

Adolescent girls' body image perceptions and
their relationship with eating behavior

by

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GENERAL INTRODUCTION

In the American culture, widespread concern with the physical body form and emphasis placed on "ideal body shape" is evident (Leon, 1980). The attempts by people with weight related problems and body perception distortions to manipulate the body form are well-documented. Each year, ten billion dollars is spent in the United States for weight loss schemes (Blackburn, Carlin, Greenwald, Goldstein, & O'Laughlin, 1983). Most adolescent females perceive themselves as being heavier than their actual body weight and report a desire to lose weight (Dwyer, Feldman, & Mayer, 1967; Gray, 1977; Storz, 1981). They overestimate their body weight and view their ideal weight as being much lighter than their true "ideal body weight" (Halmi, Goldberg, & Cunningham, 1977; Storz, 1982). The capacity to incorporate an increase in body weight and height, including female sexual characteristics, into a healthy body image is a process of maturation particular to this stage of development.

Discontent with physical appearance is expressed by adolescent females as a reason for the manipulation of their diets. Dissatisfaction with body image may lead to an increased incidence in dieting, especially "fad dieting" (Storz, 1981; Storz & Greene, 1983). Dieting to alter body

weight or proportions has been recorded by a number of investigators (Dwyer & Mayer, 1970; Storz, 1982; Storz & Greene, 1983). Evidence tends to support a relationship between negative perceptions of body image and adverse eating behaviors in adolescent girls (Button, Fransella, & Slade, 1977; Clifford, 1971; Hager, 1981; Kirkpatrick & Sanders, 1978; Storz, 1982; Worsley, 1981). Investigative research on the relationship of body image in the adolescent female and eating behavior has been limited.

The provision of nutrition education alone may not be sufficient to ensure success in changing undesirable eating behaviors. For behavior change to occur, an individual must desire to change. The attitudes held by adolescent females toward themselves, in terms of body image satisfaction, and those related to eating behavior are an important area for investigation. As adolescents are prime targets for nutrition intervention, the identification of attitudes toward their bodies and related eating behaviors, combined with the degree of factual understanding about the growth and development of the human body, may provide an effective orientation for nutrition education with this age group in the future.

The purposes of this study were to review the literature in the area of body image and eating behaviors

and to assess the effect of adolescent females' perceptions of their body image on their eating behavior. This research on adolescent body image satisfaction and eating behavior has implications for research being conducted through a North Central Regional Research Project "Communication Strategies to Improve Nutritional Practices of Adolescents".

Human Subjects in Research

The Iowa State University Committee on the Use of Human Subjects in Research reviewed this project and concluded that the rights and welfare of the subjects were adequately protected, that risks were outweighed by the potential benefits and expected value of the knowledge sought, that confidentiality of data was assured and that informed consent was obtained by appropriate procedures.

EXPLANATION OF ALTERNATIVE THESIS FORMAT

This thesis has been presented in the alternative thesis format. The alternative format involves the preparation of manuscript(s) which have been or are ready to be submitted to appropriate professional journals. This thesis contains two such manuscripts.

The first manuscript, "A review of research in body image perceptions and eating behaviors of adolescent girls. Are they related?," is a review of research in adolescent body image satisfaction and eating behaviors. The second manuscript, "Body image satisfaction and attitudes toward eating behaviors in a group of adolescent girls," describes a research study on body image satisfaction and eating behaviors of 14 to 16 year old Iowa females.

The alternative thesis format was chosen because of the valuable learning experiences to be gained from writing journal manuscripts. Also considered was the wider accessibility of journal articles compared with the traditional format outside the United States of America.

A REVIEW OF RESEARCH IN BODY IMAGE PERCEPTIONS AND EATING
BEHAVIORS OF ADOLESCENT GIRLS. ARE THEY RELATED?

Abstract

Perceptions held by adolescent females about their body form, and the expressed satisfaction/dissatisfaction with specific body aspects and relationships to eating behavior, was reviewed. The literature supported the view that adolescent girls are dissatisfied with some body aspects below the waist and with body weight. These body aspects included the hips, thighs, waist, weight and weight distribution. The eating behaviors of snacking, pigging-out, bingeing, and attempts to manipulate body weight through various forms of dieting, including fad dieting, was also addressed. The role of nutrition education in enhancing understanding of the body form and eating behaviors has been emphasized.

Introduction

Preoccupation with the physical body shape and the consequent multitude of proposed methods to achieve ideal body shape are widespread in American society (Leon, 1980). Attempts to alter the configuration of the body to conform to perceived ideals are well-documented in those with known

body perception difficulties and serious weight related problems, such as obesity and anorexia nervosa (Button, Fransella, & Slade, 1977; Cappon & Banks, 1968; Garner, Garfinkel, Stancer, & Moldofsky, 1976; Guggenheim, Poznanski, & Kaufmann, 1977; Hunt & Weber, 1960; Leon, 1980; Pearlson, Flournoy, Simonson, & Slavney, 1981; Stunkard & Burt, 1967; Stunkard & Mendelson, 1967). Leon (1980) has suggested that the attempt to manipulate the body form to achieve the ideal is present in nonanorexic as well as anorexic females. Preoccupation with appearance may cause mild forms of body image disturbance in nonobese individuals (Miller, Coffman, & Linke, 1980). An increasing number of researchers are noting a relationship between body image perception and eating behavior in normal adolescent girls (Button et al., 1977; Clifford, 1971; Hager, 1981; Kirkpatrick & Sanders, 1978; Storz, 1982; Worsley, 1981). Gray (1977) has stressed the importance of collecting data on body image from nonclinical populations.

A number of researchers have defined body image in the context of their own research (H. I. Douty, Department of Textiles and Clothing, Auburn University, Auburn, Ala., Visual somatometry, unpublished paper, n.d.; Fisher and Cleveland, 1968; Garner et al., 1976; Halmi, Goldberg & Cunningham, 1977; Hunt & Weber, 1960; Jourard & Secord,

1955; Lavik, 1981; Pearlson et al., 1981; Secord & Jourard, 1953; Storz, 1982; Stunkard & Mendelson, 1967). The elements of body image identified by various researchers include: vision, perception (actual versus imaginary), attitudes, norms, comparisons, and the physical body. Combining these various orientations, a definition of body image might include:

"The degree of satisfaction reported by a person with aspects of his/her own body" (Secord & Jourard, 1953, p. 343), "the relationship with his/her exterior environment" (Storz, 1982, p. 667), "the way an individual organizes feelings, attitudes, and experiences about the body" (Hunt & Weber, 1960, p. 3) and "operates with reference to social ideals of beauty and (to the) response of others..." (H. I. Douty, Department of Textiles and Clothing, Auburn University, Auburn, Ala., Visual somatometry, unpublished paper, n.d., p. 2).

The investigation of body image had its beginning in the field of neurology dealing with the illusion of the continued presence of pain in a missing limb. The next stage of investigation was in the field of psychiatric disorders, beginning with schizophrenic subjects and moving on to obese and anorexic patients.

Initially, little interest was expressed in the research area of body image and the "normal" individual. A possible explanation could be the lack of dynamic results and obvious conclusions which might be drawn. In a study by Kirkpatrick and Sanders (1978), 500 adolescents aged 13 to

15 years rated the mesomorph body type in the most favorable terms. The ectomorph body type was viewed negatively although not to the extent that the endomorph was. Hendry and Gillies (1978), in their study of 986 adolescents aged 15 to 16 years, supported adolescents' preference for the mesomorph body structure. This study included underweight and overweight adolescents and suggested that many adolescents have difficulties in body image perception. Researchers also suggested that attitudes held by normal individuals toward their bodies may influence responses in general, as do other significant attitudes. Feelings about the body may affect decisions at all levels (McCrea, Summerfield, & Rosen, 1982).

McCrea et al. (1982) reviewed a variety of methods used in measuring body image. These included questionnaires, draw-a-person tests, body-cathexis scale, body image boundaries, unconscious self-ratings, distortion methods, direct body measurement, and video techniques. These methods are used individually, in combination, or along with other recognized tests.

Comparisons of data collected through the use of different methods have led to conflicting findings. Many researchers have compared results from a wide variety of sources to support their findings. No one method appears to

examine the total body image construct (Hunt & Weber, 1960). The many variables which intervene and interact in the measurement of body image may lead to confusing conclusions. In addition, the various methods may be measuring different aspects of body image (Garner et al., 1976). More research is needed into the reliability and validity of the different instruments and into the consistency of findings obtained using separate methods or any combination of methods. If standardized methods were available then more appropriate choices could be made to meet the needs of research. These are some of the major problems that need to be researched in the area of body image.

Body Image

The following table lists the major research studies in the area of body image in "normal" adolescent and young adult populations and categorizes the studies by the methods of investigation used.

Insert Table 1 about here

The findings of these researchers suggest the possibility of a relationship involving the perceptions held by adolescents toward their body forms and how they attempt to manipulate their bodies through eating behaviors. One

TABLE 1. Examples of research in the area of body image involving adolescent and young adult subjects by methods

Method/Author	Year	Total N	Female	Male	Age(years)
<u>Body-cathexis Scales</u>					
Secord & Jourard	1953	88	43	45	-
Jourard & Secord	1954	62	-	62	-
Jourard & Secord	1955	60	60	-	18-36
Hart	1967	200	200	-	18-22
Clifford	1971	340	196	146	11-19
Lerner et al.	1976	342	218	124	19
Mahoney & Finch	1976	226	128	98	-
Harris et al.	1980	19	-	-	15
Damhorst & Littrell	1984	750	750	-	13-17
<u>Questionnaires</u>					
Huenemann et al.	1966	1000	-	-	14-17
Faterson & Witkin	1970	52	25	27	8-24
Guggenheim et al.	1973	981	513	469	13-14
Gray	1977	189	117	62	18-60
Hendry & Gillies	1978	986	538	448	15-16
Kirkpatrick & Sanders	1978	500	249	251	6-60
Allon	1979	95	68	27	14-17
Stager & Burke	1982	406	-	-	9-16
<u>Human Figure Drawings</u>					
Dwyer et al.	1969	996	446	450	16-19
Faterson & Witkin	1970	52	25	27	8-24
<u>Body Image Boundaries</u>					
Hunt & Weber	1960	100	100	-	17-23
Worsley	1981	138	59	79	16
<u>Direct Measurement</u>					
Stunkard et al.	1972	3344			5-18
Miller et al.	1980	66	46	20	18-23
Storz & Greene	1983	203	203	-	14-18
<u>Distortion Techniques</u>					
Lerner & Korn	1972	60	60	-	5-20
Halmi et al.	1977	86	86	-	10-18

Note. Only research directly related to this review of literature has been included in the table.

important aspect is the manipulation of body weight, especially among adolescent girls.

Concern About Weight

Some consistent results have been reported in the literature concerning body image in normal weight adolescent females. Adolescents generally show a keen interest in their body form (Kaufmann, Poznanski, & Guggenheim, 1975). During the adolescent period, the female experiences an increased awareness of her appearance and the changing configuration of her body. This is most prominent in the early stages of adolescence. Stager and Burke (1982) suggested that the adolescent growth spurt may result in a distortion of body image. Several references reported that females tend to perceive themselves as heavier than they actually are (Auckland, Hunt, & Whelbourn, 1981; Dwyer, Feldman, & Mayer, 1967; Gray, 1977). Adolescent females may overestimate their body weight and view their ideal weight as much lighter than their weight according to standardized tables (Halmi et al., 1977; Storz, 1982).

The degree of overestimation of body proportions was greater and more prominent in the obese and in those who suffer from anorexia nervosa than normal weight adolescents (Dwyer et al., 1967, Dwyer, Feldman, Seltzer, & Mayer, 1969;

Guggenheim et al., 1977; Storz & Greene, 1983). Females were reported to be relatively accurate at estimating ideal body weight (based on standardized tests) and showed a tendency to underestimate any weight loss. Many females indicated a desire to weigh less and reported a preoccupation with their weight, especially about being overweight (Calden, Lundy, & Schlafer, 1959; Dwyer et al., 1967, 1969; Hendry & Gillies, 1978). Females desired to weigh an average of seven pounds less than their actual weight (Calden et al., 1959).

Greater dissatisfaction was expressed by females with their bodies than was expressed by males in a study by Clifford (1971). As a group, adolescent girls and young women overestimated their weight and size. Overestimation of body weight was assumed to be a sign of a mild disturbance in body image (Miller et al., 1980). Women wish to be below the standardized ranges set for weight and see themselves as heavier than they actually are. Clifford (1971) reported that adolescent girls wished for smaller hips, thighs and waists. These results were consistent with those reported by other researchers investigating body image and adolescent girls (Dwyer et al., 1969; Guggenheim, Poznanski, & Kaufmann, 1973; Huenemann, Shapiro, Hampton, & Mitchell, 1968; Lerner & Gellert, 1969).

Concern about body image and eating was expressed as a source of stress by many adolescents (Olsen, 1984). Dissatisfaction with weight is a major concern for adolescent girls. Several researchers (Dwyer et al., 1967; Storz, 1982; Storz & Greene, 1983) identified a desire to lose weight and the attraction to fad diets on the part of adolescent females. Concern with weight may result from a distorted perception of body image and culturally based ideals which stress the association of thinness with beauty. Sixteen percent of the females interviewed by Olsen (1984) reported attempts to alter those parts of their body which they found unacceptable. A concern about weight, all or some of the time, was expressed by 76% of these teenage girls. Only 24% were rarely or never concerned about their weight. Based on anthropometric data, the investigators reported 17% were overweight and 78% normal weight. The adolescents' self-reports placed 60% overweight and 32% as normal. These findings tend to confirm the conclusions reached by other researchers that adolescents have difficulty in accurately estimating their body weight (Dwyer et al., 1967, 1969; Huenemann, Shapiro, Hampton, & Mitchell, 1966).

Discontent with physical appearance was cited on several occasions by adolescents as a reason for

manipulating their eating behavior in order to alter body weight and proportions (Dwyer & Mayer, 1970; Nylander, 1971; Storz, 1982; Storz & Greene, 1983).

Eating Behaviors

Adolescents have great demands placed on their diet due to the acceleration of growth and development during this period. However, their nutritional problems are not created solely by a lack of or an imbalance of nutrients alone. In a study of 2,000 Iowa teenagers, investigators found them to be healthy and well-nourished but consuming diets considered imbalanced and high in dairy products and sugar (Hodges & Krehl, 1965). There have been numerous studies criticizing the diet of the American adolescent population (Dwyer et al., 1967; Hinton, Eppright, Chadderdon & Wolins, 1963; Leverton, 1968; Macdonald, Wearing, & Moase, 1983; Storz, 1982; Storz & Greene, 1983). Specifically in terms of nutritional adequacy Schorr, Sanjur, and Erickson (1972) studied 118 adolescents in New York and the results indicated that these teenagers were consuming less than two thirds of the Recommended Dietary Allowance (RDA) of vitamin A, vitamin C, calcium and iron. Another study of fifteen year old adolescent girls in Kentucky found them to be deficient in vitamin A, calcium and iron (Lee, 1978). The

adolescents were overweight, with irregular eating habits. The presence of risk factors associated with coronary heart disease were also noted.

There are a number of eating habits which manifest themselves in the adolescent age group. Eating behavior is one way in which adolescents can express their individuality and seek their own identity (Hodges & Krehl, 1965). These eating behaviors have been well-documented in the literature (Dwyer et al., 1967; Huenemann et al., 1966, Kaufmann et al., 1975) and include: snacking, pigging-out, bingeing, missing meals, fad dieting, anorexia nervosa, and bulimia.

There is an extensive amount of research in the area of adverse eating behaviors combined with various psychological states and severely disturbed body images such as clinical obesity, anorexia nervosa, and bulimia (Greger, Divilbliss, & Aschenbeck, 1979). However, little work has been done in the area of the normal weight adolescent female who consumes a "typical" teenage diet.

Snacking

Snacking, as defined by Olsen (1984), is the eating of small amounts of food at nonmeal times throughout the day. It is considered to be casual eating and a normal part of behavior for adolescents. Snacking plays an important part in the teens' lifestyle as well as providing from 11-25% of

the adolescents' energy requirements (Olsen, 1984; Truswell & Darnton-Hill, 1981). It may or may not consist of sweets and foods low in nutrient density. The percentage who snack varies considerably from 58% snacking in the evening (Truswell & Darnton-Hill, 1981) to 75% snacking between school and dinner (Marina & King, 1980) to 90% snacking at least once per day (Greger et al., 1979).

Snacking can benefit nutrient intakes, especially when meals are missed. The meals most often missed are breakfast (Huenenman et al., 1968; Olsen, 1984; Truswell & Darnton-Hill, 1981) and lunch (Huenemann et al., 1968). Reports indicated that the practice of missing meals by adolescent females was designed in part to reduce energy intake to assist with reducing weight (Hodges & Krehl, 1965; Lee, 1978). Females were more likely to skip breakfast to lose weight than males (Olsen, 1984). Olsen found that parental pressure to stop snacking resulted from a fear that these adolescents would become overweight. Several researchers indicated that as socioeconomic status increased, meals became more regular (Schorr et al., 1972; Truswell & Darnton-Hill, 1981).

Pigging-out

Pigging-out is excessive eating for fun where the adolescent willingly becomes involved with the peer group.

Common among females, pigging-out may be planned or spontaneous and is often seen as a release from the pressures of weight control tactics (Olsen, 1984). In Olsen's investigation, 35% of the females reported pigging-out very often, and 53% sometimes.

Bingeing

Bingeing is another eating behavior and has been defined as excessive eating alone which is accompanied by feelings of being out of control and is usually associated with feelings of guilt. Two percent of the 2,000 subjects studied by Kagan and Squires (1984) were classified as having distinct eating disorders. Twenty percent of the eating disorders were identified as bingeing behavior. Of the subjects identified as having eating disorders 27 reported feeling out of control about food at least once a week. Females reported significantly more compulsive or emotional eating than males.

Body Image, Weight Control and Dieting Behavior of Adolescent Girls

The perception of overweight also has a great deal of influence on dieting and eating behavior (Dwyer et al., 1967). Hawkins, Turell and Jackson (1983) supported the association of the tendency for restricting food intake and

a concern about dieting with "socially desirable feminine attributes." Results of a study of 203 adolescent females by Storz and Greene (1983) showed that 83% wished to reduce their weight. Although teenagers rated the more nutritionally balanced methods of weight reduction higher than the undesirable methods, they reported trying many of the undesirable methods. Those who wished to lose more than 10% of their weight rated the fad diets as more desirable. Quick weight loss methods, especially low carbohydrate and high fat diets, are popular with this age group (Marina & King, 1980). However, a majority (60%) of the females studied by Huenemann et al. (1966) disapproved of liquid formula diets. A survey of a college population (Dwyer et al., 1967) found that the more hazardous practices such as fasting or the use of appetite suppressants were rare. Olsen (1984) found that 4% of 681 male and female adolescents were inducing vomiting to lose weight, 8% were using diet pills and 9% were taking laxatives and diuretics. The more extreme dieting tendencies were accompanied with dissatisfaction with body image and low self-esteem.

When 446 adolescents were asked the major reasons for commencing a diet, discontent with physical appearance was identified as the major reason (Dwyer et al., 1967). Other reasons included appearance, clothing, advice of others,

special event, and physical fitness. Reasons for terminating diets were achievement of dieting goal, boredom, hunger, and failure to reduce weight rapidly enough. An investigation of the actual incidence of dieting among adolescents found that 61.4% had dieted at some time to reduce weight. Most began dieting at the age of 14. Thirty-seven percent were on a diet the day of the survey and of those 5% were attempting to gain weight. Olsen (1984) reported that 52% dieted all or some of the time to reduce weight, while 48% reported never dieting.

Generally, the adolescent does not appear to have a problem with food availability. Consumption tends to be related to psychological and social factors (Lavik, 1981). Adolescents see the primary cause of obesity as overeating (Huenemann et al., 1966; Kaufmann et al., 1975) and attempt to reduce weight by decreasing intakes of snacks and meals (Dwyer et al., 1967). Other causes of obesity identified by adolescents were a lack of exercise (Dwyer et al., 1967) and eating the wrong foods (Kaufmann et al., 1975). Eating the wrong foods was believed to be a cause of obesity by half of those teenagers who were overweight but only by a quarter of the normal weight and thin adolescents. More females than males are prepared to use dietary modification to change body proportions (Huenemann et al., 1966; Kaufmann et al., 1975; Miller et al., 1980).

Conclusions

Concern about weight is widespread in the general population (Dwyer and Mayer, 1970), and the adolescent female appears particularly sensitive to this concern. Adolescent girls have a keen interest in their body form (Kaufmann et al., 1975). Attitudes teenagers have toward their bodies have been shown to influence eating behavior. Teenagers express a general dissatisfaction with their bodies (Dwyer et al., 1969, Storz & Greene, 1983). Girls wish to weigh less, avoid obesity and attain slimness. Even those girls who are within their ideal weight according to standardized tables wish to lose weight and choose ideal figures smaller than the actual figures considered appropriate for their age group.

Those teenage girls with unrealistic perceptions of themselves may be more prone to attempt any one or several of the various methods of weight reduction, especially fad dieting. Some teenagers are prepared to "do anything" to alter their shape, size and proportions. Adolescent girls prefer to diet. However, very few are successful in achieving the weight they desire (Huenemann et al., 1966).

There has been concern expressed in the literature over an apparent increase in the prevalence of eating disorders among adolescent females, although this prevalence has not

been supported by some researchers (Halimi, Falk, & Schwartz, 1981). Misconceptions about eating behaviors develop during childhood and adverse practices adopted during adolescence have the potential to be hazardous to their health as adults. As the teenage girl seeks independence from her family and establishes her own identity, the changes in her eating behavior have been well-documented.

In order to provide effective, well-directed nutrition education programs for adolescent females, it is necessary to identify their perceptions of their body (body image satisfaction) and any significant relationships with food behavior. Adolescence is a very appropriate time for nutrition education due to the interest in the body and the establishment of body concepts during this stage of development (Storz & Greene, 1983; Stunkard and Burt, 1967). For nutrition educators, it is important to understand the attitudes of the adolescent girl toward eating and dieting and her perceptions of her body, actual and ideal, before effective nutrition education can be implemented.

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BODY IMAGE SATISFACTION AND ATTITUDES TOWARD EATING
BEHAVIORS IN A GROUP OF ADOLESCENT GIRLS

Abstract

A study, involving 14 to 16 year old females, investigated the perception of body image using a modified version of the Secord and Jourard Body-cathexis Scale (1953). Results revealed a general level of satisfaction with the total body form. However, some areas below the waist were rated more negatively. Dissatisfaction with weight and weight distribution were expressed by these adolescent girls. Spearman's rho correlation coefficients and Chi-square values indicated that the variables percentiles for weight and weight for height and age, watching weight, and frequency of dieting were significantly related to body image. Attitudes toward the eating behaviors of snacking, pigging-out, bingeing, various methods of dieting, and concern for future health were also reported. A substantial number of girls revealed they diet to become thinner, happier, and healthier. The implications for nutrition education are discussed.

Introduction

Adolescents have great demands placed on their dietary intake due to the acceleration of physical growth which is characteristic of this period of the life cycle. However, their nutritional problems are not created by deficiencies or excesses in nutrients alone. Awareness of the conformational changes in the adolescents' body and the emphasis placed on slender body proportions as the ideal is well-documented in the American society (Leon, 1980). Concern is developing in regard to the ability of adolescent females to evaluate peer and media pressures at a time when they are very susceptible to external influences as their body conformation changes and they seek their own identity and independence (Hodges & Krehl, 1965). Stunkard and Burt (1967) stress that adolescence is a critical period of time for the development of body acceptance.

A keen interest in body form is shown by many adolescents (Kaufmann, Poznanski, & Guggenheim, 1975). Concern about body image and eating was expressed as a source of stress by many adolescents (Olsen, 1984). Hawkins, Turell, and Jackson (1983) support the association of the tendency for restricting food intake and concern about dieting with "socially desirable feminine attributes" (p. 711). Dissatisfaction with weight was a major concern

for adolescent females in a study by Dwyer, Feldman, and Mayer (1967). The perception of overweight had great influence on dieting and eating behavior. When Dwyer et al. (1967) asked adolescents the reasons for commencing a diet discontent with physical appearance was identified as the major reason. Other reasons included: appearance, clothing, advice of others, an upcoming event or physical fitness. Sixteen percent of the adolescent girls reviewed by Olsen (1984) reported attempts to alter those parts of their body which they perceived as unacceptable. Concern about weight all or some of the time was expressed by 76% of these teenagers, while 52% reported dieting to reduce weight some or all of the time. Dwyer et al. (1967), investigating 446 adolescents, found that 64% had dieted to reduce weight at some time. Thirty-seven percent were on a diet the day of the survey and 5% were dieting to increase weight.

Many adolescent females express a desire to lose weight (Dwyer et al., 1967; Storz, 1982) and are attracted to fad diets (Storz & Greene, 1983). This may result from an inadequately developed perception of body image and culturally based ideals which stress the association of beauty with thinness (Mahan and Rees, 1984). Storz and Greene (1983) indicated that, of the 203 adolescent females they reviewed, 83% wished to reduce their weight. Although

these teenagers rated more desirable methods of weight reduction higher than undesirable methods, they reported trying many of the undesirable methods. Those girls who wished to reduce their weight by more than 10% of their original weight rated the fad diets as more desirable. According to Marina and King (1980), quick weight loss methods, especially low carbohydrate and high fat diets, are popular with this age group.

There are a number of eating behaviors prevalent in the general population which begin to appear in adolescence. These eating behaviors include: snacking, compulsive eating behaviors such as pigging-out and bingeing, missing meals, experimenting with and following fad diets, and eating disorders such as anorexia nervosa and bulimia. Documentation in the literature for these behaviors is abundant; however, few deal with the normal weight adolescent female (Dwyer et al., 1967; Huenemann, Shapiro, Hampton, & Mitchell, 1966; Kaufmann et al., 1975; Schorr, Sanjur, & Erickson, 1972). The purpose of this study was to assess the effect of body image perceptions of adolescent females who were within normal ranges for height and weight on eating behaviors and attitudes toward various methods of weight manipulation.

Methodology

Instrumentation

A questionnaire was developed composed of three sections: background information, body image satisfaction, and attitudes toward eating and dieting behaviors. Socio-economic status (SES) was determined using Hollingshead's Two-Factor Index of Social Position (Miller, 1977). This index is based on the occupation and education levels of parent(s) or legal guardian(s). Body image satisfaction was measured using a shortened format (20 body part items) of the Secord and Jourard Body-cathexis Scale (BCS), (1953). The variables concerned with attitudes toward eating behaviors were chosen from a review of the literature in this area (Clifford, 1971; Dwyer et al., 1967; Dwyer, Feldman, Seltzer, & Mayer, 1969; Hinton, Eppright, Chadderdon, & Wolins, 1963; Mahan & Rees, 1984, Storz & Greene, 1983). Questionnaire items on eating behaviors included: snacking, pigging-out, bingeing and dieting methods. Additional items dealt with reasons for dietary manipulation, causes of overweight, and concern for future health. In addition to the review of literature, content validity was also sought by following the recommendations of university faculty from the departments of Food and Nutrition and Home Economics Education.

Sample

Female students from three high schools representing a large city, a medium sized town and a rural community volunteered for the study. Although the age range for the sample was defined as 14-16 years, no student was denied the opportunity to participate. Due to their age, consent forms were obtained from the parent(s) or guardian(s) of all the adolescent girls who wished to participate as required by the Human Subjects in Research Committee.

Participants were requested to complete the questionnaire and then be measured for height and weight. Height was measured without shoes using meter rules and a height right angle. Weight was recorded in light winter clothing without shoes on a portable metric scale. Emphasis was placed on confidentiality.

The data collecting sample was composed of 212 respondents aged 13-19 years and covered the full range of percentiles for height and weight. The data producing sample was composed of 154 adolescent females aged 14-16 years, between the 10th and 90th percentile for weight for height and age (WHTAGE), (National Center for Health Statistics, NCHS, 1973). Extremes in height and weight were excluded to obtain a sample of teenage girls in the normal weight and height ranges (Table 2). The group chosen

represented those participants who fell between the 10th and 90th percentiles because the means for the body image scores for the 10th-90th and 25th-75th percentiles were very similar (3.26, 3.28, respectively).

Descriptive statistics were computed for all items. For age, 33.1% were 14 years old, 41.6% were 15 years old, while 25.3% were aged 16 years. The mean age was 14.92 years. The proportion of the teenage girls sampled was not consistent with the general midwestern population. There were more adolescent girls aged 15 years (41.6% versus 33.1%) and less 16 year olds than in the general population (25.3% versus 32.6%). There were slightly fewer 14 year old adolescent girls in the sample (United States Department Commerce, Bureau of the Census, 1983) than in the general population.

An analysis of socio-economic status (SES), ranging from 1 (highest SES) to 5 (lowest SES), revealed a mean of 3.121. The Scheffé' test showed that no two groups were significantly different ($p < .05$) for SES based on school sites.

The girls sampled were heavier and taller than the predicted levels based on the NCHS tables (1973) (Table 2). The increased weight may be partially explained by heavier winter clothing; however, this factor can not account for all of the variance.

Insert Table 2 about here

Results and Discussion

Body image scores ranged from 1 (very satisfied) through to 5 (very dissatisfied) and were recoded so as to compare with other research studies (1 very dissatisfied; 5 very satisfied). The mean body image satisfaction score was 3.26 for those girls between the 10th-90th percentile for WHTAGE. The mean score indicated that these adolescents had positive views of the body aspects used on the BCS. This evidence for positive body images was consistent with similar research on adolescents (Lerner, Orlos, & Knapp, 1976). A direct comparison of scores with other researchers can not be made because the Secord and Jourard BCS (1953) was adapted for this study; however, the direction of quantified reaction is similar. Clifford (1971) indicated a mean body image satisfaction score of 3.39 for girls and 3.71 for boys (aged 11-19 years). For young adults scores were reported at 3.46 for women and 3.43 for men by Secord and Jourard (1953).

Those body aspects rated the most negative (mean less than 3.0) included: weight, thighs, hips, leg shape,

TABLE 2. Weight for height and age of 14-16 year old females compared with percentiles from the National Center for Health Statistics, 1973. (N=154)

GROUP	EXPECTED %	SAMPLED %	VARIATION %
>10, ≤25	15	13.0	-2.0
>25, ≤50	25	26.6	+ 1.6
>50, ≤75	25	39.0	+14.0
>75, ≤90	15	21.4	+ 6.4

bottom, weight distribution, abdomen and waist (Table 3). These results are consistent with those of other researchers (Clifford, 1971; Dwyer et al., 1967; Lerner, Karabenick, & Stuart, 1973; Lerner, Orlos, & Knapp, 1976; Jourard and Secord, 1954, 1955; Olsen, 1984; Secord & Jourard, 1953; Storz & Greene, 1983). Those areas of the body rated the most positive included: shoulders, face shape, arms, chin, ribs, and height.

Insert Table 3 about here

Snacking

Snacking was defined by Olsen (1984) as eating small amounts of food at nonmeal times throughout the day. The adolescents in this study viewed snacking as eating for fun (76%), alone (76.6%) or with friends (75.3%). Forty percent considered snacking a method of maintaining weight, and 40% of these teenage girls viewed snacking as a method of gaining weight. For 65.6% of the girls, snacking is not considered to be a problem to health, 79.2% viewed snacking as acceptable some of the time, and 27.3% of these teenage girls thought snacking was bad for their health.

TABLE 3. Body image satisfaction ranking of body parts by weight for height and age (10th to 90th percentiles) of adolescent females aged 14 to 16 years

Body part	Mean	Percent		
		Satisfied	Dissatisfied	Neither
Weight	2.662	35.1	57.0	7.9
Thighs	2.737	36.2	50.7	13.2
Hips	2.842	42.1	47.3	10.5
Leg shape	2.888	38.8	42.1	19.1
Bottom	2.907	40.4	39.7	19.9
Weight distribution	2.928	38.8	36.8	24.3
Abdomen	2.980	37.8	35.1	27.2
Waist	2.987	46.1	48.0	5.8
Bust	3.132	44.4	32.4	23.2
Body build	3.252	47.6	27.2	25.2
Calves	3.375	55.3	23.0	21.7
Leg length	3.427	57.3	23.4	19.3
Overall appearance	3.473	64.7	20.0	15.3
Hands	3.503	62.2	19.2	18.5
Height	3.596	66.9	22.5	10.6
Ribs	3.612	60.5	7.9	31.6
Chin	3.616	65.5	9.9	24.5
Arms	3.675	67.6	8.6	23.8
Face shape	3.762	76.1	11.3	12.6
Shoulders	3.836	75.6	5.3	19.1
Mean=3.26				
SE=0.052				
SD=0.647				
Missing cases= 2				
N=152				

Note. The body image satisfaction range is 1 (very dissatisfied) through 5 (very satisfied).

Pigging-out

Excessive eating for fun where the adolescent willingly becomes involved was the definition used to describe pigging-out (Olsen, 1984, p. 17). The teenage girls see pigging-out as fun (63%) and it is associated with the peer group (67.5%). Many girls were pigging-out alone (43.5%). Pigging-out was viewed as a method of gaining weight by 61% and acceptable some of the time by 75% of the adolescent girls. Sixty-two percent felt pigging-out was bad for their health. Olsen (1984) reported that 88% of female adolescents reported pigging-out very often or sometimes.

Bingeing

Olsen (1984) defined bingeing as very excessive eating alone which is accompanied by feelings of being out of control and is usually associated with feelings of guilt. The teenage girls who participated in this study had mixed views on what constitutes bingeing behavior. Bingeing was seen as occurring equally within the family, with friends and alone. Kagan and Squires (1984) identified 20% of the sampled 2,000 females as exhibiting bingeing behaviors. The teenagers studied viewed this type of eating behavior as eating out of control (35.1%) or for fun (29.2%). This may be related to the number of festive occasions in the American culture where family groups consume excessive

amounts of food (Thanksgiving, Christmas). Bingeing was seen as a method of gaining weight (53.9%), not acceptable any of the time (60.4%) and bad for health (79.2%)

Dieting tendencies

Fifty-one percent of the teenage girls sampled indicated they watched their weight some of the time, while 41.6% watched their weight all of the time. Concern about weight increases with age (Nylander, 1971; Olsen, 1984). The increase in publicity concerning the health hazards of overweight populations may be a factor in these results as well as body image perception distortions. When asked for the actual incidence of dieting behavior (to gain or lose weight) 61.0% were dieting some of the time while 27.9% had never dieted. The majority of adolescent girls studied (92.9%) watched their weight although not all of them felt the need to diet.

When body image was correlated with the variables percentile for weight, WTHTAGE, watching weight, and frequency of dieting Spearman's rho correlation coefficients were all highly significant ($p < .001$). Those girls in the higher percentiles for weight and WTHTAGE were more dissatisfied with their body image ($\chi^2 = 20.68$, $p < .01$; $\chi^2 = 24.37$, $p < .001$, respectively) than those who were in the lower percentile groupings. Further analyses suggested that

increased dissatisfaction with body image increased the tendency toward watching weight ($\chi_2 = 18.17$, $p < .001$), and frequency of dieting ($\chi_2 = 17.87$, $p < .001$). No significant correlations with body image were found with concern for future health or dieting on the day of the study. As percentiles for weight increased significant correlations were found with watching weight ($r = .27$, $p < .001$), and frequency of dieting ($r = .245$, $p < .001$). The same trend was reflected in the variable WHTAGE with watching weight ($r = .412$, $p < .001$) and frequency of dieting ($r = .216$, $p < .01$).

The data producing sample were separated into Dieters (72.1% dieting all or some of the time) and Non-dieters (27.9%). On the day of the study 51.3% of the data producing sample were dieting (71% of the Dieters). Thirty percent of the girls had been on the diet for only a few days and 44.1% of them intended to remain on the diet for a month or longer. Less than one half of the Dieters felt they were successful to somewhat successful in their dieting (45.6%), 36.5% felt neither successful nor unsuccessful, and only 17.3% felt they were unsuccessful or somewhat unsuccessful with their dieting.

From a selection of 17 dieting methods, each girl from the Dieters group was asked to indicate if she had used a particular method. The most popular methods used by the

Dieters to change their diets are listed in Table 4. The popularity of missing meals to reduce weight is supported by other researchers (Hodges & Krehl, 1965; Lee, 1978).

Insert Table 4 about here

Those methods revealed by the Dieters to be the least popular for changing their diets are also indicated in Table 4. The results indicated that of those dieting, one girl in 10 had tried vomiting as a method to change her weight. Olsen (1984) found that 9% of adolescents were using laxatives and diuretics, 8% using diet pills, and 4% vomiting to change weight. Dwyer et al. (1967) found the use of fasting and appetite suppressants rare. Sixty percent of females reported their disapproval of liquid formula diets according to Huenemann et al. (1966).

The percentage of Dieters who felt the use of the above dieting methods were desirable or undesirable was indicated in Table 5. Exercising was the most desirable method (86.4%) with vomiting the most undesirable method (88.2%). A few girls were undecided concerning the desirability or undesirability of vomiting (5.4%), exercising (6.4%), taking laxatives (8.2%), eating less (10%), using water pills (11.8%), and eating less fattening foods (12%) as methods for changing their diets (Table 5).

TABLE 4. Methods used by teenage dieters to change their diets. (N=111)

Method	Percent	N
Eating less	99.4	109
Exercising	97.6	107
Eating less fattening foods	89.3	98
Missing meals	84.8	93
Restricting calories while eating a variety of foods	68.4	75
Stop eating for a time	49.3	54
Crash diet	47.5	52
Following health professionals' advice	28.5	31
Taking diet pills	22.7	25
Eating mainly one food	21.9	24
Following magazine/book diet(s)	20.0	22
Liquid formula diets	17.3	19
Following advice of teachers	16.4	18
Vomiting	10.9	12
Attending weight loss groups	3.6	4
Taking laxatives	2.6	3
Using water pills	0.0	0

Insert Table 5 about here

Dieters identified several very important and important reasons for desiring to change their weight. The most important reason adolescent Dieters change their weight is to feel better about themselves (92.8%), while the least important reason is to put on weight (Table 6). Only 7.2% identified gaining weight as a reason for dieting behavior. Dwyer et al. (1967) found 5% wishing to gain weight.

Insert Table 6 about here

These teenage girls rated their normal daily diets in terms of "very good" to "very poor" (Dieters and Non-dieters). Less than one half of these girls (45.5%) felt their diet was good while 33.8% were undecided. However, only 1.3% rated their daily food intake as very poor.

When asked to identify the major reasons, or causes, for a person becoming overweight, lack of exercise, overeating, lack of will power, eating the wrong foods and a lack of motivation were the major reasons selected (Table 7). These views are supported by the work of several researchers (Dwyer et al., 1967; Huenemann et al., 1966; Kaufmann et al., 1975). Of the 10 factors listed, the absence of a mean below 3.0 (scale 1 through 5, very

TABLE 5. Desirability of methods used by teenage dieters to change their diet. (N=100)

Method	Percent		
	Desirable	Undesirable	Undecided
Exercising	86.4	7.2	6.4
Eating less	85.4	4.6	10.0
Eating less fattening foods	81.8	5.4	12.8
Restricting calories with a variety of foods	69.9	10.9	19.1
Missing meals	40.9	23.6	35.5
Health professionals advice	40.0	24.5	35.5
Attending weight loss groups	26.4	43.6	30.0
Crash dieting	25.5	56.3	18.2
Stop eating	24.5	56.3	19.1
Taking diet pills	20.0	61.8	18.2
Eating mainly one food	17.2	52.7	30.0
Magazine or book diets	15.4	47.3	37.3
Advice of teachers	15.4	47.3	37.3
Liquid formula diets	9.0	62.7	28.2
Vomiting	6.4	88.2	5.4
Taking laxatives	4.6	87.2	8.2
Using water pills	2.8	85.4	11.8

TABLE 6. Very important and important reasons for weight change according to teenage dieters. (N=111)

Method	Percent
Feel better about myself	92.8
Be more attractive	91.0
Be healthy	89.2
Be thinner	89.2
Feel happier	88.1
So clothes will fit better	77.9
Improve my health	76.6
Exercise more easily	60.3
Please my boyfriend	51.3
Prevent disease	47.3
Please my girlfriends	33.4
Follow recommendations of health professionals	29.1
Please my parents	28.7
Please my coach	20.4
Put on weight	7.2

important to very unimportant) for any of the factors suggests that all the factors listed were important to varying degrees as causes of overweight according to the adolescent girls sampled.

Insert Table 7 about here

Forty-three percent of the adolescent females sampled felt that the food which they consume daily will affect their future health, 51.3% felt it may affect their health, and 5.3% of these adolescent girls reported that the food eaten daily will not affect their future health. The concern for future health conflicts with the findings of Olsen (1984) who reported that adolescents, in general, do not perceive their lives being affected by what they eat. The concern for future health indicates a possible theme for nutrition education

Conclusions

This study involved 154 adolescent females from 14 to 16 years. The girls were individually measured for height and weight to ensure they fell within the 10th to 90th percentiles for WHTAGE. Each girl responded to a modified version of the Secord and Jourard BCS (1953) and to attitudinal items about various dieting and eating behaviors.

TABLE 7. Causes of overweight according to 14 to 16 year old teenage girls. (n=154)

	Mean Score	Percent	N
Lack of exercise	1.57	89.6	138
Overeating	1.61	87	134
Lack of will power	1.78	83.1	128
Eating the wrong food	1.86	84.4	130
Lack of motivation	1.88	78.6	121
Disease	2.24	63	97
genetic disorders	2.25	66.2	102
Eating to please someone	2.80	42.8	66
Lack of education	2.91	37.7	58
Poverty	2.94	45.4	70

Note. The lower the score the higher the value as an indicator as a cause of overweight.

These adolescent girls appeared to be satisfied with their total body form. However, there are several body aspects with which adolescent girls feel a high degree of dissatisfaction. These body aspects tend to reside below and include the waist and the body parts below the waist (thighs, hips, leg shape, bottom and abdomen). Weight and weight distribution are also areas of dissatisfaction for teenage girls. Even though these adolescent girls are satisfied with their total body image, a proportionally large percentage of the total group continue to watch their weight, and diet to feel better about themselves.

Nutrition knowledge is generally weak among adolescents (Nutrition Committee, Canadian Pediatric Society, 1983). Olsen (1984) suggested that intense pressure is present for teenagers to obtain acceptable body conformations and eating behaviors are strongly influenced by idealized body proportions (weight, shape and size). This pressure combined with media's portrayal of slimness as the ideal, and the adolescents' dissatisfaction with specific body parts make adolescents susceptible to food fads.

There are a number of methods for altering weight about which adolescent girls are unsure as to their desirability of use. These are the areas which have the most potential for nutrition education. The adolescent girls sampled appeared

concerned about their eating and dieting patterns, and their general health today and in the future. The concern for future health offers a possible emphasis for nutrition education.

Adolescence is a very appropriate time for nutrition education intervention due to interest in the body and the establishment of body concepts during this stage of development (Stunkard and Burt, 1967; Storz and Greene, 1983). Adolescents may be more receptive to nutrition if it relates to their physical development, attractiveness and performance. Nutrition education programs including the identification of body perceptions and the extent these perceptions influence eating behavior will help adolescent girls to perceive nutrition as an integral part of health care.

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SUMMARY AND RECOMMENDATIONS

The purposes of this research were to review the literature in the area of body image and eating behaviors and to assess the effect of adolescent females' perceptions of their body image satisfaction on their eating behavior.

The promotion of slimness as the most acceptable body form has led to an increase in the concern this influence has in the American population, especially among adolescent females. Attempts to manipulate the body form to comply with perceived standards of ideal beauty can be seen through the adolescent females' attempts to change specific body parts found by these girls to be undesirable. The popularity of fad diets with adolescent females may be a result of attempts to achieve an ideal body form.

Body image satisfaction, its measurement and influence, have received increasing attention in the literature. However, much of the literature deals with abnormal conditions such as anorexia nervosa. Limited work has been done on the body image satisfaction of normal teenage girls consuming a typical teenage diet. Wide diversity exists among the methods used to measure body image with no one method being superior. Each method may be measuring a different aspect of body image. A modified form of the Secord and Jourard BCS (1953) was used for this study.

A high school group of the 212 adolescent females from three separate schools volunteered for the study. Only those aged 14 to 16 years who fell within the 10th to 90th percentile for WTHTAGE were selected. The data producing sample involved 154 girls, 111 of whom were dieting all or some of the time. The mean body image score for the sample (Dieters and Non-dieters) was positive (3.26) although these adolescent girls were highly dissatisfied with the specific body aspects of weight, thighs, hips, leg shape, bottom, weight distribution, abdomen, and waist. Thighs, hips, bottom, and abdomen reflect those areas of the body where females have a natural tendency to increase fat deposits with maturation and increased weight. Those areas of greatest satisfaction included ribs, arms, chin, face and shoulders. Statistical procedures indicated a high level of significance between body image and the variables percentiles for weight and WTHTAGE, watching weight, and frequency of dieting. The variables weight and WTHTAGE were individually significant with watching weight and frequency of dieting.

The adolescent girls were asked to describe their feelings toward the eating behaviors of snacking, pigging-out and bingeing. Snacking was seen as a method to manipulate weight (gain or maintain weight). The majority of girls saw snacking as a fun activity and not a problem to

health. Although pigging-out was viewed as a fun activity approximately 66% of these teenage girls saw it as a method for gaining weight and bad for their health. Bingeing was also viewed as a method of gaining weight by half of these adolescent girls. Three quarters of the girls felt that bingeing was bad for their health. The role of nutrition education in aiding adolescent girls to understand these eating behaviors will assist in relieving some of the anxiety associated with eating patterns common to adolescents in general.

The majority of these adolescent girls were watching their weight. While not all of them felt the need to diet, almost two thirds had been dieting some of the time. The methods used by these adolescent girls to manipulate their weight are the same methods they feel are the most desirable. These included exercising, eating less, eating less fattening foods, restricting calories with a wide variety of foods and missing meals.

The more hazardous methods of using water pills, diet pills, laxatives, and liquid formula diets, although considered undesirable, were being used by a minority of these adolescent girls. Areas for concern in adolescent girls eating behaviors included the high percentage who choose to miss meals, stop eating for a time and engage in

crash dieting. Nutrition education has a role here as 40% see missing meals as a desirable method to alter their diets.

The selection of the advice of teachers and health professionals as a method to aid weight manipulation was considerably low. The desirability of these two methods was also rated low by the adolescent girls. This has implications for the reputations of these two groups as health care providers for adolescent girls.

The role of nutrition education becomes increasingly important when the majority of adolescent girls who are dieting do so to feel better about themselves, to be more attractive, thinner and healthier. The association of health and happiness with thinness is a cause for concern. These adolescent girls viewed a lack of exercise as a major cause of overweight. This tied in with the choice of exercise as the most desirable method and the second most popular method chosen to alter their diets. The view that overweight people eat too much, lack will power and motivation is still widely held by these girls. The adolescent girls participating in the study hold positive views about their general food consumption and feel the food which they are presently eating will influence their health in the future.

Possible themes for nutrition education which may arise from the results of this study include: attractiveness, improving performance, and dieting for future health. Dissatisfaction with body image, inadequate nutrition knowledge, peer pressures and the influence of the mass media combine to increase the susceptibility of adolescent girls toward less desirable eating behaviors. The prolonged use of the more undesirable methods of weight manipulation is both costly and potentially hazardous to adolescent girls' future health.

Through a greater understanding and heightened awareness of the body form adolescent girls may begin to view their bodies in a more positive light. Creating an interest in nutrition and eating behaviors, while incorporating an awareness of the body form and the knowledge to enable adolescent girls to select well-balanced diets, is a challenge for nutrition educators.

Recommendations

Recommendations resulting from this research include:

1. Both the Dieters and Non-dieters subgroups should be given the same opportunity to answer all diet related questions to find out if these two groups would have different opinions, especially toward

the desirability of methods of weight manipulation.

2. Males of the same age groups should also be included.
3. A similar study should be conducted with an older age group (perhaps 15 to 18 years of age), in order to compare results.

The results of this study have potential for use in the development of nutrition education programs to further adolescents understanding of eating behaviors and body form, and to increase awareness of the relationship of diet and health. Further study with adolescents will enhance the depth of knowledge about attitudes and eating behaviors.

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APPENDIX A INSTRUMENT

Please answer the following questions about your father or male guardian. (If you have both, answer for the one that is financially responsible for you.)

- 1. Job title or position. _____
- 2. Major employer (indicate if self-employed). _____
- 3. Briefly describe his work. _____

- 4. Does he own the business where he works? _____ Yes _____ No
- 5. If he owns a farm, how many acres is it? _____

6. Please check the highest year in school reached by your father or male guardian.

- Elementary (up to 7th grade)
- High School (7th - 9th grade)
- High School (10th - 11th grade)
- High School (12th grade)
- Partial College Training
- Undergraduate Degree
- Graduate Degree

Please answer the following questions about your mother or female guardian. (If you have both, answer for the one that is financially responsible for you.)

- 7. Job title or position. _____
- 8. Major employer (indicate if self-employed). _____
- 9. Briefly describe her work. _____

- 10. Does she own the business where she works? _____ Yes _____ No
- 11. If she owns a farm, how many acres is it? _____

Please check the highest year in school reached by your mother or female guardian.

- 12. Elementary (up to 7th grade)
- High School (7th to 9th grade)
- High School (10th to 11th grade)
- High School (12th grade)
- Partial College Training
- Undergraduate Degree
- Graduate Degree

13. Date of Birth. _____ / _____ / _____
month day year

14. Do you have a serious disease or physical abnormality?
_____ No _____ Yes. If yes, please explain _____

HOW DO YOU FEEL ABOUT YOUR BODY?Directions:

Circle how satisfied you feel about these aspects of your body using the following scale. There are no right or wrong answers.

am very satisfied	am satisfied	have no feelings either way	am dissatisfied	am very dissatisfied	Circle	
					1.	I am very satisfied
					2.	I am satisfied
					3.	I have no feelings either way
					4.	I am dissatisfied
					5.	I am very dissatisfied
1	2	3	4	5		face shade
1	2	3	4	5		chin
1	2	3	4	5		arms
1	2	3	4	5		hands
1	2	3	4	5		width of shoulders
1	2	3	4	5		bust
1	2	3	4	5		ribs
1	2	3	4	5		waist
1	2	3	4	5		abdomen
1	2	3	4	5		nips
1	2	3	4	5		bottom
1	2	3	4	5		leg shape
1	2	3	4	5		leg length
1	2	3	4	5		thighs
1	2	3	4	5		calves
1	2	3	4	5		body build
1	2	3	4	5		height
1	2	3	4	5		weight
1	2	3	4	5		weight distribution
1	2	3	4	5		overall appearance

Directions: For each of the following; snacking, pigging-out and bingeing circle the letter of the statement(s) in the box that corresponds to the situation to which you feel it applies. More than one statement may be circled. There are no right or wrong responses.

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	SNACKING Eating between meals	PIGGING-OUT excessive eating	BINGEING very excessive eating
EATING:	1. with family	1. with family	1. with family
	2. with friends	2. with friends	2. with friends
	3. alone	3. alone	3. alone
EATING:	1. out of control	1. out of control	1. out of control
	2. for fun	2. for fun	2. for fun
	3. for health	3. for health	3. for health
METHOD OF:	1. gaining weight	1. gaining weight	1. gaining weight
	2. maintaining weight	2. maintaining weight	2. maintaining weight
	3. reducing weight	3. reducing weight	3. reducing weight
ACCEPTABLE:	1. all of the time	1. all of the time	1. all of the time
	2. some of the time	2. some of the time	2. some of the time
	3. none of the time	3. none of the time	3. none of the time
IS:	1. good for health	1. good for health	1. good for health
	2. not a problem to health	2. not a problem to health	2. not a problem to health
	3. bad for health	3. bad for health	3. bad for health

3. Do you feel you need to watch your weight?

- (a) all of the time
- (b) some of the time
- (c) none of the time

4. Choose one of the following about weight loss or weight gain diets:

- 68
- (a) I am never on a diet (proceed to question 10.)
 - (b) I am on a diet some of the time
 - (c) I am on a diet all of the time

5. I am on a diet today

- (a) Yes
- (b) No

If the answer to the above question is Yes :

(i) How long have you been on this diet?

- (a) a few days
- (b) a week
- (c) two weeks
- (d) a month
- (e) longer than a month

(ii) How much longer do you expect to be on this diet?

- (a) a few days
- (b) a week
- (c) two weeks
- (d) a month
- (e) longer than a month

6. My dieting is generally

- (a) successful
- (b) somewhat successful
- (c) sometimes successful-sometimes unsuccessful
- (d) somewhat unsuccessful
- (e) unsuccessful

7. Indicate if you have ever used any of the following methods to alter your normal diet.

Circle Y for Yes
 N for No

Yes No

- | | | |
|---|---|--|
| Y | N | missing meals |
| Y | N | eating less |
| Y | N | following magazine/book diet(s) |
| Y | N | following health professionals' advice |
| Y | N | attending weight loss groups |
| Y | N | taking diet pills |
| Y | N | exercising |
| Y | N | crash dieting |
| Y | N | liquid formula diets |
| Y | N | stop eating for a time |
| Y | N | eating mainly one food, e.g. grapefruit |
| Y | N | following advice of teachers |
| Y | N | eating less fattening foods |
| Y | N | restricting calories while eating a variety of foods |
| Y | N | taking laxatives |
| Y | N | vomiting |
| Y | N | using water pills |

8. CIRCLE the reasons which best describe why you diet for weight loss or weight gain.

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- Circle
1. very important
 2. important
 3. neither important nor unimportant
 4. unimportant
 5. very unimportant
 6. Does not apply

I DIET TO:

- | | | | | | | |
|---|---|---|---|---|---|--|
| 1 | 2 | 3 | 4 | 5 | 6 | be more attractive |
| 1 | 2 | 3 | 4 | 5 | 6 | be healthy |
| 1 | 2 | 3 | 4 | 5 | 6 | so clothes will fit better |
| 1 | 2 | 3 | 4 | 5 | 6 | be thinner |
| 1 | 2 | 3 | 4 | 5 | 6 | exercise more easily |
| 1 | 2 | 3 | 4 | 5 | 6 | put on weight |
| 1 | 2 | 3 | 4 | 5 | 6 | feel better about myself |
| 1 | 2 | 3 | 4 | 5 | 6 | please my boyfriend |
| 1 | 2 | 3 | 4 | 5 | 6 | please my parents |
| 1 | 2 | 3 | 4 | 5 | 6 | please my girlfriends |
| 1 | 2 | 3 | 4 | 5 | 6 | please my coach |
| 1 | 2 | 3 | 4 | 5 | 6 | feel happier |
| 1 | 2 | 3 | 4 | 5 | 6 | improve my health |
| 1 | 2 | 3 | 4 | 5 | 6 | follow recommendations of health professionals |
| 1 | 2 | 3 | 4 | 5 | 6 | prevent disease |

9. Indicate whether the methods are desirable or not desirable for dieting. Circle number 1 for desirable, number 2 for undecided and number 3 for undesirable method.

- | | | | | | | |
|------------------|-----------|--------------------|--|--|--|--|
| desirable method | | | | | | |
| | undecided | | | | | |
| | | undesirable method | | | | |
| 1 | 2 | 3 | | | | missing meals |
| 1 | 2 | 3 | | | | eating less |
| 1 | 2 | 3 | | | | following magazine/book diet(s) |
| 1 | 2 | 3 | | | | following health professionals' advice |
| 1 | 2 | 3 | | | | attending weight loss groups |
| 1 | 2 | 3 | | | | taking diet pills |
| 1 | 2 | 3 | | | | exercising |
| 1 | 2 | 3 | | | | crash dieting |
| 1 | 2 | 3 | | | | liquid formula dieting |
| 1 | 2 | 3 | | | | stop eating for a time |
| 1 | 2 | 3 | | | | eating mainly one food, e.g. grapefruit |
| 1 | 2 | 3 | | | | following advice of teachers |
| 1 | 2 | 3 | | | | eating less fattening foods |
| 1 | 2 | 3 | | | | restricting calories while eating a variety of foods |
| 1 | 2 | 3 | | | | taking laxatives |
| 1 | 2 | 3 | | | | vomiting |
| 1 | 2 | 3 | | | | using water pills |

10. I feel my normal diet is
- (a) very good
 - (b) good 70
 - (c) neither good nor poor
 - (d) poor
 - (e) very poor

11. CIRCLE the number you feel best indicates how important the following factors are in causing a person to be overweight.

	Circle	1.	2.	3.	4.	5.	
		very important	important	neither important nor unimportant	unimportant	very unimportant	
very important							
important							
neither							
unimportant							
very unimportant							
1	2	3	4	5			disease
1	2	3	4	5			poverty
1	2	3	4	5			inherited genetic characteristics
1	2	3	4	5			overeating
1	2	3	4	5			lack of exercise
1	2	3	4	5			lack of will power
1	2	3	4	5			lack of motivation
1	2	3	4	5			lack of education
1	2	3	4	5			eating the wrong foods
1	2	3	4	5			eating to please someone

12. To what extent do you feel the food you eat daily affects your future health?

- (a) will affect my health
- (b) may affect my health
- (c) will not affect my health

THANK YOU FOR YOUR COOPERATION IN COMPLETING THIS QUESTIONNAIRE.

APPENDIX B THE BODY-CATHEXIS SCALE

Great diversity exists among the various methods used to assess the construct of body image. These methods have included questionnaires, draw-a-person tests, body-cathexis scales, body image boundaries, unconscious self-ratings (photographs), distortion techniques (mirror images), direct body measurements and video techniques (Fisher, 1964; Fisher and Cleveland, 1968; McCrea et al., 1982; Secord and Jourard, 1953). After assessing these alternative methods the Body-cathexis Scale (BCS) of Secord and Jourard (1953) was adapted for use in this research. Validity for the BCS in measuring body image satisfaction has been reported by Clifford (1971), Dwyer et al., (1969), Jourard and Secord (1954, 1955), Secord and Jourard (1953), Storz and Greene (1983), Tucker (1981) and Wylie (1974).

The BCS includes 46 items on various body parts and functions arranged in a Likert-type format. Research subjects respond in terms of the degree of satisfaction through dissatisfaction felt about each body part and function. As a result of their initial research studies Jourard and Secord (1954, 1955), and Secord and Jourard (1953) concluded that there is a group of norms shared by the subjects governing the ideal body image and the deviation from these norms reflects an individual's attitude

toward his/her own body. They suggested that the dissatisfaction expressed by females toward their body parts reflects culturally relevant factors. Females may be more critical of their bodies due to the amount of emphasis placed on buying clothes, standards of beauty and appearance for women.

Height, weight, waist, hips, thigh, calf and chest were identified by Secord and Jourard (1953) as the most significant variables in determining body image satisfaction. Dwyer et al. (1969) identified weight, waist, hips, thighs, bust and buttocks as body parts with high dissatisfaction scores. Body parts that the subjects were moderately satisfied with included girth of upper arm, calves, height, ankles, leg length and feet.

Clifford, (1971) in a study of 11 to 19 year old adolescents, revised the format of the BCS and simplified the language specifically for adolescents as well as identifying the degree of satisfaction by ranking the body parts. Clifford stated that the males and females studied tended to react to some of the items in the BCS in a similar manner. These items included height, weight, chest, waist and hips. Clifford suggested that more attention may be given to the body components of height, weight, chest, waist and hips

"because of concerns with certain aspects of physical health rather than because of concerns with stylized standards of beauty" (p. 124).

With the exception of height, the above mentioned areas are aspects of the body where weight gains are manifested and are critical body areas for both sexes. Clifford also found that females were more dissatisfied with themselves and their bodies than were males. A study by Lerner et al. (1976) on older adolescent females suggested that females' self concepts were related to their attitudes about their bodies in terms of physical attractiveness and not physical effectiveness.

Wylie (1974) suggested the need for internal factor analysis and valid measures of stability in the BCS. Tucker (1981) tested the internal structure and the reliability of the Secord and Jourard BCS. The BCS was administered to college males and the results indicated that the BCS was consistently stable over time ($p < .001$) indicating test-retest reliability. The reliability for the BCS has been reported at 0.94 (Jourard & Remy, 1955), 0.87 (Tucker, 1981) and 0.84 (Weinberg, 1960). Suggestions were made at the conclusion of research by Tucker (1981) for grouping the BCS items into four factors; health and physical fitness, face and overall appearance, subordinate and independent body features, and physique and muscular strength. Encouragement

was made for further research to eliminate and replace some items, e.g., sleep, elimination, pain tolerance, and back. The desirability of a shorter form of the Secord and Jourard BCS was also mentioned.

The criterion for the selection of body parts to be used from the Secord and Jourard BCS for this research was a hypothesized relationship with nutrition and eating behaviors. Thus, this criterion resulted in the exclusion of some body part items. The format was modified so that the language level would be appropriate for adolescent girls 14 to 16 years of age. Further aspects of the body were selected from the body image questionnaire of Damhorst and Littrell (1984). These aspects included body build, weight distribution and overall appearance.

The technique used for the subjects to react to the various body parts was a Likert-type scale. This format was selected due to the ease of construction and adaptability (Miller, 1977). It involves an ordinal scale for responding to items concerning body image satisfaction. A five point scale ranging from very satisfied through neither satisfied nor dissatisfied to dissatisfied was used. The most unfavorable response received the highest numerical value (5). The body part items were assembled according to the position on the body in descending order (head to feet).

Attempts were made to keep the names for the body parts within the vocabulary of the respondents. Examples of changes included; chest to bust and buttocks to bottom. Using the above criterion and other research results on significant body parts as a basis, the initial 46 body parts from Secord and Jourard (1953) were reduced to 20. With this new scale results were obtained which were very similar to previously reported results.

Insert Table 8 about here

The final scale that was developed proved easy to use and code (Table 8).

TABLE 8. Body-cathexis satisfaction/dissatisfaction variables for adolescent females

		Author			
Secord & Jourard 1953	Jourard & Secord 1955	Clifford 1971	Lerner et al. 1973	Lerner et al. 1976	Lerner & Brackney 1978
43 ^a	60 ^a	194 ^a	190 ^a	218 ^a	107 ^a
Weight	Weight	Weight	Weight distrib.	Weight distrib.	Distribution of weight
Waist	Waist	Waist	Waist	Waist	Waist
Height	Height	Height	Height	Height	Height
Hips	Hips	Hips	Hips	Hips	Hips
	Thighs		Thighs	Thighs	Thighs
Legs	Calves	Legs	Shape of legs	Shape of legs	Shape of legs
Feet	Feet/ ankles	Feet/ ankles	Ankles	Ankles	Ankles
Chin		Chin	Chin	Chin	Chin
Posture/ profile		Posture	Profile	Profile	Profile
Body build			Body build	Body build	Body build
Chest	Bust	Chest	Chest	Chest	Chest
Eyes		Eyes	Eyes	Eyes	Eyes
Shoulder width	Shoulder width	Shoulder	Shoulder width	Width of shoulders	Width of shoulders
Facial complexion		Looks	General appearance	General appearance	General appearance
Arms		Arms	Arms	Arms	Arms
Nose	Nose	Nose	Nose	Nose	Nose
Face		Face	Face	Face	Face
Trunk		Trunk			
Hair		Hair	Hair color	Hair color	Hair color

Note. Only those body parts relevant to this research study are listed.

^aNumber of subjects.

APPENDIX C ATTITUDES TOWARD EATING AND DIETING BEHAVIOR

Increasing support is developing in the literature for a relationship between body image perception and adverse eating behavior in adolescent females (Clifford, 1971; Dwyer et al., 1967; Olsen, 1984; Storz, 1982; Storz & Greene, 1983). As a result an attempt was made to include variables which would help identify these issues in adolescent girls participating in this research. The goal for this section of the instrument was to find out where adolescent girls were in their attitudes toward their own dieting and eating behavior.

Information needed to develop the section of the instrument on eating behaviors was derived from various sources. Macdonald et al. (1983) identified good and poor food behaviors in relation to body image perception based on food groups and dieting behavior. Dwyer et al. (1969) described relationships of prevalence, attitudes and characteristics of dieting behavior. Hinton et al. (1963) suggested that maturation, overweight, concern about overweight and the enjoyment of food were significantly related to the selection of a good diet. Types of weight reduction methods, including fad dieting, and the frequency of dieting methods in use were reported by Storz and Greene (1983). Dwyer and Mayer (1970) identified the effects of

education, occupation and satisfaction with body weight. Mahan and Rees (1984) reviewed a number of influences on adolescent eating behavior including snacking, missing meals, use of fast foods and meal patterns.

The information derived from the above-mentioned sources combined with the evaluation of judges have been the methods used to achieve content validity for the research instrument. The eating and dieting behavior portion of the instrument deals with attitudes and is classified as part of the affective domain.

This portion of the questionnaire was planned to provide some guidelines for nutrition education. It included the identification of areas for concern in adolescent girls' eating behaviors such as their perception of the effectiveness of various methods of dietary modification in current use, and their attitudes toward eating behaviors (e.g., snacking, pigging-out, and bingeing).

APPENDIX D JUDGES

Dr. Ruth Hughes. Distinguished Professor and Head,
Department of Home Economics Education, Iowa State
University.

Dr. William Runyan. Professor, Department of Food and
Nutrition, Iowa State University.

Dr. R. Dale Terry. Assistant Professor, Department of
Food and Nutrition, Iowa State University.

APPENDIX E CORRESPONDENCE

IOWA STATE
UNIVERSITY

November 7, 1984

Dear Judges:

As a graduate student in the Department of Home Economics Education at Iowa State University I am conducting research under the guidance of Dr. Rosalie Amos. The purpose of my research is to investigate how satisfied adolescent girls are with their bodies and their attitudes and behaviors in relation to dieting.

I would appreciate your evaluation of the attached questionnaire. Two copies are enclosed. The first copy of the questionnaire contains a list of objectives with corresponding items. Please evaluate these items in terms of their relationship to the objectives and appropriateness content-wise.

The second copy of the questionnaire illustrates the proposed format. I would appreciate any suggestions regarding sequence, adequate coverage of the topics, and the level of language used.

Please return these materials to Dr. Amos by November 19, 1984. If you have any questions please feel free to contact either Dr. Amos or myself.

Thank you for your time.

Sincerely,

 Jeni Pearce

Rosalie J. Amos
Assistant Professor

Consent Form

Dear Student and Parent(s) or Guardian(s),

As a graduate student in the Department of Home Economics Education I am conducting a study under the guidance of Dr Rosalie Amos, to learn how teenage girls think and feel about themselves, especially in the area of food, nutrition and eating.

We would appreciate your cooperation in filling out a questionnaire. All information will be kept strictly confidential. You may withdraw from the study at any time.

If you are interested please sign this form and have your parents' sign below also. If you have any questions related to this study please do not hesitate to contact us. Thank you.

Sincerely,

Jennifer Pearce
Graduate Student
Department of Home Economics
Education

Dr. Rosalie Amos
Assistant Professor
Department of Home Economics
Education

I agree to participate in this study.

(student's signature)

I give permission for my daughter to participate in this study.

(parent's or guardian's
signature)

Return form to _____

IOWA STATE
UNIVERSITY

Telephone 515-294-6444

3 December 1984

Jan Welbes
Hempstead High School
3715 Pennsylvania Ave
Dubuque, IA 52001.

Dear Jan,

Thank you for your willingness to involve your students in my research to learn how teenagers feel about nutrition and eating.

As we discussed in our previous telephone conversation I wish to individually weigh and measure for height each of the 200 girls aged 14 to 16 years. Each girl will be asked to complete a questionnaire. I have enclosed a copy of the questionnaire for your inspection. This questionnaire has received the approval of the Human Subjects Committee at Iowa State University.

In order to obtain a fairly representative sample students may be chosen at random from study halls or in any manner you feel is appropriate. I shall be forwarding 225 consent forms, under separate post, which need to be completed and signed by the student and parent or guardian prior to participation in this research.

Dr. Amos will be accompanying me on the 11th of December. We shall be arriving on the evening of the 10th of December and Dr. Amos has made arrangements for accommodations.

I appreciate the time you have taken to assist me with this research and thank you for your cooperation and support. Once the analysis has been completed I would be happy to share the group results with you.

Yours sincerely,

— Jennifer Pearce
Graduate Assistant
Home Economics Education
Iowa State University

Dr. Rosalie Amos
Assistant Professor
Home Economics Education
Iowa State University

IOWA STATE
UNIVERSITY

Telephone 515-294-6444

7 January 1985

Mrs Karen Clover
Marshalltown High School
1602 S. Second Avenue
Marshalltown, IA 50159.

Dear Karen,

Thank you for your willingness to involve your students in my research to learn how teenagers feel about nutrition and eating.

Each girl will be asked to complete a questionnaire. This questionnaire has received the approval of the Human Subjects Committee at Iowa State University. As we discussed in our previous telephone conversation I wish to individually weigh and measure for height each girl 14 to 16 years of age.

I have enclosed 100 consent forms which need to be completed and signed by the student and parent or guardian prior to participating in this research.

I appreciate the time you have taken to assist me with this research and thank you for your cooperation and support. Once the analysis has been completed I would be happy to share the group results with you.

Yours sincerely,

 Jennifer Pearce
Graduate Assistant
Home Economics Education
Iowa State University

Dr. Rosalie Amos
Assistant Professor
Home Economics Education
Iowa State University

IOWA STATE
UNIVERSITY

Telephone 515-294-6444

5 March 1985

Mrs Betty Yungschlager
Griswald High School
Griswald, IA 51535.

Dear Betty,

Thank you for your willingness to involve your students in my research to learn how teenage girls feel about nutrition and eating.

Each girl will be asked to complete a questionnaire. This questionnaire has received the approval of the Human Subjects Committee at Iowa State University. As we discussed in our previous telephone conversation I wish to individually weigh and measure for height each girl. I would like to obtain the cooperation of as many girls aged between 14 and 16 years as possible.

I have enclosed copies of the consent form which needs to be completed and signed by the student and parent or guardian prior to participation in this research. Further copies will be forwarded at your request.

I appreciate the time you have taken to assist me with this research and thank you for your cooperation and support. Once the analysis has been completed I would be happy to share the group results with you.

Yours sincerely,

Jennifer Pearce
Graduate Assistant
Home Economics Education
Iowa State University

Dr. Rosalie Amos
Assistant Professor
Home Economics Education
Iowa State University

APPENDIX F TABLES

TABLE 9. Body image satisfaction ranking of body parts by two weight for height and age percentiles of adolescent females aged 14 to 16 years

>10, ≤90th percentile	>25, ≤75th percentile
Weight	Weight
Thighs	Thighs
Hips	Hips
Leg shape	Bottom
Bottom	Abdomen
Weight distribution	Weight distribution
Abdomen	Leg shape
Waist	Waist
Bust	Bust
Body build	Body build
Calves	Calves
Leg length	Hands
Overall appearance	Leg length
Hands	Overall appearance
Height	Chin
Rib	Height
Chin	Rib
Arms	Face shape
Face shape	Arms
Shoulders	Shoulders
Mean=3.26	Mean=3.28
SE=0.052	SE=0.062
SD=0.647	SD=0.618
Missing cases=2	Missing cases=2
N=152	N=99

Note. The Body Image Satisfaction ranges is 1 (very dissatisfied) through 5 (very satisfied).

TABLE 10. Height percentiles of adolescent girls 14-16 years old. (N=154)

Group	Expected Percent	Sample Percent	Variation Percent
<5	5	2.6	-2.4
>5, ≤10	5	2.6	-2.4
>10, ≤25	15	6.5	-8.5
>25, ≤50	25	24.0	-1.0
>50, ≤75	25	30.5	+5.5
>75, ≤90	15	19.5	+4.5
>90, ≤95	5	7.1	+2.1
>95	5	6.5	+1.5

Note. Mean height=166.384 cm SD=45.228 cm SE=3.645 cm.

TABLE 11. Weight percentiles of adolescent girls 14-16 years old. (N=154)

Group	Expected Percent	Sampled Percent	Variation Percent
<5	5	0.0	-5.0
>5, ≤10	5	0.6	-4.4
>10, ≤25	15	13.6	-1.4
>25, ≤50	25	20.8	-4.2
>50, ≤75	25	35.7	+10.7
>75, ≤90	15	21.4	+ 6.4
>90, ≤95	5	7.1	+ 2.1
>95	5	0.0	- 5.0

Note. Mean weight=55.529 kg SD=6.607 kg SE=0.532 kg.

TABLE 12. Age comparisons for sampled population with the general population of Iowa

Age (years)	Expected Percent	Sampled Percent	Variation Percent
14	34.4	33.1	-1.3
15	33.0	41.6	+8.6
16	32.6	25.3	-7.3

Note. Expected results based on U.S. Department Commerce Bureau of the Census, 1983.

TABLE 13. Socio-economic status of sampled population

SES Group	Frequency	Percent
1	6	4.3
2	26	18.6
3	56	40.0
4	49	35.0
5	3	2.1
	140	100.0
Mean=3.121 SD=0.885 SE=0.075		

Note. The higher the SES group number the lower the SES level.

APPENDIX G CODE SEQUENCE FOR COMPUTER PRINTOUT

TABLE 14. Code sequence

Variable	Code
case 1	1-3
card 1	4
fathers occupation	5
fathers education	6
mothers occupation	7
mothers education	8
age	9-10
snacking	31-45
pigging-out	46-61
bingeing	61-75
watching weight	76
diETING	77
diETING today	78
time been on diet (yes1)	79
time to be on the diet (yes2)	80
case 1	1-3
card 2	4
success in diETING	5
diETING methods used (Alter)	6-22
reasons for diETING	23-37
desirability of methods	38-54
normal food intake rating	55
causes of overweight	56-65
future health	66
percentile height	67
actual height	68-71
percentile weight	72
actual weight	73-75
weight for height and age	76