indicated that they have at some time gone on a weight reduction diet. Table 5 displays the age of first diet. Forty (26.5%) of the individuals first dieted at age 13; 14 and 15 were the next most common ages of first diet. One individual wrote that her age of first diet was 10.

Table 4

Concern About Eating Habits (n=151)

Dietary concern	No. of respondents	Percent
overweight	107	70.9
poor nutrition	73	48.3
future health	70	46.4
parental concern	13	8.6
underweight	5	3.3
don't worry	13	8.6

Table 5

Age of First Diet (n=151)

Age	No. of respondents	Percent
12 or under	9	6.0
13	40	26.5
14	30	19.9
15	21	13.9
16	2	1.3
17	0	0.0
18	1	0.7
no response	3	2.0
not applicable	45	29.8
Total	151	100.0

Frequency of Dieting

Results of item 5c of the questionnaire, regarding frequency of dieting, are listed in Table 6. Several individuals wrote comments beside this item, including "I go on and off," "Whenever I feel the need to, not often," "counting calories," "I am always trying to diet," and "off and on continuously."

Eating Patterns On and Off Diet

Of the 105 girls who responded to item 5d of the questionnaire, 83 (79.1%) state that they eat very differently while dieting to lose weight, 14 (13.3%) do not eat differently, and 8 (7.6%) do not know if they eat differently. Reported changes in eating habits (item 5e of the questionnaire) include: eating more nutritious foods (57 individuals), eating less junk food (55 individuals), eating low calorie foods (42 individuals), and eating almost nothing for one or two days (20 individuals).

Table 6

Frequency of Dieting (n=151)

Frequency	No. of respondents	Percent
2-6 times a year	36	23.8
always dieting	30	19.9
every month	21	13.9
once a year	13	8.6
no response	6	4.0
not applicable	45	29.8
Total	151	100.0

Reasons for Ending a Diet

The most common reason for ending a diet (item 5f of the questionnaire) was hunger. The next most frequent reasons were failure to lose weight quickly enough, boredom, and attainment of desired weight goal. Other reasons were parental concern, illness, and interference with social life (Table 7). One individual wrote "I forgot about it," and another gave temptation as a reason for ending a diet. In response to item 5g of the questionnaire, 60 (56.6%) of the 106 students who have dieted stated that they were currently on a diet to lose weight and 45 (42.5%) said they were not. One individual did not respond. One individual wrote in "count calories," another, who checked "yes" and wants to lose 6-10 pounds, wrote "not really diet, just watching." A girl who checked "no," but wants to lose 6-10 pounds, said "My boyfriend won't let me lose more weight."

Planned Changes on Reaching Weight Loss Goal

In item 5h of the questionnaire, students were asked if they planned on changing their eating habits once they reached their weight loss goal. Individuals had the option of selecting more than one response. Of the 66

Table 7

Reasons Given for Ending a Diet (n=96)

Reason	No. of respondents	Percent
hunger	37	38.5
didn't lose weight quickly enough	32	33.3
boredom	29	30.2
reached desired weight	29	30.2
parental concern	14	14.6
became sick	12	12.5
interfered with social life	6	6.3

respondents, 25 (37.9%) said they did not plan to eat differently, while 46 (69.7%) said they would eat more nutritious foods, and 14 (21.2%) said they planned to eat a greater variety of foods. Two people (3.0%) planned to eat more food, and one person (1.5%) planned to eat more junk food (Table 8). Some dieters who were not currently on a diet indicated that they plan to eat more nutritious foods once their weight loss goal is attained.

Importance of Nutritional Issues

Table C-1, in Appendix C, page 119, reports the importance of nutritional issues as perceived by the respondents (items 6-13 of the questionnaire). These items were ranked according to mean values, and are, in order of importance: being healthy; being the right weight for my age, height, and bone structure; eating nutritious foods; being thin; having friends comment positively about my figure; eating with friends on social occasions; following Canada's Food Guide; and eating what my parents think I should eat.

The degree of agreement by respondents regarding various issues related to eating (items 14-33 of the questionnaire) are compiled in Table C-2, Appendix C, page 120. Responses to each item fell into one of five

Table 8

Planned Changes in Eating Habits Upon Attainment of Weight Loss Goal (n=66)

Planned change	No. of respondents	Percent
eat more nutritious foods	46	69.7
greater variety of foods	14	21.2
eat more food	2	3.0
eat more junk food	1	1.5
don't plan to eat differently	25	37.9

categories: strongly agree, agree, undecided, disagree, and strongly disagree. Highlights of the results are included here.

Of the 151 individuals, 32 (21.2%) strongly agreed, and 59 (39.1%) agreed, that they worry about their eating habits (item 15 of the questionnaire).

All participants responded to the statement "I am happy with my body shape" (item 16 of the questionnaire). Forty-three (28.5%) disagreed and 37 (24.5%) strongly disagreed with this statement.

In response to the statement "I am almost always on a diet" (item 17 of the questionnaire), 39 individuals (26 [illegible] disagreed and 50 (33.3%) strongly disagreed. One individual who circled "[illegible]ree" wrote in "I watch what I eat."

Sixty (40.0%) of 150 individuals strongly agreed with the statement "I am scared of becoming overweight" (item 24 of the questionnaire) and 53 (35.3%) agreed.

Of the 149 individuals who responded to the statement "I think it is more important to have good health than to worry about being slim" (item 25 of the questionnaire), 34 (22.8%) strongly agreed and 53 (35.6%) agreed. One girl, who didn't circle an answer, wrote in "I believe these are both interweaved."

Forty-six (30.5%) of the 151 respondents strongly agreed that they eat a variety of foods from each of the

four food groups every day (item 26 of the questionnaire) and 63 (41.7%) agreed. (See Appendix D for the four food groups in Canada's Food Guide.)

Of the 151 individuals who responded to item 33 of the questionnaire, "I would like to learn more about effective weight loss methods," 50 (33.1%) strongly agreed with the statement and 46 (30.5%) agreed.

Overeating (Pigging Out)

In response to question 34a, 115 (76.2%) of the individuals indicated that they sometimes pig out, or eat until they feel uncomfortable; 33 (21.9%) stated that they have never pigged out, while 3 (2.0%) did not respond. A total of 116 individuals reported their feelings after pigging out (item 34b of the questionnaire). The students had the option of selecting multiple responses. Seventy-eight of the 115 individuals (67.2%) reported feeling uncomfortable. Other feelings, in order of frequency, were: fat, guilty, sick, unhappy, angry, "I hate myself," happy, and "I don't care" (Table 9). One nondieter said she sometimes pigs out at a big meal. Another individual, who wants to lose 1-5 pounds, indicated that she pigs out. She wrote "Yes. Quite a bit. Food is my life."

Table 9

Feelings After Overeating (Pigging Out) (n=116)

Feeling	No. of respondents	Percent
uncomfortable	78	67.2
fat	75	64.7
guilty	56	48.3
sick	44	37.9
unhappy	37	31.9
angry	33	28.4
I hate myself	27	23.3
happy	12	10.3
I don't care	12	10.3
I don't know	3	2.6

Binging While on a Diet

Ninety-eight individuals responded to item 34c of the questionnaire, describing their behaviour after binging while on a diet. Individuals had the option of selecting more than one response. The most commonly reported behaviour was exercise. The other behaviours, in descending order of frequency, are: return to diet, go on a very strict diet, go without food for at least a day, continue to overeat, vomit, and take laxatives (Table 10). Some nondieters said they pig out and then exercise or else return to their regular eating habits. One girl, who wants to gain 6-10 pounds, indicated that she continues to overeat; she wrote "I am on a high calorie diet." Other responses were "I don't diet. . . yet" and "don't diet." Some respondents said that sometimes they continue to overeat, and other times they take other action.

Reactions to Patterns of Binging and Starving

Individuals were asked if they feel that they are caught in a pattern of often pigging out and then starving themselves in order to lose weight or stay the same weight (item 34d of the questionnaire). Thirty (19.9%) of the 151 students replied affirmatively, 66 (43.7%) said no, 20

ble 10

ported Behaviour After Binging While on a Diet (n=98)

Behaviour	No. of respondents	Percent
exercise	69	70.4
return to diet	46	46.9
go on a very strict diet	20	20.4
go without food for at least a day	18	18.4
continue to overeat	17	17.3
vomit	8	8.2
take laxatives	4	4.1

(13.2%) did not know, and 35 (23.2%) did not respond. Those who reported a binge-and-starve pattern were asked to express their feelings about this behaviour (item 34e of the questionnaire). The most common response was "guilty." Other responses, in descending order of frequency, were: depressed, mad, upset, scared, "I don't know," "I don't care," and happy (Table 11). One respondent wrote in "bored." A nondieter wrote in "I don't binge and starve, I just pig out once in awhile."

Testing of Hypotheses

Five relationships, in the form of null hypotheses, were tested, using chi-square to test for significance at the 0.05 level. These include relationships between: body satisfaction and frequency of dieting (Table C-3), perceived importance of being thin and perceived importance of eating nutritious foods (Table C-4), body satisfaction and priority given to losing weight at the expense of a nutritious diet (Table C-5), body satisfaction and worry about eating habits (Table C-6), and perceived importance of being thin, and binging and starving in order to lose weight (Table C-7).

Hypothesis 1 (Table C-3, page 121), Hypothesis 2 (Table C-4, page 122), and Hypothesis 5 (Table C-7,

Table 11

Reported Feelings With Regard to Pattern of Binging and Starving (n=30)

Feeling	No. of respondents	Percent
guilty	17	56.7
depressed	16	53.3
mad	14	46.7
upset	11	36.7
scared	9	30.0
I don't know	5	16.7
I don't care	2	6.7
happy	1	3.3

page 125) were found to be statistically significant at the 0.05 level. Hypothesis 1, "An adolescent female's level of body satisfaction (item 16 of the questionnaire) is unrelated to frequency of dieting (item 17 of the questionnaire)," has a value for chi-square of 34.78, with 16 degrees of freedom. At a 0.05 level of significance, the critical value is 26.30.

Hypothesis 2, "Perceived importance of being thin (item 7 of the questionnaire) is unrelated to perceived importance of eating nutritious foods (item 9 of the questionnaire)," has a chi-square value of 47.87 with 16 degrees of freedom.

Hypothesis 5, "Perceived importance of being thin (item 7 of the questionnaire) is unrelated to the practice of binging and starving to lose weight (item 34d of the questionnaire)," has a chi-square value of 20.30 with eight degrees of freedom.

Chi-square values for Hypotheses 1 and 2 of 34.78 and 47.87, respectively, with 16 degrees of freedom, are significant. Similarly, a chi-square value of 20.30 with eight degrees of freedom is significant for Hypothesis 5. However, these hypotheses cannot be rejected with any degree of confidence, because too many cells had an expected frequency of less than 5. (See Appendix F for contingency tables.) For Hypothesis 1, 13 of the 25 cells (52%) had an expected frequency of less than 5. For

Hypothesis 2, 18 of the 25 cells (72%) had an expected frequency of less than 5, as did 9 of the 15 cells (60%) for Hypothesis 5. Twenty percent is considered the limit of acceptability (Popham & Sirotnik, 1967, p. 287). However, for Hypothesis 2, inspection of the crosstabs table (Table C-4, page 122) shows that for 111 of the 151 students (73.5%) there was a tendency to rate both eating nutritious foods and being thin as being important or very important. In other words, there is a tendency for those who think being thin is important to also think eating nutritious foods is important.

The two remaining hypotheses were not found to be statistically significant and therefore are not rejected. They are:

Hypothesis 3: A female adolescent's level of body satisfaction (item 16 of the questionnaire) is unrelated to the priority given to losing weight at the expense of a nutritious diet (item 31 of the questionnaire). (Table C-5, page 123.)

Hypothesis 4: A female adolescent's level of body satisfaction (item 16 of the questionnaire) is unrelated to worry about eating habits (item 15 of the questionnaire). (Table C-6, page 124.)

Summary

In summary, the majority of the girls in the study indicated a desire to lose weight, and 106 (70.2%) have at some time gone on a weight reduction diet. The three most common weight loss methods which individuals report using are exercise, cutting calories, and skipping one meal a day. The most common reason for ending a diet is hunger. Other frequently cited reasons include failure to lose weight quickly enough, boredom, and attainment of desired weight goal. When eight nutritional issues were ordered according to mean values, being healthy, being the right weight for age, height, and bone structure, and eating nutritious foods were the three most important issues as perceived by the respondents. "Pigging out" is reported by 115 (76.2%) of the respondents, and 30 (26%) of these individuals feel that they are caught in a pattern of often pigging out and then starving themselves in order to lose weight or maintain their weight. Five relationships, in the form of null hypotheses, were tested; none was rejected.

CHAPTER V

DISCUSSION OF RESULTS

The discussion of the research results focuses on comparisons with findings of other studies, significance within the framework of Barker's Somatopsychological Theory of Adolescence, and relevant new findings. More specifically, dieting behaviours, the theme of the importance of being thin, tendencies toward binging and bulimic behaviour, and individuals' concerns and perceptions with regard to their eating habits are discussed.

Dieting Behaviour

Similar to findings of other studies, a high percentage (78.8%) of the teenage girls who completed the questionnaire indicate that they would like to lose weight. Storz and Greene (1980) found that 83% of their adolescent subjects wanted to lose weight. Seventy percent of the grade 10 girls in the 1966 study by Huenemann et al. reported that they wanted to weigh less.

Seventy percent of the 151 students reported that they have at some time gone on a diet to lose weight

and 40% said they were currently dieting. Results of A Nutrition Needs Assessment of Edmonton Adolescents (Edmonton Local Board of Health, 1980) indicated that almost half of the respondents were trying to lose weight. Huenemann et al. (1966) found that many adolescents were trying to lose weight, however their 3-year study revealed a low success rate among dieters in terms of attaining weight loss goals. Dwyer et al. (1967) reported that 24% of the dieting high school girls in their study ended their diets because they had reached their desired weight. Of the 96 individuals in the present study who gave reasons for ending a diet, 29 (30.2%) said they had ended a diet because they had achieved their weight loss goal. In the present study, hunger, failure to lose quickly enough, and boredom are common reasons for ending a diet.

In this study, there is some discrepancy among respondents with regard to what factors constitute a weight loss diet. Several individuals reported that they do not diet, yet they also indicated that they exercise, skip meals, and/or cut down on calories. Some of these may simply be part of an individual's lifestyle. For example, a hectic schedule may account for skipped meals, and exercise may be pursued for recreation or fitness goals rather than for weight loss.

The most common weight loss method, reported by 90.7% of the respondents, is exercise. Since 70.2% of the individuals say they have ever gone on a weight loss diet, this could indicate that 20% of the individuals surveyed use exercise alone as a weight loss method or that some or all of these individuals exercise for reasons other than weight loss. Fifty-two percent of respondents report knowing friends or classmates who exercise to lose weight.

With the exceptions of exercise and cutting calories, various weight loss methods are cited more frequently as being used by friends or classmates of the respondents than by the respondents themselves. These methods include fasting or starving, skipping one meal a day, popular diets from books or magazines, diet pills, liquid formula diets, diet programmes, vomiting, laxatives, and diuretics. It would appear that although many individuals are not using some of the listed weight loss methods, they are aware of them through observation of and/or discussion with friends and classmates. For example, only one individual reports personal use of diuretics, but 30 individuals know of others who use this method. Similarly, one respondent reports using laxatives, while 34 respondents know of others who use them. Eleven individuals (7.3%) report self-induced vomiting; this percentage is similar to findings of other

studies. Fifty-eight (38.7%) of the respondents know friends or classmates who use self-induced vomiting as a weight loss method. Results of Carter and Duncan's 1984 study of a high school population found the prevalence of self-induced vomiting for weight control to be 9%. Crowther et al. (1985) reported that 11.2% of the teenage girls in their study acknowledged vomiting. The majority of the girls vomited once per month or less; frequency of use of different methods was not raised in the present study.

Importance of Being Thin

Killen et al. (1986) note that most women consider slimness as the most salient aspect of physical attractiveness. The well-documented importance of being thin among females in our society is supported in the present research results. Through responses to many of the questionnaire items, the sample conveys a strong general consensus towards desire to be thin. Already noted are the large percentages of individuals who want to lose weight and who have gone on weight loss diets. When asked what, if anything, concerns them about the way they eat, 38.1% said they are concerned about being or becoming overweight. Huenemann et al. (1966) noted that more than

half of the high school girls in their study were "extremely" or "fairly" concerned about being overweight. Only 29% of the individuals in the present study are happy with their body shape (item 16 of the questionnaire). Seventy-five percent of the respondents say they are worried about becoming overweight. However, drive for thinness among respondents is not as high when it is compared to the importance of being healthy or eating well. In response to the statement "I think it is more important to have good health than to worry about being slim" (item 25 of the questionnaire), 58.4% of the girls agreed, and 21.4% were ~~undecided, while~~ 20.2% disagreed. Forty-nine percent of the individuals disagreed with the statement "I am more concerned about losing weight or maintaining my weight than about eating nutritious foods" (item 31 of the questionnaire), while 33.8% agreed and 17.2% were undecided.

Being thin is obviously important for many of these teenagers. While being healthy and eating nutritious foods earned slightly higher percentages than being thin, there is also a significant number of "undecideds," and it is possible that these individuals may be drawn either way. Since drive for thinness becomes stronger during later adolescence (Eisele & Light, 1985), perhaps the number of individuals in this sample opting for thinness over other considerations will be higher in one or two

more years.

In a different set of questionnaire items (items 6-13), various nutritional issues were ordered according to mean values. Being thin ranked fourth out of eight issues. Being healthy, being the right weight for age, height, and bone structure, and eating nutritious foods received higher priority. All of these items are of high value to the respondents; although fourth in importance, 84.1% of the individuals agree or strongly agree that being thin is important to them.

Binging Behaviour

A health concern which is receiving more attention is the habit of binging, which in some cases may develop into bulimia. "Pigging out" or eating until uncomfortable, was reported by 76.2% of the respondents in the present study. However, as Rosen, Leitenberg, Fisher, and Khazam (1986) state, so many people report occasional episodes of binge eating that not all individuals who binge eat can be considered to have an eating problem. Similarly, Crowther et al. (1985) state that existing research indicates that the percentage of individuals engaging in binge eating ranges from about 50 to 79%, while the percentage of individuals meeting the diagnostic

criteria for bulimia ranges from 0.6 to 13%. The authors believe that "these data would suggest that binge eating is a statistically common behavior and, as a result, may not have any diagnostic or clinical significance" (p. 30). In their study of 363 high school girls, 167 of the girls (46%) indicated that they engaged in periods of binge eating.

In the present study, 30 of the 115 individuals (26%) who pig out feel that they are caught in a pattern of often pigging out and then starving themselves in order to lose weight or stay the same weight, while another 20 (17%) do not know how they feel about this issue. In general, feelings about this binging behaviour are negative; more than half of the individuals feel guilty or depressed. Other common feelings are mad, upset, and scared.

Fasting or starving is reported as a means of weight loss by 30.7% of the sample, and 63.3% report cutting calories. There is also a high incidence of binge eating among respondents, coupled with negative feelings about this behaviour. These findings may support the theory that severe caloric restraint leads to binging (Hodges, 1983; Greenberg, 1986). Greenberg says that results of her study may suggest that binge eating and/or bulimia may be a reaction to depression in individuals who are in a state of physiological deprivation because of their

restrained eating habits. Of the individuals in the present study who acknowledge a pattern of binging and starving, 53.3% report feeling depressed about this behaviour. Taking into consideration Greenberg's findings, it is possible that the feeling of depression may precede the binging among some or all of this group as well.

Willmuth et al. (1985) state that many women with bulimia report feeling fat even if they are within the normal weight range. They note that women in general are not immune to the problem of having a distorted perception of their body size. This may help to account for the large number of individuals in the present study who wish to lose weight. Also of note is that 64.7% of the individuals who pig out report feeling fat. Crowther et al. (1985) found that although the bulimic and nonbulimic adolescents in their study did not differ in actual weight category, the bulimic subjects were more likely to perceive themselves as being overweight. The authors diagnosed 7.7% of the girls in their study as bulimic; an additional 4.4% engaged in problematic binge eating (i.e., the binge eating occurred frequently and was accompanied by negative emotions). Since most studies on bulimia have focused on adults, the authors raise the question of whether these adolescents could be in a "pre-bulimic" stage. Similarly, Killen et al. (1986) state that "the

presence of purging behaviors coupled with dysfunctional attitudes about eating and body weight may place. . . young people at risk for developing eating disorders" (p. 1449). In the present study, several potentially problematic issues are revealed: a generally high, perhaps unrealistic, desire to be thin, unsuccessful attempts at weight loss, negative feelings about binging, and a small percentage of very unhealthful dieting methods (e.g., self-induced vomiting, and misuse of laxatives and diuretics). If one went by the theory of Killen et al. (1986), some of these individuals could be in danger of developing eating disorders in their pursuit of thinness.

Barker's Somatopsychological Theory

As previously stated in the literature review, Barker's somatopsychological theory may help to focus how changes in "adolescent physiological structure" may influence coping strategies for dealing with problems, including those related to eating habits. In Assumption 1, Barker hypothesizes that, in a new situation, since the course of action to be followed to reach a certain goal is unknown, an individual will respond by trial and error. Thus, frequent errors will occur, there is a tendency towards radical and extreme moves, and there is often a

discrepancy between aspirations and reality. The dieting behaviour of the respondents fits well into the framework of this assumption. Many dieting methods were reported, and individuals who have dieted generally have experimented with more than one method. Respondents are also aware of many methods used by friends or classmates. Weight loss methods such as fasting, self-induced vomiting, and use of laxatives and diuretics can be considered extreme. A discrepancy may exist in terms of the general aspiration to be thin and the reality of actual weight. There is also a discrepancy between current eating habits and planned eating habits once weight loss is achieved. Of the 66 individuals who responded to item 5h of the questionnaire, 69.7% indicated that they plan to eat more nutritious foods.

Assumption 2 states that behaviour will depend on the individual's perception of the situation, and will be unstable and vacillating. Behaviour can be influenced easily, especially by suggestions coming from the peer group. Again, dieting behaviour of the study respondents fits this assumption. There is a trend towards desire to be thin and lose weight. Slimness is perceived as highly desirable by this age group. Dieting behaviour is inconsistent as individuals report ending diets for various reasons other than attainment of weight loss goals. Binge eating and dieting are both frequent

behaviours. These two behaviours may represent what Barker refers to as an overlapping antagonistic situation. Binging behaviour, necessary to reach one goal (possibly satiation of appetite, relieving boredom, easing anxiety, etc.), is incompatible with dieting behaviour, necessary to attain the goal of desired thinness.

Based on Barker's potency aspect, eight health-related issues were rated. Being thin is not as highly ranked as being healthy, being the right weight for age, weight, and bone structure, or eating nutritious foods. Thus, for this sample, good health seems to generally override being thin, but only by a slim margin. Ranked lower than being thin are: receiving positive comments from friends about figure, eating with friends on social occasions, following Canada's Food Guide, and eating according to parental guidelines.

Dietary Perceptions

Nelson (1982) feels that a healthful diet generally is of little importance to teenagers. This statement is not upheld by much of the feedback received in the present study. In response to item 15 of the questionnaire, 60.3% of the respondents acknowledge worrying about their eating habits, 25.8% do not worry, and 13.9% are undecided. When

asked what, if anything, concerns them about the way they eat, over 70% mentioned overweight, and about half stated that they worry about poor nutrition and/or future health. Eighty-seven percent of the respondents say that eating nutritious foods is "somewhat" or "very" important to them. Half of the respondents state that following Canada's Food Guide is important to them. The majority of respondents (72.2%) agree that they eat a variety of foods from each of the four food groups every day, while 19.2% disagree, and 8.6% are undecided. Agreement was not as high when respondents were asked if they have the daily number of servings recommended in the Guide. Most individuals (72.2%) agree that they have at least three daily servings from the milk and milk products group. However, only 57.0% report having at least four daily servings of fruits and vegetables, 56.3% have two or more servings from the meat alternates group, and 50.0% have at least three servings from the breads and cereals group. "Undecided" responses ranged from 7.3% to 16.0% for the four categories. It is possible that all respondents are not sure what constitutes a serving size in each category, or they may not know which foods are included in each group.

Huenemann et al. (1966) found that most of the ninth grade students in their study rated their own diets as fair, good, or excellent. However, over half of the

students said they believe teenage diets in general are often nutritionally inadequate. In the present study, 21.9% of the respondents were in agreement with the statement "In general, my friends have better eating habits than me" (item 32 of the questionnaire). Over half of the individuals (52.3%) disagreed, and 25.8% were undecided. Thus, the respondents generally feel that their own eating habits, in comparison with those of peers, are sounder.

Summary

In summary, similar to other research findings, the majority of girls in this study would like to weigh less, and most have tried dieting to lose weight. Some discrepancy seems to exist among respondents with regard to what qualifies as a weight loss diet.

Responses to several questionnaire items convey a strong general desire among these teenage girls to be thin. However, drive for thinness is not quite as important to the respondents as is being healthy or eating well. Over half of the respondents acknowledge worrying about their eating habits.

Overeating (pigging out) was reported by 76.2% of the respondents. However, Crowther et al. (1985) suggest

that binge eating is a statistically common behaviour and is not necessarily significant. Twenty-six percent of the individuals who pig out feel caught in a binge-and-starve pattern in order to lose weight or maintain their weight. More than half of these individuals feel guilty or depressed about this behaviour.

Issues of note which are revealed include a high, perhaps unrealistic, desire to be thin, unsuccessful weight loss efforts, negative feelings about binging, and a small percentage of very unhealthy dieting methods.

CHAPTER VI

RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

Recommendations

Unfortunately, the scope of this study does not allow for greater analysis of all the issues raised in the literature. The results do, however, raise several implications with regard to teaching. The respondents show an awareness of and interest in food and nutrition issues which goes beyond the traditional boundaries of nutrition education. Canada's Food Guide has long been a major component of nutrition education in earlier grades as well as in home economics curricula. Yet, only half of the respondents in this study say that following the Guide is important to them. There are certain assumptions which teachers may have about teenage dietary attitudes and behaviour that should perhaps be reconsidered. For example, teachers may surmise that students have been taught the principles of Canada's Food Guide and that it is therefore relevant or important to them. Likewise, teachers may take for granted that everyone puts health before thinness.

Barker's somatopsychological theory of adolescence proposes that adolescents do not necessarily make

decisions based on sensibility. According to Barker, teenagers may employ trial and error and extreme behaviours when dealing with new or unfamiliar situations. Behaviour may be unstable and vacillating, and easily influenced by peers. Present nutrition programmes may not be working because they assume that students will unquestioningly accept sound nutritional guidelines, such as Canada's Food Guide, as a way of life.

Nutrition programmes should be more personalized. Teachers need to know the general and individual concerns of their students. For example, the present study reveals several concerns related to weight loss and body shape. These include a desire to lose weight among the majority of respondents, unsuccessful weight loss efforts, and concern about future overweight. Most respondents also indicated that, along with being thin, being healthy and eating nutritious foods are important to them. As another example, some individuals feel guilty or depressed about binging and starving behaviour. With more specific knowledge about student concerns, teachers can gear nutrition education to material which will help individuals make informed decisions about their own problems.

The issues of weight loss and body shape are immediate and real to the survey respondents. Ideally, a curriculum should be developed which would encourage

individuals to look realistically at their present weight and size instead of wanting to pursue some other "ideal" body image that may not be a realizable goal for them. However, this is more easily said than done when one considers the factors which influence adolescent dietary decisions. Cultural standards, psychology, and peer group pressures are examples of factors which affect the choices female adolescents make about their food intake and patterns. Increasing student awareness and understanding of these influences should be an integral part of nutrition education. For example, through discussion and research, students might explore the foundations of societal norms and ideals with regard to body size.

Because of the influence of the peer group upon behaviour, more group discussion and activity is recommended. For example, 63.6% of the respondents express an interest in learning more about effective weight loss methods (item 33 of the questionnaire). There would seem to be some degree of discussion among the respondents and their friends about weight loss practices, since the respondents generally report being familiar with more methods than just the ones they have personally used. Discussion and analysis of weight loss approaches could become a more important part of the home economics nutrition curriculum, enabling students to make more

informed decisions about safe, effective methods of achieving goals for health and acceptance.

The survey respondents indicate a general desire to be thin, as well as to eat nutritious foods and be healthy. An effective nutrition education programme needs to guide individuals in fulfilling these goals, but with more imagination than simply directing them to eat three balanced meals a day based on Canada's Food Guide. For example, given the active lifestyles of teenagers, three meals a day may not be practical, or even desired, by individuals. The concept of daily energy intake and expenditure might be a more useful framework for teaching teenagers how to complement nutritious eating with maintaining, losing, or even gaining weight. The material would be individually relevant to the students since they could determine their own caloric and nutritional requirements. They could plan daily food intake based on these needs and their lifestyles. Computer programmes which provide dietary analysis are another possible instrument for helping students to relate caloric intake and energy expenditure.

The concept of energy input and expenditure might also prove helpful for the survey respondents who indicated that they ended weight loss diets due to boredom, hunger, or failure to lose weight quickly enough. Boredom and hunger might be lessened if calories

were not too severely restricted, but rather were moderately cut back, and regular exercise was increased. Likewise, individuals might plan how to speed up weight loss with regularly scheduled exercise. The nutrition programme might also be enhanced by having a physical education teacher discuss some basic exercise physiology with the class. These examples attempt to illustrate how consideration of specific adolescent dietary concerns may be helpful in planning nutrition education programmes.

Killen et al. (1986) are concerned that little, if any, research has focused on education for primary prevention of eating disorders. They say that theoretical models from which programmes could be developed presently exist. For example, the authors point out that adolescent smoking prevention programmes based on social influence-resistance models have provided positive results. Killen et al. believe that "educational programs that (1) unveil the social mechanisms promoting unrealistic and unhealthy attitudes about body weight and (2) impart accurate knowledge and effective influence-resistance techniques offer one potentially promising approach" (p. 1449).

This is not to suggest that the respondents in the present study show some danger of developing eating disorders; [illegible] However, the high number of individuals wanting to lose weight and dieting indicates a

desire for thinness and dissatisfaction with present size. According to Barker, extremes in adolescent behaviour can be expected, and teachers should be prepared to realize and accept that unconventional practices may be employed by some of their students. If an open, honest forum for discussion is to be maintained, teachers cannot ignore or deride extremes in behaviour which students may be using to cope with personal problems.

In summary, the nutrition component of existing home economics curricula may be based too deeply on the assumption that good health has no competitors in terms of priority and that students will wisely use general nutrition facts and knowledge imparted to them. The ultimate goal of nutrition education should be to promote positive, healthy, and realistic lifelong attitudes and practices that students can identify as useful for achieving personal goals. Perhaps this can best be done by recognizing, accepting, and dealing with present adolescent dietary perceptions and behaviours so that individuals can make thoughtful decisions about their own nutrition concerns. Nutrition education might become more meaningful to individuals if it dealt directly with their needs, and not with those needs as perceived by others.

Suggestions for Further Research

Several possibilities exist for further research beyond this study. A qualitative study, based on individual, indepth interviews with a few senior high school students, might provide more insight into some of the issues raised here. The present study could also be replicated using a sample population with grade 12 students, to see if attitudes and perceptions are any different later in the teen years. Another possibility is to use the same questionnaire again with a sample, but also take height, weight, and body fat measurements of the respondents to assess the accuracy of body perceptions and the practicality of weight change goals. Finally, it would be interesting to explore the criteria which adolescents use to identify or establish a weight loss diet. Discrepancies among responses on the survey instrument indicate that individuals probably have their own definitions of a weight loss diet. For example, one individual, who wants to lose more than 15 pounds, says that she has never gone on a diet to lose weight, yet she reports having tried skipping one meal each day, exercising, cutting down on calories consumed, fasting or starving, and vomiting in order to lose weight. In sum,

the dietary practices and perceptions of adolescents are complex and dynamic and constitute a challenging, interesting field for research.

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APPENDIX A

CLEARANCE FOR STUDY

Department of Secondary Education

Application for Departmental Ethics Review

Instructions: Submit five copies of this application to the Department's Research Ethics Review Coordinator

Date: February 17, 1986

Requestor(s):

Mrs. Beverly Mitchell (Name) Staff ___ *Ph.D. Student ___ *M.Ed. Student X

(Name) Staff ___ *Ph.D. Student ___ *M.Ed. Student ___

* Advisor's Name: Dr. Verna Lefebvre

Title of Project: Weight loss among adolescent girls: Practices and perceptions

Description of Project: This description should be limited to a maximum of 600 words and attached to the application. It should include a brief discussion of the purpose(s), methodology, data analysis, and ethical considerations.

FOR OFFICE USE ONLY

Review Panel:

Name	Rank

Signature of Panel Chairperson: _____ Date: _____

___ This application conforms with the provisions contained in the current SSHRC guidelines for research with human subjects.

___ This application does not conform with the provisions contained in the current SSHRC guidelines for research with human subjects.

Description of Project

Purpose: The purpose of this research is to study the extent of weight loss practices used by grade 10 adolescent females, and the perceptions of these girls with regard to their dietary practices.

Methodology: A 46 item questionnaire has been constructed by the researcher. It will be administered to a senior high school home economics class (Edmonton Catholic School Board) in a pilot test. Students will be asked for feedback about the questionnaire, particularly with regard to vocabulary, suitability of items, need for additional items, and ambiguity of any items. After any necessary revisions, the questionnaire will then be administered by the researcher to 8 intact grade 10 level female physical education classes (Edmonton Public School Board). These 8 schools have been randomly selected.

Ethical considerations: Individuals will be made aware of their right to refuse to answer any or all of the questions. Respondants will be assured of their anonymity and that their answers will be handled in a confidential manner.

The following paragraphs will be read to the students in order to make them aware of the purpose of the research, and of their right to choose not to participate.

Students: I would like your help in gathering information for my MEd thesis at the University of Alberta. I am researching the area of female teenagers' eating habits, with the hope that new information about eating habits may help in the planning of better nutrition education programmes. I would like you to complete this questionnaire. It should take about 30 minutes to answer all of the questions. Do not put your name on the answer sheet; you will remain absolutely anonymous. There are no right or wrong answers to these questions, only answers that reflect your feelings about different issues. Since no one will know your identity, please answer each question as honestly and completely as possible.

If there are any questions you do not want to answer, you do not have to. You may stop anwering questions at any time. You do not have to complete the questionnaire at all. However, I would appreciate it very much if you do, since it would help my research a great deal.

Thank you very much for your assistance.

It is possible that some extreme weight loss methods cited in the questionnaire may be unfamiliar to students. However, this is unlikely, considering the current publicity given to extremes such as bulimia and anorexia nervosa in popular magazines and newspapers.

COOPERATIVE ACTIVITIES PROGRAM: RESEARCH APPLICATION FORM

Field Services
Faculty of Education
University of Alberta

341 Education South
432-3659
T6G 2G5

1. Instructions:

   a) This application form is to be used for research projects which constitute a major undertaking leading to a Master's thesis or a Ph.D. dissertation, and studies of similar magnitude, or lesser research projects which involve participation of human subjects.

   b) All proposed research projects involving human participants must be reviewed by the ethics committee established in each department, to ensure that ethical guidelines are followed in the conduct of the study. Once clearance is granted, a statement to this effect, signed by the chairperson of the ethics committee, must accompany this research application.

2. Organization to be Involved

   Edmonton Public School System ☐
   Edmonton Catholic School System ☒
   N.A.I.T. ☐
   County of Strathcona ☐
   St. Albert Protestant/Separate School System ☐

3. Requestor (University staff member) Date February 17, 1986

   Name (include title) Dr. V. Lefebvre Faculty Education
   Position Professor Department Secondary Education
   Address 538 Education South Telephone 432-5769

   Is this request being made on behalf of a graduate student ☒, undergraduate student ☐

   If so, indicate: Mrs. Beverly Mitchell (Name) 436-2274 (Phone Number)

   #107 - 10603 - 40 Avenue, Edmonton (Campus or Home Address) T6J 2M3 (Postal Code)

   Ph.D. student ☐ Master's student ☒ Other: _____

4. Description of Research Project - include title, objectives, procedure, evaluation, techniques, ethical considerations, etc.

   Title: Weight loss among adolescent girls: Practices and perceptions

   Objectives: To study the extent of weight loss practices used by grade 10 adolescent females, and the perceptions of these girls about their dietary practices.

Procedure: The researcher will administer a 46 item questionnaire to a senior high school home economics class. Students will then be asked for feedback about the questionnaire: its suitability, need for additional items, and any ambiguity. (Questionnaire attached).

Techniques: The survey instrument is a 46 item questionnaire, constructed by the researcher. The questionnaire is designed so that it can be completed in about 30 minutes.

Ethical considerations: Individuals will be made aware of their right to refuse to answer any or all of the questions. Respondants will be assured of their anonymity and that their answers will be handled in a confidential manner.

Anticipated value to cooperating organization: It is hoped that more effective approaches to nutrition education may be developed as we learn more about adolescents' concerns and priorities with regard to dietary practices. The results of this study will be of interest to home economics and health teachers as they plan teaching strategies to encourage students to look at the implications of dietary practices common to those of their age group.

5. Anticipated value to cooperating organization:

6. Suggested personnel, schools and times:

Ms. Elaine Lutz, Archbishop O'Leary High School; convenient time to be arranged. We would prefer a grade 10 Clothing and Textiles class to assist us in piloting the questionnaire.

For Office Use Only:

Approved by _____, Field Services. Date _____

Approved by _____, Central Office. Date _____

Subject to the following conditions:

(a) A report of the results of findings of this project is required by the cooperating school system (check one) yes ☐ no ☐

(b) Other

Edmonton Catholic Schools

Student Services
10019 - 84 Street, Edmonton, Alberta T6A 3P8 Telephone (403) 468-3434

1986 03 20

Mr. Al Kiffiak
Rm 341 Education South
University of Alberta
Edmonton, Alberta
T6G 2G5

Dear Mr. Kiffiak:

Subject: Request made by Dr. Lefebvre on behalf of Beverly Mitchell entitled, "Weight Loss Among Adolescent Girls".

After consultations with our supervisor of Practical Arts, the Edmonton Catholic School District has approved in principle the above request.

Please contact directly the persons with whom you wish to cooperate in our district regarding the study presented.

Yours truly,

D.B. MacDougall, Ph.D.
Assistant Superintendent
Department of Student Services

DBMacD/mmm

cc: Beverly Mitchell
#107, 10603 - 40 Avenue
Edmonton, Alberta
T6J 2M3

cc: Annette Stromecki
Test & Research Coordinator

COOPERATIVE ACTIVITIES PROGRAM: RESEARCH APPLICATION FORM

Field Services
Faculty of Education
University of Alberta

341 Education South
432-3659
T6G 2G5

1. Instructions:

   a) This application form is to be used for research projects which constitute a major undertaking leading to a Master's thesis or a Ph.D. dissertation, and studies of similar magnitude, or lesser research projects which involve participation of human subjects.

   b) All proposed research projects involving human participants must be reviewed by the ethics committee established in each department, to ensure that ethical guidelines are followed in the conduct of the study. Once clearance is granted, a statement to this effect, signed by the chairperson of the ethics committee, must accompany this research application.

2. Organization to be Involved

   Edmonton Public School System ☒
   Edmonton Catholic School System ☐
   N.A.I.T. ☐
   County of Strathcona ☐
   St. Albert Protestant/Separate School System ☐

3. Requestor (University staff member) Date February 17, 1986

   Name (include title) Dr. V. Lefebvre Faculty Education

   Position Professor Department Secondary Education

   Address 538 Education South Telephone 432-5769

   Is this request being made on behalf of a graduate student ☒, undergraduate student ☐

   If so, indicate: Mrs. Beverly Mitchell (Name) 436-2274 (Phone Number)

   #107 - 10603 - 40 Avenue, Edmonton (Campus or Home Address) T6J 2M3 (Postal Code)

   Ph.D. student ☐ Master's student ☒ Other: _____

4. Description of Research Project - include title, objectives, procedure, evaluation, techniques, ethical considerations, etc.

   Title: Weight loss among adolescent girls: Practices and perceptions

   Objective: To study the extent of weight loss practices used by grade 10 adolescent females, and the perceptions of these girls about their dietary practices.

Procedure: The researcher will administer a 46 item questionnaire to 8 intact grade 10 girls physical education classes in schools which have been randomly selected for this study. (Questionnaire attached).

Techniques: The survey instrument is a 46 item questionnaire, constructed by the researcher. The questionnaire is constructed so that it can be completed in 30 minutes.

Ethical considerations: Individuals will be made aware of their right to refuse to answer any or all of the questions. Respondants will be assured of their anonymity and that their answers will be handled in a confidential manner.

Anticipated value to cooperating organization: It is hoped that more effective approaches to nutrition education may be developed as we learn more about adolescents' concerns and priorities with regard to dietary practices. The results of this study will be of interest to home economics and health teachers as they plan teaching strategies to encourage students to look at the implications of dietary practices common to those of their age group.

5. Anticipated value to cooperating organization:

6. Suggested personnel, schools and times:
Schools: Strathcona, Eastglen, Harry Ainley, Old Scona, Queen Elizabeth, Ross Sheppard, Bonnie Doone, J. Percy Page. Classes and times to be arranged by school personnel. For this study we need the cooperation of one grade 10 girls' physical education class from each of the 8 schools.

For Office Use Only:

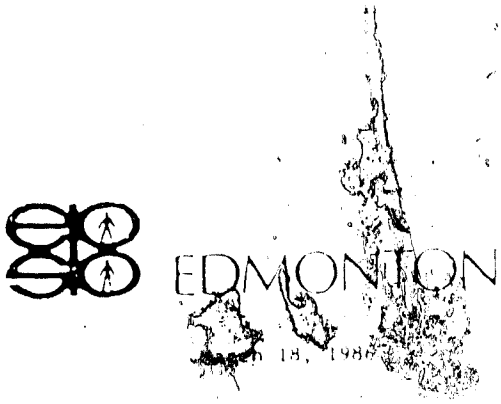
Approved by _____, Field Services. Date _____

Approved by _____, Central Office. Date _____

Subject to the following conditions:

(a) A report of the results of findings of this project is required by the cooperating school system (check one) yes ☐ no ☐

(b) Other



EDMONTON PUBLIC SCHOOLS

March 18, 1985

Mr. W. A. Kiffiak
School Liaison Officer
Division of Field Services
The University of Alberta
Edmonton, Alberta
T6G 2G5

Dear Mr. Kiffiak:

Re: Research Request - "Weight Loss Among Adolescent Girls: Practices and Perceptions" - Mrs. Beverly Mitchell

The above research request has been approved on a permissive basis following examination by our department and consultation with Jo-Anne Bowen, Health Consultant. The approval is subject to the conditions that (1) participation in the study be voluntary; (2) anonymity of respondents be protected; and (3) students must be advised that any questions they do not wish to answer may be left blank.

Mrs. Mitchell should now contact the principals of the following schools to obtain final approval and to make the arrangements necessary for conducting the study.

School	Principal
Strathcona	- Lee Phipps
Eastglen	- El Probert
Harry Ainlay	- George Nicholson
Old Scona	- Mike Demaine
Queen Elizabeth	- Don Nixon
Ross Sheppard	- Gerry Tobert
Bonnie Doon	- Shirley Stiles
J. Percy Page	- John Pankhurst

We would appreciate receiving a copy of the results of the study as soon as they are available.

Sincerely,

T. A. Blowers, PhD
Director Monitoring and
Program Review

TAB:jmr

cc: J. Bowen, B. Mitchell, V. Lefebvre

Health and Welfare Canada
Health Services and Promotion Branch

Santé et Bien-être social Canada
Direction générale des services et de la promotion de la santé

September 5, 1986

To Whom It May Concern,

Permission is granted to Beverly Mitchell to photocopy Canada's Food Guide, for use in her thesis "Weight Loss Among Adolescent Girls: Practices and Perceptions."

Public Response Clerk
Penny Goyette
990-7862

Ottawa Ontario
K1A 1B4

Ottawa Ontario
K1A 1B4

Canada

APPENDIX B

QUESTIONNAIRE

DIETARY PRACTICES AND PERCEPTIONS

University of Alberta
Edmonton
Canada T6G 2G5

Department of Secondary Education
Faculty of Education
108 Education South Telephone (403) 432-3674

Spring 1986

Dear student:

I would like your help in gathering information for my MEd thesis at the University of Alberta. I am researching the area of female teenagers' eating habits, with the hope that new information about eating habits may help in the planning of better nutrition education programmes.

Please complete the attached questionnaire. It should take about 30 minutes to answer all of the questions. Do not put your name on the questionnaire; you will remain absolutely anonymous. There are no right or wrong answers to these questions, only answers that reflect your feelings about different issues. Please answer each question as honestly and completely as possible.

If there are any questions which you do not want to answer, you do not have to do so. You may stop answering questions at any time. You do not have to complete the questionnaire at all. However, I would appreciate it very much if you do, since it will help my research a great deal.

Thank you for your assistance.

Sincerely,

Bev Mitchell

Bev Mitchell

DIETARY PRACTICES AND PERCEPTIONS

Please circle or check the most suitable response to each question. For some questions, you may want to choose more than one response.

1. Please write your age _____

2a. Would you like to weigh _____ more
_____ the same as now
_____ less

If your answer is "the same as now," go directly to question 3.

2b. By how much would you like your weight to change

_____ gain more than 7.0 kg (15 lb)
_____ gain 5.0 - 7.0 kg (11-15 lb)
_____ gain 2.5 - 4.9 kg (5-10 lb)
_____ gain 0.5 - 2.5 kg (1-5 lb)
_____ lose 0.5 - 2.5 kg (1-5 lb)
_____ lose 2.5 - 4.9 kg (5-10 lb)
_____ lose 5.0 - 7.0 kg (11-15 lb)
_____ lose more than 7.0 kg (15 lb)

3. In column A, please check weight loss methods which you have tried. In column B, check weight loss methods which you know friends your age or classmates have tried.

A you tried	B others tried	
_____	_____	skipping one meal each day
_____	_____	exercise
_____	_____	cutting down on calories consumed
_____	_____	fasting or starving (i.e., going at least a whole day with only liquids)
_____	_____	diet pills
_____	_____	popular diets from books or magazines

3. (continued)

A you tried	B others tried	
_____	_____	liquid formula diet
_____	_____	vomiting (throwing up)
_____	_____	laxatives
_____	_____	diuretics (water pills)
_____	_____	diet programme prescribed by a doctor (please specify programme) _____
_____	_____	an organized programme in a diet clinic (please specify programme) _____

4. If you worry about the way you eat, what is it that concerns you? (You may check more than one answer.)

_____ I don't worry about the way I eat
_____ future health
_____ overweight
_____ underweight
_____ concern of parents
_____ poor nutrition

5a. Have you ever gone on a diet to lose weight? _____ yes
_____ no

If your answer is no, go directly to question 6.

5b. If yes, at what age did you first try to lose weight? (Check one.)

_____ 12 or under
_____ 13 _____ 14
_____ 15 _____ 16
_____ 17 _____ 18

5c. How often do you go on a diet to lose weight?

_____ once a year _____ 2-6 times a year
_____ every month _____ I am always dieting

5d. Do you eat very differently when you are on a diet to lose weight?

_____ yes _____ no _____ I don't know

5e. If you answered yes to the above question, how do your eating habits change? (You may check more than one.)

_____ I eat almost nothing for 1 or 2 days.
_____ I eat less junk food.
_____ I eat low calori[illegible]oods.
_____ I eat more nutritious foods.

5f. If you were ever on a diet, why did you end it?

_____ I lost the weight I wanted
_____ hunger
_____ boredom
_____ concern of parents
_____ I didn't lose weight quickly enough
_____ it interfered with my social life
_____ I became sick

5g. Are you on a diet now to lose weight? _____ yes
_____ no

If your answer is no, go directly to question 6.

5h. When you reach your weight loss goal, do you plan on changing your eating habits? If so, how? (You may check more than one.)

_____ I don't plan to change my eating habits.
_____ I will eat a greater variety of foods.
_____ I will eat more food.
_____ I will eat more nutritious foods.
_____ I will eat more junk foods (chips, fries, sweets, etc.)

4

Please circle the number that best describes how important each item is to you.

very important	somewhat important	undecided	somewhat unimportant	very unimportant
5	4	3	2	1

		VI	SI	U	SU	VU
6.	being healthy	5	4	3	2	1
7.	being thin	5	4	3	2	1
8.	being the right weight for my age, height, and bone structure	5	4	3	2	1
9.	eating nutritious foods	5	4	3	2	1
10.	eating what my parents think I should eat	5	4	3	2	1
11.	eating with my friends on social occasions	5	4	3	2	1
12.	following Canada's Food Guide	5	4	3	2	1
13.	having my friends comment positively about my figure	5	4	3	2	1

Please circle the number that best describes your reaction to each statement.

strongly agree	agree	undecided	disagree	strongly disagree
5	4	3	2	1

		SA	A	U	D	SD
14.	My parents are concerned that I do not eat the right foods.	5	4	3	2	1
15.	I worry about my eating habits.	5	4	3	2	1
16.	I am happy with my body shape.	5	4	3	2	1
17.	I am almost always on a diet.	5	4	3	2	1
18.	Food is nearly always on my mind.	5	4	3	2	1

5

		SA	A		D	SD
19.	I am aware of the calorie content of the foods I eat.	5	4	3	2	1
20.	Older people think I am too thin.	5	4	3	2	1
21.	My friends think I am too thin.	5	4	3	2	1
22.	Older people think I am too heavy.	5	4	3	2	1
23.	My friends think I am too heavy.	5	4	3	2	1
24.	I am scared of becoming overweight.	5	4	3	2	1
25.	I think it is more important to have good health than to worry about being slim.	5	4	3	2	1
26.	I eat a variety of foods from each of the 4 food groups every day (milk & milk products, breads & cereals, fruits & vegetables, meat & alternates).	5	4	3	2	1
27.	I have at least 3 servings from the breads & cereals group every day.	5	4	3	2	1
28.	I have at least 2 servings from the meat & alternates group every day.	5	4	3	2	1
29.	I have at least 4 servings from the fruits & vegetables group every day.	5	4	3	2	1
30.	I have at least 3 servings from the milk & milk products group every day.	5	4	3	2	1
31.	I am more concerned about losing weight or maintaining my weight than about eating nutritious foods.	5	4	3	2	1

6

		SA	A	U	D	SD
32.	In general, my friends have better eating habits than me.	5	4	3	2	1
33.	I would like to learn more about effective weight loss methods.	5	4	3	2	1

34a. Do you ever "pig out"? (i.e., eat until you feel uncomfortable) _____ yes
_____ no

If yes, please answer the remaining questions.
If no, you are finished. Thank you for completing the questionnaire.

34b. How do you feel after you pig out?

_____ I don't know
_____ guilty
_____ unhappy
_____ happy
_____ uncomfortable
_____ angry
_____ I hate myself
_____ I don't care
_____ sick
_____ fat

34c. Which of the following best describes your behaviour after you have binged while on a diet? (You may check more than one.)

_____ return to my diet
_____ exercise
_____ go on a very strict diet
_____ go without food for at least a day
_____ vomit
_____ take laxatives
_____ continue to overeat

34d. Do you feel that you are caught in a pattern of often pigging out and then starving yourself in order to lose weight or stay the same weight?

_____ yes _____ no _____ I don't know

34e. If you answered yes to the above question, how do you feel about your pattern of binging and starving? (You may check more than one.)

_____ upset	_____ mad
_____ I don't care	_____ happy
_____ depressed	_____ guilty
_____ scared	_____ I don't know

Thank you for completing the questionnaire.

APPENDIX C

TABLES

Table C-1

Importance of Nutritional Issues as Perceived by Respondents, Listed in Order of Priority According to Mean Values

VI very important 5	SI somewhat important 4	U undecided 3	SU somewhat unimportant 2	VU very unimportant 1

Nutritional Issue	VI #	VI %	SI #	SI %	U #	U %	SU #	SU %	VU #	VU %	Mean
being healthy	121	80.1	27	17.9	1	0.7	1	0.7	1	0.7	4.76
being the right weight for my age, height, and bone structure	89	58.9	46	30.5	7	4.6	6	4.0	3	2.0	4.40
eating nutritious foods	62	41.1	70	46.4	12	7.9	3	2.0	4	2.6	4.21
being thin	60	39.7	67	44.4	11	7.3	12	7.9	1	0.7	4.15
*having my friends comment positively about my figure	49	32.7	61	40.7	17	11.3	15	10.0	8	5.3	3.85
eating with my friends on social occasions	13	8.6	61	40.4	40	26.5	30	19.9	7	4.6	3.29
*following Canada's Food Guide	16	10.7	59	39.3	25	16.7	33	22.0	17	11.3	3.16
eating what my parents think I should eat	4	2.6	44	29.1	24	15.9	53	35.1	26	17.2	2.65

Note: n = 151, except for 2 items with asterisks, where n = 150.

Table C-2

Degree of Agreement Among Respondents About Various Issues Related to Eating Habits

SA strongly agree 5	A agree 4	U undecided 3	D disagree 2	SD strongly disagree 1

Item	SA #	SA %	A #	A %	U #	U %	D #	D %	SD #	SD %
My parents are concerned that I do not eat the right foods.	18	11.9	51	33.8	22	14.6	44	29.1	16	10.6
I worry about my eating habits.	32	21.2	59	39.1	21	13.9	28	18.5	11	7.3
I am happy with my body shape.	7	4.6	38	25.2	26	17.2	43	28.5	37	24.5
I am almost always on a diet. (n=150)	11	7.3	34	22.7	16	10.7	39	26.0	50	33.3
Food is nearly always on my mind.	15	9.9	22	14.6	15	9.9	60	39.7	39	25.8
I am aware of the calorie content of the foods I eat.	16	10.6	41	27.2	17	11.3	57	37.7	20	13.2
Older people think I am too thin.	17	11.3	24	15.9	25	16.6	53	35.1	32	21.2
My friends think I am too thin.	7	4.6	16	10.6	20	13.2	67	44.4	41	27.2
Older people think I am too heavy. (n=149)	7	4.7	10	6.7	36	24.2	49	32.9	47	31.5
My friends think I am too heavy.	5	3.3	10	6.6	38	25.2	50	33.1	48	31.8
I am scared of becoming overweight. (n=150)	60	40.0	51	35.3	20	13.3	10	6.7	7	4.7
I think it is more important to have good health than to worry about being slim. (n=149)	34	22.8	53	35.6	32	21.5	22	14.8	8	5.4
I eat a variety of foods from each of the 4 food groups every day.	46	30.5	63	41.7	13	8.6	26	17.2	3	2.0
I have at least 3 servings from the bread/cereals group every day. (n=150)	28	18.7	47	31.3	24	16.0	38	25.3	13	8.7
I have at least 2 servings from the meat/alternates group every day.	30	19.9	55	36.4	19	12.6	37	24.5	10	6.6
I have at least 4 servings from the fruits/vegetables group every day.	37	24.5	49	32.5	16	10.6	37	24.5	12	7.9
I have at least 3 servings from the milk/milk products group every day.	54	35.8	55	36.4	11	7.3	22	14.6	9	6.0
I am more concerned about losing weight or maintaining my weight than about eating nutritious foods.	16	10.6	35	23.2	26	17.2	52	34.4	22	14.6
In general, my friends have better eating habits than me.	9	6.0	24	15.9	39	25.8	66	43.7	13	8.6
I would like to learn more about effective weight loss methods.	50	33.1	46	30.5	24	15.9	19	12.6	12	7.9

Note: n = 151, except for items where n is given.

Table C-1

Relationship Between Body Satisfaction and Frequency of Dieting n=150

SA strongly agree	A agree	U undecided	D disagree	SD strongly disagree
5	4	3	2	1

Body Satisfaction (I am happy with my body shape.)

Frequency of Dieting (I am almost always on a diet.)	5 n (%)	4 n (%)	3 n (%)	2 n (%)	1 n (%)	Total n (%)
5	- -	- -	1 (0.7)	3 (2.0)	7 (4.7)	11 (7.3)
4	- -	7 (4.7)	6 (4.0)	10 (6.7)	11 (7.3)	34 (22.7)
3	1 (0.7)	4 (2.7)	1 (0.7)	5 (3.3)	5 (3.3)	16 (10.7)
2	- -	9 (6.0)	7 (4.7)	12 (8.0)	11 (7.3)	39 (26.0)
1	6 (4.0)	18 (12.0)	11 (7.3)	13 (8.7)	2 (1.3)	50 (33.3)
Total	7 (4.7)	38 (25.3)	26 (17.3)	43 (28.7)	36 (24.0)	150 (100.0)

Chi-square 34.78

degrees of freedom 16

significance 0.0041

Statistically significant at the 0.05 level using alpha coefficient.

Table I-4

Relationship Between Perceived Importance of Being Thin and Perceived Importance of Eating Nutritious Foods (n=151)

VI	SI	U	SU	VU
very important	somewhat important	undecided	somewhat unimportant	very unimportant
5	4	3	2	1

	Importance of Eating Nutritious Foods					
Importance of Being Thin	5	4	3	2	1	Total
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
5	21 (13.9)	30 (19.9)	6 (4.0)	3 (2.0)	- -	60 (39.7)
4	31 (20.5)	29 (19.2)	5 (3.3)	- -	2 (1.3)	67 (44.4)
3	4 (2.6)	5 (3.3)	1 (0.7)	- -	1 (0.7)	11 (7.3)
2	6 (4.0)	6 (4.0)	- -	- -	- -	12 (7.9)
1	- -	- -	- -	- -	1 (0.7)	1 (0.7)
Total	62 (41.1)	70 (46.4)	12 (7.9)	3 (2.0)	4 (2.6)	151 (100.0)

Chi-square 47.87

degrees of freedom 16

significance 0.0000

Statistically significant at the 0.05 level using alpha coefficient.

Table 4-5

Relationship Between Body Satisfaction and Priority Given to Losing Weight at the Expense of a Nutritious Diet (n=151)

SA	A	U	D	SD
strongly agree	agree	undecided	disagree	strongly disagree
5	4	3	2	1

Priority for Losing Weight at Expense of a Nutritious Diet (I am more concerned about losing weight or maintaining my weight than about eating nutritious foods.)	Body Satisfaction (I am happy with my body shape.) 5 n (%)	4 n (%)	3 n (%)	2 n (%)	1 n (%)	Total n (%)
5	- -	2 (1.3)	1 (0.7)	3 (2.0)	10 (6.6)	16 (10.6)
4	1 (0.7)	5 (3.3)	7 (4.6)	10 (6.6)	12 (7.9)	35 (23.2)
3	2 (1.3)	6 (4.0)	5 (3.3)	10 (6.6)	3 (2.0)	26 (17.2)
2	2 (1.3)	19 (12.6)	8 (5.3)	14 (9.3)	9 (6.0)	52 (34.4)
1	2 (1.3)	6 (4.0)	5 (3.3)	6 (4.0)	3 (2.0)	22 (14.6)
Total	7 (4.6)	38 (25.2)	26 (17.2)	43 (28.5)	37 (24.5)	151 (99.9)

Chi-square 26.00

degrees of freedom 16

significance 0.0548

Not statistically significant at the 0.05 level using alpha coefficient.

Table C-6

Relationship Between Body Satisfaction and Worry About Eating Habits (n=151)

SA strongly agree	A agree	U undecided	D disagree	SD strongly disagree
5	4	3	2	1

	Body Satisfaction (I am happy with my body shape.)					
Worry About Eating Habits (I worry about my eating habits.)	5 n (%)	4 n (%)	3 n (%)	2 n (%)	1 n (%)	Total n (%)
5	2 (1.3)	3 (2.0)	9 (6.0)	7 (4.6)	11 (7.3)	32 (21.2)
4	2 (1.3)	12 (7.9)	9 (6.0)	20 (13.2)	16 (10.6)	59 (39.1)
3	1 (0.7)	8 (5.3)	2 (1.3)	6 (4.0)	4 (2.6)	21 (13.9)
2	1 (0.7)	11 (7.3)	5 (3.3)	7 (4.6)	4 (2.6)	28 (18.5)
1	1 (0.7)	4 (2.6)	1 (0.7)	3 (2.0)	2 (1.3)	11 (7.3)
Total	7 (4.6)	38 (25.2)	26 (17.2)	43 (28.5)	37 (24.5)	151 (100.0)

Chi-square 16.58

Degrees of Freedom 16

Significance 0.4184

Not statistically significant at the 0.05 level using alpha coefficient.

Table [illegible]

Relationship Between Perceived Importance of Being Thin and Binging and Fasting as a Weight (n=116)

VI very important	SI somewhat important	I undecided	SU somewhat unimportant	VU very unimportant

Practice of Binging and Fasting	Importance of Being Thin										Total	
	VI		SI		I		SU		VU			
	n	%	n	%	n	%	n	%	n	%	n	%
yes	22	19.0%	6	5.2%	2	1.7%	-	-	-	-	30	25.9%
no	23	19.8%	31	26.7%	4	3.4%	7	6.0%	1	0.9%	66	56.9%
don't know	6	5.2%	13	11.2%	1	0.9%	-	-	-	-	20	17.2%
Total	51	44.0%	50	43.1%	7	6.0%	7	6.0%	1	0.9%	116	100.0%

Chi-square 28.10

degrees of freedom 8

significance 0.0092

Statistically significant at the 0.05 level using alpha coefficient.

APPENDIX D

CANADA'S FOOD GUIDE

Canada's Food Guide

Eat a variety of foods from each group every day

milk and milk products

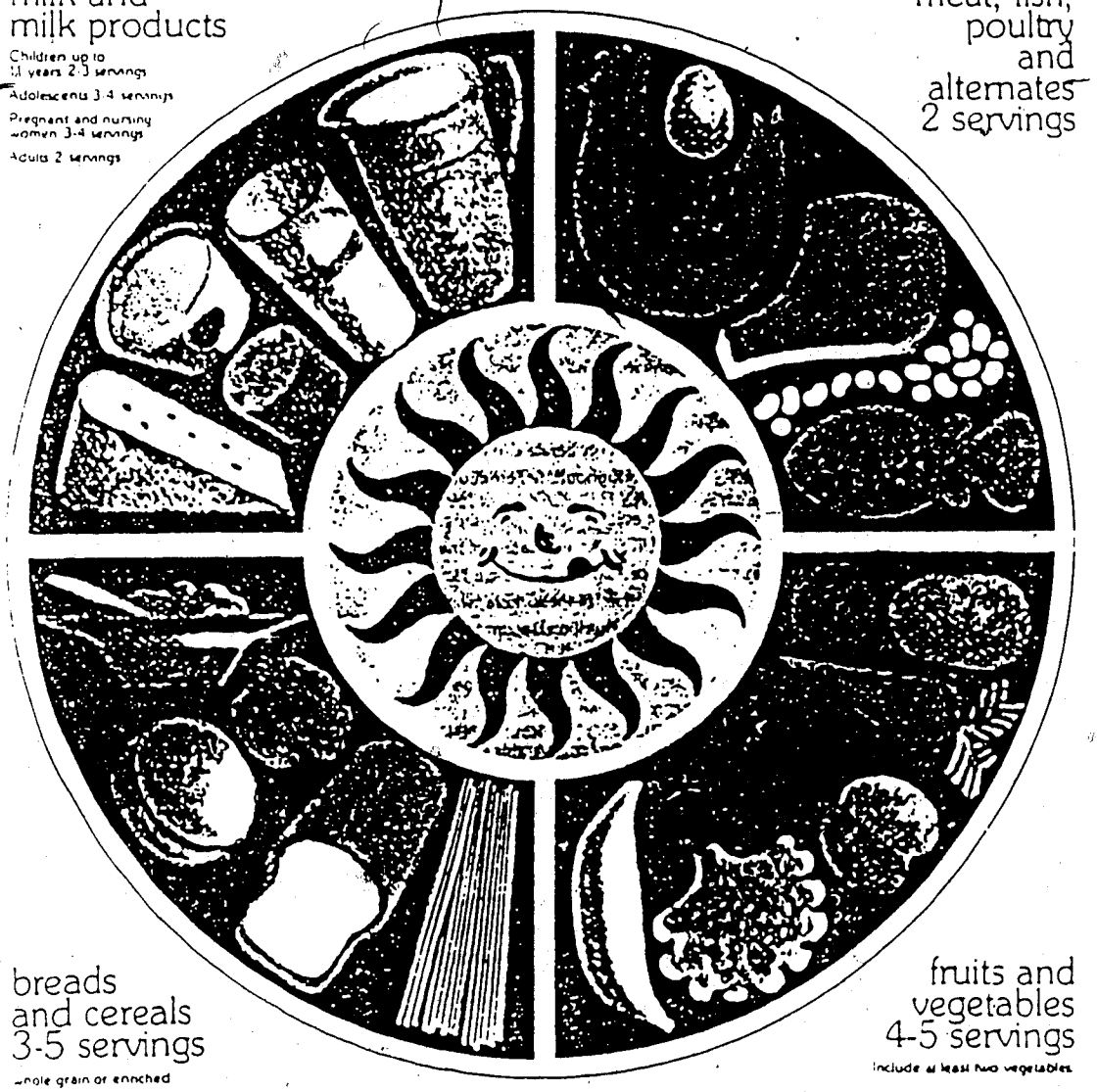
Children up to 10 years 2-3 servings

Adolescents 3-4 servings

Pregnant and nursing women 3-4 servings

Adults 2 servings

meat, fish, poultry and alternates 2 servings



breads and cereals 3-5 servings

whole grain or enriched

fruits and vegetables 4-5 servings

Include at least two vegetables

Health and Welfare Canada / Santé et Bien-être social Canada

Canada

Canada's Food Guide

Variety

Choose different kinds of foods from within each group in appropriate numbers of servings and portion sizes

Energy Balance

Needs vary with age, sex and activity. Balance energy intake from foods with energy output from physical activity to control weight. Foods selected according to the Guide can supply 4000 - 6000 kJ (kilojoules) (1000 - 1400 kilocalories). For additional energy, increase the number and size of servings from the various food groups and/or add other foods

Moderation

Select and prepare foods with limited amounts of fat, sugar and salt. If alcohol is consumed, use limited amounts

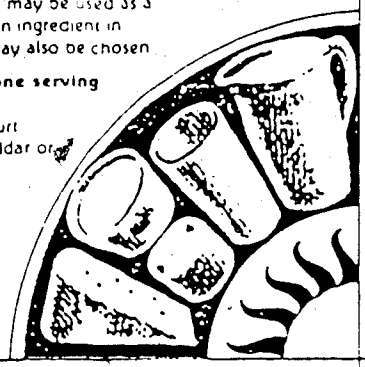
milk and milk products

Children up to 11 years	2-3 servings
Adolescents	3-4 servings
Pregnant and nursing women	3-4 servings
Adults	2 servings

Skim, 2%, whole, buttermilk, reconstituted dry or evaporated milk may be used as a beverage or as the main ingredient in other foods. Cheese may also be chosen.

Some examples of one serving
250 mL (1 cup) milk
175 mL (¾ cup) yoghurt
45 g (1½ ounces) cheddar or process cheese

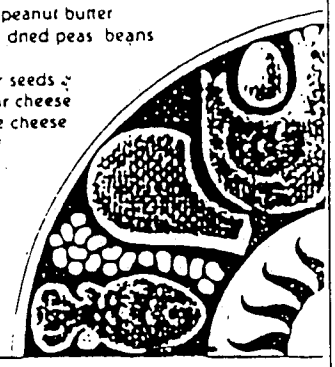
In addition, a supplement of vitamin D is recommended when milk is consumed which does not contain added vitamin D



meat, fish, poultry and alternates

2 servings

Some examples of one serving
60 to 90 g (2-3 ounces) cooked lean meat, fish, poultry or liver
60 mL (4 tablespoons) peanut butter
250 mL (1 cup) cooked dried peas, beans or lentils
125 mL (½ cup) nuts or seeds
60 g (2 ounces) cheddar cheese
125 mL (½ cup) cottage cheese
2 eggs

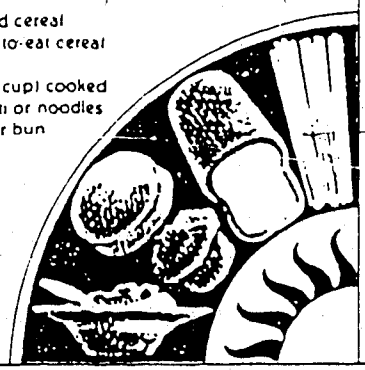


breads and cereals

3-5 servings

whole grain or enriched. Whole grain products are recommended

Some examples of one serving
1 slice bread
125 mL (½ cup) cooked cereal
175 mL (¾ cup) ready-to-eat cereal
1 roll or muffin
125 to 175 mL (½ - ¾ cup) cooked rice, macaroni, spaghetti or noodles
½ hamburger or wiener bun



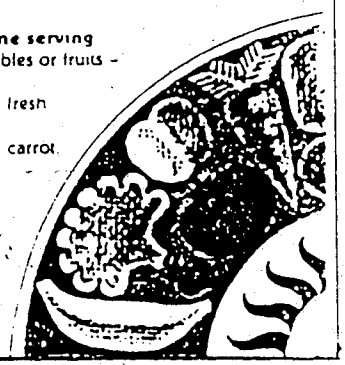
fruits and vegetables

4-5 servings

Include at least two vegetables.

Choose a variety of both vegetables and fruits — cooked, raw or their juices. Include yellow, green or green leafy vegetables.

Some examples of one serving
125 mL (½ cup) vegetables or fruits - fresh, frozen or canned
125 mL (½ cup) juice - fresh, frozen or canned
1 medium-sized potato, carrot, tomato, peach, apple, orange or banana



APPENDIX E

COMPUTER ANALYSIS - RELIABILITY

1 MAY 86 SPSS-X RELEASE 2.1 FOR IBM VM/MTS
13:17:52 University of Alberta

RELIABILITY ANALYSIS - SCALE (HEALTH)

1	V56
2	V57
3	V58
4	V59
5	V60
6	V61
7	V62
8	V63

		MEAN	STD DEV	CASES
1	V56	4.7651	.5622	149.0
2	V57	4.1342	.9128	149.0
3	V58	4.4161	.8861	149.0
4	V59	4.2282	.8709	149.0
5	V60	2.6443	1.1512	149.0
6	V61	3.2886	1.0352	149.0
7	V62	3.1477	1.2102	149.0
8	V63	3.8523	1.1471	149.0

COVARIANCE MATRIX

	V56	V57	V58	V59	V60	V61	V62	V63
V56	.3161							
V57	.0250	.8332						
V58	.1727	.1127	.7851					
V59	.2499	.0232	.2693	.7584				
V60	.0983	.0263	.0882	.2439	1.3253			
V61	.0818	.0286	.1561	.0418	.1236	1.0716		
V62	.1498	.1963	.0010	.3174	.5529	.1733	1.4645	
V63	.0079	.2159	.0754	.0542	.0755	.4010	.1436	1.3159

1 MAY 86 SPSS-x RELEASE 2 1 FOR IBM VM/MTS
13 17 52 University of Alberta

R E L I A B I L I T Y A N A L Y S I S - S C A L E (H E A L T H)

CORRELATION MATRIX

	V56	V57	V58	V59	V60	V61	V62	V63
V56	1 0000							
V57	0487	1 0000						
V58	3467	1393	1 0000					
V59	5104	0292	3490	1 0000				
V60	1519	- 0250	0865	2433	1 0000			
V61	1405	0302	1702	0464	1037	1 0000		
V62	2201	1777	- 0010	3012	3968	1384	1 0000	
V63	- 0122	2062	0741	0542	0572	3377	1034	1 0000

OF CASES = 149 0

STATISTICS FOR	MEAN	VARIANCE	STD DEV	# OF VARIABLES
SCALE	30 4765	15 9403	3 9925	8

ITEM MEANS	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	3 8096	2 6443	4 7651	2 1208	1 8020	5187

ITEM VARIANCES	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	9838	3161	1 4645	1 1485	4 6306	1464

INTER-ITEM COVARIANCES	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	1441	- 0263	5529	5791	-21 0570	0169

INTER-ITEM CORRELATIONS	MEAN	MINIMUM	MAXIMUM	RANGE	MAX/MIN	VARIANCE
	1580	- 0250	5104	5354	-20 4292	0184

ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	SQUARED MULTIPLE CORRELATION	ALPHA IF ITEM DELETED
V56	25 7114	14 0851	3647	3151	5410
V57	26 3423	13 9564	1687	1087	5784
V58	26 0604	13 4085	2692	2213	5502
V59	26 2483	12 7825	3853	3583	5176
V60	27 8322	12 3027	2863	1884	5460
V61	27 1879	12 8563	2711	1702	5497
V62	27 3289	11 4114	3748	2728	5118
V63	26 6242	12 7091	2342	1643	5650

R E L I A B I L I T Y A N A L Y S I S - S C A L E (H E A L T H)

ANALYSIS OF VARIANCE

SOURCE OF VARIATION	SUM OF SQ.	DF	MEAN SQUARE	F	PROB
BETWEEN PEOPLE	294.8960	148	1.9925		
WITHIN PEOPLE	1410.8750	1043	1.3527		
BETWEEN MEASURES	540.9924	7	77.2846	92.0433	.0000
RESIDUAL	869.8826	1036	.8397		
NONADDITIVITY	16.4974	1	16.4974	20.0083	.0000
BALANCE	853.3851	1035	.8245		
TOTAL	1705.7710	1191	1.4322		

GRAND MEAN = 3.8096

TUKEY ESTIMATE OF POWER TO WHICH OBSERVATIONS MUST BE RAISED TO ACHIEVE ADDITIVITY = 2.3375

HOTELLINGS T-SQUARED = 669.8980 F = 91.8200 PROB. = .0000
DEGREES OF FREEDOM: NUMERATOR = 7 DENOMINATOR. = 142

RELIABILITY COEFFICIENTS 8 ITEMS

ALPHA = .5786 STANDARDIZED ITEM ALPHA = .6002

APPENDIX F

COMPUTER ANALYSIS - CHI-SQUARE

V67 CROSSTABULATION OF BY V66

V67	COUNT / ROW PCT / COL PCT / TOT PCT	V66 strongly disagree 1	2	undecide d 3	4	strongly agree 5	ROW TOTAL
1 strongly disagree		2 4.0 5.6 1.3	13 26.0 30.2 8.7	11 22.0 42.3 7.3	18 36.0 47.4 12.0	6 12.0 85.7 4.0	50 33.3
2 disagree		11 28.2 30.6 7.3	12 30.8 27.9 8.0	7 17.9 26.9 4.7	9 23.1 23.7 6.0		39 26.0
3 undecided		5 31.3 13.9 3.3	5 31.3 11.6 3.3	1 6.3 3.8 .7	4 25.0 10.5 2.7	1 6.3 14.3 .7	16 10.7
4 agree		11 32.4 30.6 7.3	10 29.4 23.3 6.7	6 17.6 23.1 4.0	7 20.6 18.4 4.7		34 22.7
5 strongly agree		7 63.6 19.4 4.7	3 27.3 7.0 2.0	1 9.1 3.8 .7			11 7.3
	COLUMN TOTAL	36 24.0	43 28.7	26 17.3	38 25.3	7 4.7	150 100.0

CHI-SQUARE	D.F	SIGNIFICANCE	MIN E.F	CELLS WITH E.F < 5
34.78071	16	0.0043	0.513	13 OF 25 (52.0%)

STATISTIC	VALUE	SIGNIFICANCE
CRAMER'S V	0.24077	

NUMBER OF MISSING OBSERVATIONS = 1

Hypothesis 1

V66: I am happy with my body shape.

V67: I am almost always on a diet.

V57 C R O S S T A B U L A T I O N O F
BY V59

V57	V59 1 very unimportant	2 somewhat unimpor	3 undecided	4 somewhat important	5 very important	ROW TOTAL
1 very unimportant	1 100.0 25.0 .7					1 .7
2 somewhat unimpor				6 50.0 8.6 4.0	6 50.0 9.7 4.0	12 7.9
3 undecided	1 9.1 25.0 .7		1 9.1 8.3 .7	5 45.5 7.1 3.3	4 36.4 6.5 2.6	11 7.3
4 somewhat importa	2 3.0 50.0 1.3		5 7.5 41.7 3.3	29 43.3 41.4 19.2	31 46.3 50.0 20.5	67 44.4
5 very important		3 5.0 100.0 2.0	6 10.0 50.0 4.0	30 50.0 42.9 19.9	21 35.0 33.9 13.9	60 39.7
COLUMN TOTAL	4 2.6	3 2.0	12 7.9	70 46.4	62 41.1	151 100.0

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
47.86551	16	0.0000	0.020	18 OF 25 (72.0%)

STATISTIC	VALUE	SIGNIFICANCE
CRAMER'S V	0.28151	

NUMBER OF MISSING OBSERVATIONS = 0

Hypothesis 2

V57: Importance of being thin

V59: Importance of eating nutritious foods

CROSSTABULATION OF V81 By V66

V81 COUNT / ROW PCT / COL PCT / TOT PCT	V66 strongly disagree 1	2	undecide d 3	4	strongly agree 5	ROW TOTAL
1 strongly disagree	3	6	5	6	2	22
	13.6	27.3	22.7	27.3	9.1	14.6
	8.1	14.0	19.2	15.8	28.6	
	2.0	4.0	3.3	4.0	1.3	
2 disagree	9	14	8	19	2	52
	17.3	26.9	15.4	36.5	3.8	34.4
	24.3	32.6	30.8	50.0	28.6	
	6.0	9.3	5.3	12.6	1.3	
3 undecided	3	10	5	6	2	26
	11.5	38.5	19.2	23.1	7.7	17.2
	8.1	23.3	19.2	15.8	28.6	
	2.0	6.6	3.3	4.0	1.3	
4 agree	12	10	7	5	1	35
	34.3	28.6	20.0	14.3	2.9	23.2
	32.4	23.3	26.9	13.2	14.3	
	7.9	6.6	4.6	3.3	.7	
5 strongly agree	10	3	1	2		16
	62.5	18.8	6.3	12.5		10.6
	27.0	7.0	3.8	5.3		
	6.6	2.0	.7	1.3		
COLUMN TOTAL	37	43	26	38	7	151
	24.5	28.5	17.2	25.2	4.6	100.0

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
25.99878	16	0.0540	0.742	11 OF 25 (44.0%)

STATISTIC	VALUE	SIGNIFICANCE
CRAMER'S V	0.20747	

NUMBER OF MISSING OBSERVATIONS = 0

Hypothesis 3

V66 I am happy with my body shape.

V81 I am more concerned about losing weight or maintaining my weight than about eating nutritious foods.

CROSSTABULATION OF V65 BY V66

V65	COUNT / ROW PCT / COL PCT / TOT PCT	V66 1 strongly disagre	2 disagree	3 undecide d	4 agree	5 strongly agree	ROW TOTAL
1 strongly disagre		2 18.2 5.4 1.3	3 27.3 7.0 2.0	1 9.1 3.8 .7	4 36.4 10.5 2.6	1 9.1 14.3 .7	11 7.3
2 disagree		4 14.3 10.8 2.6	7 25.0 16.3 4.6	5 17.9 19.2 3.3	11 39.3 28.9 7.3	1 3.6 14.3 .7	28 18.5
3 undecided		4 19.0 10.8 2.6	6 28.6 14.0 4.0	2 9.5 7.7 1.3	8 38.1 21.1 5.3	1 4.8 14.3 .7	21 13.9
4 agree		16 27.1 43.2 10.6	20 33.9 46.5 13.2	9 15.3 34.6 6.0	12 20.3 31.6 7.9	2 3.4 28.6 1.3	59 39.1
5 strongly agree		11 34.4 29.7 7.3	7 21.9 16.3 4.6	9 28.1 34.6 6.0	3 9.4 7.9 2.0	2 6.3 28.6 1.3	32 21.2
	COLUMN TOTAL	37 24.5	43 28.5	26 17.2	38 25.2	7 4.6	151 100.0

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
16.57750	16	0.4134	0.510	11 OF 25 (44.0%)

STATISTIC	VALUE	SIGNIFICANCE
CRAMER'S V	0.16567	

NUMBER OF MISSING OBSERVATIONS = 0

Hypothesis 4

V65: I worry about my eating habits.

V66: I am happy with my body shape.

C R O S S T A B U L A T I O N S O F
VS7 BY V102 pattern of binging

VS7	COUNT / ROW PCT / COL PCT / TOT PCT	V102 yes 1	no 2	don't kno w 9	ROW TOTAL
1 very unimportant			1 100.0 1.5 .9		1 .9
2 somewhat unimpor			7 100.0 10.6 6.0		7 6.0
3 undecided		2 28.6 6.7 1.7	4 57.1 6.1 3.4	1 14.3 5.0 .9	7 6.0
4 somewhat importa		6 12.0 20.0 5.2	31 62.0 47.0 26.7	13 26.0 65.0 11.2	50 43.1
5 very important		22 43.1 73.3 19.0	23 45.1 34.8 19.8	6 11.8 30.0 5.2	51 44.0
COLUMN TOTAL		30 25.9	66 56.9	20 17.2	116 100.0

CHI-SQUARE	D.F.	SIGNIFICANCE	MIN E.F.	CELLS WITH E.F. < 5
20.30470	8	0.0092	0.172	9 OF 15 (60.0%)

STATISTIC	VALUE	SIGNIFICANCE
CRAMER'S V	0.29584	

NUMBER OF MISSING OBSERVATIONS = 35

Hypothesis 5

VS7: Importance of being thin

V102: Pattern of binging