

GENDER DIFFERENCES IN BODY IMAGE DISSATISFACTION, EATING  
DISTURBANCE AND PERCEPTION OF MEDIA IMAGERY IN PRE-ADOLESCENT  
CHILDREN

Thesis submitted for the degree of  
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at the University of Leicester

by

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## **Abstract**

The aims of the present study were to a) examine gender differences in body image dissatisfaction, disordered eating and drive for muscularity in pre-adolescent children and b) to explore whether children experienced perceptual distortions whilst looking at media imagery. One hundred and ninety one children aged between nine and ten years participated in the study. Levels of body image dissatisfaction were found to be equal amongst boys and girls. However, their expression of body image dissatisfaction differed, in that most girls wished for a thinner body shape, whereas the boys were equally split between those who wished to be thinner and those who wished to be larger. There were no gender differences in levels of eating disturbance. Boys reported a significantly higher drive for muscularity than girls. A significant interaction was found between the gender and the size of media celebrities on the perceptual distortion task. The clinical implications of these findings are discussed. This includes the need for educational work with professionals and children, to raise awareness of the rising prevalence of eating disturbance and body image dissatisfaction in pre-adolescent children and gender differences in their expression. The results of this study also suggest that clinical services may see a rising prevalence of eating disorders and exercise disorders in males. Implications for further research are discussed.

In our current society, women, men and children are constantly being bombarded by images and societal values which reinforce the belief that 'thin equals attractive and successful' and 'fat equals lazy, ugly and bad'. Celebrities constantly reveal how their lives have been miraculously changed by becoming thin and magazines are full of images of emaciated models and advice as to the latest diet craze. Although it is widely accepted that such societal messages have led to the development of poor body image, self esteem and disordered eating in many young women, recent research is starting to suggest that these effects have proliferated to men and, perhaps more worryingly, to children.

Thankfully, eating disorders in children are a rare occurrence before puberty at the time of writing this report (Bryant -Waugh & Lask, 1999). In order to minimise the number of young people who go on to develop eating disorders, it is of clinical relevance to identify the aetiology of such disorders through the study of antecedents and risk factors for the development of eating pathology. By researching pre-adolescent children, psychologists can learn more about the development of predisposing factors that present in children before eating disorders develop, which is commonly after puberty. Over the past ten years, there has been a rapid expansion in the literature examining factors such as levels of body image dissatisfaction and disordered eating attitudes in pre-adolescent children. Whilst the concept of body image dissatisfaction has been traditionally associated with adolescent girls and young women, recent research has uncovered the disturbing possibility that children as young as five years of age have expressed concerns about their body image and are fearful of becoming fat (Feldman et al, 1988).

In addition, trends in the literature suggest that problems with body image are prevalent amongst boys as well as girls. A recent literature review by Cohane and Pope (2001) suggested that body image dissatisfaction was common in boys of all ages and was



frequently associated with distress. These findings can perhaps be linked to research which suggests that even young boys and girls have internalised pejorative sociocultural messages about obesity. 7 to 11 year old boys and girls rated obese children as being lazier, having fewer friends, being less academically successful and being less liked by their parents than average-sized or thin children (Hill & Silver, 1995; Tiggemann & Wilson-Barrett, 1998).

### **Definition of body image**

In order to tease out the relationships between body image, self concept and eating behaviour, it is useful to highlight the complex, multi-factorial nature of body image.

Grogan (1999) suggested one possible definition of body image as

*"a person's perceptions, thoughts and feelings about his or her body" (p. 1).*

Grogan's (1999) definition implies: a *cognitive* component, which may alter as a child progresses through developmental stages; an *affective* component, which may be susceptible to alteration through exposure to family, cultural and media influences; and a *physiological* component, which may change as puberty is reached. It is hypothesised that children who have poor body image may experience this physiological component as a physical feeling of discomfort or distress, which may precipitate a range of behaviours, including disregulated eating patterns and increased levels of exercise. This literature review aims to systematically examine these areas and associated issues.

### **Body image dissatisfaction**

Ricciardelli and McCabe (2001) proposed that the best way to understand the concerns of children about their body image is to look at tools which have been designed to measure the construct. In order to establish the nature and prevalence of body image

dissatisfaction and eating concerns in children, a range of age-appropriate measures have been derived from tests which were originally designed for adult use. These tests have been adapted to use age-appropriate language, be shorter in length and ask simpler questions (Ricciardelli & McCabe, 2001). Researchers into body image make a distinction between the two differing components of body image dissatisfaction: perceptual body-size distortion and attitudinal measures of dissatisfaction with one's body shape (Gardner, 2001). The three most popular methods of measuring body image concerns in children are (1) figural selection tasks, (2) whole body size estimation techniques to measure perceptual distortions and (3) attitudinal questionnaires (e.g. Thelen et al., 1992; Candy & Fee, 1988; Mendelson & White, 1982).

**Figural selection tasks** consist of a series of line drawings of children, which range in size from very underweight to very overweight (e.g. Collins, 1991). There are separate pictures for boys and girls. From the selection of drawings, the child is asked to indicate their perceived and ideal body size. Each figure corresponds to a point on a numerical scale. A body image dissatisfaction score can therefore be calculated by subtracting the child's rated ideal body size from their current body size. Recent research suggests that there is no difference in accuracy between boys and girls on figural selection tasks and that children as young as five years of age can make accurate judgements about the size of their bodies (Williamson & Delin, 2000). Test-retest reliabilities on this task are reported to be high (Wood, Becker & Thompson, 1996; Collins, 1991) and criterion-related validity has been established by comparing children's judgements with their actual Body Mass Index (Collins, 1991).

**Whole body size estimation techniques** have been used with children, although they tend to be used less frequently for research purposes due to time and resource constraints. Gardner et al. (1990) used a video projection technique with 5 to 13 year olds, in which children could adjust the width of a television image of their body until it

reached their perceived shape. Three psychophysical measures were used to determine the children's perceived body size: the method of adjustment; the staircase method; and adaptive probit estimation. In the method of adjustment task, the children were presented with an image of themselves that was distorted by between 20% and 30% of their real body size. They were then asked to manipulate the image, using a computer mouse, until they believed the image portrayed an accurate representation of their body. In the second task, the staircase method, children were presented with a distorted image of their body which was altered sequentially every two seconds. The child was asked to halt the sequence when they believed that the image accurately depicted their perceived body size. In the final, adaptive probit estimation task, children were shown a range of life-size images which had been distorted to be thinner or wider. They were asked to provide a verbal response as to whether the image was "too wide" or "too thin". Each of the three tests yielded a numerical score which recorded the child's levels of underestimation and overestimation on each task (Gardner, Sorter & Friedman, 1997). These percentages could be used to determine the levels of accuracy of body size perception in children of a variety of ages and across gender. It is of particular relevance to body image researchers to determine the age at which children begin to show perceptual distortions relating to their own body size, as this is recognised as one of the indices of body image dissatisfaction.

A variety of **attitudinal questionnaires** have been developed to assess body image disturbance in young children. Early research in this area was conducted using adult measures or adapted versions of adult questionnaires (Candy & Fee, 1998). However, concerns were raised as to the validity of these measures, as children may not express their body image dissatisfaction or dysregulated eating habits in the same manner as adults. In an attempt to overcome these methodological flaws, a variety of child-appropriate measures have recently been developed, which aim to modify language to appropriate reading levels e.g. Body Image and Eating Questionnaire for Children

(Thelen et al., 1992). These questionnaires are generally comprised of a series of statements, which the child can respond to using a Likert scale. However, despite attempts to produce questionnaires which used age-appropriate language, doubts were raised as to whether children as young as seven years could comprehend terms such as "dieting" and "bingeing" and the subsequent validity of these questionnaires was queried (Candy & Fee, 1998). Some of the most recent questionnaires have generated items through semi-structured interviews, e.g. Eating Behaviours and Body Image Test for Adolescent Girls (Candy & Fee, 1998), which acknowledge not only the forms of weight reduction techniques pertinent to younger children, but also the language that children use to describe these processes.

It is difficult to draw definitive conclusions as to which of the above forms of measurement is most effective at measuring body image dissatisfaction in children, as each format measures a subtle, yet qualitatively different aspect of the same construct. Furthermore, the vast majority of measures have been designed specifically for girls, which makes it difficult to draw conclusions as to their validity with all children. Children's ability to understand and complete scales is also dependent upon their age and level of cognitive ability. In many studies, researchers tend to include a range of measures from more than one of the above categories, in order to maximise the breadth and depth of their understanding of body image dissatisfaction in children.

### **Prevalence and nature of body image concerns in children**

The literature on figural selection suggests that many Western children consider their ideal body shape to be thinner than their current body shape (e.g. Williamson & Delin, 2000; Collins, 1991). The research implies that this effect is more pronounced in girls than in boys. Studies have been conducted with children in the United Kingdom (Hoare & Cosgrove, 1998), Sweden (Edlund, Halvarsson & Sjoden, 1996), Australia (Kelly, Ricciardelli & Clarke, 1999), Mexico (Benjet & Hernandez-Guzman, 2001),

Czechoslovakia (Frankova & Chudobova, 2000) and the United States (Maloney, McGuire, Daniels & Specker, 1989). Ricciardelli and McCabe (2001) reported that estimates for the number of children who desire a thinner body shape range from between 28% and 55% for girls and between 17% and 30% for boys. A smaller number of girls wish to have a larger or broader body shape (between 4% to 18%), whereas the estimated number of boys who wish to be larger varies markedly, from 13% to 48% (Ricciardelli & McCabe, 2001).

The above quantitative estimates are supported by qualitative research with this population. In a series of interviews with 8-13 year olds, it was found that 50% of the sample wanted to lose weight, 16% had attempted to lose weight and over a third of the sample wanted a thinner body shape (Schur, Sanders & Steiner, 2000). Crucially, this study highlighted that boys were also showing high levels of body dissatisfaction and that 42% of boys had either tried to lose or gain weight through altering their eating habits and increasing their levels of exercise.

Researchers are starting to understand that boys may express dissatisfaction with their bodies by either wishing to lose weight to look thinner, or by trying to gain weight to look more muscular, strong and grown up (Cohane & Pope, 2001). Many of the earlier studies only measured body image dissatisfaction along an uni-dimensional construct, in that they only asked if the children wished to be thinner or larger. Many boys did not wish to be thinner, which was interpreted by researchers that boys did not experience as much dissatisfaction with their bodies as girls. Earlier prevalence studies which suggested that girls experience much greater levels of body image dissatisfaction may therefore be presenting a distorted representation of the actual situation.

The literature seems to suggest that one particular subgroup of children are less susceptible to the effects of sociocultural pressures to be thin. In two American studies,

African-American children were found to experience less body dissatisfaction than Caucasian children, dieted less and were less concerned by the prospect of gaining weight (e.g. Lawrence & Thelen, 1995; Candy & Fee, 1998). Indeed, in the Lawrence and Thelen (1995) study, the majority of African-American children indicated that their current figures were larger than Caucasian children and their ideal body shape would be even larger, in comparison to the Caucasian children who wished for a smaller body size. The authors hypothesised that African-American children may not be exposed to the same attitudes promoting thin ideal body shapes as Caucasian children, even though African-American women tend to be heavier than Caucasian women. In this particular group of society, a curvaceous or strong looking woman may be perceived as attractive and desirable. However, such studies need to be conducted with children from a variety of cultural backgrounds before firm assumptions can be made as to the role of race as a protective factor against body image concerns.

### **Developmental changes in body image**

Recent research suggests that even children of very young ages have developed a concept of body image and can consistently express a preference for a particular body shape, although the nature of this preference may alter as the child progresses through developmental stages. In a Czech study, Frankova and Chudobova (2000) investigated body image in pre-school girls between the age of three and six years. They presented the girls with three dolls of differing body shapes (thin, average and obese) and asked them to dress each doll in the clothes that fitted them. The researchers observed a developmental shift, in that the three and four year old girls seemed to see no difference between the dolls and were unable to select the clothes that fitted correctly. In contrast, the five and six year old girls were able to tell the difference between the body shapes of the dolls and were able to dress them appropriately. When asked to choose the doll which looked most like them, a friend and their mother, the five and six year olds were able to make accurate judgements. They showed a preference for the smaller figures and

used pejorative words such as "fatty" to express their negative attitude towards the larger figures. The younger children consistently preferred the larger figures and selected larger figures to represent themselves, their friends and their mothers, although they were not able to verbalise the reasons for their preferences (Frankova & Chudobova, 2000). The researchers postulated that the younger children's preference for larger dolls could be explained by a construct known as the "baby scheme", which is a preference for cuddly, friendly looking toys, animals and people. It would have been interesting if this test had also been conducted with boys, to determine whether the younger girls' preference for larger toys was culturally based or part of the developmental maturational process. One possible explanation for this developmental shift is that until the age of four, children have not yet developed the mentalising capacity to believe that other people have beliefs and preferences about their world and that these beliefs govern people's behaviour (Happé, 1994). At the age of three, the child has no concept of other people's cultural predilections regarding body image and will not provide socially desirable responses to such tasks. However, by the age of five, children may have acquired sufficient mentalising capacity to form a representation that parents or peers prefer slim looking people and they should also show this preference. This representation will also be strengthened through exposure to media images and sociocultural values. As the child progressively becomes older, they will become more aware of how other people perceive themselves and will internalise these opinions to form a sense of self and also to govern their behaviour. Rolf (1976, cited in Thelen et al., 1992) suggested that by the age of ten years, children are aware of other people's opinions of them. Furthermore, they accept other people's opinions to be a true representation of reality.

Body image dissatisfaction has been found to increase as children become older and existing studies suggest that this effect is particularly noticeable in girls. However, it

should be noted that the vast majority of research conducted in this area has been with girls and information about the development of body image in young boys is sparse.

In a psychophysiological task with six, nine and 12 year olds, Gardner, Sorter and Friedman (1997) found that girls' levels of body image dissatisfaction increased with age. At the age of six, they wished their bodies to be larger and by the ages of nine and 12, they wished that their bodies were smaller. These psychophysiological results appear to support those of other researchers (e.g. Frankova & Chudobova, 2000), who postulate that younger girls are less affected by social pressure than older girls and consequently exhibit lower levels of body image dissatisfaction. In contrast, the boys wished to have a larger body at all ages, which may explain why their levels of body image dissatisfaction appeared to decrease with age (Gardner et al., 1997).

Many of the questionnaire-based studies have only focussed upon girls, particularly when studying younger children. Research suggests that a small proportion of young girls experience body image dissatisfaction and that this proportion gradually increases with age. In a Swedish study of seven year old girls, 28% wanted to be thinner, 22% reported that they had tried to lose weight and 20% admitted to restricting their food intake with the goal of losing weight (Edlund, Halvarsson & Sjoden, 1996). In a later, longitudinal study which tracked the development of dieting behaviour in the same cohort of Swedish girls, Halvarsson et al. (2002) found that increases in dieting attempts began between 9 and 14 years. Between the ages of 7 and 11 years, attitudes and behaviours associated with disturbed eating had increased. The trend of increasing dissatisfaction with age is supported by an American study by Flannery-Schroeder and Chrisler (1996), who found that the body esteem scores of 8 to 9 year olds suggested that 35% wished that they were thinner and 18% of these children reported that they had been on a diet. By the time children had reached the age of 11 or 12 years, body dissatisfaction had significantly increased, to the point where 68% wished that they were



thinner and 28% had been on a diet. These figures closely relate to Maloney et al.'s (1988) study, which found that 40% of Grade 3 girls (8-9 years old) wanted to be thinner, as compared to 62% of Grade 6 girls (11-12 years old) who wanted to be thinner. The proportion of boys who wanted to be thinner also increased with age from 31% in Grade 3 (8-9 years) to 41% in Grade 6 (11-12 years).

These figures closely matched documented levels of eating disturbance in adolescents and young women (Maloney et al., 1989), which appears to suggest that levels of body image dissatisfaction are established by late childhood and remain relatively stable throughout the teenage years. There are conflicting views as to whether the age at which children reach puberty has a negative impact upon their level of body image dissatisfaction. Although one study found no association between these variables (Ackard & Peterson, 2001), Graber and Brooks-Dunn (2001) found that girls who had begun menarche at an early age experienced higher levels of body image dissatisfaction and had significantly higher levels of eating disturbance than the other girls. The longitudinal nature of this study highlighted that girls experienced highest levels of depressive and eating problems in mid-adolescence (Graber and Brooks-Dunn, 2001). This finding is supported by Benjet and Hernandez-Guzman (2001), who found that females experienced a slight decrease in their levels of satisfaction with their body image after puberty and became more depressed. In contrast, males felt better about their bodies as soon as their voices changed and this effect was maintained a year later. In a paper which investigated changes in body preferences across the lifespan, Rand and Wright (2000) studied children, adolescents, adults and middle-aged adults and found that tolerance for body size variations increased with age.

To summarise, studies suggest that even children as young as six years of age experience body image dissatisfaction and that levels of dissatisfaction tend to increase as children become older. Research suggests that levels of body image dissatisfaction

tend to stabilise by late childhood, although some studies suggest that the onset of puberty may be a particularly sensitive time for girls. However, the majority of research has conceptualised body image dissatisfaction as the desire to be thinner, which may be a possible reason why the majority of existing studies suggest that it is girls who have higher levels of dissatisfaction than boys.

### **Gender differences**

In a study of developmental changes in children, Gardner, Sorter and Friedman (1997) found that no differences between boys' and girls' level of body image dissatisfaction emerged until the age of eight years. There has been a general consensus amongst researchers that gender differences are not apparent until between eight and ten years of age (e.g. Thelen et al., 1992; Gardner et al., 1997; Ricciardelli & McCabe, 2001) and that from this point, girls consistently express more body image dissatisfaction than boys (e.g. Collins, 1991; Wood et al., 1996; Maloney et al., 1988). The exact reasons for this suggestion require clarification, although possible explanations for the late emergence of gender differences include cognitive difficulties with the comprehension and completion of existing psychological measures in younger children, or that the internalisation of sociocultural influences does not become apparent in girls until they reach middle-late childhood (Ricciardelli & McCabe, 2001). As previously noted, there is a paucity of research into the nature of body image disturbance in younger boys, in addition to growing concerns as to the limited face validity of measures which only define body image dissatisfaction in terms of a desire to be thinner.

A recent study has made the interesting suggestion that, rather than gender being the defining factor *per se*, identification with masculine or feminine personality traits may explain the gradual emergence of gender related differences in body image. In an examination of the function of sex roles and gender identification in the development of body dissatisfaction, Thomas, Ricciardelli and Williams (2000) found that in eight to ten

year olds, gender traits were found to predict problem eating for boys, but not for girls. Boys who obtained higher scores on a Femininity Scale were more likely to report higher levels of dieting and food preoccupation. The authors interpreted this finding in terms of a "femininity hypothesis", which postulates that identification with feminine characteristics reflects lower self-esteem and greater need for approval from others, which is expressed in a variety of ways, including problem eating (Thomas et al., 2000). The study also raised the stimulating point that the girls' mean scores on the Masculinity Scale were the same as those of the boys and there were no gender differences in levels of body image dissatisfaction. Thomas et al. (2000) suggested that identification with androgynous (both male and female) personality characteristics in young girls could act as a protective factor. Until late childhood or puberty, many girls are not likely to spend time developing a feminine image in order as a means of sexual attraction and it is at this point that young women may become particularly dissatisfied with their bodies.

### **Body Mass Index (BMI)**

This is a construct which is commonly used in eating disorders research and provides a quantitative measure of relative body weight. Bryant-Waugh and Lask (1999) define Body Mass Index as,

*"the ratio of relative body weight derived from the formula 'weight in kilograms divided by height in metres, squared'. " (p210).*

This formula yields a numerical value where the average score is 20. A score of 15 or below indicates that the person is underweight and a score of 25 or above suggests that they are overweight. Smolak and Levine (2001) postulated that a high BMI score could be conceptualised as an indirect contributor to body image problems, which is mediated by social-psychological processes. Caucasian children who are overweight are continually exposed to the ubiquitous sociocultural message that people with heavier

body weights are socially undesirable. In a study of negative stereotyping among children, girls and boys aged between 7 and 12 perceived obese children to be less friendly, happy, popular, attractive and much more lazy than thin or average-sized children (Tiggemann & Wilson-Barrett, 1998). In addition, Hill and Silver (1995) found that nine year old children rated overweight children as being unhealthy, having few friends and unattractive. These stereotypes were made by children of a range of body weights, which highlights the pervasive nature of the message that children have internalised, that "thin is good and fat is bad". It is not surprising that children who are overweight internalise these messages and Kostanti and Gullone (1998) have found a significant relationship between high BMI scores and body image dissatisfaction.

As might be expected, in addition to having higher levels of body image dissatisfaction, research suggests that overweight children also want to be thinner. In a study of 8 to 12 year olds, Rolland, Farnhill and Griffiths (1996) found that 76% of overweight girls and 56% of overweight boys wished that they were thinner. Of the 379 nine year olds studied by Hill, Draper and Stack (1994), it was found that the heaviest children wished that they were thinner and had more restrained eating than nine year olds who were of average weight. Vander Wal and Thelen (2000) also found that overweight children dieted more, had more restrained eating, were more fearful of becoming fat and were more dissatisfied with their bodies than children of average weight. Girls were more likely to demonstrate these behaviours than boys. Researchers have also observed that overweight children have lower body esteem than average sized children (Hill, Draper & Stack, 1994; Gardner, Sorter & Friedman, 1997).

To summarise, researchers have reached a consensus that gender differences in the expression of body image dissatisfaction become observable between the age of eight and ten years. This may be due to a developmental process in which their cognitive abilities and sense of self-concept are becoming more sophisticated and they begin to

identify with either masculine or feminine personality characteristics. It is suggested that children who identify strongly with masculine characteristics will wish to develop a strong, muscular physique, whereas children who identify with feminine characteristics may be more likely to try to attain a thinner body shape which corresponds with cultural ideals. Research has suggested that nine year old children have internalised the message that "fat is bad" and that obesity is socially undesirable. Consequently, children with high BMI scores have high levels of body image dissatisfaction, wish that they were thinner, diet more than other children and are fearful of becoming fat.

### **Eating disturbance in children**

It is important to highlight that there are qualitative differences between dieting and eating disturbance. Dieting occurs amongst a high proportion of the population and commonly entails reducing calorie consumption and increasing levels of physical activity. In contrast, disturbed eating patterns occur much less frequently and include behaviours such as binge eating, preoccupation with food, purging and over-exercising. Although dieting is conceptually different from eating disturbance, the two factors may be interrelated. It is the view of some researchers that early dieting can be conceived as a risk factor for the development of later problems, such as chronic body image dissatisfaction, obesity, weight cycling and eating disorders (Shisslak et al., 1999; Smolak et al., 1999).

### **Measurement of eating disturbance**

A variety of measures have been designed for the purpose of measuring eating disturbance. Traditionally, measures have been derived from existing adult measures to include age appropriate language and concepts which are appropriate to a younger age group.

One of the most frequently used assessments is the Children's Eating Attitudes Test (ChEat) (Maloney et al., 1989). This 26-item questionnaire has been derived from the adult measure, the Eating Attitudes Test (Garner et al., 1982). The ChEat measures the three main components of eating disturbance, namely: dieting and purging behaviour (e.g. "I have been dieting"); food preoccupation (e.g. "I give too much time and thought to food"); and social pressures to eat (e.g. "I feel that others would like me to eat more"). These factors differ slightly from those factors measured by the adult measure, in that some expressions of eating disturbance in adults, including bulimia and knowledge of specific types of food, are not easily observable in children (Smolak & Levine, 1994). Researchers have demonstrated high levels of test-retest reliability ( $r = 0.81$ ), which is reported to be consistent from the age of seven years, and reasonably high levels of internal reliability, with a Chronbach alpha value of 0.76 (Maloney et al., 1988).

Flannery-Schroeder and Chrisler (1996) adapted the ChEat so that it could also be used by five and six year olds whilst maintaining acceptable levels of internal consistency and reliability. This study suggested that younger children (5-6 years) experienced higher levels of eating disturbance than the older children. However, the researchers were forced to employ a different methodology with the youngest children which required the researcher to read the questions out loud and record the child's responses verbatim. This methodology contrasted with that of the older children, who read and completed the measures in privacy. The modification for younger children was required as many of the children could not read the measures. It could be speculated that the younger children did not fully understand the concepts involved, in addition to the fact that they may have answered with a positive response bias to please the researchers. This response bias would be more pronounced than in the younger children than for those who completed the written test, due to the increased social pressure placed upon them.

Kelly, Ricciardelli and Clarke (1999) administered the Children's Eating Attitude Test to 228 8 to 10 year olds and identified four factors for girls (Dieting, Food Preoccupation, Social Pressure to Eat and Restricting and Purging), which closely mirrored research with older girls and women. In contrast, they found four different factors for the boys (Dieting vs. Purging, Dieting and Food Preoccupation, Global Problems and Emotional Eating). This suggests early qualitative differences in the expression of eating concerns and that, for boys, emotional concerns about eating and becoming overweight could be a possible predictor of disregulated eating later in life (Kelly et al., 1999).

Whilst the ChEat is a popular measure which is frequently used in current research, a variety of additional measures have been specifically designed for children. The Body Image and Eating Questionnaire (Thelen et al., 1992) is a 14-item measure which focuses upon fear of becoming overweight, dieting history and food restraint. Internal consistency has been demonstrated to be good (Thelen et al., 1992). However, there are no data available to describe levels of validity and caution should be exerted in applying results from this measure to a wider population.

Candy and Fee (1998) developed a rating scale to measure levels of body image dissatisfaction and eating disturbance in preadolescent girls: the Eating Behaviours and Body Image Test for Preadolescent girls (EBBIT) (Candy & Fee, 1998). The questionnaire items were generated by reviewing diagnostic categories of anorexia nervosa and bulimia nervosa in the Diagnostic and Statistical Manuals of Mental Disorders Manual (4<sup>th</sup> ed., American Psychiatric Association, 1994), conducting literature reviews of existing measures and conducting open-ended interviews with experts in the field, clinical psychologists and parents of children with eating disorders. Confirmatory principal-axis factoring with varimax rotation was used to force two factors: Body Image Dissatisfaction/ Restrictive Eating and Binge Eating Behaviours. The psychometric properties of this scale were good, with high levels of internal

consistency (Chronbach's alpha = 0.91 for the BID/ Restrictive Eating factor and 0.75 for Binge Eating Behaviours) and test-retest reliability of 0.90 and 0.79 for BID/ Restrictive Eating and Binge Eating Behaviours respectively. Multiple regression analyses were conducted using Body Mass Index, age, race and school to predict scores on either of the EBBIT factors. The results suggested that eating concerns showed qualitative changes as girls progressed through developmental stages. It also highlighted that, although body image dissatisfaction and food restriction were closely interconnected from an early age, these behaviours were only weakly related to bingeing behaviour. The authors speculated that this finding implied that, whilst young girls occasionally ate more than their usual daily intake, this was not associated with the feelings of self loathing and guilt that have been reported in older girls. A further observation was that purging behaviour did not emerge until early adolescence (Candy & Fee, 1998). Such studies are vital in compiling a profile of how disordered eating behaviours emerge over time, whilst may enable clinicians to highlight a developmental "window" for preventative work and early intervention. However, this work has not yet been conducted with boys, despite evidence to show that a significant proportion of young boys experience eating concerns (e.g. Schur, Sanders & Steiner, 2000).

Shisslak et al. (1999) have undertaken the substantial task of developing a measurement tool which can be used to predict those children who are at heightened risk of developing eating disorders. The McKnight Risk Factor Survey-III (MRFS-III) addresses a range of factors, including early maturation, high Body Mass Index, weight-related teasing and poor interoceptive awareness (Shisslak et al., 1999). However, although this tool is ambitious in nature, it is only of limited use as a research measure. The MRFS-III has only been developed for use with girls, has poor levels of reliability and validity with younger children and no estimates of the tool's predictive validity have been obtained to date.



To summarise, recent measures of children's eating attitudes and body image dissatisfaction have evolved to overcome some of the problems with comprehension, have increased in sophistication and most have demonstrated good levels of internal consistency, test-retest reliability and face validity. Factor analyses of these measures have also been able to provide indications of how body image dissatisfaction in children relates to factors such as disordered eating patterns and compensatory behaviours, which consistently arise in research with adolescent girls and young women with eating disorders (Candy & Fee, 1998). It should be noted that the majority of such studies have only included girls in their sample, whereas factor analysis of scores on children's measures suggests early gender differences in eating attitudes and behaviour. In addition, there is still a debate amongst researchers as to whether young children can fully appreciate the meaning of concepts such as "binge" and "vomit", with the implication that caution should be demonstrated when interpreting test data (Ricciardelli & McCabe, 2001). Two studies which reported higher levels of eating disturbance in younger children than in older children, which completely contradicts the majority of research in this area, explained these findings as being due to a lack of comprehension (Flannery-Schroeder & Chrisler, 1996; Rolland, Farnhill & Griffiths, 1997). This finding suggests that body image research with children younger than eight years of age may be unreliable because of the confounding factor of cognitive maturation, which needs to be distinguished from attitudinal change.

A crucial methodological flaw in the current literature is that research in this area continues to use cross-sectional designs, rather than developing longitudinal studies which track the emergence of eating disturbance in specific cohorts of children. Data of this kind would enable clinicians to determine whether cultural trends in body shape influence particular cohorts of children, which could be correlated with fluctuations in the frequency of prevalence of eating disorders in adolescence and early adulthood. In addition, rather than using a pathological model, such studies could enable researchers to

detect protective factors in those children who do not go on to develop disordered eating later in life.

### **Understanding risk factors for eating disorders in children**

A key question for health professionals who work with children will undoubtedly be one of risk assessment and identifying those children who are particular risk of going on to develop eating disorders later in life. Whilst the literature suggests that body image dissatisfaction is a relatively normative experience in many children, it is important to determine which of these children will move along the continuum of disordered eating patterns to a point that may ultimately endanger their health. To be able to answer this fundamental question, the literature regarding the emergence of eating disorders needs to be combined with what is known about the development of body image dissatisfaction.

Striegel-Moore, Silberstein and Rodin (1986) wrote a seminal paper, combining literature from social psychology, developmental psychology, gender issues, clinical psychology and medicine, to hypothesise the possible risk factors implicated in the development of bulimia. One of the key themes of the paper was the inherent difficulty in developing an aetiological model which could be applied consistently to such a heterogeneous population as people with bulimia. They concluded that, whilst each case was based upon individual events and precipitating factors, the evidence suggested a number of key, recurring themes which are of relevance in answering the question of which children are most susceptible to developing disordered eating.

One risk factor that is particularly pertinent with children was the observation that those who have accepted and internalised sociocultural attitudes about thinness and attractiveness to a greater extent are at increased risk of developing disordered eating habits.

*"The more [one] believes that "what is fat is bad, what is thin is beautiful, and what is beautiful is good", the more she will work towards thinness and be distressed about fatness" (p. 247, Striegel-Moore et al., 1986).*

However, as studies have demonstrated, the majority of children have already internalised the message that being "fat is bad" (e.g. Shapiro et al., 1997), which ties in with findings that many children are adapting their eating habits so that they will look more like their thinner peers. A further factor that has been highlighted is that women with bulimia aspire to a much thinner body size than normal controls (Williamson et al., 1985, cited in Striegel-Moore et al., 1986). Researchers should therefore be aware that children who demonstrate a large discrepancy score between their current and ideal shape on figural selection tasks may be at heightened risk. In addition, questionnaire measures such as the Children's Eating Attitudes Test (ChEat, Maloney et al., 1989) provide clinical cut-off scores which can be employed to determine whether a child has an eating disorder.

Striegel-Moore et al. (1986) also suggest that certain subgroups of children may be at heightened risk. This includes early developing children, whose physical shape and fat distribution may be markedly different from their peer group and children in boarding schools, who may be more likely to live in a culture of high achievement, competitiveness and perfectionism. Both of these scenarios involve situations where children are more likely to engage in social comparisons and are sensitive to being different from their peers. A final risk factor which is suggested is that of personality. In a longitudinal study of the role of childhood temperament in the later development of eating concerns, Martin et al. (2000) found that high negative emotionality and low persistence in babies were risk factors that predicted eating concerns later in early adolescence, particularly in girls. They concluded that temperamental characteristics

may heighten a child's vulnerability to a variety of risk factors, such as those previously discussed (Martin et al., 2000). The role of high negative emotionality as a childhood risk factor could be connected with the observation that there is a high prevalence of depressive symptomatology in women with bulimia (e.g. Fairburn & Cooper, 1982, cited in Striegel-Moore et al., 1986). In addition, studies by Hoare and Cosgrove (1998) and Mendelson, White and Mendelson (1996) suggest that children who have poor body esteem experience low self-esteem and have a lower perception of their value as a whole person. Whether a negative temperament predisposes children to be unhappy with their bodies, or whether feeling unable to live up to cultural pressures causes low self-esteem merits further investigation.

The longitudinal, developmental study by Martin et al. (2000) appears to imply that a particular temperamental style is causal in the development of later eating concerns. However, researchers into the emergence of bulimia in adults, such as Wiederman and Pryor (2000) would argue that the direction of causality begins with a drive for thinness, which has been determined to be a unique predictor of body image dissatisfaction using regression analyses. Their aetiological model proposes that particular cultural beliefs encourage a greater drive for thinness, which in turn causes the person to be hypercritical of their body. As a result of failed attempts to lose weight and conform to cultural ideals, the person becomes depressed and either diets intensively (anorexia nervosa) or fluctuates between bingeing and purging (bulimia nervosa) in an attempt to control their weight. As previously highlighted, further longitudinal research is necessary in order to reduce the inconsistencies between the developmental literature and eating disorders research.

What is evident from both developmental research and the eating disorders literature is that there continues to be a lack of clarity as to the emergence of eating disorders and that their aetiology is multi-factorial and complex in nature.

### **Eating disorders in children**

Researchers have reached a consensus that eating disorders do exist, albeit at very low rates, in pre-adolescent children (Jaffe & Singer, 1989), although estimating levels of prevalence of eating disorders in children is not an easy task. Researchers in this field make a qualitative distinction between eating disorders and problematic eating, such as failure-to-thrive or food "faddiness" that is common amongst many young children.

In a questionnaire-based study, Maloney et al. (1989) found that 6.9% of the children studied scored above the clinical threshold for anorexia nervosa. However, Bryant-Waugh and Lask (1999) emphasised that eating disorders in childhood can take many forms and are not confined to diagnoses of anorexia nervosa and bulimia nervosa. This suggests that levels of childhood eating disorders may be higher than previously estimated. In addition to the most common eating disorders, children can also be diagnosed as having Selective Eating, Restrictive Eating, Food Phobia, Food Avoidance Emotional Disorder, Compulsive Eating or Eating Disorders Not Otherwise Specified. In a paper which discussed a pilot study of the Eating Disorders Examination with children, Bryant-Waugh, Cooper, Taylor and Lask (1996) reported treating 16 children with eating disorders (mean age = 9.06 years). Eleven of these children had a diagnosis of Anorexia Nervosa, five had an Eating Disorder Not Otherwise Specified, two were Selective Eaters and three had Food Avoidance Emotional Disorder.

Furthermore, research suggests that body image dissatisfaction is not always present in children with eating disorders. Jaffe and Singer (1989) identified a cluster of children who were described as having "atypical" eating disorders, who were not dissatisfied with their bodies. The factors that were common amongst these eight children (mean age = 8.5 years) were that their eating disorders had started before puberty, they had an

absence of body image dissatisfaction or fear of becoming fat, and finally, they all had coexisting symptoms such as depression, anxiety or thought disorder.

### **Sociocultural Influences**

A disturbing trend that is highlighted in the literature is that even young children have internalised societal views that "fat is bad" and that thin is "ideal". Shapiro, Newcomb and Loeb (1997) found that 78% of boys and 75% of girls agreed with the statement: "It is bad to be fat". In order to learn more about the development of such beliefs, they devised a questionnaire called the Perceived Origins of Attitudes About Thinness and Obesity Scale (POAATO), which measures a variety of contributory sociocultural influences. The results suggested that for 8-10 year old boys and girls, the most important factors were (in order of importance): Other Relations (friends, cousins, aunts, uncles and grandparents); Nuclear Family (mom, dad, brother, sister); and the Media (television, magazines and newspapers). A major criticism of this study was that the levels of internal consistency of the two subscales (Disregulated-Restrained Eating Behaviours and Disregulated-Restrained Eating Attitudes) were extremely poor (0.53 and 0.22 respectively). However, other researchers have also found that the influence of significant others is fundamental in the development of body image dissatisfaction in children. Using hierarchical regression analyses, Griffiths and McCabe (2000) investigated the relationships between a variety of seminal factors which had been raised in the literature, in order to establish the causal pathways implicated in the development of body image dissatisfaction and disordered eating. They determined that the influence of significant others (society, parents, girlfriends and boyfriends) was a better predictor of body image dissatisfaction than Body Mass Index, self-esteem, locus of control and menarche. However, the impact of significant others did not predict disordered eating. They therefore hypothesised that the link between exposure to significant others and eating disturbance in children was mediated by a more complex relationship, although

there were trends in that children with higher body dissatisfaction tended to restrict their food and showed patterns of bulimic eating (Griffiths & McCabe, 2000).

### **Influence of parents**

Researchers present the plausible argument that parents serve a key function in the development of eating problems in children, in that some parents may create an environment which emphasises thinness and amplifies sociocultural messages regarding the importance of having a desirable body shape (Thelen & Cormier, 1995; Smolak et al., 1999). This argument is supported by studies which have established a link between parental dieting and dieting behaviour in children (e.g. Edlund et al., 1996; Smolak, Levine & Schermer, 1999).

In a study by Thelen and Cormier (1995), it was hypothesised that direct comments by parents about their child's size would have a stronger influence than modelling dieting behaviour. The researchers found that both boys and girls perceived that their mothers gave them more encouragement to lose weight than their fathers. A significant relationship was found between such encouragement from mothers and dieting in girls, but not in boys. Given the recent advances in knowledge about the nature of body image dissatisfaction in boys, it could be speculated that boys would be less likely to use dieting as a method of changing their body shape, but may be more likely to use exercise, which was not measured. The authors' hypothesis about the importance of modelling behaviour was supported, in that there was no correlation between parents' concerns about their own weight and dieting behaviour in their children (Thelen & Cormier, 1995). In contrast, Smolak et al. (1999) found that maternal comments about a child's weight were a significant predictor of poor body esteem, dieting and fear of becoming fat. One factor which may account for these conflicting findings is the degree of eating concern or disturbance which is shown by the child's mother. Children whose mothers are preoccupied by the desire to attain a thin body shape may experience harsh

criticism about their own body shape in addition to exposure to maladaptive eating behaviour. In a study of adolescent girls with eating disorders by Pike and Rodin (1991), their mothers exhibited higher levels of eating disorder symptomatology and dieting than mothers of girls without eating disorders. In addition, the mothers of girls with eating disorders were much more critical of their daughters than other mothers. They perceived their daughters as being unattractive and thought they needed to lose weight (Pike & Rodin, 1991).

In summary, the research suggests that it is mainly mothers who comment upon their child's need to lose weight. Such comments seem to have little relevance for boys, who may be more keen to develop muscles than to lose weight. Some researchers suggest that critical maternal comments may lead to low self-esteem and dieting in girls. Mothers who experience extremely high levels of body image dissatisfaction appear to create lower levels of body esteem in their daughters.

### **Influence of peers**

One possible mediating variable between the influence of peers and the onset of disordered eating is social comparison. The developing child uses his or her peers as a benchmark against which their own physical attributes, behaviour and achievements can be evaluated. Harter (1983) suggests that younger children are more likely to focus upon concrete, observable factors such as physical appearance when making social comparisons. A child could hypothesise that the fastest method of narrowing the discrepancy between how they feel their body looks and how they feel their body *should* look, as reflected in their wider peer group, is to lose weight through food restriction or dieting.

The importance of social comparison as a predictor of body image dissatisfaction is demonstrated in a study of adolescent girls by Schutz et al.(cited in Holt, 2000). Girls



were presented with the statement, "Has comparing your body with others ever made you feel as if maybe you ought to diet or lose weight?" In response, 44% of 7<sup>th</sup> Grade girls (age 11-12), 56% of 8<sup>th</sup> Grade girls and 64% of Grade 10 girls stated "sometimes" or greater. In addition, 20% of 7<sup>th</sup> Grade girls, 42% of 8<sup>th</sup> Grade girls and 44% of 10<sup>th</sup> Grade girls responded "sometimes" or greater to the statement, "Has comparing your body with others ever led you to actually start dieting?" (Schutz et al., cited in Holt, 2000). Heinberg and Thompson (1992) conducted a study with undergraduates to examine which kinds of social comparison increased the likelihood of development of body image dissatisfaction. They found that, whilst family were important when making non-appearance comparisons, such as career, possessions, etc., their peer group were of much greater importance when making appearance-related comparisons. The authors conceded that the results of an undergraduate sample were not generalisable to younger children, although they did argue that the views of peers plays a particularly important role in the development of body image in children (Heinberg & Thompson, 1992). It would be interesting to replicate the above studies with a younger sample. However, other research would support the role of social comparison in the development of eating disturbance. In Maloney et al. (1989), both girls and boys with high scores on the Children's Eating Attitudes Test believed that their friends would like them more if they were thinner. It may be that family appearance-related comparisons only occur when children are of a similar age and gender, so that comparisons are made in a similar way as with peers. In a study of sisters, Tsiantas and King (2001) observed that younger sisters were more likely to compare themselves negatively against older sisters (upward social comparison) and made negative evaluations about themselves. In contrast, the older sisters were less likely to make comparisons with their younger sisters and experienced higher levels of body image satisfaction.

The research suggests that levels of body image dissatisfaction and pressure to diet vary widely, not only across the age span, but also across predominant cultural ideals and

aspirations. Such findings strengthen the argument that social factors, namely culturally valued body images, play a major role in the aetiology of body image dissatisfaction and eating disturbance. Marika Tiggemann (2001) investigated the effect of gender composition of schools on body image dissatisfaction in adolescent women. She found that girls at single-sex schools placed greater emphasis on intelligence and professional achievement than girls at co-educational schools. The desire for achievement predicted a thinner ideal body image, as measured by a figural selection task (Tiggemann, 2001). The possibility that a competitive desire for intellectual and professional achievement is a predictive factor of body image disturbance is of strong relevance to mental health clinicians, whose clients with eating disorders are frequently young, successful, professional women.

To review the role of peers, there remains a paucity of research in this area with pre-adolescent children. One study suggest that children who experienced eating disorders thought that their friends would like them more if they were thinner. Another study suggested that pre-adolescent girls compare themselves negatively in comparison with their older sisters. There are studies with adolescent children, some of whom agreed that comparing their own bodies with other children made them want to lose weight. However, much more research needs to be conducted in order to gain clarification as to the views of younger children.

### **Cross- cultural studies**

In a study of third and sixth grade African-American and Caucasian children, Lawrence and Thelen (1995) observed that Caucasian girls reported more dieting behaviour than Caucasian boys, African-American boys and African-American girls. In addition, African-American children indicated that their ideal body shape was larger than their present body shape, in stark contrast to the Caucasian children who desired smaller body shapes than at present (Lawrence & Thelen, 1995). The authors speculated that these

differences may be attributable to cultural preferences for body shape, as reflected in the figures of significant family members and peers. With regards to the relationship between self-concept and body image, race was a key variable. Caucasian children identified a negative association between dieting and feelings of self-worth, in contrast to the African-American children. The authors posited that decreased body image satisfaction leads to an increase in self-criticism and a decreasing sense of self-worth (Lawrence & Thelen, 1995).

Cultural variation in ideal body image is also replicated in adult studies by Lake, Stager and Glowinski (2000), who studied Hong-Kong born and Australian women and Mautner, Owen and Furnham (2000), who investigated cross-cultural differences in women from America, Italy and England. However, this study found no cross-cultural differences in the relationships between body image dissatisfaction and six other correlates of eating disturbance, which suggested that cultural expectations may be less influential as women become older. Finally, cross-cultural studies have highlighted the need to provide cross-culturally sensitive definitions and measures of body image dissatisfaction and eating disturbance (Lake et al., 2000).

### **The role of the media**

Social comparison theory (e.g. Heinberg & Thompson, 1992) proposes that individuals who frequently engage in upward social comparison practices, that is, compare their appearance with that of more physically attractive individuals, are at greater risk of experiencing dissatisfaction with their bodies. It is widely accepted that media images have impacted upon societal notions of the "ideal" figure, through the repeated presentation of distorted or unobtainable images and labelling such figures as desirable, healthy and attractive. Relationships have already been identified between exposure to

media, body image disturbance and eating pathology in adults (e.g. Henderson-King & Henderson-King, 1997; Waller et al., 1994). A number of recent studies have begun to question in more depth as to the role of the media in the development of body image dissatisfaction and eating disturbance in older children and early adolescence (e.g. McCabe & Ricciardelli, 2001; Sherwood & Neumark-Sztainer, 2001; Tsiantis & King, 2001). It is unfortunate that there is currently an absence of such studies with children below ten years of age that could offer an invaluable developmental perspective. However, the results from these investigations can be used as a basis from which to speculate about developmental trends and gender differences in children's understanding of media imagery and their subsequent responses.

Sherwood and Neumark-Sztainer (2001) advocated that exposure to media imagery is not a causal factor in the development of body image disturbance, but rather that it acts a reinforcer of body image concerns in vulnerable women. This argument could be extended to children in that, although almost all children are exposed to strong societal messages through the media, the children who are most vulnerable to the effects of media imagery are those who are dissatisfied with their body shape and engage in social comparison practices. Polce-Lynch et al. (2001) examined the influence of media exposure in male and female adolescents. They found significant, negative relationships between boys' and girls' self-esteem, body image and exposure to the media. However, there were gender differences in the nature of these relationships. Path analysis suggested that the influence of media images on girls was associated with body image, which in turn was negatively associated with self-esteem. Polce-Lynch et al. (2001) conceptualised body image in girls as a "filter" between the effects of media exposure and self-esteem, which highlights the importance of physical appearance in the maintenance of mental health for females. These findings closely mirrored those of Posavac, Posavac and Posavac (1998), who found that women's body image dissatisfaction acted as a moderator of vulnerability towards weight concern when

exposed to media imagery. They observed that the majority of women felt more concerned about their weight when they were exposed to media imagery of thin women as opposed to neutral images. It was noted that the small proportion of women who showed high levels of satisfaction with their bodies did not show this effect (Posavac et al., 1998). A similar study has recently conducted with men, which demonstrated that men who were exposed to advertisements depicting muscular men wished to be significantly more muscular than a control group (Leit, Gray and Pope Jr., 2002).

Studies with adults and adolescents have suggested that mere awareness of sociocultural messages regarding desirable body shapes is not a sufficient explanation as to why some people go on to be dissatisfied with their bodies and engage in disordered eating habits. Cusumano and Thompson (1977) used regression analyses to tease out the relative influence of media exposure, awareness of sociocultural pressures and internalisation of societal messages upon body image dissatisfaction, disordered eating and self-esteem in women. They found that media exposure *per se* was not related to body image dissatisfaction, disordered eating or self-esteem. It was the internalisation of idealised standards of appearance that accounted for a substantial proportion of the variance. Awareness of societal messages was only weakly related to the above factors (Cusamano & Thompson, 1977). A study by Griffiths and McCabe (2000) with adolescent Australian girls (mean age = 12.6 years) found that perceived views of society regarding body shape was the only unique predictor of body image disturbance. This was in comparison to the views of parents and peers, self esteem, locus of control, onset of menarche, body mass index and the importance placed upon appearance. However, whereas societal views were a strong predictor of body image dissatisfaction in these children, societal views failed to predict eating disturbance.

Sherwood and Neumark-Sztainer (2001) have further investigated the extent to which children internalise the idealised sociocultural messages portrayed by the media. In a

study of 234 American Girl Scouts (mean age = 10 years), 28% of the girls strongly agreed or agreed with the statement, "Pictures of thin girls and women make me wish I were thin", 27% strongly agreed or agreed with the statement, " I wish I looked like a magazine model" and 18% admitted to comparing their bodies to girls on magazines and on television. A much greater proportion of the girls were aware of the influence of media upon people. Roughly 85% of the girls agreed that adverts on television or in magazines made people think that they would be happier if they were thinner, that they should go on a diet and that they were too fat (Sherwood & Neumark- Sztainer, 2001). So although at least 85% of the girls were aware of the presence of societal messages regarding thinness, only about a third of those girls had internalised those messages and were striving to reach this ideal. Research predicts that it is this subgroup of girls who would be at particular risk of developing poor body esteem and /or dysregulated eating habits. The researchers also found that a third of the girls reported that they were currently dieting. However, the paper did not explore whether the girls who were dieting were the same girls who showed high levels of internalisation. Furthermore, the percentages provided in this study should not be taken to be a representative estimate of ten year old American girls, as the sample came from the Girl Scouts, which is unlikely to reflect the diverse range of American cultures or socio-economic status. Indeed, this study would have been much more interesting if it had been conducted with both girls and boys of a variety of ages, from a cross-section of the community. Alternatively, it would be fruitful to include this measure into a longitudinal study, to establish how internalisation of societal messages changes over time, particularly around puberty.

The key findings as to the role of the media in the development of body image dissatisfaction can be summarised as follows: the presentation of unrealistic media images is not a causal factor in the development of body image dissatisfaction. However, it can strengthen feelings of inferiority and dissatisfaction in those people who are already dissatisfied with their bodies. Researchers emphasise that vulnerability to

developing body image dissatisfaction is heightened when the idealised standards of physical appearance that are displayed in the media are internalised. A shortcoming of this research is that it has not been conducted with children under the age of ten years and their responses to media imagery may be qualitatively different from adolescents.

### **Measurement of sociocultural influences upon children**

As researchers have become more aware of the impact of societal influences upon children, efforts are being made to produce measures which can accurately evaluate such constructs. As previously discussed, there is a growing realisation that the majority of existing scales have taken a uni-dimensional approach to the investigation of body image dissatisfaction, that is, they have only investigated the continuum of desire to be thinner or fatter. Recent exploratory studies have found that body image dissatisfaction can also be expressed through a desire to be larger or more muscular. McCabe and Ricciardelli (2001) conducted a literature review of all previous scales which were designed to assess aspects of sociocultural influences upon children. They concluded that the majority of studies focussed upon one specific social influence which was only pertinent to a specific research question, as opposed to taking a comprehensive view of the entire range of social pressures upon children. They also noted that the majority of such studies were only conducted with adult women and there was a paucity of information regarding pressures upon men and younger people. McCabe and Ricciardelli (2001) derived the questions for their own measure, the Perceived Sociocultural Influences on Body Image and Body Change Questionnaire, from literature reviews and semi-structured interviews with adolescent boys. They identified several sources of pressure to change shape, including general feedback, encouragement, teasing and modelling all from a range of sources, including parents and best friends. The scale addressed pressures to lose weight, gain weight and become more muscular. The influence of printed and visual media were also studied, although no differential effects were found between the two sources of media (McCabe & Ricciardelli, 2001).

However, they did find that boys and girls extracted different meanings from the media images to which they were exposed. Factor analysis of the media scales for the boys suggested the existence of a single factor, which provided feedback about the size and shape of their bodies and patterns of eating and exercise which could be utilised to change body shape. In contrast, the girls' responses suggested that the media scales could be broken down into three distinct factors: weight loss, weight gain and increasing muscles. The authors postulated that these results suggest that girls have a more acute ability to discriminate and understand the conflicting nature of messages presented by the media. They are aware of the co-existence of pressures to become thin, to gain weight and to increase muscularity, whereas the majority of previous research has focussed upon messages which encourage weight loss (McCabe & Ricciardelli, 2001).

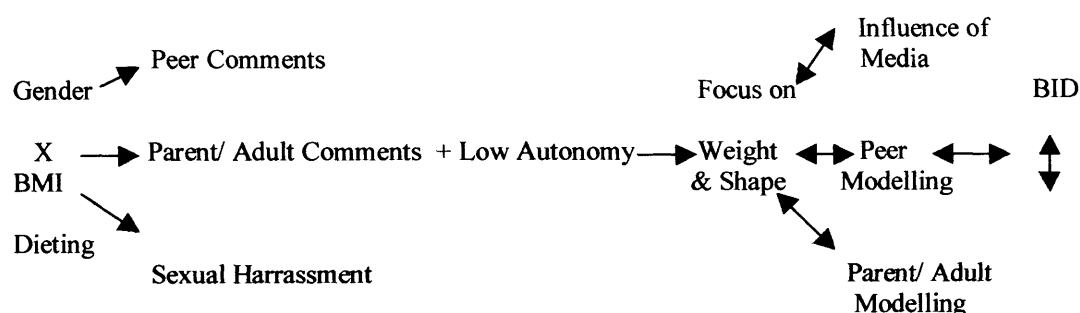
Smolak, Levine and Thompson (2001) have adapted an existing adult measure, the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ) for use with children, by adapting the language to age appropriate levels, including magazines which are read by this cohort of children and including questions relating to muscle development. Separate 14- item scales were developed for boys and girls and included statements such as, "Attractiveness is very important if you want to get ahead in this culture" and, "I tend to compare my body to people in magazines and on TV". They observed that both boys and girls were affected by sociocultural ideals, although the effect seemed to be greater for girls. Furthermore, they noted gender differences in that the influence of cultural factors led to increased weight control in girls and muscle development in boys.

From the above studies, a hypothetical model can be proposed as to the effects of media upon children. The effects of media images are observable in both girls and boys, although more so in girls. This may be because girls have a higher rate of exposure to images which portray unrealistic examples of celebrities and label these figures as the



ideal body shape. The emphasis of the majority of magazines for girls and women focuses upon the physical appearance of popular stars and techniques for increasing personal attractiveness. Girls become more aware of and are more able to discriminate between messages that encourage them to change their body shape, whereas boys use the media as a general source of feedback about their bodies. However, only some of these children will internalise these media messages to the extent that they change their eating habits. It is hoped that measures of internalisation of sociocultural pressures could be used as one element of a screening tool to determine which children are most vulnerable to developing eating problems.

### Explanatory models of the development of body image dissatisfaction in children



**Figure 1.** The Smolak and Levine (2000) Model of sociocultural influences on the development of body image dissatisfaction (BID) in children.

Smolak and Levine (2000) proposed a model which draws together many of the issues that have previously been discussed, including the contribution of gender roles and sociocultural beliefs about fat and thin people in the establishment of body image concerns. Smolak and Levine (2000) suggested that certain groups of children are much more likely to hear comments in their local environment about their body weight and appearance. Examples of such children include overweight children, particularly overweight girls. Such comments may come from family or peer conversations. The model emphasises how differing sources of criticism about body shape combine to

produce a powerful message for young children (Smolak & Levine, 2000). Whilst these authors place emphasis upon the mediating role of gender, recent research suggests that gender role identification may play an important role, which can explain the smaller, yet significant population of boys who experience body image dissatisfaction (e.g. Thomas et al., 2001). Therefore, boys who identify with more traditional feminine characteristics may experience problems such as low self-esteem and willingness to please others. This makes them particularly vulnerable to the development of poor body image.

Smolak and Levine (2000) have also incorporated the concept of a child's willingness to please others into their model, which is characterised as "Low Autonomy". Some children who have been teased about their shape may be more susceptible to the development of body image concerns because they are particularly keen to be popular and well-liked. If they believe that changing their body shape will make them more likeable and popular, they will place more emphasis upon their weight and shape and become increasingly unhappy with the way they look until they have reached their ideal size. The desire to be liked or to please others is proposed as a mediating variable, which explains why some children are more sensitive to media images than others (Smolak & Levine, 2000). As the child places increasing scrutiny upon their weight and shape, they focus increasing levels of their attention upon media, peer and parental models of socially desirable figures to reinforce their belief that popular, happy and successful people are thin. Because most children do not meet the images of sociocultural perfection which pervade the media, they feel increasingly negative about their own body and perceive an increasing need to lose weight (Smolak & Levine, 2000).

Whilst this model is useful in combining a wide range of sociocultural influences together into a coherent formulation, one criticism is that it only addresses children's desire to become thinner. Researchers are becoming increasingly aware of the small population of children who wish to become larger or more muscular (Cohane & Pope,

2001; Ricciardelli & McCabe, 2001) and predictive models need to be able to explain these findings. Furthermore, the above model requires empirical validation through testing children of a variety of ages, body mass distribution and cultural backgrounds. A final omission is that the above model does not explain the perceptual mechanisms through which children who are dissatisfied with their bodies become more likely to selectively attend to unrealistic images of "perfection". The current study was designed to investigate this question in more depth.

### **How do people with disordered eating perceive media imagery?**

Due to the low prevalence of children with eating disorders, the question of how children with eating disorders perceive media imagery has not yet been studied, although studies have been conducted with teenage and adult women. Baluch, Furnham and Huszcza (1997) conducted a study with three groups of women: teenage (mean age = 16), mature (mean age = 27) and anorexic (mean age = 28). They showed them a series of body drawings of men and women on a continua of body sizes, ranging from very thin to very obese and asked them to rate each drawing as to its attractiveness, health, confidence and popularity. The anorexic women labelled the drawings of fatter women as less attractive, less healthy, less popular and less attractive than the teenage and mature females. However, in ratings of thin women, the teenage girls responded in a similar manner to the anorexic women, in that they rated the drawings of the thin women to be significantly more attractive, healthy, popular and confident than did the mature women. The judgements of the teenage girls coincided with research conducted by Hill and Silver (1995) with younger children. Seven to 11 year old boys and girls rated obese children as being lazier, having fewer friends, being less academically successful and being less liked by their parents than average-sized or thin children (Hill & Silver, 1995). These findings may help us to understand why children who are dissatisfied with their bodies choose to focus upon thin role models, as they perceive them to be more attractive, popular and confident than larger role models.

Research with women (mean age = 20.1 years) has suggested that women with high levels of concern about their body image judged that media images of thin female celebrities were even thinner than their actual size. In contrast, women who had low levels of concern about their bodies were significantly more accurate in their judgement of the size of thin celebrities (King, Touyz & Charles, 1998). Subjects were shown one accurate and six distorted photographs of thin and large female celebrities. They were asked to select which of the photographs was the correct image. An accuracy score was obtained by calculating each woman's tendency to underestimate or overestimate the size of each celebrity (King, Touyz & Charles, 1998). The authors' interpretation of these findings was that women who experience high levels of body image dissatisfaction are actually more sensitive to the effects of media imagery because, not only do they selectively attend to images of thin women, they also perceive them in a different manner. So women with body image dissatisfaction are not simply striving for the startling levels of thinness displayed in the media, their aim is to be even thinner because this is their perception of these celebrities. There were no differences between the two groups in their judgement of large celebrities, as both women with high body image concerns and women with low concerns overestimated their size. Once again, this study can be criticised for its failure to include male subjects. It would be fascinating to determine the causal relationships implicated in this study, namely, do early perceptual distortions of media imagery lead to eating disturbance in an attempt to become thinner, or does eating disturbance and food deprivation cause distortions in the way people perceive media images? This paper aims to replicate the above study with children, to determine whether one factor precedes the other.

### **Rationale for the present study**

It is hoped that the above literature review has highlighted that whilst there is a considerable amount of research as to the nature of body image concerns and eating

disturbance in children, there are several areas of research which merit further investigation.

Firstly, a methodological shortcoming which has been raised on several occasions is the paucity of research which has been conducted with boys. This is despite the consistent findings of several studies which suggest that, although the proportion of body image dissatisfaction and eating disturbance is greater in girls, there remains a tangible subgroup of boys who experience high levels of concern about their bodies (e.g. Maloney et al., 1998; Cohane & Pope, 2001; Collins, 1991). Part of the reason why many researchers did not examine such factors in boys is that they were working along the uni-dimensional assumption that children with body image concerns only wish to be thinner. However, psychologists have recently become more aware that children have internalised a variety of complex and often conflicting messages from the media that emphasise the desirability of thinness, muscularity and strength simultaneously (e.g. Cohane & Pope, 2001; McCabe & Ricciardelli, 2001) and many existing measures have failed to address this issue. Pre-adolescent children of between 9 and 10 years have been chosen as an appropriate age group to investigate the presence of gender differences in body image dissatisfaction. Literature reviews, such as Ricciardelli and McCabe (2001) suggest that gender differences in the expression of body image dissatisfaction only become observable between the ages of 8 and 10 years. Furthermore, developmental literature suggests that there may be low levels of validity and reliability when measuring body image dissatisfaction in children who are younger than eight years of age (e.g. Flannery-Schroeder and Chrisler, 1996).

This study aims to investigate whether body image dissatisfaction exists in boys, but that its expression is different to that of girls, in that many boys wish to develop a muscular physique. Existing models of the development of body image dissatisfaction, such as Smolak and Levine (2000) fail to make this gender distinction. In this study, body image

dissatisfaction is operationalised as the discrepancy between one's current and ideal body shape. The Figural Selection Task (Collins, 1991) has therefore been chosen as the most appropriate scale to measure this construct, as the children can select the body shape which looks most like them and the body shape they aspire to. It is felt that the Figural Selection Task is a useful method of asking boys to express how they feel about their bodies, without asking them to engage in a conversation that they may find embarrassing, which may lead them to minimise their sense of dissatisfaction.

The majority of attitudinal questionnaires (e.g. Children's Eating Attitudes Test) only ask children about their desire to be thinner, which gives the false impression that girls experience higher levels of disturbance than boys. It is therefore expected that, in this study, girls will attain higher scores than boys on the Children's Eating Attitudes Test, as they are more likely to engage in weight loss behaviours.

This study hopes to highlight that boys may engage in alternative strategies to change the shape of their bodies, such as exercise or muscle development. In an attempt to explore this hypothesis further, gender differences in children's desire for muscularity will be examined, using a recently adapted version of the Children's Eating Attitudes Test (Holt & Ricciardelli, 2000). This test was administered to both girls and boys. It is hoped that the results can present the reader with a heightened understanding of the subtle, yet observable gender differences in body image dissatisfaction in children.

A final question is one of causality. It is evident that many children experience high levels of body image dissatisfaction, as demonstrated by studies in which some children report a large discrepancy between their perceived current body shape and their ideal body shape (e.g. Collins, 1991) and/ or high levels of eating disturbance (e.g. Maloney et al., 1989). Recent research suggests that children with high levels of body image dissatisfaction experience perceptual distortions with respect to how they see

themselves, with a tendency to overestimate the size of their bodies (Gardner, Sorter & Friedman, 1997). However, King et al. (1998) have made the fascinating observation that women with high levels of body image concern exhibit subtle perceptual distortions that apply not only to themselves, but also to prominent media celebrities who may act as role models for adults and children alike. The final part of this thesis will be an exploratory study which hopes to provide some tentative information as to whether children who exhibit high levels of body image dissatisfaction have perceptual distortions which affect the way they perceive media celebrities. This will be achieved by replicating the King et al. (1998) study with pre-adolescent girls and boys. The celebrities and instructions were altered so that they are appropriate to this particular cohort of children. In the King et al. (1998) study, women who were concerned about their own body shape underestimated the size of thin female celebrities and overestimated the size of large female celebrities. It is hypothesised that younger girls who are dissatisfied with their bodies might also show this effect. However, as this study is emphasising gender differences, the task will be adapted for use by boys. It is hypothesised that boys who are dissatisfied with their bodies will also underestimate the size of thin male celebrities, but overemphasise the size of large male celebrities.

### **Hypotheses**

1. Boys will display body image dissatisfaction as well as girls, as measured by a figural selection task. However, the expression will be different, in that boys may express a desire to be thinner or larger, whereas girls are more likely to express a desire to be thinner.
2. Girls will score more highly than boys on the Children's Eating Attitude Test.

3. Boys will respond more highly to questions pertaining to muscle development than girls on the adapted version of the Children's Eating Attitude Test (ChEat-M; Holt & Ricciardelli, 2000).
4. On the celebrities task, boys will display perceptual distortions in a different manner to girls.
5. Boys and girls who show high levels of body image dissatisfaction will be adversely affected by media images. Specifically,
  - a) girls who wish to be thinner will underestimate the size of thin female celebrities and will overestimate the size of large female celebrities.
  - b) boys who wish to be thinner will underestimate the size of thin male celebrities and will overestimate the size of large male celebrities.
  - c) The effect will be gender specific, in that girls will only show perceptual distortions for female celebrities and vice versa.
6. Boys and girls who show high levels of eating disturbance (above the clinical threshold of the ChEat) will be adversely affected by media images. Specifically,
  - a) girls who are above the clinical cut-off point for eating disorders will underestimate the size of thin female celebrities and will overestimate the size of large female celebrities.
  - b) boys who are above the clinical cut-off point for eating disorders will underestimate the size of thin male celebrities and will overestimate the size of large male celebrities.
  - c) The effect will be gender specific, in that girls will only show perceptual distortions for female celebrities and vice versa.



## **Method**

### **Participants**

A total of 191 children from six junior schools in Derby took part in the study. All of the children (90 boys, 101 girls) were from Year 5 (9 to 10 years). The majority of children (90%) were Caucasian, whilst the remaining 10% of children described themselves as Asian (3.1%), Chinese (2.1%), Black (1.1%) or Other (3.7%). A range of schools were recommended by a local Consultant Child Clinical Psychologist to reflect the range of socio-economic status within Derby. Two of the schools were inner city primary schools, two schools were based in the suburbs and the final two schools were in more rural communities.

### **Measures**

#### *Figural Selection Task(FST)*

Children were asked to indicate their perceived current size and their ideal body size using the Collins (1991) Figural Selection task (see Appendix D). The children were shown a range of line drawings of children of their own age, ranging from very thin to obese. There were separate scales for boys and girls. They were then asked to indicate their present perceived size (Which picture looks most like you?) and their ideal size (Which picture shows the way you want to look?). Children rated their current and ideal body shapes on the FST along an interval scale between 1 and 7, where 1 represents very thin, 4 represents average and 7 represents obese. A body image dissatisfaction score was obtained by calculating the discrepancy between the 'ideal size' score (as measured on a numerical scale under the pictures) from the 'current size' score. Test-retest reliabilities on this task are reported to be high (between 0.60 and 0.70 for current ratings and between 0.50 to 0.60 for ideal figure ratings: Wood, Becker and Thompson,

1996; Collins, 1991). Criterion-related validity was established by finding significant correlations between the pictures that children selected with their weight and BMI (Collins, 1991). Recent research suggests that there is no difference in accuracy between boys and girls on figural selection tasks and that accuracy remains consistent between five and 10 years of age (Williamson and Delin, 2000).

### *Children's Eating Attitude Test*

Problematic eating attitudes and behaviours were measured using the Children's Eating Attitude Test (ChEat; Maloney, McGuire and Daniels, 1988- see Appendix E). This test was adapted from the Eating Attitudes Test (Garner and Garfinkel, 1979; Garner, Olmstead, Bohr and Garfinkel, 1982) and incorporated simplified, age appropriate forms of language. The ChEat is a 26-item questionnaire which consists of a series of statements which correspond to four broad factors, including dieting, food preoccupation, global problems and emotional eating (Kelly, Ricciardelli and Clarke, 1999). Each child responded along a 6-point scale, with higher scores being indicative of greater eating disturbance.

With regards to reliability of the ChEat, Maloney et al. (1988) reported high test-retest reliability (0.81). However, Item 19 ("I can show self-control around food") was omitted from the scale by the original authors as it was found to be negatively correlated with the other items in the measure (Maloney et al., 1988; Smolak and Levine, 1994). This item was therefore removed from both of the scales used in the current study. Using the 25-item measure, Smolak and Levine (1994) reported internal reliability of 0.88.

Concurrent validity was established in that significant correlations were obtained between scores on the ChEat and independent measures of weight management and body image dissatisfaction (Smolak and Levine, 1994).

The test was administered so that it could be marked using two differing versions: the original 25-item format (Maloney et al., 1988) and in a recently adapted format which measures a desire for muscularity amongst boys and girls, in addition to previously researched behaviours (Holt and Ricciardelli, 2000). For the purposes of this study, the modified version of the ChEat will be referred to as ChEat-M.

In the ChEat-M (Holt and Ricciardelli, 2000), two of the original ChEat items relating to purging behaviour, item 9 ("I vomit after I eat") and item 26 ("I have the urge to vomit after eating") were removed by the original authors, as these behaviours have been shown to be uncommon in children. In addition, these items are frequently misunderstood by children (Rolland et al, 1997). Recent developments in the literature have highlighted the absence of questions relating to exercise and muscularity in children's measures of eating disturbance. The ChEat-M has therefore incorporated eight exercise and muscularity related questions to overcome this shortcoming. An internal reliability check was run on the muscularity questions and a high level of internal reliability was obtained (Chronbach's  $\alpha = 0.81$ ). A breakdown of which questions feature in each form of the ChEat is presented in Appendix J.

The factor structure of the ChEat-M was examined using Principal Components Extraction with oblique rotation (Holt and Ricciardelli, 2000). The results showed that the measure yielded four factors for boys, namely, Muscles and Exercising (accounting for 15.68% of the variance), Bingeing and Food Preoccupation (accounting for 10.18% of the variance), Social Pressures to Eat (accounting for 7.12% of the variance) and Dieting (accounting for 6.43% of the variance). The four factors identified for girls were: Muscles and Exercising (accounting for 6.09% of the variance); Dieting versus Food Preoccupation (accounting for 9.59% of the variance); Social Pressures to Eat (accounting for 6.46% of the variance) and Dieting and Muscle Preoccupation, which accounted for 21.28% of the variance (Holt and Ricciardelli, 2000).

### *Perceptual Distortions of Celebrities task (PDC).*

This measure was an adapted version of the King, Touyz and Charles (2000) study which examined the effect of body dissatisfaction on women's perception of female celebrities. In the original study, Australian women were presented with a series of images of female celebrities who had differing body shapes. The images were manipulated upon a computer so that the celebrity's figure was 10%, 20% and 30% thinner, or 10%, 20% or 30% larger than reality. The women were presented with all seven images and asked to choose the correct picture of the celebrity. An underestimation or overestimation value could subsequently be calculated.

In order to fill the gap in the literature as to the presence or absence of perceptual distortions in children, it was necessary to adapt the measure so that it was suitable for both young boys and girls. Pilot studies were conducted to ensure that male and female celebrities were selected who were age-appropriate and well known to this particular cohort of children. The PDC is displayed in Appendix F.

### *Pilot study A - Selection of appropriate celebrities*

In order to select celebrities who would be well known by nine and ten year olds, ten Year 5 children were asked to name thin and large male and female celebrities. The celebrities who were named most frequently formed the basis of a celebrity quiz, which was given to five Year 5 boys and 5 Year 5 girls from Derby. The children were asked if they knew who the celebrity was and whether they were thin or fat (copies of the Celebrity Quiz can be found in Appendix G). The most well known celebrities were selected for the perceptual task (ranging from 63% recognition to 100% recognition). Four celebrities were chosen for the perceptual task; one thin woman (Hannah Spearitt, a pop singer), one thin man (Jack Ryder, an actor in a popular soap opera), one large woman (Lisa Riley, a television presenter) and one large man (Ricky Tomlinson, a

comedian and soap opera actor). A fifth celebrity who had been judged to be of average size (Britney Spears, a pop singer) was selected to be used as an example to show the children. In the experimental task, each child viewed all of the celebrities.

#### *Celebrity booklet*

Magazine images of the five celebrities were scanned into a computer. They were then adjusted so that they were all the same height (whilst retaining accurate proportions). The images were displayed in a booklet format. On the front of each page was an accurate size picture of the celebrity, with their name and occupation written underneath. The manipulated images were presented on the reverse of the page, which encouraged the child to hold the original image in their mind, rather than making measurements or visual comparisons. The example picture was presented first, followed by the remaining items in random order.

#### *Experimental task*

After being scanned into the computer, each photograph was manipulated using the Adobe Photoshop Programme. Each picture was distorted horizontally so that the image of the celebrity was either 10% thinner, 20% thinner, 10% wider or 20% wider than the original picture. The original image and the four distorted images were randomly ordered on an A4 page. Letters were written under each of the images. The booklets were laminated so they could be used several times. Each child was presented with an answer sheet, asking them to circle the letter which corresponded to the real picture of the celebrity. All of the children completed the task in the same order and the pictures were all arranged in an identical manner. A copy of the experimental task is presented in Appendix F.

### *Pilot task B*

At the first junior school attended, the first ten children who completed the task were carefully observed and asked to give feedback. All of the children appeared to complete the perceptual task without difficulty and did not raise any suggestions as to how the task could be improved.

### **Procedure**

Ethical Approval was obtained from the Southern Derbyshire research committee (See Appendix A for confirmation). Head Teachers of local schools were then approached to ask for their support with the study. Following the Head Teacher's consent, information leaflets and consent forms were distributed to all of the parents of Year 5 pupils (Appendix B). The number of children who returned signed parental consent forms varied between schools, from 30% to 60%.

Children who had not returned their consent forms or who had declined to take part were sent to work with a different class. All children who returned their forms were seen as a group in their classroom. These children were provided with a pack which included an information sheet, consent form and the three measures. The information leaflet was designed to be age-appropriate and included a description of the rationale behind the project, task instructions and a list of recommended people to speak to if any of the items had caused distress. The information leaflet and task instructions were also read out by the researcher. Children were asked to work individually and not to confer with their peers during the test. They were also asked to sign consent forms (Appendix C), which were later removed from the response booklets in order to preserve anonymity.

The question booklet contained the tests arranged in the following order: Figural Selection task, Children's Eating Attitudes Test (which was presented with the additional ChEat-M questions) and the Perceptual Distortions of Celebrities task. The class completed each task as a group and children were encouraged to ask for the researcher's assistance if they did not understand any of the words. Definitions were provided for more complex concepts in the Children's Eating Attitude Test such as rich foods, binges, the urge to vomit and calorie content of foods. All children were provided with the same definitions and a glossary is provided in Appendix H.

In the perceptual task, it was explained that the object of the test was to look at the real image of a celebrity, before turning over and guessing which of the five distorted pictures was the correct image. All of the children were shown an example before being asked to complete the remaining items. The children were asked to look carefully at the original picture before turning the page over and making a guess. They were asked not to use measurement techniques (e.g. rulers, using their fingers as a gauge) to inform their choice. The accuracy of the children's judgements was recorded by using percentages, as in the King et al. (2000) paper. Using this scoring system, 100% corresponded to the correct image, 90% to the image that was 10% thinner, 110% to the image that was 10% larger, and so on. Therefore, an average score of 100% suggested that the child accurately estimated the body shape of celebrities. An average of less than 100% suggested that the child tended to underestimate the size of the celebrities and an average score of over 100% indicated that the child tended to overestimate the celebrities' body shapes. The children were not provided with information regarding the accuracy of their judgements.

The tasks took roughly 45 minutes to complete and were completed in class time. The children were also asked to provide some basic demographic information, including gender, age and racial background.

## **Results**

The aims of the study were to a) examine gender-related differences in body image dissatisfaction and eating disturbance in pre-adolescent children and b) to conduct an exploratory study of whether pre-adolescent children experienced perceptual distortions whilst looking at pictures of celebrities.

### **a) Gender-related differences in body image dissatisfaction and eating disturbance**

The first aim of the study was to examine gender-related differences in body image dissatisfaction and eating disturbance in pre-adolescent children, using two traditional measures: the Figural Selection Task and the Children's Eating Attitudes Test.

#### ***Figural Selection Task (FST)***

On the basis of the current literature, it was hypothesised that body image dissatisfaction does exist in boys, but that it is expressed in a different manner to girls. In order to test this hypothesis, a direct comparison was made between the figures selected by boys and girls, as in previous research. It was hypothesised that girls would express their body image dissatisfaction by selecting thinner ideal figures than their current shape, whereas boys who were unhappy with their bodies would choose figures that were either larger or thinner than their current shape. Children rated the size of their bodies using a series of pictures, where 1 signified an extremely thin child, 4 represented average and 7 represented obese. The mean score and range of scores of the Figural Selection Task (FST) are presented in Table 1.



**Table 1. Mean score, standard deviations and range of scores of the Figural Selection Task**

	N	Mean Score	Range	(SD)
<u>Current Score</u>				
Boys	90	3.88	1-7	(0.91)
Girls	101	3.96	2-6	(0.78)
<u>Ideal Score</u>				
Boys	90	3.84	2-7	(0.80)
Girls	101	3.61	1-5	(0.77)
<u>Discrepancy Score</u>				
Boys	90	-0.03	-5 - +6	(1.07)
Girls	101	-0.35	-3 - +2	(0.78)

When asked about their perceived current shape, the boys' current scores ranged from 1 (very thin) to 7 (obese). The girls' perceived current scores ranged from 2 (thin) to 6 (overweight). With regard to their ideal body shape, the boys scores ranged between 2 (thin) and 7 (obese). The girls selected ideal figures which ranged from 1 (very thin) to 5 (slightly larger than average).

A t-test was performed to evaluate any differences between the children's current and ideal scores. The ideal ratings for girls were significantly lower than their current ratings of how their body looked ( $t(100) = 4.48$ ;  $p < .001$ ). However, for the boys, the difference between their current and ideal scores was not found to be significant. Thus, girls wished for an ideal body shape that was significantly thinner than their current body shape, whereas boys did not wish for a thinner body shape.

In order to determine the trends through which body image dissatisfaction was expressed amongst boys and girls, a discrepancy score was calculated. This was determined by subtracting each child's ideal score from their current score and yields a quantitative measure of body image dissatisfaction. Negative scores indicated a wish to lose weight and positive scores indicated a wish to gain weight. The discrepancy scores are presented in Table 1. As can be seen from the table, both boys and girls had negative mean discrepancy scores. An Independent Samples t-test was used to compare the mean discrepancy scores ( $t(189) = 0.46; p < .05$ ). The discrepancy score for girls was significantly greater in size than that of the boys and indicated a stronger desire to have a thin body shape, which supports the experimental hypothesis. The range of scores suggest that boys displayed a variety of body change preferences, with some wishing to be much thinner (-5 points on a 7-point scale), whilst others wished to be much larger (+6 points). In contrast, the girls showed a more restricted range of preferences, which varied from wishing to be somewhat thinner (-3 points) to slightly larger (+2 points).

After comparing children across gender, the analysis was refined to compare those children who were satisfied with their bodies with those children who wished for a thinner body shape or a larger body shape. In order to classify these children into 3 groups, of those who wished to be thinner, larger or stay the same, the discrepancy scores were re-coded. All negative discrepancy scores were coded as 1, scores of 0 (no discrepancy) were coded as 0 and all positive discrepancy scores were coded as 2. These variables were intentionally coded in a sequential order to emphasise the ordinal nature of the data. Descriptive statistics are presented in Table 2.

**Table 2. Frequencies and percentages of children who wish to be thinner,  
stay the same or be larger**

	Thinner		Same		Larger	
	N	(%)	N	(%)	N	(%)
Boys	21	(23.3%)	52	(57.8%)	17	(18.9%)
Girls	39	(38.6%)	56	(55.4%)	6	(5.9%)
Total	60	(31.4%)	108	(56.5%)	23	(12.0%)

As can be seen from Table 2, only just over half of the boys (57.8%) and the girls (55.4%) were satisfied with their body shape. The boys who were dissatisfied with their bodies were approximately equally split between those who wished to be thinner (23.3%) and those that wished to be larger (18.9%). Of those girls who were dissatisfied with their bodies, a larger percentage wished for a thinner body shape (31.4%), whereas a smaller proportion wished to be larger (5.9%). Therefore, whilst a similar proportion of boys and girls showed dissatisfaction with their bodies, their dissatisfaction seemed to be expressed in different ways.

As can be seen in Table 2, the proportions of boys who wished to be thinner or larger appeared to be equal. This was verified using 95% confidence intervals which estimated the distribution of body image dissatisfaction in the general population of Year 5 boys. These are presented in Table 3.

**Table 3. 95% confidence intervals for boys who wished to be thinner or larger.**

95% CI boys who wish to be larger	[0.146, 0.320]
95% CI boys who wish to be thinner	[ 0.108, 0.270]

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*Note: Confidence intervals (CI) were calculated using the following equation:*

$$95\% \text{ CI} = p \pm 1.96 \sqrt{p \frac{(1-p)}{n}}$$

*where p = proportion and n = number of subjects.*

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The 95% confidence intervals predict that between 14.6% and 32.0% of the general population of Year 5 boys would like to be thinner and that between 10.8% and 18.9 % of the general population of Year 5 boys would like to be larger. As these two sets of confidence intervals overlap, it is suggested there is no difference between those boys who wish to be thinner and those who wish to be larger.

A risk calculation was conducted, to determine the risk (or likelihood) that girls would want to be thin, in relation to boys. This was achieved by simply comparing the proportions of girls who wished to be thinner with the proportion of boys who wished to be thinner. The risk value offers a simple ratio which can be easily remembered by clinicians. The results are presented in Table 4.

**Table 4. Proportion of children who wished to be thinner.**

	N	Wish to be thinner (%)
Girls	39	38.6%
Boys	21	23.3%
Relative Risk	1.66	

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*Note: Relative Risk is calculated by dividing the proportion of girls who wish to be thinner (0.386) by that of boys (0.233).*

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A risk calculation is a stronger predictor than a p-value as it utilises known numerical quantities, as opposed to making a judgement on the basis of probability. In the sample studied, girls were found to be 1.66 times more likely to want to be thin than boys.

#### ***Relationship between gender and the desire to be thinner or larger***

A Chi-Square test showed a significant difference between the desire to have a thinner or larger body shape in boys and girls ( $\chi^2 (2) = 10.21$ ;  $p < .01$ ). However, as the data consisted of ranked variables which followed an ordinal progression, from those who wished to be thinner, through to those who wished to stay the same, to those who wished to be bigger, a correction needed to be applied. The Linear-by-Linear Association value incorporates this correction and the result demonstrates a significant difference ( $\chi^2 (1) = 9.50$ ;  $p < .01$ ). Thus, each gender expresses body image dissatisfaction in different ways.

To summarise, the first aim of this study was to examine gender differences in body image dissatisfaction in pre-adolescent children. It was found the prevalence of body image dissatisfaction was equal amongst boys and girls. However, their expression of body image dissatisfaction was different. Girls who were dissatisfied with their bodies wished for a thinner body shape, whereas the boys were equally split between those who desired a larger body shape and those who desired a thinner body shape.

#### ***Children's Eating Attitudes Test (ChEat)<sup>1</sup>***

The next part of the first aim of the study was to examine gender differences in eating disturbance in pre-adolescent children. This was measured using a traditional measure,

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<sup>1</sup>A table featuring a breakdown of mean scores and standard deviations for each question is presented in Appendix I. A key is also provided to enable the reader to compare which question features in each of the two versions of the Children's Eating Attitudes Test.

the Children's Eating Attitudes Test (ChEat). It was hypothesised that as the ChEat examines children's weight-reducing attitudes and behaviours, the girls' scores would be higher than those of the boys. A summary of the means, range of scores and standard deviations is presented in Table 5. Breakdowns of scores for individual items can be found in Appendix I.

**Table 5. Mean score, standard deviations and range of scores of the Children's Eating Attitudes Test**

	N	Mean Score <sup>a</sup>	Range	(SD)
Boys	79	11.47	0-42	(9.68)
Girls	89	9.64	0-63	(9.86)

<sup>a</sup> Scores calculated using Maloney et al. (1989) scoring system:  
Never, Rarely, Sometimes = 0, Often = 1, Very Often = 2, Always = 3.  
Mean score obtained by Maloney et al. (1989) was  $8 \pm 7$  (range = 0 - 41).

It is possible to score the ChEat in two ways. The first method is the original scoring system by Maloney et al. (1989), which recommends that answers of Never, Rarely or Sometimes are scored as 0, whilst Often is scored as 1, Very Often as 2 and Always as 3. This scoring system provides a useful clinical picture of levels of eating disturbance which is directly comparable with the existing evidence base and is therefore used for this section. The overall mean ChEat score was 10.5 (standard deviation = 9.8) and the range was from 0 to 63. Although the mean score for the boys (11.47) was slightly higher than that of the girls (9.64), there was not a significant difference in results between the girls' and boys' scores on the ChEat ( $t(166) = 1.21$ ;  $p > .05$ ). The range of girls' scores was broader than the boys' scores, with the highest score being 63, as opposed to 42 for the boys.

In order to establish the prevalence of children with an eating disorder, a clinical cut-off was applied. In his original paper, Maloney et al (1988) proposed that a score of 20 or above to be the clinical cut-off point for disordered eating (Maloney et al., 1988). However, the authors recommended that one of the test items should be removed due to low reliability (Maloney et al., 1988), and the cut-off score was adjusted accordingly (to 19.4). The frequency and percentages of boys and girls who exceeded the clinical cut-off point is presented in Table 6.

**Table 6. Frequency and percentages of children who exceeded the clinical cut-off on the ChEat**

	N	(%)
Boys	14	(17.7)
Girls	12	(13.5)
Total	16	(15.5)

As shown in Table 6, 15.5% of children who fully completed the test obtained scores of 19.4 or higher on the ChEat. This group was comprised of 14 boys (17.7%) and 12 girls (13.5%).

#### ***Children's Eating Attitudes Test - Modified version***

As previously stated, traditional measures of eating disturbance have asked children about their attitudes and behaviours regarding weight loss and dieting. This form of questioning privileges girls, in that it asks about behaviours that girls may use to alter their body shape. Such tests fail to consider that not all children wish to be thinner, or that they may use alternative strategies to manage their body shape, including exercise. Such behaviours may be more likely to be employed by boys who wish to look stronger or more muscular. In order to overcome this shortcoming, the modified version of the ChEat was administered. This incorporates questions which ask children about their

desire to be more muscular. It was therefore hypothesised that boys would score more highly on this scale.

Following the recommendation of the authors, a 6-point scoring system was employed (ranging from 1= never to 6 = always), in order to gain as much information as possible as to the variation of children's responses. Descriptive statistics are presented in Table 7.

**Table 7. Mean score, range of scores and standard deviations on the Children's Eating Attitudes Test (Modified Version)**

	N	Mean Score <sup>a</sup>	Range	(SD)
Boys	81	82.06	43-130	(21.00)
Girls	87	77.15	41-167	(20.56)

<sup>a</sup> Scores calculated using Holt and Ricciardelli (2000) scoring system: Never =1, Rarely=2, Sometimes = 3, Often = 4, Very Often = 5, Always = 6.

The mean ChEat-M score for boys (82.06) was higher than that of the girls (77.15), although as before, the range of responses by the girls was broader than that of the boys. An Independent Groups t-test showed that the difference between the means was not significant ( $t = 1.53(166)$ ;  $p > .05$ ). However, it should be emphasised that although one might expect boys to answer more highly on the muscularity questions, these scores might be masked by low scores on items which ask about a desire to be thin or dieting. Therefore the scores on the questions relating to muscle development were compared on their own. The sum of these scores was defined as "Muscle total" and descriptive statistics for this variable are presented in Table 8.



**Table 8. Muscle Total scores on Children's Eating Attitude Test (Modified Version)**

	N <sup>a</sup>	Mean	(SD)	Range
Boys	88	22.99	(8.17)	21.26- 24.72
Girls	98	19.67	(7.29)	18.21 - 21.14

<sup>a</sup>Scores cannot be calculated if there are missing data. Subsequently, N varies.

The boys' mean muscle total score of 22.99 was higher than the mean of the girls' (19.67). In order to see whether these groups were equal in size, 95% Confidence Intervals were obtained in order to estimate the true population means. As the two confidence intervals did not overlap each other, it was hypothesised that the two groups were different from one another. In order to verify this hypothesis using parametric statistics, the data were screened to ensure that they were normally distributed and did not violate the assumptions of parametric testing. This was achieved by displaying the data as a histogram (see Appendix K). The histogram for the girls' muscle total score suggested that the data were positively skewed and not normally distributed, whereas the boys' histogram suggested a bi-modal distribution of the data. Non-parametric statistical analysis was therefore more appropriate, which compares the median scores as opposed to the mean scores. The median score for boys was 22.50 and 18.00 for the girls. A Mann-Whitney U Test was used to refute the null hypothesis that the two medians were the same. There was a significant difference between girls and boys in their muscle total scores ( $U=3307.5$ ,  $N_1=88$ ,  $N_2=98$ ,  $p<.01$ ). Therefore, boys have positive attitudes to muscularity and are significantly more likely to use behaviours to develop their muscularity than girls.

To summarise, the final aspect of the first aim of the study was to examine gender differences in eating disturbance in pre-adolescent children. Contrary to expectations, this analysis found no significant differences between the mean scores of boys and girls

on the Children's Eating Attitude Test, a traditional measure of eating disturbance. It was found that 17.7% of the boys and 13.5% of the girls studied exceeded the clinical cut-off point for eating disorders. These proportions are higher than in existing studies, which estimate between 8.8% to 14% of girls and 4.7% to 8% of boys score above the clinical threshold (Ricciardelli and McCabe, 2001). On a modified version of the ChEat, it was found that boys were significantly more likely to engage in behaviours to increase their muscularity.

## **b) Perceptual Distortions**

The second aim of the study was an exploration of whether children experience perceptual distortions whilst looking at celebrities of differing body shapes. Particular questions were asked about the role of the gender of the child, the gender of the celebrity, the body shape of the celebrity and the level of body image dissatisfaction expressed by each child.

### ***Perceptual Distortions of Celebrities Task (PDC)***

In order to examine whether pre-adolescent boys and girls experience perceptual distortions whilst looking at celebrities, accuracy scores were compared across gender for each of the four celebrities. This was a replication of the methodology employed by King et al. (2000) in their study of adult women. It was hypothesised that pre-adolescent boys and girls would experience perceptual distortions in different ways, in that distortions would be gender specific and that girls would display greater distortions when looking at the thin female celebrity.

An accuracy score was calculated for each celebrity, where 0 was an accurate estimation of size, negative scores represented the percentage by which children underestimated the celebrity's size and positive scores represented the percentage of overestimation. For example, an accuracy score of + 4.00 signifies that the children overestimated the

celebrity's size by 4 %. The mean and standard deviations of the children's judgements of the four celebrities are presented in Table 9.

**Table 9. Children's judgements on the PDC task**

Celebrity	Gender	N	Accuracy Score	(SD)	Range
Thin Man	Boys	89	+ 4.27	(11.97)	-20 to +20
	Girls	99	- 0.51	(11.64)	-20 to +20
Large Woman	Boys	89	+ 5.17	(12.35)	-20 to +20
	Girls	99	+ 4.55	(12.06)	-20 to +20
Large Man	Boys	89	- 2.36	(13.32)	-20 to +20
	Girls	99	- 3.13	(13.14)	-20 to +20
Thin Woman	Boys	89	- 0.11	(13.44)	-20 to +20
	Girls	99	- 0.91	(12.79)	-20 to +20

A 2 x 2 x 2 ANOVA was performed to examine the effect of the gender of the child, the gender of the celebrity and the size of the celebrity on perceptual judgements. By conducting an ANOVA test, one can look at not just the individual effects of the size of the celebrity, the gender of the celebrity and the gender of the child upon their perception of media images, but also the combined effect of these factors, in all possible combinations. The results are presented in Table 10.

**Table 10. Analysis of Variance for Perceptual Distortions**

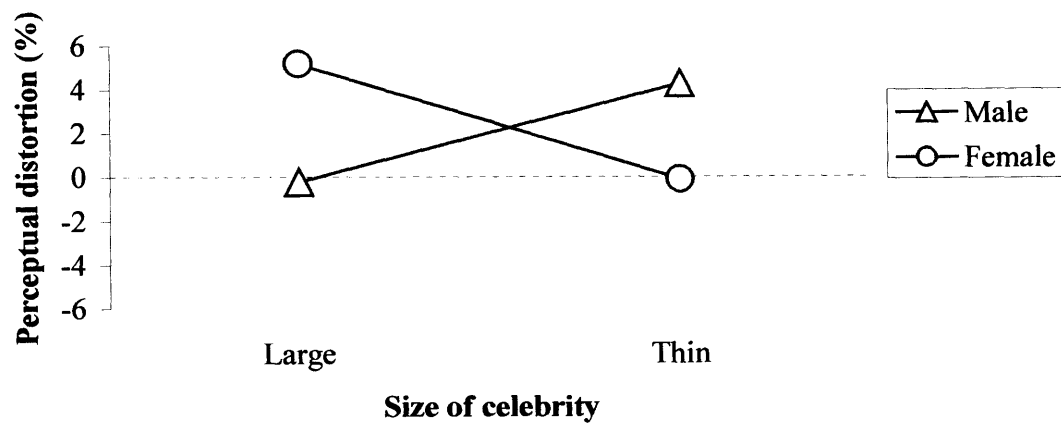
Source	df	F	$\eta$	p
Between subjects				
gender_child (GC)	1	2.89	568.60	.09
GC within group error	186	(196.61)		
Within subjects				
gender_image (GI)	1	0.16	25.63	.69
GI x GC	1	1.25	204.39	.27
size_image (SI)	1	8.85**	1271.87	.003
GC x SI	1	1.39	199.53	.24
GI x SI	1	36.63**	4682.45	.000
GI x SI x GC	1	1.34	171.81	.25
GI x SI within-group error	186	(127.84)		

\*p< .05 \*\*p< .01

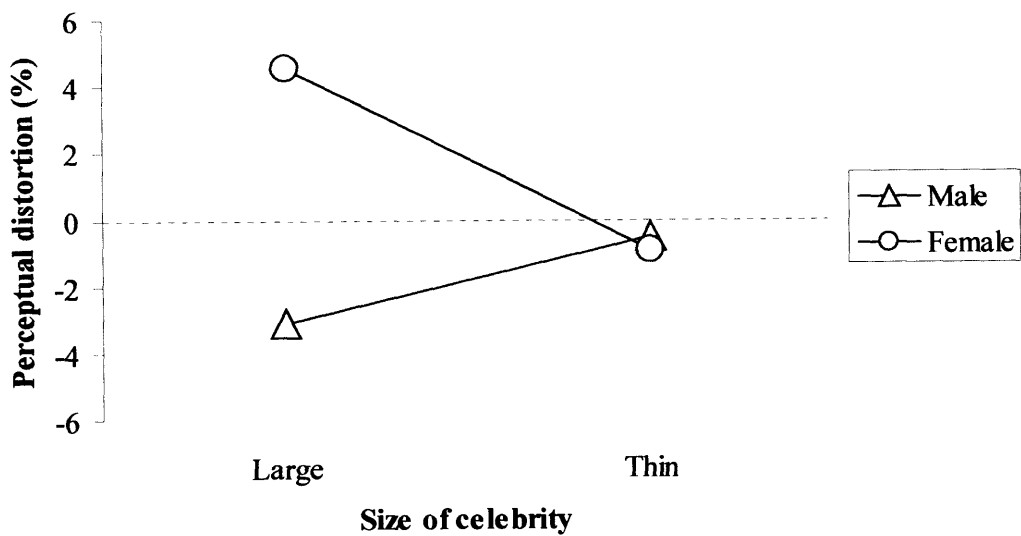
When a significant interaction effect is observed between two of the factors studied, this is known as a first-order interaction. There was a significant first-order interaction between the size of the celebrity and the gender of the celebrity ( $M = 36.63$ ),  $F(1, 186) = 0.165$ ,  $p < .001$ . However, the gender of the child did not account for a significant proportion of the variance. Both boys and girls underestimated the size of the large male celebrity and overestimated the size of the large female celebrity. The first-order interaction effect is displayed in Figure 2.

**Figure 2. Interaction between the gender of the celebrity and the size of the celebrity**

**a) Boys**



**b) Girls**



### ***Perceptual distortions in children who experience body image dissatisfaction***

It was hypothesised that boys and girls who displayed body image dissatisfaction would be more likely to make perceptual distortions when looking at media imagery. Specifically, girls who wished to be thinner would underestimate the size of the thin female celebrity and overestimate the size of the large female celebrity. It was anticipated that boys who wished to be thinner would underestimate the size of thin male celebrity and overestimate the size of large male celebrity. The final hypothesis stated that the effect would be gender specific, in that girls would only show perceptual distortions for female celebrities and vice versa.

In order to test these hypotheses, the children who wished to be thinner or larger (as measured by the FST) were isolated to determine whether they experienced greater levels of perceptual distortions of celebrities than children who were satisfied with their shape. The results are displayed in Table 11.

**Table 11. Perceptual distortions of celebrities by children who wished to be thinner  
(0), stay the same (1) or be larger (2)**

Celebrity	N	Mean	(SD)	Range
<b>Thin Man</b>				
0	62	0.97	(12.11)	-20 to +20
1	103	1.55	(11.73)	-20 to +20
2	24	3.75	(11.73)	-20 to +20
<b>Large Man</b>				
0	62	-0.65	(12.40)	-20 to +20
1	103	-3.33	(13.52)	-20 to +20
2	24	-5.83	(13.49)	-20 to +20
<b>Thin Woman</b>				
0	62	-1.61	(13.08)	-20 to +20
1	102	0.29	(13.08)	-20 to +20
2	24	-1.25	(13.29)	-20 to +20
<b>Large Woman</b>				
0	62	4.52	(11.83)	-20 to +20
1	103	5.53	(11.78)	-20 to +20
2	24	2.50	(14.52)	-20 to +20

A series of single sample t-tests were conducted to determine the accuracy of the children's judgements of the four celebrities. This test determines whether the observed mean is significantly different from a fixed point, which was specified as 0 (i.e. no underestimation or overestimation). Children were separated by gender and then subdivided into those who wished to be thinner, those who wished to stay the same and those that wished to be larger, as indicated by their discrepancy score on the FST.

The only significant result found was that boys who wished to be thinner significantly overestimated the size of the thin male celebrity ( $t(21) = 2.42; p < .05$ ), which had not been predicted. None of the other subgroups were significantly inaccurate in their judgements of celebrities and the specific hypotheses were not supported.

In order to determine whether perceptual distortions were gender specific, an additional single sample t-test was conducted to determine whether boys who wished to be thinner were inaccurate in their judgements about thin female celebrities. This was not found to be significant, suggesting that thin boys were gender specific in their distortions of thin celebrities. Girls who wished to be thinner were accurate in their judgements of thin male celebrities. However, they did not show any distortion effects when looking at females.

It was speculated that FST discrepancy scores could be a poor outcome measure of those children who exhibited high levels of body image dissatisfaction and eating disturbance. This was because those children who only wished to be slightly thinner were categorised as being the same as children who wished to lose a lot of weight. In order to overcome this shortcoming, it was decided to examine the levels of perceptual distortions in those children who showed more definite levels of disturbance, i.e. those who were above the clinical cut-off point of the ChEat.

### ***Perceptual distortions in children who have disordered eating***

It was hypothesised that boys and girls who showed high levels of eating disturbance (above the clinical threshold) would be more likely to experience perceptual distortions whilst attending to media imagery. The specific hypotheses that were proposed for children with body image dissatisfaction were replicated for those children with high levels of eating disturbance. Accuracy scores are displayed in Table 12.



**Table 12. Perceptual distortions in children over the clinical cut-off point of the ChEat**

Celebrity		N	Mean Accuracy Score	(SD)	Range
Thin Man	Boys	13	+0.77	(14.41)	-20 to +20
	Girls	12	-3.64	(11.20)	-20 to +20
Large Woman	Boys	13	+ 2.31	(11.66)	-20 to +20
	Girls	12	-0.91	(11.36)	-20 to +20
Large Man	Boys	13	0.00	(12.06)	-20 to +20
	Girls	12	- 2.73	(12.72)	-20 to +20
Thin Woman	Boys	13	+2.50	(14.85)	-20 to +20
	Girls	12	- 9.09	(13.00)	-20 to +20

In order to determine whether there were any gender differences in the perceptual judgements of boys and girls with disordered eating, a series of Independent Samples t-tests were conducted. The results were not significant, although the t-test comparing boys' and girls' accuracy scores on the picture of the thin woman approached significance ( $t(21) = 0.90$ ;  $p = 0.06$ ). The scores of children with disordered eating were also compared with children who were under the clinical threshold, whose results are displayed in Table 13.

**Table 13. Perceptual distortions in children under the clinical cut-off point of the****ChEat**

Celebrity		N	Mean Accuracy Score	(SD)	Range
Thin Man	Boys	65	+3.85	(11.38)	-20 to +20
	Girls	75	+0.53	(12.08)	-20 to +20
Large Woman	Boys	65	+ 5.08	(12.76)	-20 to +20
	Girls	75	+5.87	(11.40)	-20 to +20
Large Man	Boys	65	-2.46	(14.15)	-20 to +20
	Girls	75	- 3.20	(12.75)	-20 to +20
Thin Woman	Boys	65	-0.46	(13.51)	-20 to +20
	Girls	75	+0.53	(12.61)	-20 to +20

Girls who were above the clinical threshold underestimated the size of the thin female celebrity in comparison to those girls who were under the threshold, as determined by an independent samples t-test ( $t(85) = -2.26$ ;  $p < .05$ ). However, when a single sample t-test was used to compare the judgements of the girls who were over the cut-off against a fixed point (0), it was not found to be significant. There were no significant differences between the estimates of boys who were above the normal threshold and the other boys. Therefore the remaining specific hypotheses were not supported.

To summarise, children were shown pictures of four celebrities, two male, two female, two large and two thin. They were then presented with a series of distorted images and asked to select the true picture of the celebrity. A three factor ANOVA found that, for all children, perceptual judgements were affected by a first-order interaction between the size of the celebrity and the gender of the celebrity. However, there were no significant

effects of gender. Both boys and girls underestimated the size of the large male celebrity and overestimated the size of the large female celebrity. Children who had displayed body image dissatisfaction were isolated to determine whether they experienced higher levels of perceptual distortions. The only significant result was that boys who wished to be thinner overestimated the size of the thin male celebrity. Finally, those children who were above the clinical cut-off point for eating disorders were compared with other children. Girls who were above the clinical threshold significantly underestimated the size of the thin female celebrity in comparison to the other girls.

### **Discussion**

The purpose of this research was to explore two broad topics. Firstly, levels of body image dissatisfaction and eating disturbance were measured using pre-existing, traditional measures and drive for muscularity was measured using a recently modified scale, to investigate whether gender differences existed in pre-adolescent children. The results of the figural selection task suggested that just over half of the children studied were content with the shape of their bodies. However, there was a gender difference amongst those children who were dissatisfied with their bodies in that, whilst most girls desired a thinner body shape, the boys were split equally between those who wished for a larger body shape and those who hoped for a thinner body shape. It was found that there were no differences in levels of eating disturbance between boys and girls, as measured by the ChEat. Boys had significantly higher scores than girls on the muscularity scale (ChEat-M).

The second component of the research was an exploratory study to examine whether pre-adolescent children experienced perceptual distortions when looking at pictures of thin and heavy celebrities. It was found that boys and girls were not significantly different in their judgements of the celebrities. However, a first-order interaction was

found between the size of the celebrity and the gender of the celebrity. Both boys and girls overestimated the size of the large female celebrity and underestimated the size of the large male celebrity. When those children who were dissatisfied with their bodies were isolated, the only perceptual distortion that was observed was that those boys who wished to be thinner significantly overestimated the size of the thin male celebrity. Finally, perceptual distortions were examined in those children who exceeded the clinical cut-off point for disordered eating on the ChEat. It was found that girls above the clinical threshold significantly underestimated the size of the thin female celebrity in comparison to the other girls studied.

### **Summary of Findings**

- 1) There were gender differences in the expression of body image dissatisfaction in pre-adolescent children. Most girls wished for a thinner body shape, whereas boys were split between those who wished to be thinner and those who wished to be larger.*

Recent developments in body image research have suggested that body image dissatisfaction exists in boys as well as girls. Such papers suggest that the expression of body image dissatisfaction may differ across gender, in that many boys aspire to have a larger body shape, whereas most girls prefer a thin body shape (e.g. Schur, Sanders & Steiner, 2000; Cohane & Pope, 2001). This finding has been overlooked by many previous studies, which have only used scales, which measure a desire for thinness. This study therefore hypothesised that the above gender difference might be observable on the Figural Selection Task, as it measures children's current and ideal body shapes along a continuum from very thin to very large. It was found that amongst the children who wished that their bodies were different, the boys were equally split between those who wished to be thinner and those who wished to be larger, whereas the majority of the girls

wished that their bodies were thinner. These results confirmed the experimental hypothesis. It was only possible to detect the presence of this gender difference by performing separate analyses of discrepancy scores for those children who wished to be thinner and those that wished to be larger, as opposed to obtaining an overall average discrepancy score for all of children. If the positive discrepancy scores of the boys who wished to be larger had been added to the negative discrepancy scores of those boys who wished to be thinner to obtain an average score, it would have appeared as though boys did not experience body image dissatisfaction at all.

The "ideal" figures selected by the boys (between the second and the last figure) were larger than those of the girls (between the first and the fifth figure), indicating that many of the boys aspired to have a larger body shape than the girls. However, this does not necessarily mean that the boys wished to be fatter. Cohane and Pope (2001) argue that existing figural selection tasks fail to offer boys a range of figures along a muscularity continuum. They suggest that as muscular figures are not available, boys may select a larger "compromise" figure, but one which does not look too fat (Cohane and Pope, 2001). This strategy may actually mask the true levels of body image dissatisfaction in boys. In order to determine whether some of the boys did employ this strategy, it would have been interesting to ask the boys about the meaning they extracted from the larger figures and whether they attributed the larger figures to have socially desirable qualities. One hypothesis is that the boys interpreted the larger male figures to be stronger, more muscular or mature, whereas the girls interpreted the larger female figures to be fat or unattractive. Ricciardelli and McCabe (2001) also emphasise that figural selection tasks fail to ask children how important it is for them to have a thinner or larger body shape, which could provide information about the level of discontentment experienced by each child in relation to their body image.

The prevalence of boys and girls who wished to be thinner was similar to that presented in previous prevalence studies (e.g. Maloney et al., 1989; Edlund et al., 1996). A risk calculation was performed to determine the likelihood that girls would wish to be thin, in comparison to boys. A gender difference was clearly discernible in that the girls were 1.66 times more likely to want to be thin than the boys, a ratio that could be clinically useful to professionals working with pre-adolescent children. Ricciardelli and McCabe (2001) suggest that gender differences in the way that children express body image dissatisfaction only start to become observable between the ages of eight and ten years.

2) *There were no gender differences in levels of eating disturbance. Levels of eating disturbance exceeded estimates in previous prevalence studies. A similar proportion of boys and girls were above the clinical threshold for eating disorders.*

As the Children's Eating Attitudes Test examines levels of dieting, food preoccupation and emotional problems, it was hypothesised that girls would score more highly than boys. The observed result that there were no statistical differences between boys' and girls' total ChEat scores was unanticipated. Furthermore, the mean scores for both boys and girls appeared to be higher than those reported in previous papers (e.g. Rolland, Farnhill & Griffiths, 1997; Schur, Sanders & Steiner, 2000). It must be emphasised that these papers were produced in Australia and America and that norms are not currently available for British children. However, the question arises as to whether the experimental finding that boys present with the same levels of eating disturbance as girls is a true representation of eating disturbance amongst the wider population of pre-adolescent British children, or whether this finding has arisen because of shortcomings in the research process. It could be that overall levels of eating disturbance in boys have increased since the publication of the above papers, or that levels of eating disturbance in American and Australian boys is lower than in British boys. A recent longitudinal study by Halvarsson et al. (2002) suggests that levels of eating disorders in seven and

nine year old girls had increased between 1995 and 1999. This supports the hypothesis that levels of eating disturbance in children are gradually increasing. An alternative consideration could be that the demographics of the sample used in this study differ from those in published papers. As this study aimed to obtain a sample of children which was representative of a cross-section of British society, it did not control for cultural differences and social class. Finally, it may be that some of the boys did not take the test seriously and provided answers that were artificially inflated. It is hoped that using a sizeable sample of children would minimise the effect of any outlying scores.

An interesting finding was that the range of the girls' scores on the Cheat (0-63) was wider than that of the boys (0-42). This suggests that there may be a small number of girls who are experiencing very high levels of disordered eating, in contrast to boys who may be experiencing slightly lower levels of discontent. In this British sample, it was found that 13.5% of the girls and 17.7% of the boys scored above the clinical cut-off point for disordered eating, as specified by Maloney et al. (1989). As before, the prevalence scores for boys were much higher than those reported in existing studies (e.g. Maloney et al., 1989; Rolland et al., 1997), who estimated that between 6.9% to 14% of pre-adolescent girls and 4.7% to 8% of boys will exceed the cut-off point. However, the number of children in this study (191) was lower than in the previous studies (393 and 244 respectively) and the results should subsequently be treated with caution.

An unexpected finding was that the proportion of boys who exceeded the clinical cut-off score was similar to the proportion of girls. Such findings support the key arguments of this study, that many boys do experience unhappiness with their bodies and that this is reflected in their disordered eating habits. Furthermore, the prevalence of eating disorders in children in this study appears to be higher than the original study by Maloney et al. (1989) and is equal amongst boys and girls. Rolland et al. (1997) also found that the levels found in their Australian study were much greater than in the

original American study. They therefore suggested that the American threshold score of 20 suggested by Maloney et al. (1989) is inappropriate for children from other countries.

3) *Boys had a higher drive for muscularity than girls*

In order to investigate whether there were gender differences in the drive for muscularity amongst boys and girls, the Muscularity questions from the ChEat-M (Holt and Ricciardelli, 2000) were isolated. It was found that the Muscle total scores were significantly higher for the boys than the girls. This gender difference was expected and corroborates the arguments of Cohane and Pope (2001), who suggest that many young boys who experience body image dissatisfaction have a strong desire for a muscular body and that this desire is closely related to their levels of self-esteem. Cohane and Pope (2001) have emphasised the methodological shortcomings of previous research into body image dissatisfaction in males, which has only addressed body image dissatisfaction along an uni-dimensional scale of thinness to fatness. In order to overcome such flaws they have designed a "somatomorphic matrix" for use with adult men. This is a figural selection task in which an ideal figure can be selected from two independent scales, a fat-thin continuum and a muscular-thin continuum. On the adult scale, it was found that men selected ideal body images that were no fatter, but much more muscular than their current figure (Cohane and Pope, 2001). It would be fruitful to reproduce these scales so they are appropriate for younger boys and girls. However, their paper heralds a growing awareness that research tools need to be refined and adapted in order to obtain a more accurate representation of body image dissatisfaction amongst males of all ages.

4) *There were no gender differences in perceptual distortions. Both boys and girls underestimated the size of the large male celebrity and overestimated the size of the large female celebrity.*



The final aim of the study was an exploration of visual perception of thin and large celebrities by children. This was an extension of a paper by King, Touyz and Charles (2000) which looked at the differences in the perceptions of celebrities between women with high body image concerns and women with low body image concerns. It was found that the women with high body image concerns perceived the thin female celebrities to be even thinner than they actually were, in contrast to the other group of women. However, both groups of women overestimated the size of the large female celebrities. The current study therefore generated a series of tentative hypotheses, relating to children's performance upon the perceptual distortions of celebrities (PDC) task. The first hypothesis was that boys and girls would differ in their judgements regarding the size of the celebrities. However, it was found that boys and girls were not significantly different in their judgements of celebrities, but that there was an interaction between the size of the celebrity and the gender celebrity. Both boys and girls overestimated the size of the large female celebrity and underestimated the size of the large male celebrity. It would therefore appear that such perceptual biases are sociocultural in origin and not caused by gender differences.

The fact that both the boys and the girls overestimated the size of the large woman mirrors the findings of the King et al. (2000) study, who also found that women with both high and low levels of concern about their body shape overestimated the size of large female celebrities. They posited that this perceptual bias was indicative of society's negative view of larger females, in that society fails to take account of the actual body shape of heavy women and merely considers them to be "fat". The results of the current study suggest that children make different perceptual judgements about heavy people on the basis of gender. Both the boys and the girls underestimated the size of the large man and overestimated the size of the large woman. One interpretation of this finding is that children minimise heaviness in men, but overemphasise heaviness in females. This

result could be due to the presence of wider sociocultural attitudes that suggest that large men are more socially acceptable than large females. However, this hypothesis would need to be tested empirically. If it could be demonstrated that children find large men more socially acceptable than large women, it may enhance our understanding of why some boys aspire to have a larger body shape, whereas the majority of girls wish to have a slimmer body shape. Alternatively, it may be that many of the children did not recognise the large male celebrity, so they judged him by size, but they knew the large female celebrity and used their past experiences of seeing her on the television to inform their choice. Throughout the process of selecting appropriate celebrities to include in the study, the children found it extremely difficult to name any large, male celebrities, although they found it easy to name large, female celebrities. On the celebrity quiz (see Appendix), only six out of the ten children recognised the large man, yet they all recognised the large woman. Both boys and girls were extremely accurate in their perceptual judgements of the thin woman. This result ties in with the findings of King et al. (2000), who found that women who were unconcerned about their body shape were accurate in their judgement of thin female celebrities.

5) *Children who were dissatisfied with their bodies did not display greater levels of perceptual distortions than other children. However, girls with eating disorders significantly underestimated the size of the thin female celebrity in comparison to other girls.*

As the boys and girls comprised two heterogeneous groups consisting of those who wished to be thinner, larger or stay the same, it was decided to break the two groups down into smaller sub-groups to study perceptual distortions in greater detail. A more specific set of hypotheses were thus developed, which speculated that girls who wished to be thinner, as determined by the figural selection task, would underestimate the size of the thin female celebrity and overestimate the size of the large female celebrity. In

addition, boys who wished to be thinner would underestimate the size of the thin male celebrity and overestimate the size of the large male celebrity. However, the only significant result found was that boys who wished that they were thinner significantly overestimated the size of the thin male celebrity. This result is difficult to interpret in terms of the existing psychological evidence base. This finding would need to be replicated with several images of different thin male celebrities before one could draw firm conclusions as to whether boys who wish to be thin consistently overestimate the size of all thin male celebrities. If this finding was found to be consistent, it could be hypothesised that the boys perceived the thin male celebrity to have grown up or muscular attributes, which was translated into a perceptual judgement that was inaccurate.

A methodological flaw with comparing children on the basis of whether they wished to be thinner or larger on the Figural Selection Task is that it does not take into account the magnitude of the child's body image dissatisfaction. Those children who only wished to be slightly thinner were classified as being the same as those children who wished to radically alter the size of their bodies. It was therefore decided to compare the perceptual distortions of children who exceeded the clinical cut-off score for eating disorders on the ChEat with other children of the same sex. It was hypothesised that this subgroup of children would have much higher levels of body image dissatisfaction, which might be more closely comparable against the group of women with high body image concerns who were included in the King et al. (2000) study. It was actually found that children with disordered eating were not significantly inaccurate in their judgements of pictures of celebrities. The only significant difference that was found was that girls who were above the clinical threshold underestimated the size of the thin female celebrity, as compared to the other girls. This finding mirrors that of King et al. (2000), who found that women with high body image concerns saw the thin women as being thinner than they actually were. King et al. (2000) speculated that women with high body image

concerns were highly susceptible to media imagery of thin women because their visual perceptual processes were different to other women.

In this study, the children who were dissatisfied with their body shape did not display perceptual distortions. However, in those girls who met the criteria for a diagnosis of an eating disorder, there were observable qualitative differences in their visual perception of celebrities, in that they judged the thin woman to be significantly thinner than the other girls. It is therefore hypothesised that perceptual distortions are not a precursor of eating disorders, but a consequence of the long-term effects of food restriction. This hypothesis is supported by research discussed by Bryant-Waugh and Lask (1999), who have found permanent physical changes in the brains of children with eating disorders. In particular, they have found reduced blood flow to the part of the brain which deals with visual-image processing, sense of fullness and appetite regulation (Bryant-Waugh and Lask, 1999). Differences in the processing of visual imagery may provide a partial explanation of the results found in this study and in the King et al. (2000) paper. It may be that deficits in visual processing become more pronounced due to developmental changes or prolonged physical deprivation. Longitudinal research is needed to tease these factors apart and investigate such hypotheses in greater depth.

A variety of specific hypotheses were made as to the presence of perceptual distortions in children who were dissatisfied with their bodies or had disordered eating. Despite these predictions, the majority of these hypotheses were not supported. The absence of perceptual distortions in these children could reinforce the argument that perceptual distortions are not pre-cursors to eating difficulties, but are long-term sequelae of food deprivation. The finding that children with eating problems do not experience perceptual distortions supports research by Gardner, Sorter and Friedman (1997), who found that children with eating disorders did not make significant errors on a perceptual task which asked them to estimate the size of their own bodies.

One possible explanation may be that perceptual distortions only present in those people who are dissatisfied with their own body shape and are also able to make a direct comparison of their own bodies in relation to unattainable media ideals. At present, media trends for presenting images of very thin women has not extended to their portrayal of children. As a consequence, models of the development of body image dissatisfaction in children (e.g. Smolak and Levine, 2001) place a greater emphasis upon the role of peer modelling and social comparison in the development of body image disturbance than comparison with adults or media imagery. It may be that the children in this study who were unhappy with their bodies did not demonstrate perceptual distortions of adult celebrities because they do not tend to compare their bodies with those of adult celebrities, whose bodies are fully developed and therefore very different to their own. In a paper describing the mediating mechanisms between media exposure and disordered eating, Stice, Schupak-Neuberg, Shaw and Stein (1994) propose that family and peers may play a much greater role in developing internalised notions of thinness than the media. If one returns to Grogan's (1999) definition of body image as, "a person's perceptions, thoughts and feelings about his or her body" (p.1), the complex, multifactorial nature of the construct of body image becomes apparent. It is therefore possible that perceptual elements of body image dissatisfaction may become apparent at a later age than cognitive or emotional elements, because of children's inability to engage in social comparisons with adult figures.

Alternatively, the absence of positive results could be due to the fact that the perceptual task itself was poorly designed or insufficiently sensitive for use with children. Shaw and Waller (1995) propose that body image is not a fixed, definable construct; conversely, it is elastic in nature and varies according to the conditions under which it is assessed. It is acknowledged that there are limitations to the perceptual distortions of celebrities task (PDC) developed in this exploratory study, which make it difficult to

draw definitive conclusions as to the presence or absence of perceptual distortions in children. The PDC task was a cognitively demanding task, in that children were asked to select the true picture of the celebrity from a range of photographs that had only been distorted very slightly, by intervals of ten percent. The pictures were distorted to this degree in order to replicate the King et al. (2000) study with adult women and Gardner, Sorter and Friedman (1997) have estimated that children can detect differences in body shapes beyond a threshold of 4.61%. However, distorting the pictures by only 10 or 20 percent may have been too sensitive for use with young children and they may have been unable to differentiate between the pictures. During the analysis, it was found that not a single child had answered the PDC task completely correctly. If the children did have difficulties in discriminating between the pictures, they may have guessed, provided responses that were socially desirable or copied those of other children. Furthermore, it was not possible to produce estimates of reliability and validity for the PDC task in this study, due to time and resource constraints. However, it is emphasised that this part of the study is an exploratory piece of research and it would be fruitful to spend time and resources on developing and validating a reliable tool that could investigate perceptual distortions in children with greater precision.

### **Critique of the study**

#### *Methodological shortcomings of existing measures*

One of the main criticisms of this study is that standardised tools which measure body image dissatisfaction and eating disturbance in children have become outdated, given our recent advances in understanding of the complex nature of body image and the existence of gender differences in its expression.

Several authors have highlighted the methodological problems that exist when figural selection tasks are used in research with children. Gardner (2001) argues that figural

scales depict children of a specific age, yet the same sets of pictures are often used to study children from the age of five years to twelve years. The figural selection task used in this study (Collins, 1991) had been standardised with a large group of pre-adolescent children and depicted children who looked around nine or ten years of age. However, even within this cohort of children who were born in the same year, there would have been vast variations in their body shapes and sizes, particularly in those girls who have matured early. It could be hypothesised that the pictures presented in the figural selection task will have had little or no resemblance to some of the children who completed the figural selection task. Although ethical approval was requested to exclude girls who had entered menarche at the time of testing, this request was denied. Furthermore, all of the pictures presented in the Collins (1991) figural selection task depict children with Caucasian characteristics, which were particularly prominent in their facial features (Gardner, 2001). Subsequently, it is difficult to draw conclusions as to the validity of such measures in determining body image dissatisfaction in children from other cultures, who may neither currently resemble any of the figures selected, nor aspire to look like any of the figures. Gardner, Friedman and Jackson (1998) provide further criticism of figural selection tasks. Their first criticism is that of scale coarseness, in which information is lost by asking individuals to select a figure from a finite number of drawings and then drawing assumptions as if the scale was a continuous variable. Secondly, the range of the scale is restricted, in that between 85% and 90% of pre-adolescent children will only select from three or four of the figures along the scale (Gardner et al., 1998). The final criticism is that the body shapes in some figural selection tasks do not consistently increase in size and yet they are marked along an ordinal scale (Gardner et al., 1998). Williamson and Delin (2000) emphasise that figural selection tasks make the assumption that children can use complex levels of visual imagery to compare a mental representation of their own body image with a schematic drawing. The authors recommend that children's representational ability needs to be considered when designing age-appropriate measurement scales. Cohane and Pope

(2001) recommend that figural selection tasks should incorporate scales that allow the subject to select a figure that varies in its degree of fatness and muscularity. However, such scales are yet to be developed for use with children.

There are also a variety of methodological flaws with the Children's Eating Attitudes Test (Maloney et al., 1989). The ChEat is derived from the adult measure, the Eating Attitudes Test (Garner and Garfinkel, 1979), which is not only outdated, but incorporates language which may be difficult for nine and ten year old children to understand, such as "binge", "vomit" and "calorie content". Rolland et al. (1997) suggest that some of the items that are considered to be indicative of eating pathology may be perfectly normative experiences for young children. For example, in this study, many children agreed with the statement, "I cut my food into small pieces", as this may well be how they have learned to eat independently. Rolland et al. (1988) highlight that if a child replied "sometimes" to the statement, "I vomit after I eat", this could be interpreted as eating pathology, but could also plausibly apply to a child who has been sick after an illness. Furthermore, the phraseology of the test may have different connotations to young children who are unaware of its diagnostic properties. For example, a child may freely admit to binge eating if they have done this at parties or on trips away from home. However, the function of this behaviour may be more related to establishing independence than eating pathology and may not be associated with guilt or secrecy. A final shortcoming of this test is that it has been standardised with an American sample of children and eating habits may be markedly different across the two cultures. The optimal test which should be used to measure eating disturbance in British children is one that has been generated from semi-structured interviews with children with eating problems, parents and professionals, developed for use with boys and girls and standardised on a British population. However, such a tool has yet to be developed.



This study also included a modified version of the Children's Eating Attitudes Test (ChEat-M; Holt and Ricciardelli, 2000). It was decided to use this scale to address children's desire for muscularity, a factor that has not been considered in published measurement tools. An internal reliability check was conducted, which was actually higher than the reliability of the original ChEat. However, it is acknowledged that this scale is as yet unpublished and has not been standardised. This makes it impossible to compare the results of the children in this study against normative data. The results obtained in this study would not be sufficient to provide standardisation data, as the children were relatively few in numbers and came from one small city in England. It should be emphasised that the desire for muscularity does not equate directly with body image dissatisfaction and the fact that muscularity scores of the ChEat-M scale were higher in boys is not indicative of greater body image dissatisfaction. However, it may connect with the finding that roughly half of the boys who were dissatisfied with their body wished that they were larger. This may not be the whole explanation, as some children may wish that they looked grown up, some may wish to be taller and some boys may genuinely wish that they were heavier. It must be emphasised that those children who hoped to increase the size of their muscles may have wished to do so for a variety of reasons, such as sport, to be more grown up or to become more sexually attractive. However, these reasons do not presuppose that the child is unhappy with how their body looks at present.

#### *Limitations of the measure specifically designed for this study*

In the summary of results, it was discussed that it is impossible to draw definitive conclusions as to whether perceptual distortions do not exist in pre-adolescent children or whether the perceptual task was poorly designed. It is conceded that the task may have been too difficult for children and that perhaps it would have been easier for the children to discriminate between the pictures if they had been distorted to be 20% larger, 40% larger, 20% thinner and 40% thinner. If more time had been available to conduct

lengthy pilot studies, perhaps the children could have completed both formats of the test and the results could have been compared, to see if the children were more accurate in their judgements or whether they experienced higher levels of perceptual distortions. At present the task has not been validated and no measures of reliability are available. Literature reviews of perceptual judgement measures with children (e.g. Gardner, 2001) suggest that levels of test-retest reliability are often extremely low. As the children only rated one large woman, one large man, one thin woman and one thin man, it is impossible to determine whether the children who displayed perceptual distortions did so for that particular picture, or whether they would have the same distortions for all celebrities. Alternative forms of the test would need to be designed to establish levels of reliability. It may be that in some pictures, the famous person looked thinner or larger than usual and the children compensated for this when making their judgements. Including several examples of each sex and body shape would help to overcome some of these problems, although it may be difficult to find several large, famous men who are known to this cohort. If more time and resources were available, it would be useful to replicate this experiment using computer-based demonstration techniques, which would enable each child to manipulate the experimental figure until they felt it was the correct size. This would enable the researcher to obtain a much more accurate estimate of the presence, or level of perception distortions.

A further shortcoming of the task is that the children were not asked whether they recognised the famous celebrity. In the King et al. (2000) study with adults, subjects were excluded if they did not recognise all of the celebrities presented in the task. Therefore, some of the children may have been making judgements upon their past experiences of seeing the celebrity, whereas other children may have been making judgements on the basis of size alone. It would be interesting to see whether children have higher levels of distortions for adult celebrities than they do for pictures of "normal" adults, as they may project idealised notions of thinness onto the famous

people, but less so for normal people. The task could easily be replicated to include thin and large, male and female adults.

### *Practical considerations*

A final criticism of the overall study was the sheer logistics of conducting research with 30 young children at one time. In order to provide standardised responses to the children's questions during the testing session, the researcher asked each child to raise their hand if they had a question and attended to each child individually. However, this was time consuming and children often conferred with their classmates before they spoke to the researcher. It was difficult to ensure that the children were not copying each other's answers, using measurement techniques on the perceptual task (such as rulers or using their fingers), or not taking the task seriously. If this study were to be replicated, it is recommended that testing is either conducted in smaller groups or that there are several researchers who have an agreed set of definitions for words on the ChEat.

### **Clinical Implications**

The results of this thesis present a number of clinical implications for professionals working with children. This research has chiefly examined the precursors to eating disorders, including body image dissatisfaction and dysfunctional attitudes regarding eating and exercise. It could therefore be argued that the greatest clinical applications of this research will apply to the first tier of Child and Adolescent Health services, that of primary prevention. Although not all clinical psychologists work at this level of service provision, they could usefully provide consultation to general practitioners, school nurses, teachers, community paediatricians and dieticians who may come into contact with children who have sub-clinical levels of disordered eating.

*1) There is an equal prevalence of body image dissatisfaction and eating disorders across gender*

Firstly, this study emphasises the fact that body image problems are equally prevalent in boys as well as girls. Until very recently, clinicians and researchers held the belief that only girls were at risk. Educational work may therefore need to be conducted with professionals to alert them of the subtle differences that exist between boys and girls who are dissatisfied with their bodies and the differing compensatory strategies that might be employed. This thesis has demonstrated that most of the girls studied who were unhappy with their bodies desired to have a thinner body shape. Further research needs to be conducted to determine whether those girls who wished to have a thinner body shape were the same girls who exhibited high levels of eating disturbance. However, it is hypothesised that girls are more likely to engage in dietary restriction or disregulated eating to achieve increased thinness. In contrast, the results showed that of those boys who were discontented with their bodies, half wished for a thinner body shape, whilst the other half desired a larger body shape. It could be hypothesised that the boys who wished to be thinner may be at greater risk of developing disordered eating habits, whereas the boys who wished to be larger may place more emphasis on exercise.

In this study, it was found that similar levels of boys (17.7%) and girls (13.5%) exceeded the clinical threshold for disordered eating, which was an unexpected result. It should be emphasised that the range of eating disorders in children is much wider than that of adults and may take a variety of forms, including selective eating, food refusal and food avoidance emotional disorder (Jaffe & Singer, 1989; Bryant-Waugh & Lask, 1999; Manley, Smye & Srikaneswaran, 2001). Boys and girls may have different patterns of disordered eating in order to attain differing goals. Andersen and Holman (1997) suggest that boys will lose weight "as a means to an end", such as to avoid teasing, to increase sports performance or to improve relationships. In contrast, girls diet as it is a socially approved behaviour and see weight loss as their ultimate goal

(Andersen & Holman, 1997). As previously discussed in relation to body image, parents and professionals need to be aware of the fact that boys are equally susceptible to eating problems as girls, although their expression may be slightly different.

## *2) Possible long term increases in levels of males with eating disorders and exercise disorders*

The finding that equal numbers of boys and girls exceeded the clinical threshold for disordered eating also has long term implications for the planning of clinical services for adolescents and adults with eating disorders. In 1997, Andersen and Holman suggested that there were ten cases of females with eating disorders for every male case. It is possible that in the long term, services may see an increase in the prevalence of males with eating disorders and this ratio may become less skewed in favour of women. The data presented in this study suggests that clinical services may also see an increasingly large subgroup of men whose symptoms include dietary restriction in combination with excessive exercise. Research by Thomas, Ricciardelli and Williams (2000) suggest that males who identify strongly with masculine personality characteristics are more likely to want to develop a strong looking, muscular physique. It is possible that strong identification with male characteristics may increase the likelihood of overexercise, yet decrease the likelihood of engagement with health services if their eating/exercise disorder reaches severe levels. Furthermore, research suggests that boys and men who overexercise are also more likely to engage in drug misuse (e.g. Grogan, 1999), such as taking anabolic steroids, which places them at further medical risk. Clinical services may therefore need to come up with imaginative solutions to reach boys and men who are at risk. One possible solution would be to offer an eating disorders outreach service to fitness gyms and sports clubs.

Social learning research suggests that boys are experiencing increased pressure from the media to develop muscular, yet lean bodies (e.g. Leit, Pope & Gray, 2000). Cultural

preferences for muscular figures have been amplified in toys and specifically in boys' action figures, whose muscles have been exaggerated to the extent that their proportions are more muscular than bodybuilders in real life (Pope, Olivardia, Gruber & Borowiecki, 1999). Such toys and media images present an unattainable mesomorphic ideal, which can be seen as analogous to the thin ideals presented to females. This study suggests that some of the boys had internalised a desire to be muscular and were actively engaging in behaviours to increase their muscularity. The Muscularity scores of the ChEat-M were significantly higher for the boys than the girls. It is therefore hypothesised that boys are much more likely than girls to use exercise as a means of altering their body shape. It is anticipated that many pre-adolescent boys will act upon their desire to have a mesomorphic, muscular body and that some may exercise to an extent which may have health implications in later life. A developing area of adult eating disorders research has described a phenomenon known as 'muscle dysmorphia' in men. This occurs in men who over-exercise and is characterised by extreme body image disturbance, coupled with a desire to increase muscularity (e.g. Cohane & Pope, 2001; Olivardia, Pope & Hudson, 2000). It may be that this phenomenon already exists in younger boys, although it has yet to be formally identified. However, those boys whose self-esteem is derived from having a strong or muscular body may be at the greatest risk of developing such problems. Thomas, Ricciardelli and Williams (2000) have found that childhood association with a traditional, masculine gender role was a predictor of disordered eating, whereas those children who associated themselves with a more androgynous gender role had the best outcomes.

### *3) Existence of a tangible population of pre-adolescent children with eating disorders*

Whilst it is acknowledged that a similar proportion of boys and girls studied reached the clinical cut-off point for eating disorders, as determined by the ChEat, the range of the girls' scores were much broader than the boys. These results suggest that some girls in the community are already experiencing severe forms of eating disorders by the age of

9-10 years. As this research was conducted with an anonymous, community based sample, it may be that many of these children are not known by health services. The fact that a sample of such children have been found within a group of 191 children suggests that there are a significant population of children under ten years of age whose physical and mental health may be at risk. Manley et al. (2001) emphasise the importance of early intervention in children with eating disorders in order to minimise later problems with growth, fertility and brain development. Jaffe and Singer (1989) suggest that young children with eating disorders have a poor prognosis, in terms of psychological distress, family functioning difficulties and mental health problems. Psychologists such as Shisslak et al. (1999) have endeavoured to develop a psychometric tool that can be used to identify a number of risk and protective factors in the development of disordered eating in pre-adolescent and adolescent girls (McKnight Risk Factor Survey - III). However, the tool is lacking in that large amounts of longitudinal and cross-cultural information need to be collected before any definitive models of risk can be proposed. In addition, the survey completely fails to address the issue of increasing body image dissatisfaction and disordered eating in boys. It is therefore suggested that better diagnostic and screening tools need to be developed and made widely available within the community in order to determine which children need additional psychological support, coupled with education about eating healthily. This study suggests that the children who are at the greatest risk are those who have high levels of body image dissatisfaction, which may be expressed behaviourally through extreme levels of dieting or exercise. Furthermore, the girls who had eating disorders observed the thin female celebrity in a qualitatively different manner to the other girls. If the quality of the perceptual distortions of celebrities task was improved and normative data were available, it is possible that this sort of perceptual task could be incorporated into a diagnostic tool.

From a community psychology perspective, much more educational work needs to be conducted with all children to raise their self-esteem, develop their ability to critically appraise media messages, reduce teasing and develop a growing acceptance of a range of body shapes. Health education services and healthy lifestyle policies could be enhanced by incorporating some of the findings of this research, namely that eating disorders are already present in some children by the age of nine years and that boys and girls are at equal risk. Experts in the field, such as Levine and Smolak (2001) suggest that early intervention programmes need to target children before they reach the age of 13, before they enter the high-risk period of adolescence. However, this study suggests that many children as young as nine years already have disordered eating and that these behaviours may well be entrenched by the time children reach adolescence.

Levine and Smolak (2000) make the valid point that community focused work is a more efficient means of accessing children with body image and eating problems, as their high levels of secrecy and shame can make it difficult for children to access professional help. They advocate a cognitive-behavioural prevention programme which aims to reduce negative body-related perceptions ("I see myself as being fat"), feelings ("I do not like my body because it is fat") and beliefs ("It is very important for me to be thin"). Cusumano and Thompson (1997) also outline a range of cognitive-behavioural strategies which could be utilised to decrease distress, including education regarding the marketing strategies employed by the mass media to create feelings of inadequacy and inferiority in children and young people. Hill, Draper and Stack (1994) make the pertinent observation that educational programmes need to acknowledge gender differences in children's weight control strategies, i.e. weight control and exercise, in order to minimise feelings of alienation or that the subject matter is inappropriate for boys. Some research into early intervention suggests that offering educational eating disorder prevention programmes to all children is an ineffective strategy, which fails to bring about notable degrees of change and is not sustained over time (Stewart et al., 2001). This may be



because intervention strategies have been based upon traditional assumptions that it is only girls who experience body image problems and that dieting is the only shape control strategy employed by children. Further research is therefore drastically needed to improve our knowledge of those children at risk of developing eating disorders, and the most effective model and timing for intervention by clinicians. Increasing numbers of girls, and increasingly boys, feel uncomfortable with their body shape and feel that they are incompatible with increasingly demanding socially acceptable body images. Unless clinicians, and society in general, are better informed of the pressures upon young children and the most effective ways to reduce risk, it is likely that the prevalence of eating disorders in children will become much higher and begin much earlier.

#### *4) Enhance understanding of the role of the media in the development of eating disorders*

Preliminary results from the prototype perceptual distortion of celebrities task suggests that the vast majority of children do not experience perceptual distortions whilst looking at thin celebrities. Although only tentative recommendations can be drawn from this part of the study, it may be that children are not as susceptible to the effects of media imagery as had previously been feared. It may be that a greater emphasis needs to be placed upon the contribution of peers and family in the development of body image dissatisfaction and eating disturbance. The hypothesis that social comparison with distant media figures has a less detrimental effect upon children's satisfaction with their own bodies than social comparisons with proximal relationships is supported by a study by Shapiro, Newcomb and Loeb (1997). They found that for eight to ten year old boys and girls, the most important sociocultural influences which made them fearful of becoming fat were (in order of importance): Other Relations (friends, cousins, aunts, uncles and grandparents); Nuclear Family (mom, dad, brother, sister); and the Media (television, magazines and newspapers). Sherwood and Neumark-Sztainer (2001) advocated that exposure to media imagery is not a causal factor in the development of

body image disturbance, but rather that it acts a reinforcer of body image concerns in vulnerable people. This argument supports the results found in this study, in that, although almost all children studied would have been exposed to strong societal messages through the media, the children who had the most distorted perceptions of media imagery were those girls who had disordered eating. For these girls, their perceptual distortions were not a causal factor of their eating disorders, but served as a maintaining factor, in that they saw the body shape of their role models as increasingly unattainable in comparison to their own bodies. In contrast, those children with little or low levels of body image dissatisfaction did not experience significant levels of perceptual distortions whilst looking at images of thin celebrities. It therefore appears that a child's level of satisfaction with their body affects the way in which they perceive media imagery and not vice versa. Polce-Lynch et al. (2001) conceptualised body image as a "filter" between the effects of media exposure and self-esteem in adolescents.

Although the sample of pre-adolescent children did not experience perceptual distortions whilst looking at thin celebrities, they did experience distortions when looking at images of large celebrities. There were gender biases in their judgements, in that the children underestimated the size of the male celebrity, but overestimated the size of the female celebrity. It is possible that this effect is caused by the societal message that "it is bad to be fat". However, it seems that children could have felt that fatness in a Caucasian female was worse, or more prominent in women than in men. If this gender difference is based on cultural assumptions that it is more acceptable for a man to be large than for a woman, then there is a need for education about the range of normal body sizes that exist in the community and increased tolerance towards large women.

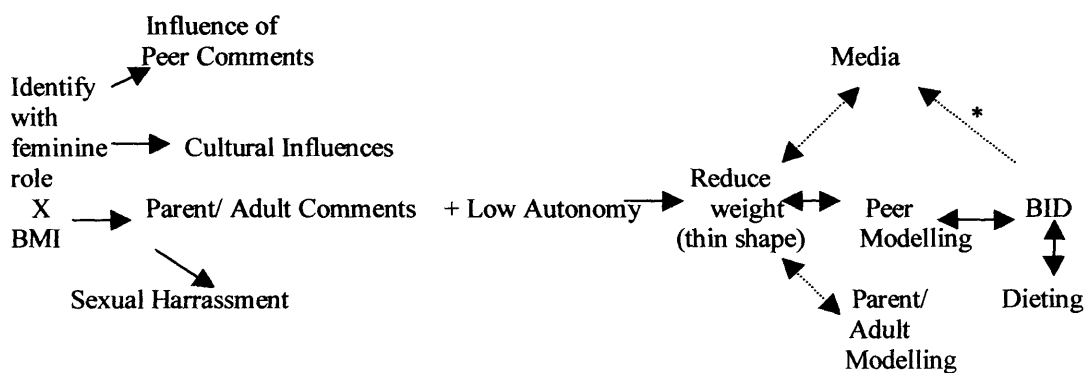
##### *5) Improve existing models*

The findings from the present study could be used to supplement existing models of the development of body image dissatisfaction in children, e.g. Smolak and Levine (2000).

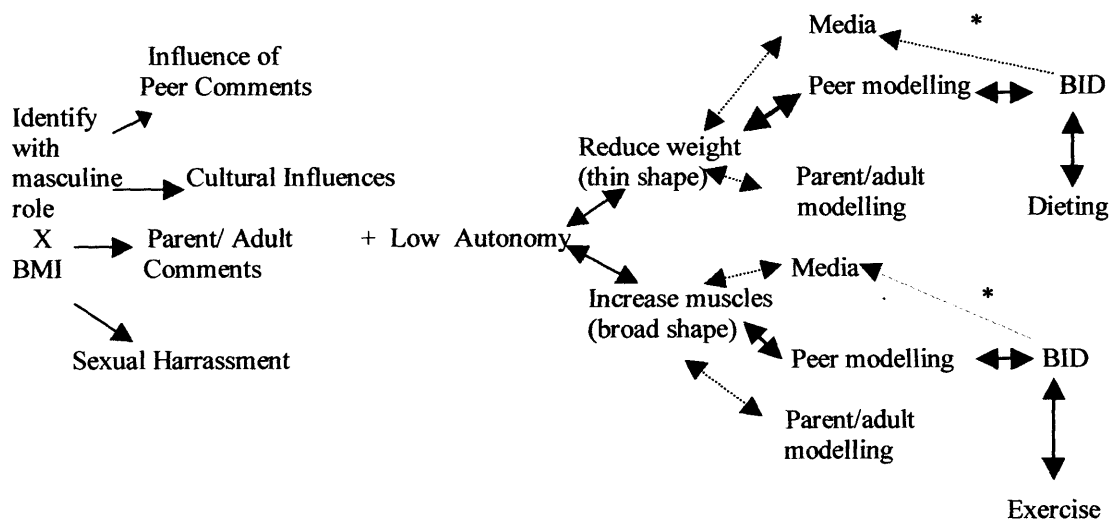
Two revised versions of the Smolak and Levine (2000) model are presented in Figure 3:  
one for boys and one for girls.

**Figure 3.** Revised models of the development of body image dissatisfaction in pre-adolescent children.

a) Girls



b) Boys



\*Long term effects of disordered eating

The revised versions of the Smolak and Levine (2000) model aim to draw together the findings of the present study, in addition many of the issues that have previously been discussed in the existing literature. Smolak and Levine (2000) suggested that certain groups of children are much more likely to hear comments in their local environment

about their body weight and appearance, e.g. overweight girls. However, in contrast to the previous model, this model suggests that both boys and girls are sensitive to such comments from peers and from adults. However, boys and girls may choose to respond to this criticism in different ways. In this study, it was found that girls were more likely (1.66 times) to want to be thin than boys. Most of the girls who were dissatisfied with their body wished for a thin body shape, whereas the boys who were dissatisfied were equally split between those who wished to be thinner and those who wished to be larger. Most children who have been teased about their body shape will experience a sense of wanting to please others (termed as "low autonomy" in this model) and wanting the teasing to end. They therefore focus their attention upon changing their body shape, through becoming more muscular or losing weight, in an attempt to prevent the reason for teasing and to increase their popularity. Smolak and Levine (2000) conceptualise the desire to be liked or to please others as a mediating variable, which explains why some children are more sensitive to media images than others. As the child places increasing scrutiny upon their weight and shape, they focus increasing levels of their attention upon media, peer and parental models of socially desirable figures to reinforce their belief that popular, happy and successful people are thin. Because most children do not meet the images of sociocultural perfection which pervade the media, they feel increasingly negative about their own body and perceive an increasing need to lose weight (Smolak & Levine, 2000). This study has provided additional information regarding children's responses to the media, namely that pervasive sociocultural attitudes can actually affect the manner in which children perceive media imagery of celebrities. In this study, it was found that both boys and girls overestimated the size of the large woman and underestimated the size of the large man. Such perceptual distortions may place additional pressure upon girls to avoid being large and upon men to avoid being thin. At the extreme end of the spectrum of body image dissatisfaction, girls who exceeded the cut-off actually perceived the thin woman to be thinner than the other girls. This result suggests that the long term effects of eating disorders cause children to perceive media

imagery in a qualitatively different manner to other children. This finding may be of utility to clinicians working with children with eating disorders and is represented as a feedback loop in the above models.

### **Implications for further research**

It is hoped that this study has highlighted the notion that much more research needs to be conducted with boys to establish the nature and prevalence of body image dissatisfaction and eating problems. This requires the development of innovative, multidimensional figural selection scales, which have the capacity to measure children's desire to increase muscle tone and lose weight simultaneously. In addition, such scales need to ask children how much importance they place upon losing weight, in order to obtain a measure of subjective distress.

There also need to be many more longitudinal studies, which can track the origins of body image dissatisfaction and identify those children who go on to develop pathological eating or exercise habits. It would be useful to determine whether high scores on childhood tests of eating disturbance, such as the Children's Eating Attitudes Test, correlate with eating disorders in adolescence and adulthood. Furthermore, it would be interesting to track those children who have a strong drive for muscularity, as measured by the ChEat-M, to determine which children go on to experience disorders of over-exercise, such as muscle dysmorphia.

It is acknowledged that this study has used tools that lack normative data for an English population and that two of the tools, the ChEat-M and the PDC task have little or no data as to their reliability and validity. The tentative conclusions that have been drawn from this study would be much more robust if such data were available. It would be invaluable to standardise these tools upon a culturally diverse population of British

children and with clinical samples of children with eating disorders. This would enable researchers to determine whether such tools are culturally appropriate and whether the existing cut-off points are valid for a British population. All of the tasks used in this study were devised in America or Australia and the tests may not be sufficiently sensitive to the diverse nature of British culture. It would be fascinating to ask children from a variety of cultures to examine the figural selection task and to ask them whether they aspire to have any of the body shapes presented, which depict Caucasian, Western looking children. If none of those pictures were appropriate, what sort of body shape would they aspire to? With regards to the perceptual distortions of celebrities task, would children like to have seen celebrities from other cultures included in the task? Would the additional factor of culture affect the manner in which children perceive media imagery?

A final question that has been raised by this study is the role of sociocultural influences in the development of perceptual distortions in pre-adolescent children. Although the current study is only exploratory in nature, the results seems to suggest that all children overestimate the size of large female celebrities, yet underestimate the size of large male celebrities. It would be interesting to determine whether this gender bias exists for all large men and women, or whether this effect is confined to their perception of celebrities. Furthermore, longitudinal studies could be conducted to determine the age at which this gender bias appears.

Despite the limitations described, this study represents a significant departure from the vast majority of previous research that has predominantly conceptualised body image dissatisfaction as a drive for thinness that occurs mainly in girls. This study has aimed to demonstrate that boys are just as likely as girls to experience dissatisfaction with their bodies and in their levels of eating disturbance, although these may be expressed in different ways. This study has used newly developed tools to determine that many boys

wish for a larger, stronger body shape and feel a significantly stronger desire for muscularity than girls. The final part of this study was an attempt to design an innovative tool that was sensitive to subtle perceptual distortions in pre-adolescent children. Although only tentative results can be drawn from this part of the study, it seems that boys and girls experience a gender bias when looking at pictures of large celebrities. Furthermore, girls with eating disorders perceive images of thin female celebrities in a qualitatively different manner to other children. These results have a range of implications for professionals working with children and stimulate a variety of questions that could be investigated in future research.

## **APPENDIX A**

### **Letters confirming ethical approval for research**



**Southern Derbyshire  
Local Research Ethics Committee**

**Southern Derbyshire**

Health Authority



**Chairman:** Dr A W A Crossley MB ChB FRCA

**Administrator:** Jenny Hancock ext 6209 (direct dial from Derby hospitals 16-6209)

**Direct fax:** 01332 363963

**email:** jenny.hancock@mail.sderby-ha.trent.nhs.uk

Derwent Court

Stuart Street

Derby

DE1 2FZ

9 May 2001

Tel: 01332 626300

Fax: 01332 626350

Ms Lisa Rabone  
271 Highbridge Road  
Sutton Coldfield  
West Midlands  
B73 5QU

Dear Ms Rabone

**SDLREC REF: 0103/304**

**THE EFFECTS OF PROBLEMATIC EATING ATTITUDES AND BODY IMAGE**

**DISSATISFACTION UPON THE PERCEPTION OF CELEBRITIES IN PRE-ADOLESCENTS**

Further to the conditional approval of this study by the Southern Derbyshire Local Research Ethics Committee, thank you for your letter of 28 April enclosing a revised parent information sheet and consent form and child appropriate information sheet. I note also that the exclusion criteria have been removed.

I confirm that full SDLREC approval is now granted on the understanding that you will follow the protocol as agreed. However before commencing the study, final approval must be obtained from the management of the appropriate Trust(s).

Please note that the committee will require:

- to be advised immediately of any adverse report or changes to the protocol or if the trial is abandoned;
- a progress report on an annual basis or at the end of the trial if this is a lesser time;
- copies of all published reports.

For your information, the SDLREC complies with the ICH Harmonised Tripartite Guidelines for Good Clinical Practice. In line with Department of Health guidance it has an executive sub committee which meets twice a month specifically to consider MREC-approved applications.

**Please note that the committee will require:**

Yours sincerely

A W A Crossley

Chairman

Southern Derbyshire Local Research Ethics Committee

cc: Mr Martin Taylor, Chief Executive, Leicestershire & Rutland NHS Trust  
Sue Rhead, Consultant Clinical Psychologist, DCGH

Leicestershire and Rutland **NHS**  
Healthcare NHS Trust

Research & Development Office  
Daisy Peake Building  
Towers Hospital  
Gipsy Lane  
Leicester  
Tel: 0116-225-6307  
Fax: 0116-246-1222  
David.Clarke@lrh-tr.trent.nhs.uk

DC/LR/Indemnity

4 June 2001

Miss Lisa Rabone  
271 High Bridge Road  
Sutton Coldfield  
West Midlands  
B73 5QU

Dear Lisa

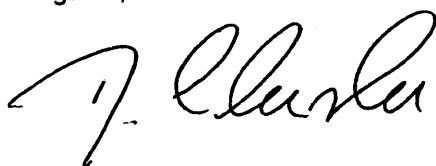
**Re: The effects of problematic eating attitudes and body image dissatisfaction upon the perception of celebrities in pre-adolescent children.**

Please accept my sincere apologies for the delay in responding to your request. My only excuse is that we were committed to completing the Trust Annual R&D Report to NHSE by May 31, and therefore everything else became a lesser priority.

After consultation with the R&D Director and the Trust R&D Operational Group, I am happy to confirm that as an employee of Leicestershire & Rutland Healthcare NHS Trust, you are eligible to receive indemnity cover for the research you wish to undertake. This letter serves as confirmation that you are covered by NHS Trust Indemnity for the above study, subject to the proviso that the original study protocol is adhered to, and that the Trust Research Office is informed of any planned changes (including recruitment outside the specified area) to this protocol. In addition, it is expected that at the conclusion of the study, the principal findings and any recommendations for clinical care are made available to the Trust.

With best wishes on the success of your study.

Regards,



Dr. Dave Clarke  
[R&D Manager]

**DEPARTMENT OF CLINICAL PSYCHOLOGY**  
**Telephone 01332 625542 Fax 01332 625983**

Ref: SJR/AM/  
Date: 13<sup>th</sup> July 2001

Ms. J. Blunt  
Headteacher  
Portway Junior School,  
Robincroft Road,  
Allestree  
Derby DE22 2GL

Dear Ms. Blunt

I am writing to thank you for agreeing to take part in our clinical psychology project with local Year 5 pupils.

As I mentioned on the phone, we are interested in children's views about eating, dieting and how they see television celebrities. We will ask children in Year 5 to do 3 tasks which will take roughly 45 minutes. The first task will ask the children to describe what their body looks like and how they would like their body to look, using drawings of children of their own age. The second form asks children their opinions about eating, dieting and exercise. This form has been specifically designed for children of this age group and has frequently been used in child psychology research. The third task is a game which asks the children to guess the correct size of a range of thin, heavy and muscular television celebrities.

The study is being supervised by Sue Rhead, Consultant Clinical Psychologist and is being conducted by Lisa Rabone, Clinical Psychologist in Training, as part of her Clinical Psychology Doctorate at Leicester University. All parents and children will be provided with information about the project and taking part is purely voluntary. The study has been approved by the Southern Derbyshire NHS Ethics Committee and all results will be kept strictly confidential.

The local ethics committee have requested that we obtain individual consent from parents. I will send through enough information sheets and reply slips for the parents at the start of next term, so that these can be distributed to parents in the usual way and will ring you shortly afterwards to arrange a date for my visit.

Many thanks in advance for your help.

**Lisa Rabone**  
**Clinical Psychologist in Training**

## **APPENDIX B**

### **Parental Information Sheet and Consent Form**

# **SPECIAL NOTE**

**THIS ITEM IS BOUND IN SUCH A  
MANNER AND WHILE EVERY  
EFFORT HAS BEEN MADE TO  
REPRODUCE THE CENTRES, FORCE  
WOULD RESULT IN DAMAGE**

# Derby City General Hospital

## PARENT INFORMATION SHEET

### The effects of body image and eating attitudes upon the views of celebrities in pre-adolescent children.

#### Introduction

We are writing to you to ask for your help in a study looking at your child's views about eating, dieting and how they see television celebrities. This study is part of a Doctorate in Clinical Psychology at Leicester University.

#### What will my child have to do?

We are asking children in Year 5 (9-10 years) to do 3 tasks. This will take roughly 45 minutes. The first task will ask the child to describe what their body looks like and how they would like their body to look, using drawings of children of their own age. The second form asks children their opinions about eating, dieting and exercise. This form has been specifically designed for children of this age group and has frequently been used in child psychology research. The third task is a game which asks the children to guess the correct size of a range of thin, heavy and muscular television celebrities from a series of pictures.

#### Are the results kept confidential? Will the teachers see the results?

All data from this study are strictly confidential and will be used for research purposes only. Any data that your child provides will be anonymous and not traceable.

#### Does my child have to take part?

Taking part in this study is voluntary. Your child may choose to withdraw from the study at any time. If you do wish your child to take part, please could you let the school know as soon as possible.

If you have any questions or concerns about this study, you should discuss them with the researcher leading the study. If you have any concerns about the way this study is being conducted, you are welcome to contact the Chairman of the Southern Derbyshire Local Research Ethics Committee via the committee's administrator, Jenny Hancock (Tel: 01332 626300 ext. 6209).

Thank you for your assistance.



Lisa Rabone  
Clinical Psychologist in Training



Sue Rhead  
Consultant Clinical Psychologist



Accredited by the  
King's Fund  
Organisational Audit



**CLINICAL PSYCHOLOGY PROJECT**

**PARENT CONSENT FORM**

**This form should be read in conjunction with the Information Sheet.**

**I agree for my child to take part in the above study as described in the Information Sheet.**

**I understand that my child may withdraw from the study at any time.**

**Signature of parent.....Date.....**

**Name (block letters).....**

**Name of child (block letters).....**

**Class.....**

## **APPENDIX C**

### **Child Information Sheet and Consent Form**



# Psychology Project

## Who am I?

My name is Lisa Rabone and I am training to be a clinical psychologist at Leicester University. Every psychologist is asked to do a project as part of their training and I have decided to do my project with children from Derbyshire.

## What do I have to do?

I want you to do three things.

1. I am going to show you some pictures of boys and girls. I want you to put a circle around the one that looks most like you now. Then you need to put a circle around the one on the next page of how you would like to look.

2. This is a quiz. You need to put a circle around the answer that tells me most about you.

For example, the question is "I like to eat vegetables." You can put a circle around one of these:- always, very often, often, sometimes, rarely, never.

3. This is about famous people. You have to guess which picture out of lots of them shows the real size of the famous person. We have made the faces fuzzy on the computer so you don't have too many clues!

## Are the results kept secret?

All of the results will be private and will not be seen by your parents or teachers so please **do not** write your names on the sheets.

## What if I don't understand?

Just put your hand up. If any of the questions make you feel sad or worried, you can talk to your teacher or your school nurse about it.

## Do I have to take part?

We have written to your parents about the project, who have agreed that you can take part.

But if you feel that you don't want to take part today, just let me or your teacher know before we start.

## Thanks for your help!

Lisa Rabone

Department of Clinical Psychology

Leicester University

☎0116 252 2162

## **CHILD CONSENT FORM**

**The effects of body image and eating attitudes upon the perception of celebrities in pre-adolescent children.**

**Principal investigator: Lisa Rabone, Clinical Psychologist in Training.**

**This form should be read in conjunction with the information sheet.**

-----

**I have had the nature of this research explained to me. I agree to take part in the study. I understand that:**

- 1. The time taken for me to do the study is about 45 minutes.**
- 2. I may withdraw from the study at any time.**
- 3. All information I give will be anonymous and confidential.**

**Signature of child..... Date.....**

**Name (Capital letters).....**

**Name of parent (Capital letters).....**

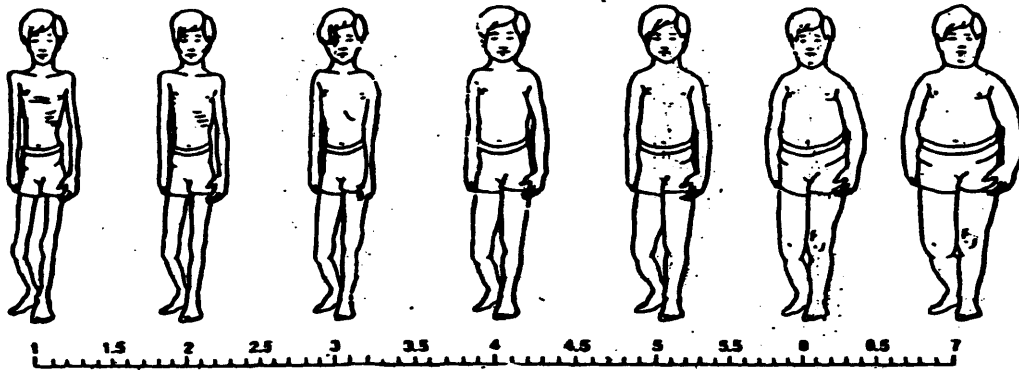
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**If you have any further questions (before or after you take part) the researcher can be contacted at the above address/ telephone number.**

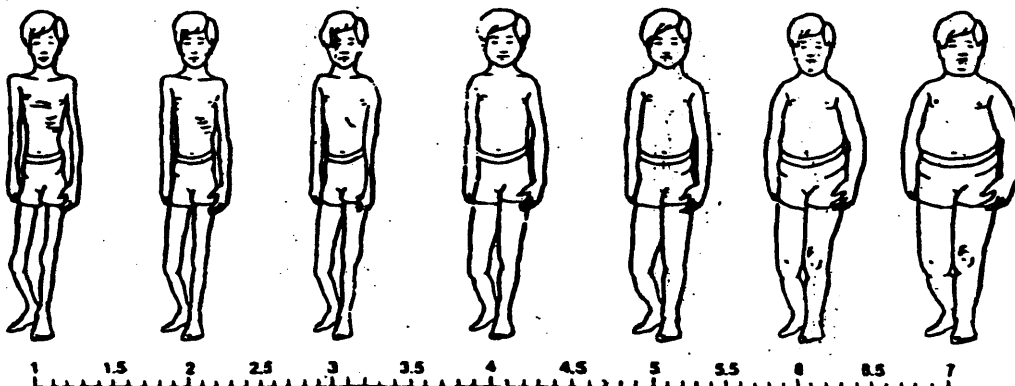
**APPENDIX D**  
**Figural Selection Task**

## BOYS

1. Which picture looks most like you look?  
Draw an arrow underneath the picture that looks most like you.

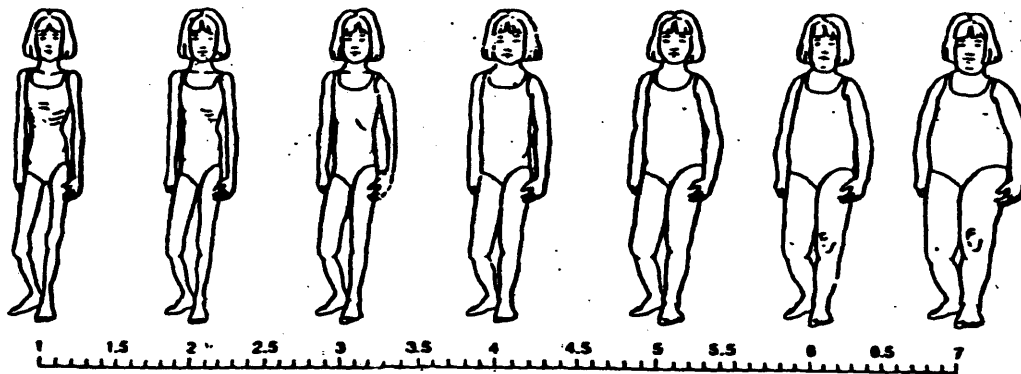


2. Which picture shows the way you want to look?  
Draw an arrow underneath the picture.

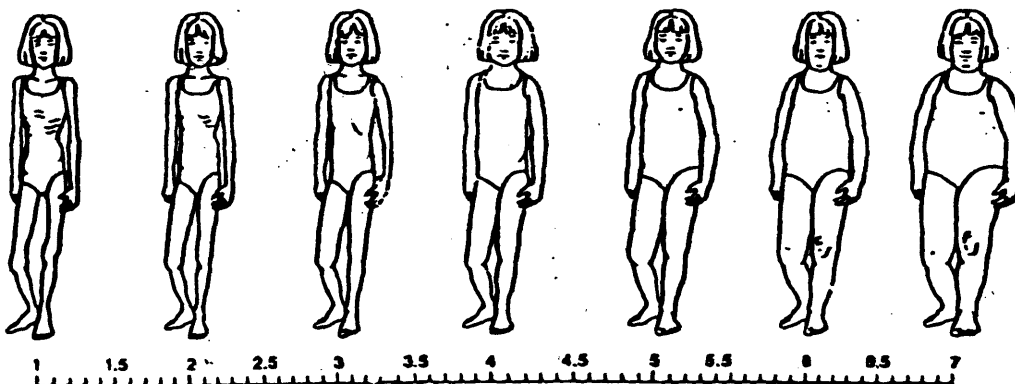


## GIRLS

1. Which picture looks most like you look?  
Draw an arrow underneath the picture that looks most like you.



2. Which picture shows the way you want to look?  
Draw an arrow underneath the picture.



## **APPENDIX E**

### **Children's Eating Attitudes Test**

**(Original Version- Q1-24)**

**(Muscularity Items- Q25-32)**

## **Children's Eating Attitude Test**

### **Instructions**

Please place a circle around the word that best applies to the statements below.  
For example:

**I like to eat vegetables.**

Always    Very often    Often    Sometimes    Rarely    Never

**1. I am scared about being overweight.**

Always    Very often    Often    Sometimes    Rarely    Never

**2. I stay away from eating when I am hungry.**

Always    Very often    Often    Sometimes    Rarely    Never

**3. I think about food a lot of the time.**

Always    Very often    Often    Sometimes    Rarely    Never

**4. I have gone on eating binges where I feel that I might not be able to stop.**

Always    Very often    Often    Sometimes    Rarely    Never

**5. I cut my food into small pieces.**

Always    Very often    Often    Sometimes    Rarely    Never

**6. I am aware of the energy (calorie) content in foods that I eat.**

Always    Very often    Often    Sometimes    Rarely    Never

**7. I try and stay away from foods such as bread, potatoes and rice.**

Always    Very often    Often    Sometimes    Rarely    Never

**8. I feel that others would like me to eat more.**

Always    Very often    Often    Sometimes    Rarely    Never

**20. I give too much time and thought to food.**

Always    Very often    Often    Sometimes    Rarely    Never

**21. I feel uncomfortable after eating sweets.**

Always    Very often    Often    Sometimes    Rarely    Never

**22. I have been dieting.**

Always    Very often    Often    Sometimes    Rarely    Never

**23. I like my stomach to be empty.**

Always    Very often    Often    Sometimes    Rarely    Never

**24. I enjoy trying rich foods.**

Always    Very often    Often    Sometimes    Rarely    Never

**25. I exercise to become more muscular.**

Always    Very often    Often    Sometimes    Rarely    Never

**26. I eat food high in calories in order to increase my muscles.**

Always    Very often    Often    Sometimes    Rarely    Never

**27. I worry about the size of my muscles.**

Always    Very often    Often    Sometimes    Rarely    Never

**28. I think a lot about the muscles on my body.**

Always    Very often    Often    Sometimes    Rarely    Never

**29. I feel bad if I don't exercise a lot.**

Always    Very often    Often    Sometimes    Rarely    Never

**30. I feel guilty when I am not exercising.**

Always    Very often    Often    Sometimes    Rarely    Never



**31. I think about increasing muscles when I exercise.**

Always      Very often      Often      Sometimes      Rarely      Never

**32. I am unhappy about the size of my muscles.**

Always      Very often      Often      Sometimes      Rarely      Never

### **Dieting Questionnaire**

Please place a circle around the word which best applies to the statements below. All of the results will be very confidential. The purpose of this questionnaire is to help us understand children's attitudes about food better. Please answer each question carefully. Thank you.

**1. Sex:**      Male      Female

**2. Race:**      White      Black      Asian      Oriental      Other

**3. Age in years:** .....

**4. Have you ever wanted to be thinner?**      Yes      No

**5. Have you ever tried to lose weight?**      Yes      No

**6. Has your mother ever been on a diet to lose weight?**      Yes      No

**7. Is your mother overweight?**      Yes      No

**8. Has your father ever been on a diet to lose weight?**      Yes      No

**9. Is your father overweight?**      Yes      No

**10. Has your brother or sister ever been on a diet to lose weight?**  
Yes      No

**12. Have you ever had a friend on a diet to lose weight?**      Yes      No

**13. Would your friends like you more if you were thinner?**      Yes      No

**14. I feel:**      Too fat      Just right      Too thin

**15. Others think I am:**      Too fat      Just right      Too thin

**16. How many hours of TV do you watch a day?**

**0-1**

**2-3**

**4-5**

**6 or more**

## **APPENDIX F**

### **Perceptual Distortions of Celebrities Task**



**Britney Spears**

Singer

**example**

Which of these pictures shows the real Britney Spears?





**Jack Ryder**

**Actor**

**Jamie Mitchell - Eastenders**

Which of these pictures shows the real Jack Ryder?





**Lisa Riley**

**TV Presenter/Actress**

**You've Been Framed, Mandy Dingle - Emmerdale**



Which of these pictures shows the real Lisa Riley?





**Ricky Tomlinson**

**Actor**

**Jim Royle - The Royle Family**

**Bobby Grant - Brookside**

Which of these pictures shows the real Ricky Tomlinson?



Which of these pictures shows the real Hannah Spearitt?

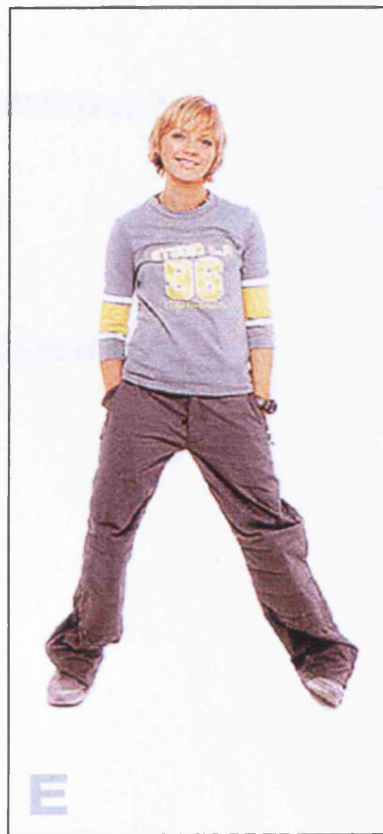


**Hannah Spearitt**

**Singer/Actress  
S Club 7**



Which of these pictures shows the real Hannah Spearitt?



☆☆☆ Answer Sheet – Celebrity Quiz ☆☆☆

1. Which picture shows the real **Britney Spears**?

**A                      B                      C                      D                      E**

2. Which picture shows the real **Jack Ryder**?

**A                      B                      C                      D                      E**

3. Which picture shows the real **Lisa Riley**?

**A                      B                      C                      D                      E**

4. Which picture shows the real **Ricky Tomlinson**?

**A                      B                      C                      D                      E**

5. Which picture shows the real **Hannah Spearitt**?

**A                      B                      C                      D                      E**

## **APPENDIX G**

### **Quiz to identify age-appropriate celebrities**

## **Celebrities Quiz**

**Are you in Year 5?**  
**Would you like to help us by doing a quiz about famous people?**

**Are you a boy ☐ or a girl ☐ ? (Please tick)**

**1. Do you know who Victoria Beckham is?**

**Yes ☐      No ☐**

**Do you think she is thin or fat ?      Thin ☐      Fat ☐**

**2. Do you know who Jack Ryder is (Jamie from Eastenders) ?**

**Yes ☐      No ☐**

**Do you think he is thin or fat ?      Thin ☐      Fat ☐**

**3. Do you know who Lisa Riley is (presenter of You've Been Framed!)**

**Yes ☐      No ☐**

**Do you think she is thin or fat ?      Thin ☐      Fat ☐**

**4. Do you know who Hannah from S Club 7 is?**

**Yes ☐      No ☐**

**Do you think she is thin or fat ?      Thin ☐      Fat ☐**



**5. Do you know who Robbie Coltrane is? (Hagrid in the Harry Potter Film, Cracker)**

**Yes ☐ No ☐**

**Do you think he is thin or fat ?**

**Thin ☐ Fat ☐**

**6. Do you know who Jamie Theakston is?**

**Yes ☐ No ☐**

**Do you think he is thin or fat ?**

**Thin ☐ Fat ☐**

**6. Do you know who Ricky Tomlinson is? (Jim Royle in the Royle Family)**

**Yes ☐ No ☐**

**Do you think he is thin or fat ?**

**Thin ☐ Fat ☐**

**8. Do you know who Dawn French is? (TV Comedian)**

**Yes ☐ No ☐**

**Do you think she is thin or fat?**

**Thin ☐ Fat ☐**

**9. Do you know who Vanessa Feltz is? (TV Presenter)**

**Yes ☐ No ☐**

**Do you think she is thin or fat ?**

**Thin ☐ Fat ☐**

**10. Do you know who Geoffrey Hughes is? (Eddie Yeats from Coronation Street, Onslow in Keeping up Appearances, Vernon in Heartbeat)**

**Yes ☐ No ☐**

**Do you think he is thin or fat ?**

**Thin ☐ Fat ☐**

**Thanks for your help!**

### Results of Celebrities Quiz (n=8)

	Known	Judgement re: size		
		Correct	Incorrect	Don't Know
Victoria Beckham	8	7	1	
Jack Ryder	7	7		1
Lisa Riley	8	8		
Hannah Spearitt	8	8		
Robbie Coltrane	4	3		5
Jamie Theakston	4	4	1	3
Ricky Tomlinson	5	4	1	3
Dawn French	3	3	1	4
Vanessa Feltz	5	4	1	3
Geoffrey Hughes	5	4	1	3

## **APPENDIX H**

### **Children's Eating Attitudes Test-**

#### **Definitions of terms**

**Standardised verbal definitions of complex words used in the Children's Eating**

**Attitudes Test**

*Binge:* When you eat a very large amount of food in a short time and you feel like you can't stop eating.

*Vomit:* to be sick.

*Self-control:* You can stop eating when you want to.

*Rich foods:* Foods which have a lot of fat in them, like cakes, sauces and curries.

*Calorie content:* the number on the back of food packets that lets you know how much energy is in the food.

*Feeling guilty:* Feeling bad, like you shouldn't have done something.

*Urge to vomit:* A feeling like you're going to be sick.

*Burning up calories:* Using up the energy in your food.

*Pressure to eat:* When someone tries to make you eat or forces you when you don't want to.

## **APPENDIX I**

### **Children's Eating Attitudes Test-**

#### **Responses to individual items**

# T-Test

Group Statistics

	gender	N	Mean	Std. Deviation	Std. Error Mean
CHEAT1	boy	90	2.84	1.82	.19
	girl	100	2.63	1.58	.16
CHEAT2	boy	89	2.55	1.33	.14
	girl	100	2.60	2.31	.23
CH3	boy	89	2.78	1.56	.17
	girl	101	2.59	1.37	.14
CH4	boy	89	2.00	1.28	.14
	girl	101	1.93	1.27	.13
CH5	boy	90	4.06	1.79	.19
	girl	101	3.53	1.71	.17
CH6	boy	90	3.21	1.85	.20
	girl	99	2.93	1.43	.14
CH7	boy	90	2.10	1.42	.15
	girl	101	1.73	1.12	.11
CH8	boy	90	2.21	1.45	.15
	girl	101	2.38	1.68	.17
CH9	boy	89	1.69	.91	9.67E-02
	girl	100	1.63	.95	9.50E-02
CH10	boy	90	1.61	1.00	.11
	girl	100	1.86	1.21	.12
CH11	boy	89	2.29	1.49	.16
	girl	99	2.75	1.81	.18
CH12	boy	89	3.25	1.66	.18
	girl	99	2.88	1.59	.16
CH13	boy	90	2.02	1.53	.16
	girl	100	2.11	1.53	.15
CH14	boy	90	2.27	1.53	.16
	girl	98	2.32	1.57	.16
CH15	boy	90	3.13	1.68	.18
	girl	100	3.45	1.75	.18
CH16	boy	90	2.62	1.40	.15
	girl	100	2.51	1.15	.12
CH17	boy	90	2.97	1.39	.15
	girl	100	2.68	1.43	.14
CH18	boy	89	2.18	1.49	.16
	girl	98	2.26	1.54	.16
CH19	boy	90	4.06	1.64	.17
	girl	99	3.82	1.56	.16
CH20	boy	90	1.98	1.37	.14
	girl	101	2.05	1.23	.12
CH21	boy	89	2.10	1.31	.14
	girl	101	1.97	1.14	.11
CH22	boy	89	2.58	1.57	.17
	girl	101	2.62	1.44	.14
CH23	boy	90	2.16	1.62	.17
	girl	101	2.03	1.36	.14
CH24	boy	90	2.10	1.29	.14
	girl	100	1.97	1.16	.12

### Group Statistics

	gender	N	Mean	Std. Deviation	Std. Error Mean
CH25	boy	90	3.47	1.49	.16
	girl	100	3.46	1.47	.15
CH26	boy	89	1.97	1.20	.13
	girl	101	1.84	1.04	.10
CH27	boy	90	3.68	1.68	.18
	girl	101	3.09	1.59	.16
CH28	boy	90	3.21	1.61	.17
	girl	100	2.54	1.19	.12
CH29	boy	90	1.97	1.29	.14
	girl	101	1.96	1.26	.13
CH30	boy	90	2.76	1.55	.16
	girl	101	2.26	1.25	.12
CH31	boy	90	3.19	1.68	.18
	girl	100	2.91	1.55	.16
CH32	boy	88	2.93	1.77	.19
	girl	100	2.48	1.45	.14
CH33	boy	90	3.43	1.69	.18
	girl	101	2.41	1.42	.14
CH34	boy	90	1.83	1.21	.13
	girl	101	1.94	1.39	.14
Total cheat score	boy	80	62.46	15.76	1.76
	girl	89	60.97	15.90	1.69

## **APPENDIX J**

### **Children's Eating Attitudes Test-**

#### **Breakdown of questions**



Breakdown of questions contained in the Children's Eating Attitudes Test and in the Children's

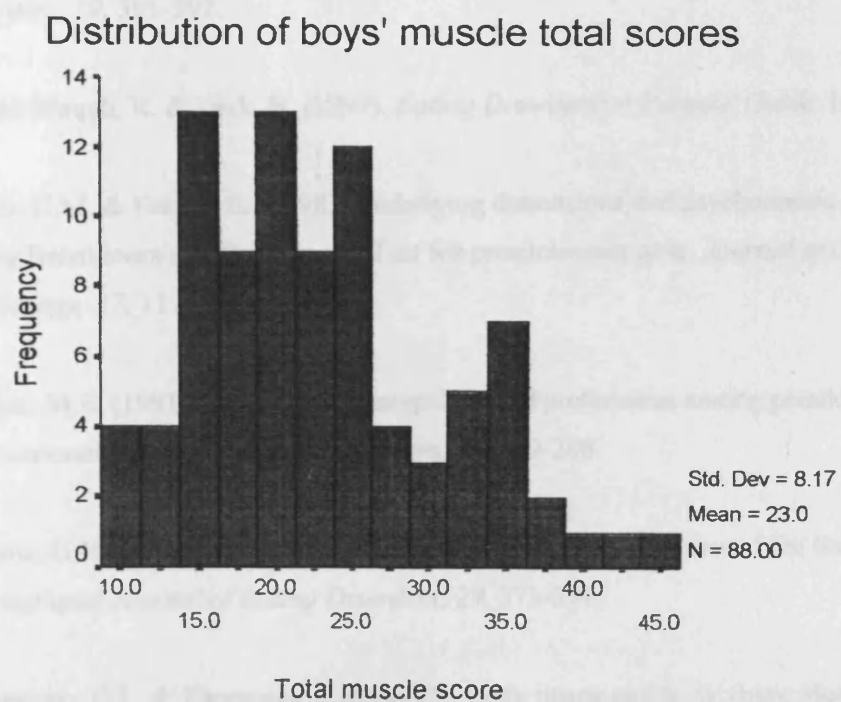
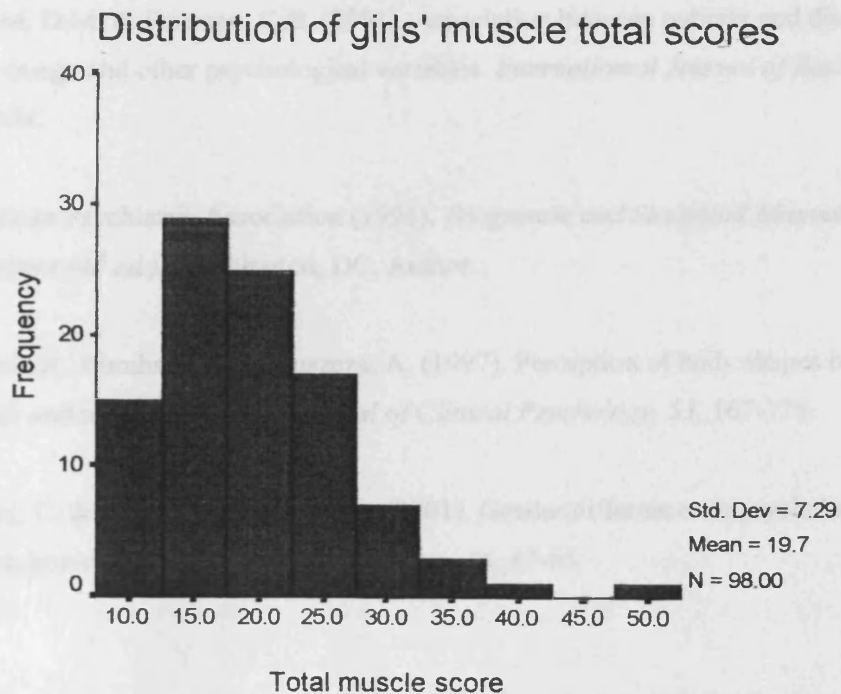
Eating Attitudes Test (Modified version)

	<u>ChEat</u>	<u>ChEat-M</u>
1.	✓	✓
2.	✓	✓
3.	✓	✓
4.	✓	✓
5.	✓	✓
6.	✓	✓
7.	✓	✓
8.	✓	✓
9.	✓	✗
10.	✓	✓
11.	✓	✓
12.	✓	✓
13.	✓	✓
14.	✓	✓
15.	✓	✓
16.	✓	✓
17.	✓	✓
18.	✓	✓
19.	✗	✗
20.	✓	✓
21.	✓	✓
22.	✓	✓
23.	✓	✓
24.	✓	✓
25.	✓	✓
26.	✓	✗
27.	✗	✓
28.	✗	✓
29.	✗	✓
30.	✗	✓
31.	✗	✓
32.	✗	✓
33.	✗	✓
34.	✗	✓

## **APPENDIX K**

### **Children's Eating Attitudes Test (Modified Version)**

#### **Distribution of Muscle Total scores in boys and girls**



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