

EARLY MENARCHE AS A PRECURSOR TO  
BODY DISSATISFACTION AND DIETARY RESTRAINT

CENTRE FOR NEWFOUNDLAND STUDIES

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Early Menarche as a Precursor to  
Body Dissatisfaction and  
Dietary Restraint

By

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The main goal of this study was to test the hypothesis that chronological or subjective early menarche results in increased body dissatisfaction and consequently increased dietary restraint. One hundred and ten grade seven and grade eight girls from a local junior high school completed questionnaires during class time to assess dietary restraint and self-esteem. All girls were personally interviewed using a structured interview schedule to determine their puberty status, preparation for menarche, feelings toward menarche, and amount of social support received. Height and weight measures were also obtained.

Forward stepwise regression analysis revealed that a non-significant amount of body dissatisfaction variance was attributable to actual or perceived early menarche. Body Mass Index accounted for the largest amount of variance, which suggests overweight individuals are more dissatisfied with their body than normal or under weight individuals. Pubertal status was the only other independent variable which accounted for a significant amount of the body dissatisfaction variance. This indicates that body dissatisfaction increases as puberty progresses. Neither body dissatisfaction or early menarche were significant predictors of the level of dietary restraint reported. Time since menarche accounted for the largest amount of the variance, which suggests the onset of menarche

is associated with an increase in restraint and the level of restraint continues to increase after menarche has occurred. Body Mass Index was the only other variable which contributed to a significant amount of the restraint variance. This finding replicates that of previous studies which demonstrated overweight individuals were more highly restrained eaters than normal or underweight individuals. Implications of all results are discussed.



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In recent decades public and professional attention has been focused on body weight. More and more individuals, females in particular, experiment with dieting and exercising in an attempt to achieve an impossibly thin societal standard (Cash and Green, 1986). It has been suggested that weight concerns and dieting are so pervasive among females today that they have become normative (Strigel-Moore, Silverstein and Rodin, 1986). A large number of women currently feel too fat regardless of their actual size.

Weight and physical appearance concerns, and involvement in dieting, are not unusual in adolescent populations. Recent investigations indicate a large proportion of preteen and teenage girls feel they are fat and subsequently engage in various dieting practises (Hackett, 1989; Leon, Perry, Mangelsdorf and Tell, 1989). Other studies have demonstrated a direct relationship between dieting practises during adolescence and the development of more serious eating disorders during late adolescence and adulthood (Garner and Garfinkel, 1981). Considering these findings the present study is designed to explore a developmental stage during which concerns with dieting and appearance may begin.

As body dissatisfaction has been shown to be highly correlated with eating disturbance (Zankin, 1988), effort must be made to isolate factors which may contribute to the

development of dissatisfaction with ones body. Early menarche has been demonstrated to be a negative event for many young girls who experience it (Brooks-Gunn, 1984). Further to this finding, girls who perceive the time of their menarche to be early, report feelings and attitudes regarding menarche which are significantly more negative than those who do or perceive themselves to experience menarche on time (Brooks-Gunn, 1984). This study will investigate whether early menarche or the perception of early menarche is significantly correlated with the level of body dissatisfaction reported. The investigation will be extended to explore the relationship of these factors with the level of dietary restraint experienced.

### **Dietary Re-traint**

Development of the theory. Dietary restraint refers to the intention to diet to achieve or maintain a desired weight. The concept was originally developed to describe and explain differences in eating patterns between obese people and people of normal weight (Herman and Mack, 1975). Historically, the restraint hypotheses have their roots in Schacter's (1968, 1971) and Nisbetts (1972) theories of obesity. Up until the early 1980's the internal-external theory as proposed by Schacter (1968, 1971) was the most widely held account of the

differences between obese and normal weight individuals' eating patterns.

Schacter's original proposal asserted that the eating behaviours of normal weight people was controlled by internal physiological cues, such as gastric contractions. The eating behaviours of obese people however, were thought to be more significantly influenced by external cues, such as sight, smell and taste of food. As this theory developed, the differences between normal weight and obese individuals were formulated in more general terms. It was suggested that obese people were more responsive in general to environmental cues than were normal weight people.

Since its development, an abundant amount of research has been completed testing Schacter's theory (Leon and Roth, 1977; Wooley and Wooley, 1975). The results reported to date are indeed varied, with a majority failing to offer support for the theory. This mass of research has succeeded in identifying a number of flaws and shortcomings with Schacter's theory. For example it has been difficult to establish adequate definitions of external and internal cues (Ruderman, 1986).

Given the apparent shortcomings with Schacter's theory,<sup>4</sup> other research ensued. Nisbett (1972) proposed a "set point" model of obesity to explain why the external responsiveness of obese and normal weight people might differ. Nisbett proposed that each individual has a predetermined ideal weight or "set point", adding that obese people have higher than average set points. He further proposed that obese people often tried to suppress their weight below their set point, in response to the value society places on slimness. This led to the conclusion that overweight people were starving according to biological standards.

Support for Nisbett's theory has been equivocal. Similar to Schacter's theory, Nisbett's predicts that overweight and normal weight people differ in external responsiveness. As noted previously, results of studies investigating this theory have been inconsistent (Ruderman, 1986).

Although Nisbett's (1972) theory has been difficult to test, it did encourage a wave of research in attempting to define the role of dieting in determining eating patterns. The most widely referred to research of this type is that originated by Herman and Mack (1975). Accepting the argument that dieting is a key factor in food regulation, Herman and Mack (1975) developed the concept of restraint. Restraint



refers to a cognitively mediated effort to combat the urge to eat (Herman and Mack, 1975). Individuals vary in the extent to which they exercise restraint. At one end of the presumed continuum are highly restrained eaters who worry about what they eat and struggle to diet and resist food regularly. Unrestrained eaters, falling at the other end of the continuum, eat freely as the desire strikes them.

A major hypothesis concerning restraint proposes that differences in level of restraint underlie obese-normal differences in eating behaviour (Herman and Polivy, 1980). Specifically, obese people are expected to have higher levels of restraint than their normal-weight counterparts. Similar to Nisbett (1972), Herman and Polivy (1980) argued that obese individuals expressed significantly higher levels of restraint specifically in response to the high value and esteem society places on slimness.

Disinhibition. Early on it became evident that individuals who restricted their food intake in an attempt to lose or maintain weight, often experienced lapses from the restraint, during which time they consumed a significantly larger amount of food than was usual. It became a basic hypothesis of restraint theory that when self-control of restrained eaters is disrupted, overeating ensues (Herman and Polivy, 1975;

Ruderman, 1986). Disrupting events, referred to as disinhibitors, include perception of having overeaten, strong emotional states, and alcohol.

Measurement of Restraint. Once the restraint theory had been developed, Herman and Mack proceeded to design a self-administered questionnaire to measure level of restraint experienced. The Restraint Scale (Herman and Mack, 1975) has become a standard tool for measuring restraint. Initially, the Restraint Scale was used in all studies of restraint theory, however there was little published information concerning its psychometric properties. The scale's ability to predict behaviour in experimental settings (Herman and Mack, 1975; Herman and Polivy, 1975) provides some evidence for its predictive and construct validity. However, the evidence is limited as it was found in studies using all normal weight individuals as subjects. Other investigations of the psychometric properties of the Restraint Scale have presented some points for consideration.

Most concern is expressed over the finding that the scale contains two factors, 'concern for dieting', and 'weight fluctuation' (Ruderman, 1983). As a result, it is difficult to isolate whether a particular factor or the combination of the two factors results in dietary restraint. Another concern

with the scale arises from the finding that obese people obtain high restraint scores when in fact they are not chronic dieters (Drewnoski, Risky and Desor, 1982). This effect is thought to result from high scores on the 'weight fluctuation' items, as weight fluctuation appears to be relatively frequent among obese people. Heatherton, Herman, Polivy, King and McGree (1988) have reviewed these criticisms and argue that they are unwarranted. They state "the factor structure of the Restraint Scale will change if the sample characteristics change in a systematic way, and that the sample-based variation in a factor structure is not a problem with the scale, but rather a general issue in the interpretation of factor analysis derived from unusual samples" (Heatherton, et al., 1988). They also suggest that the obese actually do obtain higher restraint scores than do normal weight individuals. They propose that evidence for this is the consistently significant correlations between the percentage overweight and restraint. In spite of these counterarguments, it remains unclear whether obese individuals' higher degree of restraint is due to their concern for dieting or their weight fluctuation. As a result, some researchers remain sceptical of the psychometric properties of the Restraint Scale and often opt to use alternate measures, such as the Dutch Eating Behaviour Questionnaire - Restraint Scale (DEBQ-R) (Strien, Frijters, Bergers and Defares, 1986).

The DEBQ-R is designed with three scales, 'restrained eating', 'emotional eating' and 'external eating'. The scale has demonstrated high internal consistency as well as high factorial validity (Strien, et al., 1986). The DEBQ-R has been employed in studies investigating dietary restraint in adolescent populations (Hackett, 1989; Wardle and Beales, 1986). Wardle and Beales (1986) decided to use the DEBQ-R over the Restraint Scale because its questions were judged to be more comprehensible for an adolescent population. In addition, it does not require facts about weight history, facts which may not be easily remembered by adolescents. Further, weight fluctuation is relatively common among adolescents, therefore, restraint scores may be inappropriately inflated by the 'weight fluctuation' scores. For the reasons discussed the DEBQ-R is the preferred measure of restraint for an adolescent population.

The role of dietary restraint in eating disorder development. Several studies have indicated that temporary restraint violations often lead to episodes of gross overeating, or 'binging'. 'Binge eating' refers to a disturbed eating pattern with an excessive food intake and abnormalities of hunger and satiety (Wardle, 1987). In its most extreme form, an individual becomes preoccupied with food on an almost continuous basis, often craving particular foods.

In some cases a binge is followed by self-induced vomiting or abuse of laxatives, in an attempt to avert weight gain. When the bingeing is severe and accompanied by a profound fear of fatness, the clinical syndrome, bulimia nervosa, is diagnosed (DSM-III; APA, 1980). Individuals with bulimia nervosa or anorexia nervosa have high scores on measures of dietary restraint and a great majority report that an episode of dieting preceded the onset of their eating disorder (Mallick, Whipple and Huerta, 1987).

Prevalence among adolescents. Research on body image, dieting and food attitudes has generally been conducted on subjects in their late teens and early twenties. However, recent evidence suggests that cultural influences toward thinness have been increasingly filtering down to younger age groups. Nylander (1971) found 8% of the 14 year olds, 23% of the 15 year olds and 31% of the 16 year olds in his sample had dieted. Dieting concerns were not evident among boys included in the sample. More recent surveys demonstrate dieting motivation in 12-year olds is comparable to that of older girls and that 12-year olds want to weigh less, despite being of average or below average body weight (Hackett, 1989; Wardle and Beales, 1986). Scales (1991) demonstrated similar results with girls as young as six.

Restricting food intake at a young age is of great concern, particularly as it is a time of marked physical and psychological change. It has been argued that weight control at this age may cause a variety of health problems including, retardation of growth, development, mental functioning, and reproductive capacity (Mallick, 1983). A study of 14 children aged 9 to 17, who engaged in self-imposed restriction of caloric intake, described short stature in 12 and delayed puberty in seven (Pugliese, Lifschitz, Grad, Fort and Marks-Katz, 1983). These physical problems were significantly reversed upon institution of a well balanced diet. Conversely, it has been demonstrated that longer periods of dietary restraint among individuals in this age group, have resulted in prolonged delays in puberty (Russell, 1985).

### **Body Dissatisfaction**

Previous studies have demonstrated high correlations between level of dietary restraint and ones attitude toward their body (Zankin, 1988). The importance of body dissatisfaction in the development of restraint and subsequent eating disorders has become the focus of research in recent years.

Definition. Body image is defined by Powers, Schulman, Gleghorn and Prange (1987), as the inner mental image of ones

body and the sum of ones emotional attitudes toward that image. Generally, researchers describe two separate aspects of body image: an emotional or attitudinal component pertaining to attitudes toward body size/weight, specific body parts or overall physical appearance, and a perceptual component, commonly referred to as body-size perception accuracy (Cash and Brown, 1987). A disturbance of the attitudinal component has a cognitive and affective nature. Individuals presenting with this problem usually accurately assess their body's size but they react to their body with extreme disparagement. Although the majority of research conducted to date has focused on disturbances of the perceptual component, more recent investigations have demonstrated disturbances of the attitudinal component to be a more significant factor in the development and maintenance of various eating disorders (Hsu and Sobkiewicz, 1991).

Measurement. A number of attitudinal measures have been developed to assess body dissatisfaction. These include paper and pencil questionnaires and various methods using silhouettes of female figures ranging from very thin to very fat.

Paper and pencil questionnaires. The majority of techniques currently being employed to assess body

dissatisfaction involves self-report ratings of ones feelings toward a particular part of the body or the body as a whole. These measures are usually presented as paper and pencil questionnaires.

The first such scale developed was the Body-Cathexis Scale (Secord and Jourard, 1953). Respondents are presented with a list of body parts each having a five-point Likert scale, ranging from 'have strong negative feelings' to 'have strong positive feelings'. The more negative a score the greater the degree of the dissatisfaction experienced. In devising this instrument the authors assumed that body esteem could be expressed as a single score based on the sum of the individual's responses to body items. However, investigations since then have cast serious doubts on the assumption of the unidimensionality of body image (Fisher, 1964; Gunderson and Johnson, 1965). In response to these doubts, Franzoi and Shields (1984) modified the Body-Cathexis Scale to develop the Body-Esteem Scale. A factor analysis of the Body-Esteem Scale indicated there are three distinct scales representing separate aspects of women's body-esteem: sexual attractiveness (13 items); weight concern/satisfaction (11 items); and physical condition (8 items). All three scales have exhibited satisfactory reliability and validity (Franzoi and Shields, 1984).



Mendelson and White (1985) developed a similar inventory for adolescents. However, instead of requesting subjects to rate how they feel about particular parts of their body, they are asked to rate their degree of agreement with various statements about their body. The scale includes such items as "I like what I look like in pictures", and "Kids my own age like my looks" (Mendelson and White, 1985). The scale has been found to have acceptable reliability (split-half reliability  $r = .83$ , Mendleson and White, 1985).

Figure Drawings method. The most widely used methods of determining an overall level of body dissatisfaction are the schematic figures of silhouettes of different body sizes, ranging from very thin to very fat (Thompson, Penner and Altabe, 1990). Generally, subjects are requested to select a figure which most closely resembles his/her own body shape, followed by a selection of an ideal figure, or the one he/she would really like to be like. The discrepancy between the two is considered an indication of the level of body dissatisfaction experienced.

Fallon and Rozin's (1985) method of figure selection has been a widely used measure of body dissatisfaction. Respondents are presented with nine figure drawings ordinarily ranging from very thin to very heavy. Each figure is assigned

a number from one to nine (one = thinnest). Subjects are asked to indicate the figure (a) that approximates their current figure, (b) they would most like to be like, (c) that they think would be most attractive to the opposite sex, and (d) of the opposite sex they find most attractive (Fallon and Rozin, 1985).

Williamson, Davis, Goreczny and Blouin (1989), modified Fallon and Rozin's procedure to develop the Body Image Assessment. The Body Image Assessment technique uses nine cards each containing a silhouette of a woman whose body size ranges from very thin to very obese. Each card is assigned a number from one to nine. The cards are placed in random order in front of the subject who is requested to select the card which most accurately depicts their current body size. The number on the back becomes the subject's current body size score (CBS). The cards are then reshuffled and presented a second time for subjects to select the card with the figure they would most like to be like. This selection becomes the subjects ideal body-size score (IBS). The discrepancy between the CBS and the IBS is indicative of the level of body dissatisfaction experienced. Preliminary research has shown the procedure to have an adequate test-retest reliability,  $r=.92$  for the CBS and  $r=.79$  for the IBS (Williamson, et al., 1989).

It has been suggested that subject's selections of figures may be biased toward a larger figure than their actual one, if they overestimate their actual body size (Thompson, et al., 1990). The perceptual overestimation may lead the subjects to choose a figure larger than he/she actually is. This would inflate the difference between the actual and ideal figures, resulting in an inaccurate body dissatisfaction score. However, if one is assessing the level of body dissatisfaction, it should not matter whether the subject overestimates and chooses a figure that is larger than he/she actually is. In this case the subject is selecting a figure which approximates how he/she perceives their own body size. The discrepancy between this selection and the ideal body size indicated would then be a reasonable measure of the level of body dissatisfaction experienced.

The Williamson et al. (1989) revision of Fallon and Rozin's method seems to be the better measure to use. Randomly presenting the figures on individual cards and reshuffling them after each selection, possibly decreases the likelihood of subject selections being biased by figures appearing at opposite ends of the scale. Subject's 'ideal body size' choice is not likely to be as influenced by their 'current body size' choice as is probable when all of the figures are presented at once in a ranked order.

Sociocultural influences in the development of body dissatisfaction. Widespread body dissatisfaction among young women in the modern world has become the focus of considerable research in recent years (Baily, Goldberg, Swap, Chomitz and Houser, 1990). Numerous studies have found that women are dissatisfied with their weight and physical appearance, and often engage in reducing diets, even when their weight is at or below established standards (Hackett, 1989; Strigel-Moore, et al., 1986). Several arguments have been offered attempting to explain the 'drive for thinness' and overconcern with physical appearance experienced by an abundant number of today's females. Among the sociocultural variables considered important is the value our society attaches to being attractive and thin, while it views obesity as a highly stigmatized condition (Boskind-White and White, 1983). Numerous studies suggest that while this attitude seemingly affects people of all ages, it appears to be more consistently directed toward women than it is toward men (Strigel-Moore, et al., 1986).

Furthermore, it appears that there are certain women who deeply internalize the sociocultural mores about thinness and attractiveness. Such women constantly strive toward thinness and are consequently distressed about fatness. Strigel-Moore et al. (1986) assert that some women internalize these values

because of the influences of the subculture in which they live. Although attitudes about thinness and obesity pervade our entire society, they are intensified in some instances. Women of higher socioeconomic status are more likely to be affected by societal pressures to be slim. Consequently, they exhibit greater weight preoccupation and engage in reducing diets more frequently than their peers of lower socioeconomic status (Dornbusch, Carlsmith, Duncan, Gross, Martin, Ritter and Siegel-Gorelick, 1984). In addition, it has been shown that certain environments appear to encourage greater preoccupation with weight and appearance. For example, boarding schools and colleges have been found to contribute to the development of eating disorders such as bulimia (Squire, 1983). This may be a function of the fact that generally women of higher socioeconomic status attend these types of institutions. Alternatively, as stressful and semienclosed environments, campuses may serve to intensify societal pressures to be slim.

Many professions such as dancing, modelling, acting and athletics specify an optimal weight, thus amplifying sociocultural pressures to be slim. Often females interested in any of these professions are constantly preoccupied with their weight and appearance, and regularly engage in weight reducing regimens. Not surprisingly, an increasing number of

individuals, females in particular, pursuing professions such as these, express high levels of body dissatisfaction and are more frequently diagnosed with eating disorders (Yates, Leehay and Shisslak, 1983).

Prevalence and expression among adolescents. From early childhood girls learn from diverse sources that appearance is especially important to them as girls and they should be concerned with it (Strigel-Moore, et al., 1986). Family members encourage little girls to "pretty up" and seem to stress the importance of being neat and attractive. Beyond the family, schools advocate this societal message. Girls seem to be positively reinforced for activities directed toward neatness, whereas boys are more regularly positively reinforced for the intellectual aspects of their performance (Dweck, Davidson, Nelson and Enna, 1978). The mass media, including teen magazines and television programs developed for teenage audiences, also stress the value and importance of being slim and attractive. Again, these efforts are consistently directed more strongly toward females.

Girls appear to internalize these values concerning appearance. Developmental studies have documented that girls are more concerned than boys about looking attractive (Coleman, 1962; Douvan and Adelson, 1966). Studies have shown

that even as children girls are more dissatisfied with their bodies than are males. Although non-obese girls have a more positive attitude toward their body than obese girls, they still express more dissatisfaction with it than boys (Tobin-Richards, Boxer and Petersen, 1983). These researchers also found that perceived weight and body satisfaction are negatively correlated with weight for girls, whereas boys valued being of normal weight and expressed equal dissatisfaction with being underweight or overweight.

Although girls seem to learn and internalize societal values to be slim and attractive as early as childhood, the major influence and response to the pressure appears to occur during adolescence. The self-image of adolescent females seems to be more interpersonally oriented than are those of boys (Chodorow, 1978). Girls also seem to worry more about what others think of them. Hill and Lynch (1983) assert that in response to feeling insecure and in an effort to avoid negative evaluation from others, the adolescent girl becomes increasingly sensitive to and compliant with social demands and sex-role appropriate standards. This in turn leads to a desire and drive for thinness, and heightened dissatisfaction with body shape and appearance.

Recent investigations have indicated the physical changes which occur during puberty result in more pronounced body dissatisfaction than is found among prepubertal girls (Dornbusch, et al., 1984). In particular, the physical and emotional changes which occur during the menstrual cycle have been found to contribute to increased body dissatisfaction (Altabe and Thompson, 1990). For this reason it becomes important to study relevant literature on the impact of the menarcheal experience.

### **Menarche**

There are certain transition points in an individual's life which are imbued with psychological and sociocultural significance because they signal a need for change in self-identity (Brooks-Gunn, 1984). Early adolescence is a developmental period in which multiple and often simultaneous changes occur within the individual. Perhaps the most dramatic changes evident to the adolescent and to those around them are the physical changes that occur as part of the pubertal process. During puberty, the transition from a child's body to an adult's occurs. Rapid increases in weight and height occur, genitalia develop, axillary, pubic and body hair appear, and in girls the menstrual cycle begins at an average age of 12.6 years (Frisch, 1976).



As first menstruation, or menarche, is a concrete symbol of a transition from girl to woman, it is of particular importance for girls. In many cultures menarche is regarded as a major religious or community event, marked by elaborate rituals and ceremonies (Paige and Paige, 1981). More commonly in our culture, menarche is generally considered in terms of the impact it ultimately has on a girl's self-definition as a female and her subsequent behaviour as a woman (Brooks-Gunn, 1984). At a minimum, it requires a girl to determine what it means to be a menstruating woman, and she is now faced with coping with many physical and emotional changes, as well as interpreting others' responses to her newly acquired status (Brooks-Gunn, 1984).

Early maturation. In the last decade the psychological significance of menarche has been studied extensively. Studies have investigated the extent to which menarche elicits anxiety, is considered traumatic and has integrative positive aspects (Brooks-Gunn, 1984). In general, menarche is regarded as a positive experience as it adds to a girl's social maturity, peer prestige and self-esteem (Faust, 1960; Garwood and Allen, 1979), and it is often viewed as a confirmation of womanhood (Brooks-Gunn, 1984). Ruble and Brooks-Gunn (1982) conducted an investigation in which they asked post-menarcheal girls during face-to-face interviews about what they perceived

to be positive about menstruation. The most frequent positive item was sign of maturing (72%). Other positive aspects included ability to have children (30%); part of being a woman (26%); and being liked by friends (22%) (Ruble and Brooks-Gunn, 1982). The most frequent negative aspect was the hassle (46%), for example, carrying supplies or messiness. Other negative aspects included physical discomfort (30%), behavioral limitations (20%), and emotional changes (17%) (Ruble and Brooks-Gunn, 1982).

Girls who experience menarche at an earlier age than average, report more negative experiences than their on-time peers (Brooks-Gunn, 1984; Ruble and Brooks-Gunn, 1982). They report more negative initial reactions, more symptoms and more negative self-images (Ruble and Brooks-Gunn, 1982). Early maturers have been found to be less satisfied with their weight than later maturing girls (Simmons, Blyth and McKinney, 1983). Other findings showed that earlier maturing girls had less positive body image and feelings of attractiveness (Tobin-Richards, et al., 1983).

A number of hypotheses have been developed to explain the findings which indicate that menarche is apparently a more negative experience for girls who have it before the average onset age. Experiencing early development may mean that girls

will not feel comfortable disclosing their new physical status to their peers. As they are early, they will have fewer people to share and compare their experiences with. In addition, early maturing may generate insecurity about being different from the group.

Investigators interested in the study of the human life cycle have been persuaded that it is not only the events which people experience, but also the timing of these events, that influence the subjective sense of well-being or stress (Rierdan and Koff, 1985). Neugarten (1970) has distinguished between two types of timing: objective timing, when an event occurs relative to a person's actual chronological age, and subjective timing, when an event occurs in a person's life relative to social norms for the timing of its occurrence. She has suggested that it is a person's subjective timing of events which is the more important in determining the psychological significance of developmental events.

It appears that by early adolescence children have begun to formulate a "social clock" with respect to events occurring in childhood and adolescence (Rierdan and Koff, 1985). Seventh-graders are able to characterize their own rate of pubertal development as early, on time, or late (Tobin-Richards et al., 1983). This subjective sense of being early,

on time or late in ones pubertal development seems to be of psychological significance. For example, Tobin-Richards et al. (1983) found that girls who perceive themselves as on time had more positive body images and greater feelings of attractiveness than those who perceive themselves as early or late.

The subjective sense of pubertal development and the objective norms are not always congruent. One study reported only a 60% overlap between subjective and objective pubertal timing for girls, as indicated by such things as breast development, amount of body hair, growth spurt and age at menarche (Wilén, 1980). Considering this lack of correspondence, it becomes necessary to determine the relative importance of subjective versus objective timing of these events on psychological development. Wilén (1980) found that girls who perceived themselves as on time felt more positive about their rate of development than girls who perceived themselves as early or late.

Rierdan and Koff (1985) extended Wilén's research, essentially supporting his conclusions. They determined in a retrospective study of college woman, that subjective, rather than objective timing of puberty more strongly determined the affective impact of pubertal development. In addition, their

data indicated that girls who experience themselves as on time or late had a more favourable response to menarche than girls who perceived themselves as early. Although the majority of research completed in this area has been designed as retrospective studies, recent prospective investigations have demonstrated similar results (Ruble and Brooks-Gunn, 1982).

Another variable hypothesised to affect initial menstrual experience is one concerned with cognitive status in relation to a girl's adequacy of preparation for menarche (Rierdan, Koff and Stubbs, 1989). Significant relationships have been found repeatedly between preparation for menarche and the experience of it. In cross-sectional and prospective studies of early adolescents (Ruble and Brooks-Gunn, 1982), as well as in retrospective studies of late adolescents and young adults (Deveaux, 1991; Golub and Catalano, 1983) better prepared individuals have reported more positive menarcheal experiences than more poorly prepared individuals. Ruble and Brooks-Gunn (1982) found that girls who have reported feeling totally unprepared for the menarcheal experience, expressed considerably more negative feelings, less positive feelings and more surprise than girls who felt they were adequately prepared for the experience. The unprepared girls expressed more negative self-images, and greater frequency and severity of symptoms than the prepared girls.

### **The Present Study**

Previous studies have demonstrated that body dissatisfaction and dietary restraint exist among prepubertal girls, and there is some evidence which indicates both become more prevalent and extreme at puberty. Although this evidence exists, research to date has not investigated puberty in enough detail to determine exactly why appearance concerns and dieting practises increase in frequency and intensity during that developmental stage. The main goal of the present study is to investigate some features of the pubertal process which may lead to an increase in the level of body dissatisfaction and dietary restraint experienced.

Considering previous research which demonstrates that early menarche is reported as a negative event and often involves some level of body dissatisfaction being experienced, the present study hypothesises that girls who experience early menarche will report significantly higher levels of body dissatisfaction than girls who experience menarche on time or late. As subjective timing of menarche has been shown to be more highly correlated with negative menarcheal experience than objective timing, it is expected to have a more significant effect on the degree of body dissatisfaction experienced.

Individuals who are dissatisfied with their body are likely to respond in a number of ways with one possible response being restricting food intake. Food restriction is a common response when individuals are attempting to achieve an ideal figure. For this reason individuals who express body dissatisfaction are expected to report significantly higher levels of dietary restraint than those who report little dissatisfaction.

Recent research has demonstrated that girls who report early menarche are less well prepared and receive less social support for the menarcheal experience than girls who develop on time or late. Considering these findings the amount of preparation and social support received for menarche are expected to contribute to a significant amount of the body dissatisfaction and dietary restraint variance.

Considering the expected importance of menarche it is hypothesised that post-menarcheal girls will express significantly higher levels of body dissatisfaction, dietary restraint and lower self-esteem than pre-menarcheal girls.

### **Method**

Subjects. One hundred and ten schoolgirls ranging in age from 12 to 15 years served as subjects. They were obtained by first getting approval for the investigation from the Avalon Consolidated School Board, the school principal, and three physical education instructors. Following this approval, 210 parental consent forms were distributed to the grade seven and eight female population of MacDonald Drive Junior High School in St. John's (See Appendix A). Of the 160 (76%) who responded 137 (86%) gave consent for their daughters to participate in the investigation.

Measures. Pubertal development was measured with the Physical Development Scale (Petersen, Crockett, Richards and Boxer, 1988) (See Appendix B). The scale includes questions pertaining to growth spurt in height, pubic hair growth, skin change, breast development and menarche. Individual's weight and height are also recorded. Since this scale has only been recently developed, it has not been widely used to date. The Pubertal Development Scale has been shown to be reliable and valid (Petersen, et al., 1988).

Two sets of questions developed by the author for assessing knowledge and preparation of menarche, and the level of social support received prior to and during menarche, were also included. The Social Support and Preparation Inventory -



Post-Menarche, was designed for those individuals who have experienced menarche (See Appendix C) while the Social Support and Preparation Inventory - Pre-Menarche, was developed for individuals who had not experienced menarche to date (See Appendix D). The main goal of the questioning was to determine the amount and source of preparation for the menarcheal experience, and the content of any information acquired. We were also interested in determining the amount and type of social support received before and during menarche. Choice of specific questions was guided by a review of the relevant literature. These questions were then reviewed by a second individual who had also completed a literature review. As a check for word knowledge and comprehensibility, the initial questionnaire was administered to six female adolescents ranging in age from 12 to 14. Minor revisions were made and checked with the pilot sample again to ensure comprehensibility.

Body dissatisfaction was assessed with the Body Image Assessment (Williamson et al., 1989) (See Appendix E). A series of seven cards (instead of 9 as had been used by Williamson et al., 1989, because the designer of the cards was unable to prepare nine distinct figures) of female silhouettes ranging on a scale from very thin (card one) to very fat (card seven) are presented in front of the subject in random order. Each subject is asked to "Please choose the card with the

figure you think looks most like you right now." (current body size) and the scale position of the card is recorded. Next, the cards are reshuffled and the subject is asked to "Please choose the card with the figure you most want to be like." (ideal body size). Again the scale position of the card is recorded. To determine the level of body dissatisfaction, the Ideal Body Size score is subtracted from the Current Body Size score.

The Rosenberg Self Esteem Scale is a measure of the self-acceptance aspect of self-esteem often considered "global" self-esteem (Rosenberg, 1965) (See Appendix F). It consists of 10 items all answered on a four-point scale ranging from "strongly agree" to "strongly disagree". The scale has been found to be a reliable, valid measure in previous studies of adolescents (O'Brien, 1985).

Dietary restraint was assessed with the Dutch Eating Behaviour Questionnaire - Restraint Scale (DEBQ-R) (Strien, et al., 1986) (See Appendix G). It consists of ten questions, each having a four-point rating scale ranging from "never" to "always". The scale has been demonstrated to be a reliable, valid measure of dietary restraint in other studies of adolescents (Hackett, 1989; Wardle and Beales, 1986). As the scale was originally developed for adults minor alterations were made to improve comprehensibility for adolescent and

preadolescent populations (Hackett, 1989). The DEBQ-R was found to have a high internal consistency with a Cronbach's alpha of 0.94.

Procedure. One week prior to data collection teachers were asked to give a brief description of the investigation, prepared by the author, to their home room classes (See Appendix H). Parental consent forms were distributed to any students interested in participating. All data were collected between May 22 and June 11, 1991.

So as not to disrupt academic classes all subjects were interviewed during their all-girl physical education classes, which has 100 per cent enrolment from the population sampled. At the beginning of each class everyone was asked to indicate who had received parental consent for participation by a showing of hands. Subjects were chosen from this sub-group on a basis of convenience, when they were not engaged in any class activity. An average of four girls per class period were interviewed. Due to time constraints, only 110 of the 137 girls who had received consent were interviewed.

Each interview was started with a brief introduction to the types of questions to be asked and explanation that all responses would be kept strictly confidential (See Appendix I). An identification code was generated for each subject

(first letter of last name; day of birthday e.g. 1, 10; number of sisters; last letter of first name; number of brothers). Use of the code ensured anonymity and permitted matching of the interview information with questionnaires to be completed during class time.

Any questions or concerns were dealt with, then the questions from the Physical Development Scale were asked. To maintain rapport and the comfort of the subject, weight and height measurements were made at the end of the interview.

Either the Social Support and Preparation Inventory - Post-Menarche or the Social Support and Preparation Inventory - Pre-Menarche was presented next. As some of the subjects did not understand or misunderstood some of the items, questions were sometimes reworded in order to improve comprehensibility. For some items, probes were made to clarify subjects' responses. Upon completion of this questioning, the Body Image Assessment was administered.

Finally, the subject was weighed and measured on a balance scale (Health-O-Meter, Continental Scale Corporation). Each interview lasted approximately 15 minutes.

The DEBQ-R and the Rosenberg Self-Esteem Scale were introduced to all home room classes by the teacher with a

statement prepared by the investigator (See Appendix J). Prior to completing the questionnaires, teachers instructed the subjects to generate individual identification codes following the same procedure used in the personal interviews. The questionnaires were administered a second day to anyone who had not completed them during the first administration.

### Results

The sample consisted of 110 girls, 92 of whom had reached menarche at the time of interviewing and 18 who had not. Detailed demographic information for both groups is available from Table 1. The age of menarche was available for 88 of the 92 post-menarcheal subjects. The mean menarche age was 12.2 years which is slightly below the average of 12.6 years as determined by Frisch (1976). The pre-menarcheal cohort is absent from the average mean, making the sample incomplete. When the pre-menarcheal subjects' menarche age becomes available, the average age for the combined group will increase. Since the figure determined by Frisch was demonstrated 16 years ago, it is possible that average menarche age continues to follow the decreasing trend of the past number of decades.

The sample's mean Body Mass Index of 19.71 closely matches the mean Body Mass Index of 19.73 for a similar age group reported in the Physical Fitness of Canadian Youth (1985). The post-menarcheal subjects' mean Body Mass Index was 21.54, while that of the pre-menarcheal group was 17.99 (See Table 1).

**Table 1**  
**Demographic Summary and Mean Scores**  
**on Standardised Measures for**  
**Pre and Post-menarche Girls**

Age	12		13		14		All	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
N	6	11	10	48	2	32	18	92
wt kg	45.7	56.8	45.6	53.9	43.0	58.1	45.4	55.6
ht cm	156.5	160.6	160.1	160.3	159.5	161.2	158.8	160.6
BM	18.67	21.81	17.81	20.97	16.89	22.38	17.99	21.54
DE BQ	12.17	20.45	11.40	18.02	6.0	20.44	11.06	18.99
BD	1.17	1.55	1.1	1.3	1.0	1.6	1.11	1.45
RS	17.17	16.27	15.5	16.81	19.0	17.29	16.44	16.92

**Note.**

N - number of subjects  
 wt - weight in kilograms  
 ht - height in centimetres  
 BM - Body Mass Index  
 DEBQ - Dutch Eating Behaviour Questionnaire  
 BD - Body Dissatisfaction  
 RS - Rosenberg Self-esteem score

Effects of Early Menarche. Using criteria for objective timing of menarche as described by Tanner (1972) and Rierdan and Koff (1985) post-menarcheal subjects were categorized as being early if they reached menarche before 12 years (41.6%), on time if they reached menarche between 12 years and 13 years 11 months (58.3%), and late if they experienced menarche at 14 years or later (0%). The age of menarche ranged from 9.83 years to 13.75 years. The lower quartile was 11.7 years (140.4 months) and the top quartile was 12.83 years (154 months), with a median of 12.08 years (145 months).

Although the correlation between objective and subjective timing of menarche is significant ( $r=.56$ ), it is relatively low, indicating a weak correspondence between the two variables. Objective timing of menarche did not correspond with subjective timing in 35% of the post-menarcheal girls. Twenty per cent of the subjects who reported themselves as on time were actually early and 28.2% of the subjects who were chronologically on time reported themselves as early. Sixty two per cent of the subjects who were chronologically late reported themselves as on time.

To test the hypothesis that actual or perceived early menarche results in higher body dissatisfaction and consequent increased dietary restraint, forward stepwise regression



analysis (using NCSS 5.01, 1987) was used. The forward stepwise regression technique was used because, although we hypothesized that subjective timing would explain more body dissatisfaction variance than objective timing, we did not have any specific expectations regarding the relative importance of the other variables in explaining body dissatisfaction and consequent dietary restraint. One of the advantages of the forward stepwise regression technique is that it adds variables into the regression equation in the order in which they contribute to the prediction of a dependant variable (Hosmer and Lemeshow, 1989). Since the present study is exploring the ability of a number of independent variables without a predetermined rank order in explaining dependent variable variance, the forward stepwise technique is the preferred analysis to use (Hosmer and Lemeshow, 1989).

Independent variables in the forward stepwise regression equations included: objective and subjective timing of menarche, dietary restraint as measured by the DEBQ-R, Body Mass Index, pubertal status as measured by the Physical Development Scale, self-esteem as measured by the Rosenberg Self-esteem Scale, time elapsed since menarche, and amount of preparation for menarche. Time elapsed since menarche was determined by calculating the number of months between

menarche and the month of data collection. During personal interviews subjects were asked "What did you know about the menstrual cycle before you experienced it?". Based on the answers to this question subjects were assigned a preparation score ranging from 1 (not at all prepared) to 7 (extremely well prepared). Answers to the preparation for menarche question were scored by two independent raters and interrater reliability was found to be 84%.

The analysis revealed that both objective and subjective timing of menarche accounted for an insignificant amount of the body dissatisfaction variance, less than three per cent combined (See Table 2). Thus our hypothesis was not supported. Body Mass Index which accounted for 14.83% of the variance was the best predictor of body dissatisfaction ( $t=3.30, p<.01$ ) (See Table 2), followed by pubertal status which accounted for 7.3% of the variance ( $t=-2.3, p<.05$ ). None of the remaining independent variables were significant. The combined independent variables included in the stepwise regression equation accounted for 24.6% of the total body dissatisfaction variance.

In explanation of the dietary restraint variance the regression analysis revealed body dissatisfaction accounted for an insignificant amount (1.7%) as did subjective and

**Table 2**  
**Stepwise Regression of Independent**  
**Variables on Body Dissatisfaction**  
**and Dietary Restraint**

	Standard Estimate	t	R2
<b>Dependant Variable:</b>			
Body dissatisfaction			
<b>Variable:</b>			
BMI	0.40	3.3**	0.148
Puberty	-0.28	-2.3*	0.073
Menarche time	0.44	1.8	0.045
Agestart	0.33	1.4	0.027
Time		0.4	0.002
RSE		1.0	0.013
Preparation		0.4	0.002
<b>Dependent Variable:</b>			
Dietary Restraint			
<b>Variable:</b>			
Menarche Time	0.32	2.5**	0.091
BMI	0.30	2.2*	0.072
Puberty	-0.22	-1.7	0.043
RSE	0.18	1.4	0.029
Body Dis	-0.15	-1.1	0.017
Time		0.4	0.002
Agestart		0.3	0.001
Preparation		0.1	0.000

\*p&lt;.05

\*\*p&lt;.01

Note.

Menarche time - number of months since menarche  
 BMI - Body Mass Index  
 Puberty - pubertal status  
 RSE - Rosenberg Self-esteem score  
 Body dis - body dissatisfaction score  
 Time - subjective timing of menarche  
 Agestart - objective timing of menarche  
 Preparation - amount of preparation for menarche

objective timing which combined accounted for less than one per cent (See Table 2). Thus our hypothesis that body dissatisfaction would explain a significant amount of the dietary restraint variance was not supported. The forward stepwise regression analysis revealed that time since menarche, which accounted for 10.2% of the variance ( $t=2.5, p<.01$ ), and Body Mass Index, which accounted for 7.2% of the variance, were the only variables explaining significant dietary restraint variance as measured by the DEBQ-R. The combined independent variables accounted for 23.27% of the total dietary restraint variance.

Intercorrelations of all dependant and independent variables are available in Appendix K.

Pre/Post Menarche Comparisons. Seventy per cent of the post-menarcheal girls reported they either had dieted in the past or were currently dieting. Fifty per cent of the pre-menarcheal subjects reported they had engaged in some dieting practises.

Seventy-five per cent of the post-menarcheal subjects selected ideal figure silhouettes which were smaller than the figure they selected as corresponding to their current body size. A significantly smaller number of the pre-menarcheal

sample, 33.3%, selected thinner figures as their ideal (Chi square (2, N=110)=12.62,  $p < .05$ ).

It was expected that post-menarcheal girls would exhibit a significantly higher degree of dietary restraint as measured by the DEBQ-R, than pre-menarcheal girls. A GLM ANOVA (using NCSS 5.01, 1987) with age covaried out, revealed the post-menarcheal group DEBQ-R mean of 18.99 (sd 9.8) (See Table 1) is significantly greater than the pre-menarcheal group DEBQ-R mean of 11.06 (sd 8.9) ( $F(1,107) = 9.99, p < .05$ ) (See Figure 1).

There are no independent criteria available for categorizing restraint scores as measured by the DEBQ-R. As an approximation it is suggested that scores on the DEBQ-R from zero to nine be categorized as 'normal' concern for dieting, those between 10 and 19 be classed as 'mild' concern, scores between 20 and 29 as 'high' concern, and those above 30 be categorized as 'extreme' concern (Hackett, 1989). To be classed in either of the latter two categories an individual would need to report either many 'sometimes' restraint practises or several 'often' or 'very often' rigid restraint practises.

Using these criteria, 18 (19.6%) post-menarcheal girls and 9 (50%) of the pre-menarcheal girls reported 'normal'

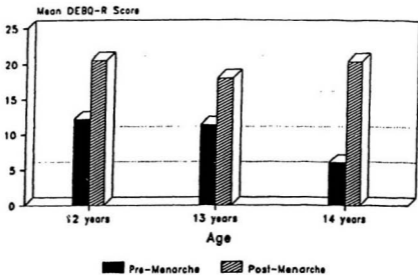


Figure 1. Mean DEBQ-R scores for pre and post-menarche girls.

concern for dieting; 31 (33.7%) post-menarcheal and 5 (27.8%) pre-menarcheal girls reported 'mild' concern; 28 (30.4%) post-menarcheal and 4 (22.2%) of the pre-menarcheal sample reported 'high' concern; while 15 (16.3%) of the post-menarcheal and 0 (0%) of the pre-menarcheal girls reported 'extreme' concern for dieting (See Figure 2). Chi square analysis revealed the post-menarcheal group obtained scores in the 'high' and 'extreme' categories significantly more frequently than the pre-menarcheal group (Chi square (3, N=110)=9.13,  $p < .05$ ).

Post-menarcheal girls did not demonstrate significantly higher levels of body dissatisfaction as was expected. The post-menarcheal group Body Image Assessment mean of 1.45 (sd .85) (See Table 1) was not significantly greater than the pre-menarcheal group mean of 1.11 (sd .68) ( $F(1,108) = 1.44$ ,  $p > .05$ ) (See Figure 3). Thus, our hypothesis was not supported.

The hypothesis that post-menarcheal girls would exhibit significantly lower levels of self-esteem, as measured by the Rosenberg Self-esteem Scale, was also not supported ( $F(1,108) = 0.05$ ,  $p > .05$ ) (See Figure 4).

Feelings toward Menarche. During the personal interview subjects were asked "What were your feelings when you had your first period?". Responses to this question were categorized

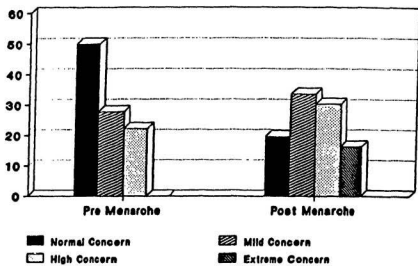


Figure 2. Frequency of pre and post-menarche girls in DEBQ-R categories.



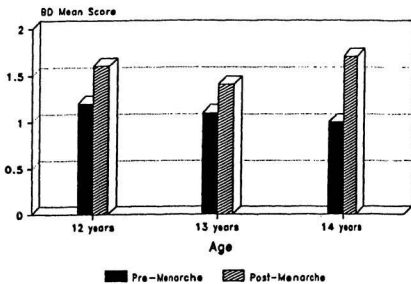


Figure 3. Mean body dissatisfaction scores for pre and post-menarche girls.

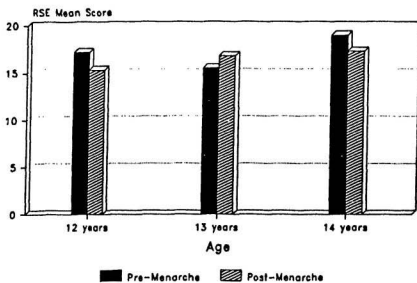


Figure 4. Mean Rosenberg Self-esteem scores for pre and post-menarche girls.

as either positive, negative, or indifferent. Positive responses were those which indicated in some way 'happiness' that menarche had started. Examples of positive responses included "I was excited", "I was happy because I would be like all of my friends who already had it", and "I knew I was finally becoming a woman". Negative responses were those which suggested the subject was not happy about having started menstruation. Such responses included "I hated it", "I wish it never had to happen to me", and "It was gross and I was scared". Indifferent responses included those which suggested it did not matter one way or the other whether menstruation had occurred. Examples of an indifferent response include "It did not matter, I knew it had to happen sometime" and "It did not bother me when it happened". All responses were categorized by two independent raters and there was 92% agreement between scorers. Fifty-nine (64%) of the subjects reported feelings which were classified as negative; 13 (14%) reported feelings which were positive; and feelings of indifference were reported by 20 (22%) of the subjects. The negative preponderance was significant (Chi square (2, N=110)= 40.10,  $p < .01$ ).

Subjects were also asked to rate the degree to which they experienced a number of specific positive and negative feelings toward their menarcheal experience. As shown in

Figure 5, subjects more frequently reported experiencing emotions which are classified as negative. Subjects frequently reported feeling "not at all" to the positive emotions of 'excited', 'grown up' and 'pleased', while they more frequently reported 'very' to the negative emotions of 'surprised', 'scared', 'embarrassed' and 'gross'.

In response to the question "What was the most positive thing about having your period?", 33% of the subjects stated they could not recall any positive aspects. Of those who reported some positive aspects, the most frequent response was that it was a sign of maturing (31.5%). Other positive responses included being liked by friends (13.1%); it was part of being a woman (1%); and it enabled one to have children (1%).

When asked "What was the most negative thing about having your period?", 100% of the subjects responded with some negative aspect. The most common negative response was related to the hassle involved (e.g., carrying supplies, messiness) (26%). Other negative responses included physical discomfort (17.4%); behavioral limitations (e.g., cannot go swimming or play sports) (16.3%); and emotional changes (8.6%).

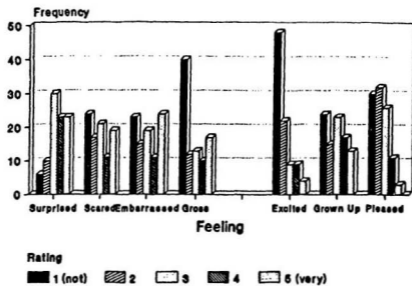


Figure 5. Frequency of positive and negative feelings toward menarche in post-menarche girls.

The mean preparation score for menarche was 2.35 (sd 0.97), which indicates that overall the subjects were not very well prepared for the menarcheal experience.

How well subjects were able to talk to their mothers, fathers, siblings, friends and teachers before their menarcheal experience was taken to indicate the amount of social support they had received for their menarche. Scores ranged from 1 to 5, a score of 1 indicated the subject was able to talk to the source very well, and a score of 5 indicated the subject was unable to talk at all to the source about menarche. Most subjects were able to talk to their mothers about menarche (mean score 2.2), however they were unable to discuss the matter with their fathers (mean score 4.9). Subjects were also able to talk to their friends about menarche (mean score 2.1), however they were unable to talk to their siblings (mean score 4.3) or teachers (mean score 4.2). In summary, post-menarcheal girls reported receiving support for the menarcheal experience from their mothers and friends but little support from their fathers siblings or teachers.

### Discussion

The main hypothesis of this study that actual or perceived early menarche results in body dissatisfaction and consequent dietary restraint was not supported. The time elapsed since menarche accounted for the most significant amount of dietary restraint variance as measured by the DEHQ-R. These two results suggest that on average, dietary restraint increases at menarche, regardless of timing, and the increase appears to continue over a period of time. This inference is further supported by the finding that post-menarcheal girls were found to express restraint significantly more frequently, as well as to have significantly higher restraint scores than pre-menarcheal girls. Although it cannot be determined from the present study exactly how long the increase in restraint continues, it may be concluded that the onset of menarche does play some role in restraint development, and the effects appear to develop over a period of a number of months.

Pubertal status accounted for a significant amount of body dissatisfaction variance. This indicates that a prominent effect of normal pubertal changes is it makes girls dissatisfied with their bodies. This is consistent with an earlier finding by Dornbusch, et al., (1984) who reported that normal body changes during puberty are evaluated negatively by

adolescent girls, which suggests girls express some degree of dissatisfaction toward these changes. In addition, others have reported the external pubertal changes (e.g. weight gain) evident to others are more likely to have a negative effect on the developing girl than less evident changes such as menarche (Brooks-Gunn and Warren, 1985).

As for dietary restraint, 4.3% of its variance is attributable to pubertal status. Although the amount of variance accounted for was not significant, it approached significance and was the third variable entered into the regression equation behind the two significant variables. Considering this along with the finding that post-menarcheal girls were also found to more frequently experience 'high' or 'extreme' levels of restraint than pre-menarcheal girls, it appears that the progress of puberty plays some role in restraint development. Follow-up investigations are needed to study this relationship in more detail.

Our failure to replicate previous findings which demonstrated a significant relationship between menarche timing and body dissatisfaction may be partly attributed to the use of different body dissatisfaction measures. Blyth, Simmons and Zankin (1985) who found such a relationship, requested subjects to rate on a four point scale their



satisfaction with their height, weight and figure development, as well as rate their overall looks. The present study's measure of having subjects select figures of female figures to correspond to their ideal and current body size, possibly did not measure the same component of body dissatisfaction as the Blythe et al., (1985) study. Their method measured an attitudinal component, whereas we investigated figure preferences without questioning subjects about their feelings toward their selections or asking how important being discrepant from their ideal was to them.

Another possible problem with our body dissatisfaction measure is there are only seven cards of female figures, while the Williamson et al., (1989) study used nine cards of greater discrepancy. A majority of post-menarcheal girls selected card 3 or 4 to correspond to their current body size and card 2 as their ideal figure. Although this indicates some degree of body dissatisfaction it suggests the subjects were not highly dissatisfied with their current figure. However, it is possible that had more card selections of finer discrepancies between cards 1 and 4 been available, subjects would have selected figures further apart on the scale thus indicating a greater degree of dissatisfaction. This possible shortcoming with the body dissatisfaction measure may also explain why

there was not a significant difference in dissatisfaction scores found between pre and post-menarcheal girls.

Although a significant proportion of the post-menarcheal sample were found to practise varying levels of dietary restraint, the level of body dissatisfaction experienced was not a significant predictor of the amount of dietary restraint variance. While we were expecting a significant relationship between body dissatisfaction and dietary restraint, it is possible that individuals who are dissatisfied with their body do not necessarily restrict their food intake. The pubertal process seems to effect both body dissatisfaction and dietary restraint, however, dissatisfaction, as measured by figure discrepancy, and restraint appear to remain relatively independent of each other.

Post-menarcheal girls were expected to demonstrate significantly lower self-esteem scores than pre-menarcheal girls, however our hypothesis was not supported. While it appears menarche and puberty have some effects on the level of body dissatisfaction and dietary restraint experienced, such does not appear to be the case regarding global self-esteem. This finding replicates earlier studies which demonstrated body dissatisfaction (body esteem) to be a separate component from overall self-esteem, and experiencing it does not

necessarily mean an individual suffers from low self-esteem. Our finding also corresponds to Simmons et al., (1983) who reported pre and post-menarcheal girls did not differ significantly in the degree of self-esteem they demonstrated.

Body Mass Index accounted for the largest amount of body dissatisfaction variance and a significant amount of dietary restraint variance among post-menarcheal girls. Girls who are overweight are more dissatisfied with the appearance of their body than normal or under weight individuals, and they are more likely to restrict their food intake. This finding corresponds to several previous studies which have demonstrated overweight individuals respond to social pressures to be slim and report levels of body dissatisfaction and dietary restraint which are significantly greater than that of normal or underweight individuals (Boskind-White and White, 1983; Herman and Polivy, 1980).

The amount of preparation for menarche was expected to account for a significant amount of body dissatisfaction and dietary restraint variance, however our hypothesis was not supported. As we used a retroactive measure of prior knowledge, it is possible we did not accurately assess the subjects' level of preparation for the menarcheal experience. In response to the preparation question a number of subjects

said, "I knew everything", yet they were unable to provide many factual details regarding their prior knowledge of menarche. Considering the possibility that many subjects were unable to recall what they knew about menarche prior to experiencing it, a prospective study of pre-menarcheal girls may be a more accurate way to assess preparation for menarche.

The present study's findings regarding feelings toward menarche indicate that overall the subjects investigated viewed menarche as a negative experience. One hundred per cent of the post-menarcheal subjects were able to report some negative aspect of their menarche, while only 66% were able to report some positive aspect. The most common positive response was that it was a sign of maturing, which corresponds to Ruble and Brooks-Gunn (1982). Similarly, the most negative aspect of menarche was the hassle involved (e.g., carrying supplies and messiness), which was also reported by Ruble and Brooks-Gunn (1982) to be the most negative aspect regarding menarche. Considering that negative feelings toward menarche have been shown to be highly correlated with negative menarcheal experiences which has consequences such as body dissatisfaction, it is important to investigate why the negative feelings prevail, and exactly what impact that has on the type of menarche one experiences.

The present study indicates that overall the sample investigated was not very well prepared and did not receive much social support for the menarcheal experience. These particular findings have important implications for both the school system and parents. Considering previous research which has demonstrated that girls who are unprepared and receive little social support for the menarcheal experience report more negative menarcheal experiences than better prepared and more supported girls, it is suggested that the school curriculum be reviewed and provisions be made for more education on the subject of menarche. It is likely that if the sample investigated had more knowledge and support regarding menarche they would not have reported a significant number of negative feelings toward the onset of menstruation.

#### Future Research

Although this study's main hypothesis regarding the effects of menarche timing on body dissatisfaction and consequent dietary restraint was not supported, we did demonstrate that the time lapse since menarche did contribute to a significant amount of the dietary restraint variance. This suggests dietary restraint increases at menarche, regardless of timing, and according to our data it appears to increase for at least a number of months. This particular finding has interesting implications for future research. It

warrants further investigation which is aimed at understanding exactly why menarche leads to food restriction and isolating characteristics peculiar to those post-menarcheal girls who continue to restrict their food intake well beyond menarche.

Pubertal status was found to account for a significant amount of body dissatisfaction variance, which indicates normal pubertal development does play some role in the development of appearance concerns. Future research must endeavour to isolate and understand the specific features of pubertal development which lead to these concerns occurring. The research must be expanded to include attempts to understand the characteristics peculiar to those girls who continue to be dissatisfied with their body once pubertal development is complete. A longitudinal study with prepubertal girls as subjects is likely the best method to use for such an investigation.

This study demonstrated that a significant proportion of the sample investigated did report varying levels of dietary restraint as well as selected thinner figures than their current size as ideal. These findings correspond to previous studies which have demonstrated that the desire to be thinner and food restriction occur in prepubertal and pubertal girls. Considering previous findings which indicate a direct

relationship between preadolescent and adolescent dietary restraint with the development of more serious eating disorders, the present findings warrant the continuation of research whose aim is to isolate factors involved in adolescent body dissatisfaction and dietary restraint development. It is only when these factors are fully understood that preventative measures may be designed in an effort to lessen the frequency of body dissatisfaction, dietary restraint and eating disorders which are all so prevalent in our society.

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**Appendix A**  
**Parental Consent Form**

Dear Parents,

We request your permission for the participation of your daughter in a study of the physical and emotional changes of becoming an adolescent and their effects on her attitudes. This participation will consist of completing two questionnaires in class and having a ten minute personal interview.

Approval for this study has been given by the school board and the principal of your child's school. If you wish to ask any questions about this study, you are invited to call either of the researchers, or Dr. A.S. Ross, Head, Psychology Department, M.U.N., at 737-8496. All records will be kept confidential.

Please Circle One

I agree that my child will participate.      YES      NO

Parents Signature \_\_\_\_\_

Date \_\_\_\_\_

Thank you,

Rhonda G. Hackett, B.Sc.  
Researcher

368-3072

David Hart  
Professor

737-7683

## Appendix B

### Physical Development Scale

To begin I would like to ask you some questions about physical development.

- |  |   |   |   |   |
|--|---|---|---|---|
| 1. Would you say that your growth in height has not yet begun to spurt, has barely started, is definitely underway, or does growth seem completed?   | 1 | 2 | 3 | 4 |
| 2. And how about your growth of body hair? Would you say that your body hair has not yet started growing, has barely started growing, has definitely started growing, or does growth seem completed? | 1 | 2 | 3 | 4 |
| 3. Have you noticed any skin changes, especially pimples? Would you say that skin changes have not yet started, have barely started, have definitely started, or are completed?                      | 1 | 2 | 3 | 4 |
| 4. Have your breasts begun to grow? Would you say that growth has not yet started, has barely started, has definitely started, or would you say that growth is completed?                            | 1 | 2 | 3 | 4 |

Menstruation refers to when you are having your period. Do you know what that means?

- |   |       |   |            |   |
|---|-------|---|------------|---|
| 5. Have you begun to menstruate? (If yes what was the date of first menstruation? If not certain, ask what grade she was in, what season and try to get a month). | 1     | 2 | 3          | 4 |
|   |       |   | Month ---- |   |
|   |       |   | Year ----- |   |
| 6. Subjects height in centimetres   | ----- |   |            |   |
| 7. Subjects weight in kilograms   | ----- |   |            |   |

- 1 = No  
 2 = Yes, barely  
 3 = Yes, definitely  
 4 = Development completed



## Appendix C

Social Support and Preparation Inventory  
Post-Menarche

Now I would like to ask you some questions about the menstrual cycle. Again, if you have any questions please feel free to ask them.

- 1) What did you know about the menstrual cycle before you experienced it? (use probes such as 'explain that some more')
- 2) What was your main source of information about the menstrual cycle?

How much information about your periods did you get from?

School	none	some	quite a bit	all
Mother	none	some	quite a bit	all
Father	none	some	quite a bit	all
Siblings	none	some	quite a bit	all
Friends	none	some	quite a bit	all

- 3) For each of the sources: "How well were you able to talk to your \_\_\_\_\_ about menstruation before you had your first one?  
How comforting was this?

Teacher	very well	1	2	3	4	5	not at all
	very comforting	1	2	3	4	5	not at all
Mother	very well	1	2	3	4	5	not at all
	very comforting	1	2	3	4	5	not at all
Father	very well	1	2	3	4	5	not at all
	very comforting	1	2	3	4	5	not at all
Siblings	very well	1	2	3	4	5	not at all
	very comforting	1	2	3	4	5	not at all
Friends	very well	1	2	3	4	5	not at all
	very comforting	1	2	3	4	5	not at all

- 4) What do you know now that you did not know before about the physical changes which occur during menstruation?  
(use probes here)

- 5) What do you know now that you did not know before about the emotional changes which occur during menstruation? (probes)
- 6) What were your feelings when you had your first period?

Request respondents to rate the following feelings:

Not Surprised	1	2	3	4	5	Surprised
Not Excited	1	2	3	4	5	Excited
Not Scared	1	2	3	4	5	Scared
Not Embarrassed	1	2	3	4	5	Embarrassed
Not Rejected	1	2	3	4	5	Rejected
Not Gross	1	2	3	4	5	Gross

"You felt \_\_\_\_\_, what made you feel \_\_\_\_\_?  
(complete for each feeling rated four or five)

- 7) What was the most positive thing to happen when you began menstruating?
- 8) What was the most negative thing associated with having your first menstrual cycle?

#### **Social Support**

- 9) How well were you able to talk to your mother about your experience when you had your first menstruation?
- Very Well    1    2    3    4    5    Not At All
- 10) How comforting did you find this talk with your mother?
- Very Comforting    1    2    3    4    5    Not At All
- 11) How well were you able to talk to your father about your experience when you had your first menstruation?
- Very Well    1    2    3    4    5    Not At All
- 12) How comforting did you find this talk with your father?
- Very Comforting    1    2    3    4    5    Not At All
- 13) How well were you able to talk to your friends about your experience when you had your first menstruation?
- Very Well    1    2    3    4    5    Not At All

14) How comforting did you find talking to your friends?

Very Comforting    1    2    3    4    5    Not At All

15) Do you continue to talk to your friends about menstruating?

If yes, how comforting is this?

16) Do you talk to your friends about other aspects of your physical maturation?

If yes, about what?

17) If you had a question about menstruation, who are you most likely to ask? e.g. teacher, parent, friend

#### Timing

18) What do you think is the average age of a girl who has her period for the first time?

19) How many of your friends have experienced menarche?

Is that most of them or a minority?

20) How many of your friends experienced menarche before you did?

21) Do you consider yourself early, on time, or late?

### Appendix D

#### Social Support and Preparation Inventory Pre-Menarche

Now I would like to ask you some questions about the menstrual cycle.

- 1) What can you tell me about the physical changes which occur to a girl when she has her first period? (use probes here)
- 2) What can you tell me about the emotional changes which a woman or girl experience when she has her first period? (use probes)
- 3) How would you rate your feelings about beginning to have your period?

Ask respondents to rate the following feelings:

Not Eager	1	2	3	4	5	Eager
Not Scared	1	2	3	4	5	Scared
Not Embarrassed	1	2	3	4	5	Embarrassed
Not Gross	1	2	3	4	5	Gross
Not Excited	1	2	3	4	5	Excited

"You feel \_\_\_\_\_, what makes you feel \_\_\_\_\_?  
(Complete for each feeling rated 4 or 5)

#### Social Support

- 4) Have you learned anything about the menstrual cycle in school?

If yes, probe to find out extent, content and source.

- 5) How well are you able to talk to your mother about the menstrual cycle?

Very Well 1 2 3 4 5 Not At All (Very Difficult)

- 6) How comforting do you find these talks?

Very Comforting 1 2 3 4 5 Not At All (Upsetting)

- 7) How well are you able to talk to your father about having your period?

Very Well 1 2 3 4 5 Not At All (Very Difficult)

- 8) How comforting do you find these talks with your father?

Very Comforting 1 2 3 4 5 Not At All (Upsetting)

- 9) How well are you able to talk to your friends about menstruation?

Very Well 1 2 3 4 5 Not At All

- 10) How comforting do you find these talks with your friends?

Very Comforting 1 2 3 4 5 Not At All (Upsetting)

- 11) Do you talk to your friends about other aspects of your physical maturation?

If yes, about what?

- 12) If you had a question about menstruation, who would you ask?

#### **Timing**

- 13) At what age do you expect menarche to occur for most people?

- 14) How many of your friends have had their period?

Is that most of them or a minority?

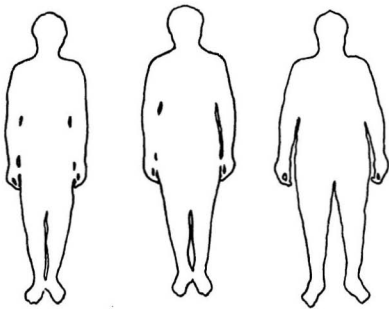
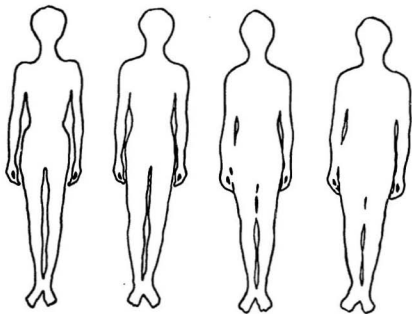
**Appendix E**  
**Body Dissatisfaction Assessment**

Please choose the figure you think looks most like you right now.

Card number chosen \_\_\_\_\_

Now pick the card which has the figure you would most like to be like.

Card number chosen \_\_\_\_\_



## Appendix F

## The Rosenberg Self-Esteem Scale

For each statement please circle the number which shows how much you believe that it describes how you feel about yourself. The numbers mean:

- |   | 1. Strongly<br>Agree | 2. Agree | 3. Disagree | 4. Strongly<br>Disagree |
|---|----------------------|----------|-------------|-------------------------|
| 1. I feel that I am a person of worth, or at least on an equal basis with others. | 1                    | 2        | 3           | 4                       |
| 2. I feel that I have a number of good qualities.                                 | 1                    | 2        | 3           | 4                       |
| 3. All in all, I am inclined to feel that I am a failure.                         | 1                    | 2        | 3           | 4                       |
| 4. I am able to do things as well as most people.                                 | 1                    | 2        | 3           | 4                       |
| 5. I feel that I do not have much to be proud of.                                 | 1                    | 2        | 3           | 4                       |
| 6. I take a positive attitude toward myself.                                      | 1                    | 2        | 3           | 4                       |
| 7. On the whole, I am satisfied with myself.                                      | 1                    | 2        | 3           | 4                       |
| 8. I wish I could have more respect for myself.                                   | 1                    | 2        | 3           | 4                       |
| 9. I certainly feel useless at times.   | 1                    | 2        | 3           | 4                       |
| 10. At times I think I am no good at all  | 1                    | 2        | 3           | 4                       |



### Appendix G

#### Dutch Eating Behaviour Questionnaire

Please answer the following questions by circling the answer that best describes what you do. Please circle a number to indicate your answer according to the following code:

- |   | never<br>0 | seldom<br>1 | sometimes<br>2 | often<br>3 | very often<br>4 |
|---|------------|-------------|----------------|------------|-----------------|
| 1. When you have put on weight do you eat less than you usually do?                               | 0          | 1           | 2              | 3          | 4               |
| 2. Do you eat less at mealtime than you would like to eat?  | 0          | 1           | 2              | 3          | 4               |
| 3. How often do you refuse food or drink offered you because you are concerned about your weight? | 0          | 1           | 2              | 3          | 4               |
| 4. Whenever you eat something, do you think of how fattening it might be?                         | 0          | 1           | 2              | 3          | 4               |
| 5. Do you deliberately eat foods that are slimming?   | 0          | 1           | 2              | 3          | 4               |
| 6. When you have eaten too much, do you eat less the following day?                               | 0          | 1           | 2              | 3          | 4               |
| 7. Do you deliberately eat less in order not to become heavier?                                   | 0          | 1           | 2              | 3          | 4               |
| 8. How often do you try not to eat between meals because you are watching your weight?            | 0          | 1           | 2              | 3          | 4               |
| 9. How often in the evenings do you try not to eat because you are watching your weight?          | 0          | 1           | 2              | 3          | 4               |
| 10. Does your weight enter into your decision about what to eat?                                  | 0          | 1           | 2              | 3          | 4               |
| 11. How often are you dieting?  | 0          | 1           | 2              | 3          | 4               |

**Appendix K****Teachers Introduction to Study**

Ms. Rhonda Hackett is a university student who is interested in studying adolescent female experiences of growing up and their attitudes toward these experiences, and how each affects how one feels about themselves. In addition, she is interested in investigating how these things are related to our attitudes toward eating and some of our eating habits. Her study will involve a personal interview during which time she'll ask you questions about your growing up experiences. She will also give out a questionnaire during class time sometime during the next couple of weeks. You will find out more about these things when you actually do them. Before taking part in this study you will have to have written permission from your parents. Do you have any questions?

Any girls interested in taking part in the study please raise your hand so that I may give you a parental consent form.

## Appendix I

### Investigators Introduction to Personal Interview

Hi my name is Rhonda Hackett. I am a student at Memorial University and I am conducting a study of how our attitudes about eating relate to our growing up experience. This interview should take approximately ten or fifteen minutes, and during it I will be asking you some questions about the physical changes you experience as you grow. In addition, I will ask you some questions about your attitudes regarding these and some other experiences.

It is important for me to tell you that I do not need to record your name on any of this material. Instead we will generate an ID code so that I can match this information up with some questionnaires you will complete in class as another part of this study. Any information you give me will be held in strict confidence.

Do you have any questions about anything I just said? If you have any questions as we go through the interview please feel free to ask them. Are we ready to start?

**Appendix J****Teachers Introductory Statement to the  
DEBQ and the RBE**

(Please request all participants to generate a code using the following guidelines. This code is to be included in the space provided on the questionnaire marked ID CODE).

Please write the first letter of your last name;  
Now write the day of your birthday (e.g. 1, 10, 28);  
Next write the number of sisters you have;  
Now write the last letter of your first name;  
Finally, write the number of brothers you have.

Now you are asked to answer two short questionnaires. These are part of a university study of the changes that occur as you become an adolescent. Some of the questions are about feelings about yourself - all of us have some good feelings and some bad feelings about ourselves, so the questionnaire is designed to get a good sample of these. There is also a set of questions about your attitudes toward eating. Do you have any questions? (If there are not any questions posed, please instruct students to begin).

## Appendix K

Correlations of all Variables included in  
Regression Equation

	Time	Agestart	RSE	BMI	Rec	Prep
Time	1.0000	0.5552	0.1631	-0.3655	-0.5220	-0.1153
Agestart	0.5552	1.0000	0.1196	-0.2513	-0.8678	0.0285
RSE	0.1631	0.1196	1.0000	-0.0490	-0.0317	0.0464
BMI	-0.3655	-0.2513	-0.0490	1.0000	0.2529	0.1439
Recency	-0.5220	-0.8678	-0.0317	0.2529	1.0000	-0.0704
Prep	-0.1153	0.0285	0.0464	0.1439	-0.0704	1.0000
BD	-0.0980	-0.1261	0.1752	0.3855	0.1980	0.0010
Puberty	-0.2135	-0.0833	-0.2132	0.1562	0.1937	-0.0465
DEBQ-R	-0.2219	-0.3114	0.1735	0.2843	0.3192	0.0570

	BD	Puberty	DEBQ-R
Time	-0.0980	-0.2135	-0.2219
Agestart	-0.1261	-0.0833	-0.3114
RSE	0.1752	-0.2132	0.1735
BMI	0.3855	0.1562	0.2843
Recency	0.1980	0.1937	0.3192
Prep	0.0010	-0.0465	0.0570
BD	1.0000	-0.1620	0.0999
Puberty	-0.1620	1.0000	-0.1268
DEBQ-R	0.0999	-0.1268	1.0000

## Variables

Time	- subjective timing of menarche
Agestart	- objective timing of menarche
RSE	- Rosenberg Self-esteem Scale
BMI	- Body Mass Index
Recency	- recency of menarche
Preparation	- preparation for menarche
BD	- body dissatisfaction
Puberty	- pubertal status
DEBQ-R	- DEBQ-R score





