

# Children's views about obesity, body size, shape and weight

## A systematic review

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### Conflicts of interest

There were no conflicts of interest in the writing of this report.

### Contributors\*

The protocol was developed by AH, JK, AO, RR, JT and JW. TL, RR, CS and JW conducted searches and screened studies. AH, RR, JW and KO developed the data extraction tool. Data extraction, quality appraisal and synthesis were conducted by RR and KO. The NCB Young People's Public Health Group commented on interim findings. The report was written by RR, KO and JT. (\*Full names can be found under acknowledgements above.)

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## Preface

### Scope of this report

This report describes the methods and findings of a systematic review of research relevant to children's perspectives of obesity, body size, shape and weight. Since it aims to inform a particular national policy context it focuses upon children aged four to eleven living in the UK.

This review forms part of the core programme of Department of Health-funded work at the EPPI-Centre, Social Science Research Unit, Institute of Education, University of London. It is designed to dovetail with two systematic reviews from the EPPI-Centre that explore the relationships between obesity and sedentary behaviour, and obesity and educational attainment; a map and searchable database of schemes tackling obesity and overweight in children and young people in England; and a systematic map of reviews of social and environmental interventions to reduce childhood obesity.

Conclusions are discussed in detail, and policy, practice and research implications of the findings are outlined. There are many useful messages in this work for policy-makers, commissioners, practitioners, and researchers who have a remit to explore policy issues or to promote or conduct research on children and obesity.

### How to read this report

Because this review is a systematic review, using explicit and rigorous methods to synthesise the evidence in this topic area, the report is necessarily detailed. Its complexity and length have also been increased because the review contains different types of research which were synthesised in different ways. Without compromising on the transparency that is expected of a systematic review, we have taken a number of steps to facilitate readability for those who are more concerned with the findings of the review, than with its methods.

In order to give due prominence to the findings of the review, rather than its methods, we have divided the report into two sections: Part I focuses on the findings of the review with only very brief information given on the methods; Part II describes the review methods in detail, and presents extensive tables that detail the research contained in the review.

Chapters 4 to 6, containing the results of the review, have been structured to aid quick reading. Each major theme has a clear sub-heading in the text with an italicised summary underneath. Those who want to skim-read these chapters should focus on the themes and accompanying summaries. Each theme is then expounded upon in greater depth, along with examples from the research studies on which the theme is based.

## Executive summary

### Background

The review has been conducted in the context of high levels of concern about obesity in children in the UK. Children are likely to experience immediate physical and psychosocial problems as a result of being obese and are at a higher risk of obesity as they grow older. Increases in obesity also represent considerable financial costs. Children's attitudes to and beliefs about their bodies, which can include high levels of body dissatisfaction, have also raised concern.

There is a growing awareness of the importance of the social and environmental determinants of obesity and of the ways in which many central factors might be out of an individual's own control. Obesity is most likely to be experienced by people who are socio-economically disadvantaged. Despite growing understanding about the need to tackle the 'obesogenic environment', research from the USA in particular shows blame and responsibility is often placed mainly on those who are overweight. Weight-related stigma and discrimination are widespread, and these impact considerably, both on the well-being of those who are very overweight and on their attempts to modify their size.

Unfortunately there is a dearth of evidence from well-conducted studies to help us decide what can be done to prevent or deal with obesity. In particular, little is known about research that asks children for their own perspectives on obesity and body size, shape and weight. Such perspectives can inform the ways in which interventions aim to bring about positive outcomes. This systematic review aims to address this gap and to examine recent research findings from the UK where children aged from four to eleven provide views about their own body sizes or about the body sizes of others. It is hoped that this can help inform policy and the commissioning of further research in ways that put children's experiences in the forefront.

### Methods

This systematic review aims to identify, appraise and synthesise published and unpublished research on children's views about obesity, body size, shape and weight. The review focuses upon children aged four to eleven living in the UK and addresses the following questions:

- What are children's views about the meanings of obesity or body size, shape or weight (including their perceptions of their own body size), and what experiences do they describe relating to these issues?
- What are children's views about influences on body size?
- What are children's views about changes that may help them to achieve or maintain a healthy weight?

We searched eighteen electronic databases, searched three key journals and sixteen websites by hand, scanned reference lists, looked for papers that had cited key studies, and contacted key

informants for research to include in the review. Studies needed to have provided findings for children in the UK aged four to eleven and to have described basic aspects of their study methods. They needed to have been published since the start of 1997.

We examined 28 studies in detail, using a standardised framework to describe key aspects of each study (including population, research methods and findings). We also assessed the study findings in terms of whether the studies had used rigorous methods and whether they provided rich data that were likely to be rooted in children's perspectives. This was used to make a judgement about each study's overall 'weight of evidence'. The judgement was based on how reliable the study's findings were and how useful the study was in answering the reviews' questions from a child's perspective.

Findings were synthesised in two, separate analyses. One synthesis is of findings where children had been asked open-ended questions. These children's responses provided predominantly qualitative data which were then interpreted so as to develop understandings of children's views of body size. The second synthesis is of findings where children were asked to select from responses already set by researchers. These responses provided predominantly quantitative data. The findings from the two syntheses were then juxtaposed. A consultation was held with young people that explored the credibility of a subset of the findings and their possible implications.

## Findings

**It is not always easy to describe the children who participated in the studies in this review. Children's ethnicity and socio-economic status, in particular, were frequently not stated by the study authors. While it is clear that a range of children had been involved in many of the studies, some children appear to be underrepresented, in particular children not at school, socio-economically disadvantaged children and young children. Very overweight children were the focus of a small number of studies; otherwise, views are most likely to have come from children with body sizes within the healthy range.**

**Recent research that asks children for their views about body size, shape and weight was found to be very limited in its scope. No studies were found, for example, that explicitly asked children what they thought might help them to achieve or maintain a healthy weight. Studies did not always report rigorous methods or methods designed especially to encourage children to share their perspectives. The data from individual studies were often not very detailed.**

**Nonetheless, when synthesised together, these studies do provide a coherent collection of views and experiences. The richness of detail contained within the syntheses cannot be summarised adequately here. Please see Chapters 4 to 6 for a comprehensive account of the findings of this review. The children's views can be summarised as follows:**

- Children, unless they were very overweight, often did not see body shape as an immediately relevant issue. Children in general did see body size as an issue for others, and some reported negative feelings around body size.

- Children, whatever their body size, did not emphasise the health implications of being overweight. Instead they saw – and had experienced – overweight bodies as having problematic social and psychological consequences, including bullying and isolation.
- Children assessed their own and others' body sizes critically. They described how they compared their bodies over time and with other peoples' bodies. Very overweight children spontaneously described their own bodies as being a larger size.
- Children's responses to body fat were almost exclusively negative and were infused with moralistic ideas involving blame, responsibility and due punishment.
- Many, but not all, children's experiences of their own body size were negative.
- While attitudes to thinness and dieting for weight loss were not always positive, girls, in particular, were aware of social pressures to be thin and were sometimes applying them to themselves. Boys may also have picked up on these ideas.
- Gender plays a large role in children's views about body size.
- Very overweight children and those who are not overweight had very different ideas about children's control over their body sizes.
- Children identified multiple influences on their body size and discussed some in complex terms. Children's recommendations for other children who seek to lose weight, however, focused mainly on eating.
- Children emphasised the importance of support for helping them deal with pressures around body size and helping them have a healthy weight.
- Very overweight children identified other barriers to and facilitators of their own attempts at weight loss.

## Conclusions and implications

### Conclusions

#### *Children experience obesity largely as a social problem*

This review indicates that children in the UK who have a healthy body size often may not have body size very high on their everyday agendas. When these children see body fat as a problem it is because of the impact it has on other children's lives as social beings. Children identify very overweight children as being less popular.

Many very overweight children, however, experience body size as a big problem. They are likely to experience unhelpful responses to their own body sizes from other children, as well as adults. Fat-

related name calling and bullying is currently considered by children, whatever their body size, to be a normal occurrence.

Children, whatever their body size, often may not consider the health consequences of obesity to be important.

*Children appear to be aware of the influence of both food and exercise on body size but emphasise food the most. They appear most aware about influences on body size when they are themselves very overweight*

Children hold complex views about influences on body size that tend to focus on individual behaviours. Overweight children are likely to be perceived by their peers as being responsible for their own size. Children with healthy body sizes appear less aware than their very overweight peers of the potential influence of factors – other than individual behaviour – on their own body size.

*Children appear to be critical about their own body sizes and are highly aware of our society's heightened interest in body size*

Children appear to be aware of the actual size of their own bodies. They are likely to have judged the acceptability of their own body by the time that they are 12 and many are dissatisfied. Girls are likely to want to be leaner, regardless of their size. Boys and girls with body sizes within the healthy range may feel anxious when considering their own bodies and the negative reactions their bodies might produce if they are exposed in some way to their peers. They may often feel they should aspire to very lean body shapes that are unattainable and likely to be unhealthy.

*The adult world does not appear to be helping children much with the different problems that can arise around body size*

Very overweight children are likely to be experiencing considerable social and physical difficulties as a result of their size. They also encounter many barriers, and a lack of support, when they try to take action. Parents and friends appear to be the most helpful source of support, but this is not always unproblematic.

*Actual body size and gender are central to understanding children's views around body size*

While very overweight children and girls bear the brunt, the combined impact of our obesogenic environment and our society's ongoing preoccupation with body size appears now to be affecting the body image ideals and body satisfaction of boys as well. Girls and boys aged under 12, however, differ considerably, both in their aspirations for their bodies and ideas about others' bodies.

*Research that has asked children for their views about body size has often been of a low methodological quality*

**Studies of children's views have not always reported rigorous methods, or have not adequately described the children involved. The data from individual studies have often not been very detailed.**

## *Research has so far failed to engage children properly in the debate about obesity and public health*

There is a striking lack of studies that can serve to privilege children's views. No studies appear to have been done that directly ask children what they think should be done to support them in developing or maintaining a healthy body size. Few studies appear to have used methods that can support children's own framing of issues in their lives. Many reports make no mention of seeking children's informed consent for participation.

## **Implications**

Children in this review's synthesis were often not encouraged to go into much detail about their views and experiences. This review has also not considered available or evaluated interventions (although see Section 8.2 for two initiatives we were asked to consider). As a result, the implications of the above conclusions need to be general in form, relating to areas that need to be addressed, rather than specific ways in which issues might be addressed.

## **Implications for public health and health promotion practice**

The findings suggest there is a need for those who run or develop initiatives:

- to target commonplace, unhelpful beliefs, attitudes and discriminatory behaviours around body size;
- to bolster overweight children's self-esteem and assertiveness skills;
- for action to increase understanding among children and adults about multiple influences on body size;
- to modify beliefs about the limits to an individual's control over their own body size and to encourage action to tackle obesity at community and other important levels;
- to consider reducing the emphasis on body size and physical health as an intervention outcome when marketing initiatives;
- to consider the role of positive social outcomes, such as friendship, support and social inclusion, in attracting children to interventions, and maintaining their interest and commitment;
- to consider exploring with children the full range of consequences of obesity, including those for mental and physical health;
- to develop materials and processes that respond appropriately to the differing values, aspirations and concerns held by girls and boys around their own body sizes.

## **Implications for policy**

The findings suggest there is a need:

- for population-level efforts that counter and aim to reduce the stigma associated with very large body size;

- to consider initiatives to address the support needs of parents, other adults and children in their discussions of children's body sizes;
- to involve diverse groups of children in the development and evaluation of initiatives.

### **Implications for research**

The findings suggest there is a need:

- for research that actively engages children in identifying forms of support around body size that they consider might be appropriate;
- to rigorously explore the views of very overweight children about their support needs, for example about possible ways of supporting their social inclusion, providing psychological support as well as for their modifications to exercise and diet;
- for research that seeks children's views on how public health campaigns and interventions can help children understand influences on obesity, as well as the full range of its negative consequences, without contributing to the stigma felt by those most adversely affected;
- for more attention to description and analysis in research findings;
- for research to explore with children the contexts for their views and the rationales they consider to be important;
- for those who conduct research with children to aim to clarify and report the meanings these children ascribe to the descriptive terms that they use;
- for research on body size to be influenced more by the children who participate, and be more sensitive to children's rights and engagement; .
- for studies that aim for more generalisable findings about children's views, where questions in these population-based studies are derived from studies that have themselves used methods that aim to privilege children's views.

## **Part I: Background and findings of the review**

## 1 Background

This review forms part of the core programme of Department of Health-funded work at the EPPI-Centre, Social Science Research Unit, Institute of Education, University of London. It is designed to dovetail with other work on childhood obesity from the EPPI-Centre that includes:

- two systematic reviews that explore the relationships between obesity and sedentary behaviour, and obesity and educational attainment;
- a map and searchable database of schemes tackling obesity and overweight in children and young people in England;
- a systematic map that describes published reviews of social and environmental interventions to reduce childhood obesity.

This body of work aims to inform the development of policy and practice so as to reduce problems associated with childhood obesity. The review described in this report is of research involving children in the UK aged from four to eleven. This age-range maps, roughly, onto the ages at which children attend primary school.

### 1.1 Why body size is an issue

This review is being done in the context of high levels of concern about obesity in children in the UK (Butland et al. 2007). Levels of obesity have been on the increase for several decades and a large number of children are now experiencing a body weight judged to be above the healthy range. The latest England-wide measurement of children in primary school estimated that 9.6% of children aged four to five, and 18% of children aged ten to eleven were obese. A further 13.0% and 14.3% of these same age-groups of children were overweight (Health and Social Care Information Centre 2008). In comparison, reference figures from children in the UK in 1990 using the same definitions, classify 5% as obese, with a further 10% classified as overweight (Dinsdale and Rutter 2008).

Children who are obese are likely to experience immediate physical and psycho-social problems as a result (Dietz 1998, Lobstein et al. 2004). In addition to individual children's experiences, any increase in obesity represents financial costs to health care systems and the economy, both in the present and the future. The costs of obesity among children are frequently seen to include the likely continuation of obesity, or associated problems, into adulthood.

Children's attitudes and beliefs about their bodies have also raised concern, although these are currently less in the spotlight. Children as young as six have been found to dislike their body image (Dohnt and Tiggemann 2006, Flannery-Schroeder and Chrisler 1996). Body dissatisfaction grows among girls as they age, and in adolescent girls is one of the main risk factors leading to problematic attitudes to eating (Flannery-Schroeder and Chrisler 1996, Ricciardelli and McCabe 2001). Early dieting and related behaviours, such as exercising to lose weight, binge eating, food preoccupation and purging, have been seen in children. All are risk factors associated with various chronic problems in later life, including heightened concern over body image, weight cycling, eating disorders such as anorexia and bulimia nervosa, and obesity (Birch and Fisher 1998, Haines and Neumark-Sztainer 2006, Marchi and Cohen 1990, Shisslak et al. 1999, Smolak et al. 1999).

While only a few recent studies appear to have examined British children's attitudes towards their own body sizes (see below), views of adults in the UK have been under scrutiny. One study compared adults' ratings of their own bodies as being overweight or not, using data from two population-based surveys conducted eight years apart, and compared these with participants' reports of their weight and height (Johnson et al. 2008). The proportion of people reporting body sizes that put them above levels considered to be healthy was higher for the later survey (in 2007). However, fewer people said that they considered themselves to be overweight. The authors interpret this as a decline in people's sensitivity to detecting that they are overweight. They caution, however, that increased attention to the health risks of excess weight might have left people more reluctant to identify themselves with labels such as 'overweight' and 'obese'. Another difference between the two surveys was that fewer women of normal or low weight described themselves as overweight, suggesting that inappropriate perceptions of overweight might be declining among women in the 'healthy' weight range.

### 1.2 Understanding children's body sizes

Researchers have recently constructed 'system maps' to describe the complex and multi-levelled pathways which influence body weight. The most ambitious of these models have sought to integrate biological and genetic factors, individual behaviour, and influences from individuals' social and physical surroundings to provide a complete picture of the 'obesogenic environment' (Butland et al. 2007, Swinburn et al. 1999, Swinburn and Egger 2004). It is argued that major changes in the social and environmental determinants of obesity, such as work patterns, transport and the production and sale of food, have exposed an underlying biological tendency to both put on weight and retain it (Butland et al. 2007). These authors describe weight gain in the population as the 'inevitable ... consequence [for many] of exposure to a modern lifestyle', and once a certain weight is gained, a large number of factors act to make that weight extremely difficult to lose (Swinburn and Egger 2004).

It is recognised that the factors influencing children's body weight are likely to differ from those of adults: for example the influence of adults on children's dietary and physical activity behaviours are likely to be considerable, ranging from parental rules and controls over food and leisure, through access to different modes of travel, to activities and eating while at school. Butland and colleagues' main report provides a version of their model adapted for children. However, they note that data are too sparse and fragmented to provide a reliable indicator of the relative importance of these links to changes in children's body weights (Butland et al. 2007). Recent findings from longitudinal surveys report obesity in children as young as three to be linked to a wide range of individual and family-level factors that are far from being under the child's own control, such as their ethnicity, their birthweight, whether they had been breastfed or weaned early, their parents' weight and mother's socio-economic circumstances (Hawkins et al. 2009).

Others have focused more on children's lived experiences, and on the impact of cultural and social values. Children are seen as living in an increasingly individualised world where bodies are considered personal projects that should be improved, through dieting, exercise or even surgery (Orbach 2006). At fault, it is argued, are a pervasive visual culture and a dieting industry that present increasingly homogenous, underweight bodies as desirable. Furthermore, natural appetites for food are distorted as mothers transmit rigid ideas about eating to their daughters. Young girls and

women, in particular, are left feeling 'fat in their minds', regardless of their actual body shape or weight (p68).

And being 'too fat' in most industrialised cultures is socially problematic. Despite the increasing prevalence of obesity, being obese still transgresses social norms (Lobstein et al. 2004). Being too fat is commonly seen as aesthetically and morally reprehensible. Press coverage routinely blames obesity solely on individual choices, without discussing structural factors that might influence weight gain (Saguy and Riley 2005). Very overweight people experience societal stigma, where others react negatively towards them or make decisions about them that are influenced by negative attitudes towards overweight bodies as a whole. Stereotyping is common, with overweight bodies linked with socially undesirable behaviours and other attributes, such as weakness of will, laziness and greed. Several studies of employers in the USA, for example, found overweight and obese job applicants were viewed routinely as having less ambition and productivity, poor self-discipline, low supervisory potential, and poor personal hygiene (Puhl and Heuer 2009).

Very overweight children are far from immune from this stigma, experiencing weight-related stereotyping and bias from their peers, educators and parents (Puhl and Latner 2007, Ricciardelli and McCabe 2001). Childhood bullying as a result of being overweight is common (Dietz 1998), with one large-scale longitudinal UK study finding children who were eight and obese were one-and-a-half times more likely to have been bullied than 'average weight' children. Weight-based teasing and bullying can itself lead to weight gain in young people because it can lead them to engage more in unhealthy eating and less in physical activity (Puhl and Latner 2007). Parents of very overweight children in the UK have described multiple challenges for their children and families. These include negative attitudes of healthcare professionals towards their children and towards them for allowing their children's weight to increase, difficulties co-ordinating their child's dietary and physical activity needs with those of the rest of the family without their children feeling further stigma, and a general lack of help from others or willingness to discuss childhood weight (Edmunds 2008).

The rise in obesity has not been equally shared among all children. While all children are vulnerable to becoming overweight, children whose parents have a low socio-economic status appear to be at higher than average risk (Shrewsbury and Wardle 2008). Socio-economic inequalities in obesity are also stronger in girls than in boys. Asian children are more likely to be obese than white children (Department of Health Public Health Consortium et al. 2007). This last group of authors again emphasise the importance of looking at environmental influences, noting that the speed at which the prevalence and the social patterning of obesity in the UK have changed suggests adverse environmental factors as being the primary cause. In the USA, inequalities also appear to be a factor in public discourses about obesity, with people from minority ethnic groups most likely to be criticised for their obesity on lifestyle grounds (Saguy and Riley 2005).

A variety of objective measures are used by researchers and others to measure body size and each has strengths and weaknesses that should be considered when appraising their use (National Obesity Observatory 2009). Most common is Body Mass Index (BMI), which is a person's weight in kilograms divided by the square of their height in metres. Furthermore, to increase understanding about possible risks to individual children of diseases such as Type 2 diabetes, weight circumference and the thickness of folds of skin at key points of the body are also sometimes measured (Zimmet et al. 2007). While it is recognised that BMI is only a proxy for body fatness, it is widely used as it is a

relatively easy and non-invasive measure. For children, BMI needs to be compared to growth reference charts, as the relationship between BMI and body fat varies greatly with age and sex as children develop. In addition, other factors, including ethnicity and fitness, can modify the relationship between BMI and fatness and so should be taken into consideration when assessing an individual's body size. When judging claims about the impact of children's body size, for example that children of different body sizes report different experiences or perspectives, ideally all of the above should be taken into account. At a minimum, researchers need to state their methods for physical measurement so that these can be evaluated for appropriateness on a study by study basis.

### 1.3 Children-centred frameworks for health

Increasingly, policy in the UK and elsewhere seeks to put children at the centre of their own health-related decisions (Department for Education and Skills 2003, Department of Health 2004, UNICEF 2009). This emphasis recognises that children are people in their own right, and are competent social actors who are able to make sense of their own lives. It holds that adult-led agendas can be limited in their understanding of children's health behaviours. Children are often portrayed largely in terms of 'adults to be': future contributors to society whose physical health, in particular, can be 'at risk'. In contrast, children can be seen as part of cohorts 'of their time', experiencing and reacting to specific social, economic, and political contexts (James and James 2004, Mayall 1998).

Never before have children experienced the current combination of environmental circumstances that make obesity so likely, or lived with such a widespread public emphasis on avoiding body fat and approval for thinness (Butland et al. 2007, Saguy and Almeling 2005). Today's children hold a vital set of perspectives on what it is like to be a child in an obesogenic world. Recent research that studied Scottish teenagers' views of their own body sizes, for example, found their views often ran counter to popular belief and counter to much of the psychological literature. Most overweight or obese participants said that they liked all or parts of their bodies and were satisfied with their overall size (Wills et al. 2006). The study authors argue that only by engaging with views such as these will it be possible to gain insights into why young people do not always act around body size in ways approved of by adults (Wills et al. 2008).

It is also possible that adult society's preoccupation with the health implications of different body sizes does not always resonate with children's views or experiences. For example, in the Children's Society's recent large-scale study on what makes a good childhood (The Children's Society 2009) children did not discuss obesity or fatness in terms of health or indeed in any other way. Children did say that a good childhood was characterised by supportive friends and family. They identified loneliness, bullying, pressure and lack of support as major influences on their health and well-being.

### 1.4 Policy background

In response to concerns about rising body weight, the UK Government has identified obesity as a policy priority. Government targets include a reduction by 2020 of obesity among children aged two to ten to the levels seen in 2000 (Cross-Government Obesity Unit et al. 2008, HM Treasury 2007). Two initiatives central to the Government's current strategy are the National Child Measurement Programme and Change4Life. These two initiatives are considered again in Chapter 8 of this report, which explores some of the implications of the review's findings. Both initiatives are part of the

'Healthy weight, healthy lives strategy' (Cross-Government Obesity Unit et al. 2008). This sets out a framework for action in five main areas: 'promoting children's health; promoting healthier food choices; building activity into our lives; creating incentives for better health; and personalised advice and support'.

As part of the National Child Measurement Programme (NCMP), children in Reception year (aged four and five) and Year six (aged ten and eleven) of English schools have their height and weight measured. The Programme was established in 2005, with measurement results being fed back to local Primary Care Trusts (PCTs) so as to gather population-level surveillance data. From September 2008, PCTs have been strongly encouraged to feed back the results of measurement to parents. The Government's guidance on local delivery of the NCMP, published every year for Primary Care Trusts (PCTs), recommends that measurements are taken in a private setting and says that children and parents should be given the choice of whether or not to participate (Cross-Government Obesity Unit 2009). Posters are being used in schools to inform children about what to expect and what will happen to their results, and to encourage them to participate (Department of Health 2009).

Change4Life, which was launched in January 2009, is described as a social marketing campaign. It is currently directed at parents of children aged five to eleven (Mayor 2009). The campaign aims for healthier family behaviours around food and exercise, and emphasises the immediate and future health effects on children of unhealthy diets and low levels of activity. It provides information and advice for healthy living via a website, mass media advertisements and information packs. Interactive services include a helpline and a web-based survey that will provide parents with action plans for their children. Commercial and other organisations are encouraged to sign up to be partners in the campaign, and to promote behaviour change messages or use sub-brand toolkits, for example 'swim4life'.

The relative importance of social and environmental factors for obesity, the role of inequality, and the social consequences of obesity described above have, however, led many to argue for extreme caution when developing policy and practice in this area. Interventions that solely target individual behaviour, it is argued, are unlikely to be sustainable, especially for those who are most disadvantaged. A preoccupation with body size, in the absence of effective measures to help body sizes be healthy, may result only in a lowering of children's well-being. An emphasis on body size, as the main outcome of programmes, could act to increase the stigma felt by those who are most overweight. Indeed, without additional steps to increase tolerance for diversity, physical activity and healthy eating initiatives could act mainly to further alienate and marginalise very overweight children (Curtis 2008, Wills et al. 2008). Others note that there are important physical risks associated with many weight-loss methods and products, and emphasise that initiatives should aim to improve lifestyles and health, not merely attempt to make or keep people thin (Campos et al. 2006).

### 1.5 Existing research

Unfortunately, the evidence available to inform effective approaches to both treatment and prevention of obesity is marred by poorly conducted studies using restricted populations and inconsistent methods of assessing and measuring outcomes (Oude et al. 2009, Summerbell et al. 2005). Despite much research effort, we simply do not know what interventions work to promote healthy body sizes in children.

Another weakness of much existing research evidence is its failure to interrogate what children themselves think. Children's own views can play an important part in the process of designing and implementing interventions. They will attach a range of meanings to body size and weight that will influence the ways in which they act and communicate around weight and health. They may have insights into factors that influence their own weight and that of their peers, and ideas about how they can be supported to keep their own weight within a healthy range. Research that explores how children experience and make sense of their lives can inform the ways in which interventions aim to bring about positive outcomes.

Systematic reviews aim to use rigorous methods to seek out, describe, appraise and synthesise the findings of existing research so as to answer a research question in a methodical and transparent way (Harden et al. 2004). Like all kinds of research, systematic reviews have strengths and weaknesses. One common weakness is a lack of substantive findings, due to there either being very few studies that address the review's question or due to methodological limitations in the studies found. Previous syntheses of children's and young people's views of health and health behaviours have found literature to be limited in quantity and patchy in quality (Brunton et al. 2005, Brunton et al. 2006, Oliver et al. 2008, Rees et al. 2006, Shepherd et al. 2006, Thomas et al. 2003).

As a result, we decided in this review to 'throw our net' very wide, running extensive and sensitive searches, but also including a wide range of study designs that could help answer our review's questions. We sought studies that used open-ended questioning and interpretive methods from researchers to explore children's perspectives from the starting point of these children's own words. For the purposes of this review, we have termed these 'interpretive' studies. To increase the findings available to us, however, we also included studies that only provided children with pre-determined responses from which they could select their answers. For the purposes of this review, we have labelled this second set 'aggregative' studies.

The inclusion of these two types of study raises the issue of the extent to which different kinds of research respect children's abilities to describe their own worlds. Both researchers and children have the potential to describe and interpret children's experiences, but they do not always have equal power. Strategies which can be useful in minimising unequal power relationships include: allowing children flexibility in terms of what they talk about; encouraging children to describe their lives through storytelling (rather than in question and answer format); using focus groups made up of groups of friends to mimic as much as possible how children usually interact; and encouraging children to engage with, and voice opinions about, the research process (Mauthner 1997). Systematic reviews can attempt to examine whether such approaches have been used in research involving children and can then comment on the quality of the review's findings, in terms of how likely it is that children's perspectives have been missed or distorted.

Systematic reviews that synthesise the findings of research about children's views can help policy-makers gain a broader and deeper understanding of obesity from children's perspectives (Harden et al. 2004). Our preliminary searches located only one systematic review that focused on lay views about body size. This focused on the growth of infants and explored the views of adults (Lucas et al. 2007). The research evidence on experiences and perspectives cited above originates from the USA, relates to young people aged 12 or over, and was published over 10 years ago.

There is therefore a substantial gap in the current evidence base which this systematic review aims to address. It examines recent research findings from the UK where children aged from four to eleven provide views about their own body sizes or about the body sizes of others. It is hoped that it can help inform policy and the commissioning of further research in ways that put children's experiences at the forefront.

### **1.6 A note on the terminology used in this report**

Descriptive terms for body size are extremely value laden. We have therefore tried to restrict our use of terms that could potentially further stigmatise individuals or cause offence. We have described individuals or groups of people as 'obese' only when study authors have described the people in their studies solely in these terms. We have avoided use of the word 'fat' and other possibly pejorative terms unless children or others are quoted as using them. Elsewhere, we have used the term 'very overweight' when authors have used this or another phrase or term to indicate that one or more children in their study has been diagnosed as clinically obese or was considered to be at risk from their body fat. Otherwise we have used the terms 'overweight', 'a healthy weight' and 'underweight' to identify children with increasingly smaller body sizes, although, again, only when study authors indicated a distinction. It should be noted, however, that it is difficult to report body size variation in this literature with any precision, since the body sizes of participating children are often not specified with any precision by study authors. For brevity's sake, the term 'body size' is used when discussion encompasses both body shape and body weight, but these two different aspects of children's sizes are distinguished only when study author's accounts make this possible.

## 2 Aims and research questions

### 2.1 Aims

The aims of this project were to undertake a systematic review of research that explores children's views about obesity, body size, shape and weight. The review explores children's understandings of body size, the factors they identify as influencing body size, and the steps that they think could be taken to help them to avoid being overweight. As well as being of value in their own right, the review's findings can be used to inform research and the development of interventions to tackle obesity.

The work outlined in this report describes:

- A systematic search for, and the description and appraisal of, studies of children's views about obesity, body size, shape or weight;
- A synthesis of the findings of this research;
- A consultation with a panel of young people convened to discuss public health research to explore the credibility of the synthesis and possible implications of the findings;
- The research team's views on the implications of the synthesis for ongoing initiatives in the UK, and for further research.

### 2.2 Research questions

This systematic review aims to identify, appraise and synthesise published and unpublished research on children's views about obesity, body size, shape and weight. The review focuses upon children aged four to eleven living in the UK, and addresses the following questions:

- What are children's views about the meanings of obesity or body size, shape or weight (including their perceptions of their own body size), and what experiences do they describe relating to these issues?
- What are children's views about influences on body size?
- What are children's views about changes that may help them to achieve or maintain a healthy weight?

### 3 Review methods

This report describes the results of a systematic review of research that examines children's views on obesity, and body size, shape and weight. It contains studies which tell us about young people's views and experiences in the UK.

The review answers the questions set out in the previous chapter in a structured and systematic way, aiming to present the range of views that children in the UK have on this topic and how these views vary among different children. Detailed methods are presented in Part II of this report.

We searched eighteen electronic databases, searched three key journals and sixteen websites by hand, scanned reference lists, looked for papers that had cited key studies, and contacted key informants for research to include in the review. Studies needed to provide findings for children in the UK aged four to eleven and to have described basic aspects of their study methods. They needed to have been published since the start of 1997.

Our searches found 8,029 potentially relevant reports. On closer inspection and after the retrieval of 203 paper reports, we identified a total of 37 reports of 28 separate studies which were relevant to answering our review questions. We examined these 28 studies in detail, using a standardised framework to describe key aspects of each study (including population, research methods and findings). We also assessed the study findings in terms of whether the studies had used rigorous methods and whether they provided rich data that were likely to be rooted in children's perspectives. This was used to make a judgement about each study's overall 'weight of evidence'. The judgement was based on how reliable the study's findings were and how useful the study was in answering the review's questions from a child's perspective. This description, appraisal and weighing of studies was done for each study by two reviewers who first worked independently and then compared their work so as to reach a consensus. We entered data from these assessments onto an online database.

In order to deal with the diversity of studies identified, findings were synthesised in two, separate analyses. One synthesis is of findings where children had been asked open-ended questions. These children's responses provided predominantly qualitative data which were then interpreted so as to develop understandings of children's views of body size. The first of these syntheses is described as 'interpretive' to reflect both the methods employed in the primary studies and those used to synthesise them.

The second synthesis is of findings where children were provided with pre-determined responses from which they could select their answers. These responses provided predominantly quantitative data. These data were brought together to explore and refine researchers' pre-existing ideas about how children's views of body size might vary. This second synthesis is called 'aggregative' in recognition of the emphasis on aggregation in the studies it contains.

The findings from the two syntheses were then juxtaposed. This brought together findings about perceptions and experiences of body size that were rooted in children's perspectives with findings about the circumstances in which children might hold certain views about body size.

The effect on the syntheses' findings of excluding the poorest quality studies was explored and found to be negligible. The review's conclusions are therefore based upon all 28 studies.

Finally, an outline of the findings of the first synthesis was presented to two groups of young people who had been convened by the National Children's Bureau. The aims of this consultation were to explore the credibility of our findings and to explore possible implications.

## 4 Findings: interpretive synthesis

This review synthesises children’s views about obesity, body size, shape and weight. A total of 28 relevant UK-based studies were identified. The findings from these studies were subsequently synthesised in two ways, reflecting the methods employed in the original studies. Further details of the flow of studies through this review are presented in Part II of this report.

This chapter presents the synthesis of findings from a subset of 15 studies. The synthesis develops themes that were recurrent or contrasting in these studies and explores possible relationships between the themes.

We have labelled this synthesis as ‘interpretive’. Children in these 15 studies had been asked open-ended questions so they could discuss issues in their own words. This research approach required an emphasis on researchers’ interpretations in both the individual studies’ methods of analysis, as well as the methods we used in the synthesis. (See Chapter 5 for the findings from other studies, the approaches to which can be described as more ‘aggregative’ than those in this chapter, and Chapter 6 for how the two syntheses together help address this review’s questions.)

Table 4.1 assigns a number to each of the studies in this synthesis. These numbers are referred to throughout this chapter.

**Table 4.1** Studies in the interpretive synthesis (N=15)

Number	Study name
1	Burrows et al. (1999)
2	Cole et al. (2005)
3	Dixey et al. (2001a, 2001b).
4*	Edmunds (2000)
5	Girlguiding UK (2007)
6	Grogan and Richards (2002)
7	Kurtz and Thornes (2000)
8	Ludvigsen and Sharma (2004)
9	McKinley et al. (2005)
10	Mulvihill et al. (2000b)
11	Murtagh et al. (2006)
12	National Children’s Bureau (NCB) (2005)
13*	Robinson (2000)
14	Stewart et al. (2006)
15*	Walsh-Pierce and Wardle (1997)

\* These studies also contributed to the aggregative synthesis. There were approximately 240 children in the three studies that contributed views to both syntheses.

The views, between them, relate directly to two of the questions posed by this review. As is covered in detail below, children discussed the meanings of different body sizes and their perceptions of body sizes and influences on body size. While children did not explicitly discuss what changes they felt should be made by others to help them achieve or maintain a healthy weight, they did express views about child measurement.

The studies varied in their reliability and usefulness for understanding children's views. The findings of four studies (1, 5, 12, 15) were judged to have both a low reliability and a low usefulness. These four studies all reported very little about the methods that were used to study children's responses to open-ended questions. They also did not present their findings in much depth or breadth, and described taking relatively few steps to privilege children's perspectives. Most study findings were judged medium in both their reliability and usefulness. None scored high in both areas (see Part II for further detail of this quality appraisal, and Chapter 6 for how the results of this quality appraisal were used).

#### 4.1 The children and studies in the interpretive synthesis

The studies involved over 1,295 children aged from five to eleven. Appendix A details the children's characteristics. Most were aged seven or over, although five studies sought views from younger children (1, 2, 7, 10, 12). Most studies used a mixed-sex sample. One involved girls only (5) and one focused on boys and young men (6). Most of the children came from England, from studies set in the North, South, East, South West and the Midlands. Three studies recruited children from Wales and Northern Ireland (8, 9, 14). No studies included children from Scotland.

Children were nearly all recruited through their schools. Two studies (11, 15) recruited children who had been referred to weight-loss clinics. Both of these reported the BMI ranges for the children studied, but only the second study described its procedures for measurement. One further study focused on the views of very overweight children (4). This used weight, height and skin-fold measurements to classify children into different health risk groups and fully described its measurement procedures. The body sizes of children were only described in three further studies (6, 13, 14). Here all children were described as similar to national norms, but only the second study described actual measurement of children's BMI. No studies aimed to focus on minority ethnic children or children from more disadvantaged groups. Mention of either children's socio-economic status or their ethnicity was absent in nearly two-thirds (N=9) of the studies.

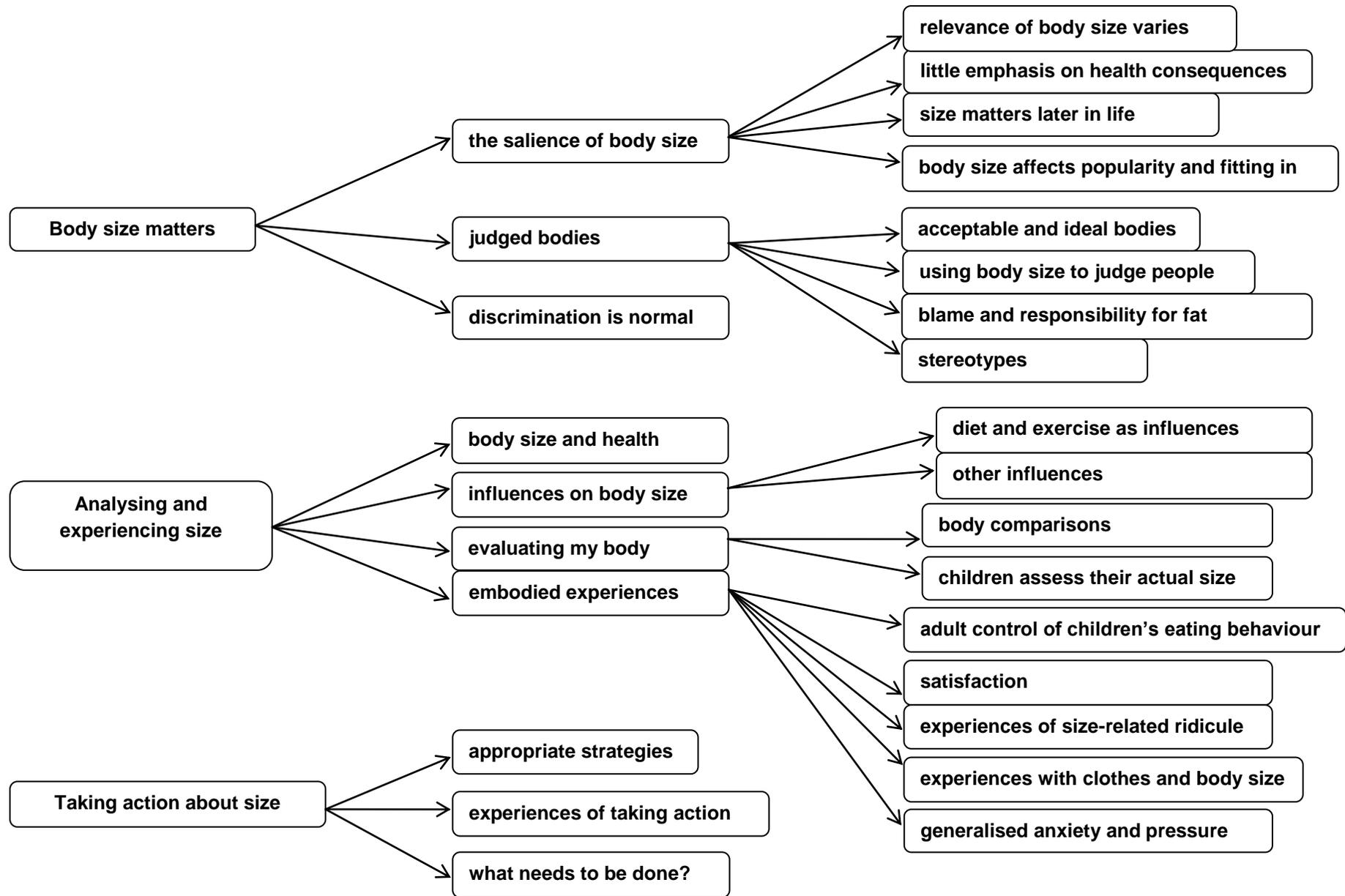
Studies ranged considerably in size, aim and approach (see details in Appendices A and B). Three involved 20 children or fewer (2, 6, 11) and three involved 100 or more (3 2001a, 9, 12). Nine studies were focused specifically on children's views of body size. Three of these focused on experiences of being overweight (4, 11, 15); two on being weighed and measured (2, 12); two on mental health and body image (5, 13); one on body image and masculinity (6); and one on perceptions about body size, health and healthy behaviours (3 2001a). The remaining six studies asked children their views about food (8, 9, 14), physical activity (1, 10) and their overall health needs (7).

Children participated in group discussions in nine studies (2, 3 2001a, 5, 6, 7, 8, 9, 11, 12). They were also interviewed individually or in pairs (4, 10, 11, 12, 13, 14, 15). In several of the studies, children took part in drawing and other activities, such as playing with toy food, role-playing and card sorting (1, 2, 5, 13).

#### 4.2 What were the views of the children in these studies?

Qualitative analysis of the findings of each study resulted in ten main themes and a further 17 sub-themes, which were related to children's views in three areas: how body size matters; analysing and experiencing bodies; and taking action about size (see Figure 4.1).

Figure 4.1 Themes identified across studies of children’s views



Appendix C lists all of the sub-themes and indicates whether or not views from each study contributed to a theme's development. The rest of this chapter describes children's views in each of the three areas in turn.

### 4.2.1 Body size matters

Children talked readily about how body size matters in the world around them, providing insights into how body size may often not be that high on the everyday agenda of a child's life, as well as the different ways in which body size might be important to them. The children in the studies were aware of the ways in which different body shapes are deemed acceptable and desirable, and how body size, and overweight people in particular, are talked about in moralistic terms. The studies also identify just how 'normal' size-related ridicule and bullying are considered to be.

#### *The salience of body size*

*Body size was not always a central issue in children's everyday lives, although for some overweight children it was clearly very prominent. Similarly, children only rarely talked about the health consequences of being a certain body size. Instead, body size was an issue that might be important when they were older, or important because of its considerable impact on peer relationships.*

**The relevance of body size varies.** Body size was often not relevant to children when they were asked about their lives as a whole. Three studies used approaches that might encourage children to express body size in terms of their own priorities. When children were encouraged to rate the importance of four areas of their lives – 'how I look', 'being active', 'schoolwork' and 'making friends' – 'schoolwork' was rated first in importance by over half of the children and 'how I look' by fewer than 10% (4). This study enabled children to bring up body size as an issue for discussion only if they wished to. There was a tendency in this same study for the importance of being overweight to increase as children became more overweight. One study of girls belonging to a girls-only youth organisation reported that some never thought about how they looked (5). Another explored children's perceptions of their own health needs (7). These children referred very little to body size, indicating only that it could be a problem for adults, or one of many problems experienced by teenagers:

*'as a teenager you get fat and have other problems and that's when you need help most.'* (7, p35)

Unlike children in general, body size was clearly highly central to many overweight children's lives. In the study by Edmunds referred to above, two of the very overweight children introduced body size as the very first thing they wanted to talk about. One girl's opening comment was simply, 'Some people call me fatty' (4, p225). (For children's descriptions of what it is like to be a certain body size see 'Embodied experiences' below.)

Children also placed **little emphasis on the health consequences** of being a certain body size. In only one study did children mention a specific weight-related illness (diabetes) (3 2001a, p211); they also described the heart 'slowing down' as a result of being overweight (3 2001b, p74). It should be noted that the children in this study were part of an intervention that was designed to promote

physical activity and healthy eating, so one might expect them to be more aware of these issues than children not receiving such an intervention. Otherwise, views were extreme, for example 'If you get fat you die' (1, p65). Very few of the clinically obese children in one study mentioned future health implications when they were asked what motivated them to lose weight (11).

In contrast, the idea that **size matters later in life** was reported by children in several studies. When asked about their diets, children talked about how they might improve them in adulthood and made no mention of current changes (14). In one study, girls perceived themselves to be too young to be concerned by weight (3, 2001a). The boys in this study thought weight could be important if your future career depended on it:

*'If you want to be a famous footballer then you'd have to lose weight, but if you just want to be a computerist sitting at a desk, it's OK.'* (Boy breaking in:) *'My friend doesn't mind being fat – he wants to be a heavyweight champion.'* (3 2001a, p210)

The main aspect of body size considered important by children, regardless of their own size, appears to be how **body size affects popularity and fitting in**. Body size was seen to affect both the way children interact with each other and how included they feel.

Children talked in particular about body size and bullying or ridicule. These views are discussed separately below (under 'Discrimination is normal' and 'Experiences of size-related ridicule'). In addition, children thought that overweight children might be lonely or not have people to play with (5), might be less popular than thin children (3 2001a, 5), might only have fat friends (8), might need to choose a boyfriend or girlfriend the same size as themselves (3 2001a), or even might need to get slim in order to make friends (3 2001a, 4).

The experiences of very overweight children support some of these perceptions. A third of overweight children in one study made comments that revealed that they felt less socially accepted, compared with 10% of children with a more optimal weight (4). One very overweight girl described how weight 'gets in the way' of her making friends (p228) and one very overweight boy reported feeling disliked because of his weight. Others reported being abandoned by friends. Nearly three-quarters of obese children in another study felt that they would have more friends if they lost weight (15). Emphasising a desire to fit in, other clinically obese children described needing to be 'normal' so they could 'blend in' and so not be singled out for social torment. One felt, 'different and terrible, like I'm not like everyone else' (11, p921).

### *Judged bodies*

*Children assigned value to bodies. They saw being overweight as undesirable. Views about being underweight were mixed. Children presented conflicting views about whether body size was important when judging someone but used moralistic ideas of blame and accountability when describing overweight people. When asked to generalise, they assigned a wide variety of negative characteristics to overweight people.*

Children expressed views on **acceptable and ideal bodies**. Being overweight was almost always described as undesirable. The few positive comments that were made were restricted to boys who

noted that fat might help keep you warm (3 2001a, 4) and that it was preferable to (3 2001a), or could help prevent (4), starvation.

Views about being underweight were more mixed. Children in several studies (3 2001a, 4, 8) indicated that girls of their age might want to be 'thin' or 'skinny'. Both boys and girls, however, also linked being 'too thin' unfavourably with anorexia (9, p548) and girls linked it with being 'quite ill' (3 2001a, p,210) and 'obsessed' (8, p21). Children also seemed to vary in their appraisals of the very thin body sizes of models and some media celebrities (3 2001a, 4, 5, 9). In the last of these studies, children aspired to their 'lovely wee skinny little bodies', while also judging some to be 'too thin' (p549).

Overall, children talked mainly in negative terms when they evaluated different body sizes. Girls talked in solely favourable terms about having a 'slim' body (5, 13) or 'a good figure' (9), but did not discuss this in any depth. Only one study focused on boys' aspirations for their bodies (6). In contrast to girls' emphasis on body fat, these boys expressed their ideal body as one that 'looked fit'. They described a lean body as appropriate, but it also needed to be toned and muscular and in their view extreme muscularity was to be avoided (p224).

Children did not refer to health explicitly when discussing ideal bodies. There was, however, reference to moderation: some children thought it important to be 'not too fat and not too thin' (3 2001a, p211), and to social norms: one child thought it important to be 'the right size' (2, p14).

There were no views recorded about ideal bodies from children who were very overweight, although one study noted that clinically obese children did not identify a need themselves to be 'perfect' (11, p921).

When talking about body size, children presented different accounts of whether they should be **using body size to judge people**. Three studies presented discourses where appearance was discounted in favour of other characteristics, for example 'It doesn't matter how you look, it's what you are inside that matters' (4, p234); 'beauty is only skin deep' (3 2001a, p213); 'No matter what anybody says ... if you're a good person on the inside, then it doesn't really matter how you look on the outside' (5, p14).

But this positive-sounding appraisal is challenged by other children's accounts. Edmunds (4) notes that body weight was discounted in this way by some of the overweight children in her study, but not by any of the children who had an 'optimal' weight. Dixey and colleagues' (3 2001a) study reports an exchange where a boy accuses others in his group of hypocrisy, 'they say that now, but in real life they'll make fun of you if you're different' (p210). As another two boys put it,

*'It's not a very good image if you are going round with a fat person.' (Boy cutting in:) '... nowadays it's all on your looks.'* (3 2001a, p210)

Children apportioned **blame and responsibility for fat**. They talked judgementally about people characterised as having a particular body size or shape. In one study boys linked becoming overweight with a weakness of will and saw it as something that people had control over (6). This was used to justify teasing. In another study, children implied that being overweight could be a just punishment for this lack of control:

*'[They] deserve to be fat if they eat sweets all the time.'* (3 2001a, p209)

Furthermore, overweight children were seen as morally required to take action about their weight if they had become overweight through self-indulgence or by eating the wrong food. They were less accountable if it was genetic, or in some way 'natural' (3 2001a):

*'If it's weight they've put on, they should do something; if they're genetically like that, then they shouldn't.'* (p209)

One girl advised larger children, 'do not wear swimming costumes because you show it' (5, p13). Here, it appears that an overweight child is presented as responsible, either for reducing their own feelings of being exposed or for reducing others' exposure to their overweight body.

Overweight children's accounts were similarly infused with ideas about duties related to body size. For example, one very overweight girl described being told in a dance class that she ought to take stock of her body size,

*'You should look at yourself in the mirror ... just look how you look.'* (4, p225)

Children created **stereotypes** centred on body size. In addition to links made between body size and peer relations (described under 'popularity and fitting in' above and 'Discrimination is normal' below), children associated overweight bodies with a range of behaviours and attitudes that have negative connotations. These included: eating food and drinks with a high fat and/or sugar content (2, 8, 13); not eating healthy food (2); eating inedible or unrealistic food items (13); laziness and watching too much television (2,8); poor table manners (13); not washing, not exercising (2); 'trouble-making' (8); being selfish or being stressed (2); and having no hobbies (8).

In contrast, children in three studies characterised the experience of being underweight. When children considered a 'thin' person's food and eating (13), they described eating very small portions and lots of vegetables and salad, healthy or slimming foods, and good table manners. The children in Ludvigsen and Sharma's (8) study described how a salad meal would usually be eaten by a girl, who would also be skinny or thin, would take part in a range of sports, would be healthy and would care about her looks or appearance. In Girlguiding UK's (5) study, a girl is quoted as saying, 'She would be popular because she's skinny' (p11).

This last study also provides some ideas about children's associations with being 'slim'. These appear very positive, as the children from a hypothetical 'Planet Happy' were described as looking 'slim', as well as eating well, drinking plenty of water and being physically active. Similarly, one girl in a photo was 'happy because she's slim and she's fit' (p11).

In contrast, the residents of 'Planet Sad' were 'fat and lazy', again watching too much TV and failing to get fit. Many were the victims of bullying, often because of weight and other aspects of appearance (p9).

While children did provide researchers with generalisations about 'fat', 'slim', 'thin' or 'skinny' people, only one study reports children's reflections on these ideas. Two children discussed an imaginary 'unhealthy child' and indicated their understanding of the difficulties that overweight children might experience.

*'She's fat, and ... really smelly' 'and she has bad breath' 'and she's always stroppy and stressed' 'so she doesn't have many friends' ... 'Well it's quite likely that a person who's fat would be selfish. I think. Do you think?'*

*(Adult directs back to other child – 'what do you think?')*

*'I think maybe stressed. So it would be hard to think about other kids.' 'Yeah it would be hard to run.' 'It would be hard to do anything.' 'You wouldn't feel good.'* (2, p11)

### *Discrimination is normal*

***Children thought that it was usual for overweight children to be treated differently because of their body size.***

Overweight children could expect to be singled out:

*'They'll be miserable for the rest of their lives because they'll get picked on.'* (3 2001a, p209)

*'... you put on weight and you get teased.'* (9, p547)

*'If you're overweight, you're going to be made fun of.'* (4, p229)

*'If people are fat, people bully them.'* (5, p9)

Overweight children also reported believing that teasing would cease if they lost weight (15).

Boys described feeling conflicted about taking part in size-related ridicule, one boy saying, 'Your mates pick on them and you join in, but you don't want to inside' (3 2001a, p209). However, size-related teasing was seen as normal among boys in both this and other studies (3 2001a, 6, 11). In two of these studies, even those boys who had been teased or bullied themselves seemed accepting of it. As one clinically obese boy said, 'You hear people calling them fat but that's just normal isn't it?' (11, p921). In one study, boys were said to represent teasing as a legitimate response if being overweight was someone's own fault (6).

#### **4.2.2 Analysing and experiencing size**

Children presented analyses about how body size relates to health and what makes children have a certain body size. They also described their evaluations of their own bodies, their experiences of adult control and of being a particular size, and a range of more general concerns and pressures that they relate to body size.

### *Body size and health*

*While not emphasising the impact of body size on physical health, children did talk about body size in relation to health. They had a complex understanding of the ways body size might be linked to states of health and 'healthy' behaviours.*

When encouraged, children presented complex views (also seen in the stereotypical characterisations of 'fat' and 'thin' people as unhealthy and healthy under 'stereotypes' above). When asked whether a fat person was necessarily unhealthy, they noted that this could depend on whether they '[had] a lot of exercise' (3 2001a, p211). Health for a fat person could also result from them being 'born that way' or being 'muscle' or 'well built' (3 2001a, p211). These last two ideas possibly indicate ways in which children sometimes use the term 'fat' to mean big in volume (see 'Children ... assess their actual size' below).

Likewise, a 'thin' person could be unhealthy: most children in this same study had heard of anorexia, describing it, for example, as 'refusing to eat anything' or 'starving yourself' because 'you think that you're fat but you're not' (p211). Other reasons for a thin person not necessarily being healthy were their not eating enough food, or eating too much 'healthy food' (p211).

Children also mentioned body size when talking about health or fitness as a state, and about healthy behaviours. 'Healthy' to some children meant 'being conscious about your weight' (3 2001b, p74). Boys in particular linked physical fitness and body size. Overweight children were less strong (3 2001a) and were 'not gonna have very good muscles, just all flab' (4, p228).

Several separate groups of children saw dieting for weight loss as a healthy activity, naming it as one of the behaviours of a stereotypical healthy girl (8).

### *Influences on body size*

*Children described complex perspectives on the influences that might act to make them gain or lose weight. They described properties of food and exercise, mechanisms for weight change and the roles played by their own eating and exercise. They were also aware of factors that were biological in nature and factors that belonged more to their social circumstances and to wider society.*

When talking about **diet and exercise as influences**, children described some kinds of food as having inherent weight changing properties, as though eating them necessarily influenced weight (3 2001a, 4, 9, 13, 14). Some foods were 'fattening': both crisps and chips were described as fattening in more than one study. However, children also identified 'slimming' foods (13). 'Fattening foods' were often also 'fatty' foods, although sugar was also implicated in weight loss.

However, children also seemed to take into account both quality and quantity:

*'[Fattening foods] are] anything if you eat too much of it.' (9, p548)*

*'[People might be overweight because they] eat a lot of healthy food, but too much of it.' (3 2001a, p 211)*

In terms of physical activity as an influence, one set of children was described as not making a firm link between exercise, or energy expenditure, and overweight (3 2001a). When asked whether children exercised to 'get thin' or 'get fit', only three of this study's 60 focus groups answered 'to get thin'. In other studies where children were asked solely about exercise, it was however, seen as potentially preventing weight gain (1, 6, 10, Mulvihill 2000a).

The descriptions above are of children identifying either food or exercise as influencing body size. They also expressed the more complex view that weight change results from the combination of exercise and food:

*'If you are like quite fat and you don't do exercise, and you keep eating more food, you'll get fatter. If you do exercise, you don't get much fat.'* (10, p18)

Reflecting again on behaviour, the clinically obese children in one study observed that they ate only as much as others and even less than some children who were thinner, both in terms of food as a whole and in terms of sweets and snacks. They reported feeling that it was unfair, as a result, that others judged them as being greedy about food (15).

Children talked in terms of a mechanism central to the weight-modifying power of physical activity. In all cases, physical activity was helpful because it 'burnt off' or 'wore off' fat (1, p65; 6, p227; 10, p18). In terms of food, children identified the fat or oil content as important in 'fattening' foods.

In addition to talking about diet and exercise, children talked about **other influences** on their body sizes. Genetic, or other family factors, were singled out in particular (3 2001a, 8). For example, a hypothetical family's obesity was described by some children as 'genetic' (8, p20). Other mentions of genetics are described in 'blame and responsibility for fat' above. In one study asthma was named by several overweight children as a reason for their larger body size (4). This was the only physical illness that was named by children as an influence.

A wider range of influences were named by the clinically obese children in one study (11, p211). These children had experience of trying to lose weight on a formal programme. As well as talking about their own eating and activity levels (see 'Experiences of taking action' below), they saw many factors as being out of their own control. The study authors list some of these as being 'area of residence', 'actions of peers' and 'voices of authority' (p922).

### *Evaluating my body*

*Children appraised their own bodies, both making comparisons and summing up their actual size as overweight or not. Their evaluation of their own body size was often, but not always, critical, and awareness increased as their own size increased.*

In terms of **body comparisons**, a variety of children indicated that they were aware of their own bodies changing over time. Most of the very overweight children in Edmunds' study (4) remembered the point at which they had started to be overweight. Most spontaneously compared their current body size with how it had been in the past, for example,

*'There's a picture of me when I was 6 and I'm quite thin, so I expect I was 6 when I started getting bigger.'* (4, p224)

Comparisons also arose for children who were likely to have had a normal range of body sizes (12). They were described as having a 'growing awareness, particularly with age, of their own and other children's changing bodies' (p7).

Children described comparing their bodies with other peoples' bodies. In one study a minority of girls claimed to gauge their own bodies against those of underweight celebrities 'such as Kate Moss and Victoria Beckham' (5, p13). The very overweight children in another study (4), instead, compared themselves with others in their peer group,

*'I want to look better 'cos all my friends look better than me.'* (p225)

Children commented on the prevalence of different body sizes. As part of a group discussion one child noted, '[there] are no overweight children in [my] school, not even one. But there are lots of overweight grown-ups' (2, p15). Several girls in another study noted the contradictions between media images and reality,

*'They make clothes for stick-thin people and in magazines everybody's thin and you don't get fat people in them.'* (3 2001a, p210)

**Children** described how they **assess their actual size** (2, 3 2001a, 4). Girls commented that boys sometimes start with a person's overall volume and confuse muscularity and body fat (3 2001a). They also said that if a boy was fat, they would describe themselves as 'muscly'. The study authors present the following quote to illustrate how boys' evaluations were sometimes confused in this way,

*'You could be fat and healthy like rugby players who have a lot of exercise.'* (3 2001a, p211)

While attempting to explore body size awareness, one study found that children varied in the extent to which they referred to their own body size without being prompted (4, p224). In this study, children did not mention their body size up to a certain point (a summed skin-fold value of 35). Beyond this point, most did mention it.

Overweight children also described becoming aware of their size because of bullying (11), through clothes not fitting (4) and simple observation:

*'When I get up in the morning, my belly's poking out and I can see.'* (4, p224)

Very overweight children commented critically on others' appraisal of their size. In both cases, they disagreed with their parents' evaluations of their bodies. A parent was denying that they were overweight,

*'My mum tells me that I'm not overweight, but I know I am.'* (4, p235)

*'Ma Mum for 5 years: "its just puppy fat".'* (A clinically obese child described in 11, p922, as blaming his parent for a delay in taking action over his growing body size)

### *Embodied experiences*

*Children described being directed and controlled by adults over issues to do with body size. Many reported dissatisfaction with their body sizes and described how they liked and disliked their stomachs in particular. Very overweight children reported very negative effects of being at the receiving end of ridicule and bullying because of their size, and described difficulties with clothes. Children more generally also described problems around pressures to be thin. They appeared to find it difficult to talk freely about body size. For experiences of particular strategies, see 'Experiences of taking action' below.*

Children were aware of **adult control of children's eating behaviour** related to concerns about body size. Children discussed how people who conduct weighing and measuring clinics could help you by 'tell[ing] you to go on a diet' if you were found to be 'really overweight' (2, p12). Another child noted that, because she was thin, she was allowed to eat whatever she wanted (8). The one overweight child who commented about parental control over food was positive, saying 'I reckon its good my mum and dad stopping me from eating all the time' (4, p237).

Many children, and girls in particular, reported low levels of **satisfaction** with their bodies. One group of children, who were mainly neither overweight nor underweight, were asked if there was anything they didn't like about the shape and size of their bodies (13). They were also asked, separately, 'What do you like about the shape and size of your body?' Just over half of the children said 'no' to the first of these questions and just over half said 'nothing' to the second. So, while many of these children were not dissatisfied with their body size or shape, just as many were not proud of their bodies. Girls and boys also seemed to differ. Fewer girls than boys said there was nothing that they didn't like about their own body size or shape (40% vs 68%) (p121). Similarly, more girls than boys (60% vs 48%) said that there was nothing in particular that they did like.

Edmunds (4) found that very overweight children were more likely than the other children in her study sample to voice dissatisfaction with their appearance, and 84% of the clinically obese children in another study believed they would look better if they were thinner (15). Again, emphasising a desire to fit in, one very overweight boy is quoted as saying,

*'I don't look very nice. When I'm dressed up I look all right ... slimmer ... I feel different from the others.'* (4, p225)

However, body size could not always predict whether children would express dissatisfaction or satisfaction with their bodies. One girl, described as only moderately overweight, was moved to tears when she discussed how much she wanted to become thinner and so be accepted by a friendship group that she wished to join. Likewise, being very overweight did not mean that weight was necessarily described in negative terms. One very overweight girl, when asked if she would like to change anything about herself, said she was 'not really bothered'. This was corroborated by a friend who said '[she] likes the way she is ... She don't mind' (4, p232).

Children also emphasised the importance of their stomachs. 'Tummies' were the body part liked the most in one study (13). Crop tops that showed the 'belly' were a problem in another (5). For many with lower levels of body fat (categorised as being at 'moderate risk' from their subcutaneous body

fat), the stomach was considered the only part of the body that was a problem. This appraisal was also seen elsewhere, however, in children with much riskier levels of fat deposits:

*'I don't mind how I look. There's only one thing I don't like about myself, my belly.'* (Boy whose tricep and calf skin-folds placed him in a 'high' health risk category: 4, p224)

Children talked extensively about **experiences of size-related ridicule**. Name calling about weight was experienced as the worst kind of ridicule. In Edmunds' (4) study, children with a range of body weights were asked what aspects of their appearance made them feel good or bad. As well as body size, they mentioned disliking freckles, glasses and moles. Of those overweight children who had freckles, glasses or moles, all named ridicule about their fatness as making them feel the worst.

Depending on their body size, however, children were affected differently. In this same study, children who were not overweight described being called fat related names, but also reported being able to dismiss them. Another study, however, suggests that size-related abuse can reach beyond those who are abused (5). This study noted that girls tended to have a more developed sense of their own body image if they had experienced size-related bullying or name-calling or if their friends or classmates had experienced it.

One clinically obese child summed up the serious psychological impact of size-related taunting, describing how he is left feeling, '... fat, you're slow, you're ignorant, you're useless' (11, p921).

Bullying was not only implicated in making very overweight children feel bad. Many had also changed their behaviour as a result. Boys described retaliation against those who taunted them, such as calling them names back or chasing them (4, 11). In one of these studies most very overweight boys described 'uncharacteristic behaviour' at school, which led to them being punished with exclusion from school activities (11). One child reported doing a friend's homework in return for their protection against bullying that he believed was to do with his size (15). Another boy described having a split life, saying, 'At school I'm a different person to who I am at home' (11, p921).

Escape from school did not, however, mean escape from abuse. People in the neighbourhood as well as parents and siblings were also implicated (4). One child noted, 'When I get on my mum's nerves she says shut up you're fat' (4, p225).

While bullying was clearly an extremely negative experience for many children, some described how it marked a stage in a process for them. Most of the obese children in one study named bullying as the main reason for becoming aware of their size (11). A small number also said that it was the main factor that started off a process of behaviour change (as 'Experiences of taking action' below notes, the most frequently cited factor was input from a role model or other influential figure).

Overweight children described difficult **experiences with clothes and body size**. This included: ease of finding clothes,

*'Mum says it's easier to get clothes for my sister and they would like it if I was a normal size' (3 2001a, p210);*

feeling exposed,

*'I don't like going shopping for clothes because I feel people are looking at me' (11, p922);*

and (mainly among girls who were very overweight) having clothes that are the wrong size,

*'I got really nice clothes but they ain't nice clothes because they don't fit me.'* (4, p225)

While overweight children clearly describe having negative experiences as a result of their body size, they are not alone in finding things difficult. Children described negative emotions around body size, including a **generalised anxiety and pressure**, regardless of their weight. Both boys and girls expressed anxiety when asked about being measured (see 'Appropriate strategies' below) although they were likely to have a normal range of body sizes. The anxiety seemed to be about being labelled as an unacceptable size and then this being found out by peers. For example, one boy said,

*'I'd get scared and worried if the rest of the class were there in case you are fatter than you think you are.'* (12, p5).

Children described their perceptions of pressures on girls in particular (3 2001a, 5, 8, 9), saying for example, 'When you think of boys you think of sweets, you think of chocolate ...Yeah, they think they are already strong so they don't have to go on any diets' (8, p25).

Girls themselves sometimes expressed anxiety about their own bodies (5). They talked about feeling self-conscious on occasions when they had to expose more of their bodies – particularly when swimming, or feeling uncomfortable when swimming with a friend who was more developed physically. The girls in this study also showed their awareness that other girls are likely to feel sensitive about their bodies. When asked to look at photographs of girls of different sizes, several wanted reassurance that their comments would not be passed back to the girls in question.

Children talked about the influence of debate and information about body sizes, discussing in particular the presentation of body sizes in the media. Some described fictional and reality television programmes as influencing their awareness and sometimes providing information (5, 9). Some children had read about eating disorders in magazines and seen programmes on television (3 2001a).

Some children reported that their mothers' concerns about their own bodies impacted negatively on them. One described taking on a supportive role (4). In another study, a girl as young as five said, '[My mum goes to Weight watchers] because she wants to be thin and not fat' (12, p4). In another study, many children spoke of trying to alter their mother's practice around dieting:

*'I wish my mum would stop dieting. I tell her she's not fat every night.'* (3 2001a p21)

Children may also experience a more diffuse sense of unease about body size. In two studies, researchers noted that children reacted unexpectedly to the topic of obesity. In one study of girls, researchers found some reluctant to talk about body size and appearance at all (5). In another study the researchers also noticed children finding it difficult to talk,

*'There was some anxiety about these issues [healthiness, food and being measured] and whether it was 'ok' to articulate them. As adults we had to work particularly hard to facilitate while remaining neutral. Facilitators were asked more direct questions about their own opinions than is usual, which suggests that some children were seeking guidance or feeling unsure.'* (2, p16)

### 4.2.3 Taking action about size

This section presents children's views about what can be done about body size, both in terms of reaching a 'healthy' body size and in terms of coping with pressures, anxieties and negative experiences. Some children discussed, in generalised terms, the appropriateness of specific strategies. Others talked of their own experiences of trying certain things. Also presented here are children's ideas as to what actions should be taken to support them in this area.

#### *Appropriate strategies*

*When recommending action for others, children commonly recommended dieting, although some concerns were raised. Views about measurement were more mixed and physical activity was not raised as an option. Emotional support for those trying to lose weight was seen as important but potentially problematic.*

Since many children identified food as the main influence on their body size, it is perhaps not surprising that the main thing that children said an overweight child should do was to change their **diet**. In one study, girls in particular are said to have identified dieting as a solution (3 2001a). While the study's authors do not report any discussion of which kinds of diets were being proposed here, one child is quoted as saying that an overweight girl 'should swap unhealthy things for healthy things but not eat less' (p210). The following quotes from the same study show a similar awareness that caution is required,

*'[An overweight girl's diet] ... might go wrong, she might get anorexia.'* (p210)

*'You've got to be sensible with diets, because you see those in magazines and they're really thin.'* (p210)

Children did not explicitly recommend **exercise** as an option for children who were overweight, although the weight-control potential of physical activity was identified in several studies (as described in 'diet and exercise as influences' above).

Children described how **measurement of weight and height** could be used positively. In one study, children thought that results 'would be used in a positive way to improve children's health and give advice to children and their parents' (12, p5). In another study, one child said it would be good to 'know if you're the right size' (2, p14). Another exchange between children in this study, however, was less positive, with one child seeming unsure that help would actually be forthcoming. As already mentioned in 'generalised anxiety and pressure' above, these children were also anxious and concerned. Descriptions of feelings about being measured in school included 'happy' and 'interested', but also 'strange', 'worried', 'annoyed', 'suspicious' and 'embarrassed' (12, p5). Several children voiced very strong opinions that included a determination not to be measured, and views on the Government's rights to know about children's body sizes (2). In both studies, children had concerns about consent and information, where measuring would be done, who would see the results, and who would accompany them (see Chapter 8 for a discussion of implications for the National Child Measurement Programme).

In terms of strategies for coping, girls felt that it was important to give **support**. There was a need to 'support [a girl] ... if she was trying to lose weight' (3 2001a, p210). When asked how they might help a friend who seemed worried about their appearance, other girls emphasised the importance of reassurance,

*'I would say you look beautiful even if other people can't see it.'* (5, p14)

But support was not always seen as straightforward. Some overweight children who had sought support described parental denial of their problems (see 'Experiences of taking action' below). In addition, several different focus groups of girls in one study came up with the scenario of an overweight girl aiming to manipulate others who might offer support:

*'She may try to make people feel sorry for her by saying "I'm fat" and others saying "No, you're not.'* (3 2001a, p210)

### *Experiences of taking action*

*Children who had attempted to lose weight seemed to have little to say that was positive about their experiences. They described a chain of processes, many of which were inherently social. They described considerable difficulties with exercise and modifying their diet. These difficulties were often linked to their large body sizes and the way others treated them because of their size. Support, while seen as essential, was not always forthcoming or appropriate. Children presented a range of coping strategies that they had used to deal with problems around body size.*

Children who were overweight talked **about weight loss as a process**, often influenced by interactions with other people, and highly challenging. Again emphasising the central influence of bullying, one boy said, 'When I was really chubby they all used to call me "fatty", so I had to stop tennis and so I went on a diet and nobody has called me "fatty" since' (3 2001a p210).

In another study, experiences of bullying were named by some as the main factor that instigated changes in behaviour around body size, but in nearly all other cases, children named the input of an 'external influential figure or role model' (11, p922). This person, who was usually their mother, was seen as finally moving the child to act.

These children also made it clear that deciding to take action was far from the most difficult aspect of trying to lose weight. Taking action and maintaining that action was far more difficult. Almost half of one group of obese children who had been referred to dietitians feared that they would always be overweight (15). Children were also disappointed on seeing little difference, despite taking action, for example,

*'She (mother) puts me up for lots of groups and keeps me active, but I'm just as fat.'* (4, p249)

Children also found the lengthy timescale involved particularly problematic,

*'I should be skinny by now.'*

*'Can't we just do liposuction and just suck it all off?'* (11, p922)

Children's experiences of taking action with their **diet** were problematic, both when trying to control eating generally and when they had specifically attempted to eat differently so as to lose weight.

In terms of general control over their own eating, many children in one study (9) described how they knew they ate more at the weekends, often as a result of boredom.

In contrast, the views of clinically obese children who had experience of a weight-loss programme seemed to be mainly focused around unhelpful dietary guidance or direction. Again referring to discomfort at not fitting in socially, some reported feeling conspicuous when having special food at lunch (15). Some were unhappy about the unsolicited advice they often received about their diet. Others felt that unsuccessful weight-loss regimes had failed because they had 'unrealistically strict dietary guidelines' (11, p923). These children also felt very negative about dietitians, seeing them as a barrier, rather than as a support,

*'Dietitians never listen.'*

*'They just tell you what to eat, what to do.'* (11, p992).

Another, more practical, constraint for these children was the expense of 'healthy' school meals (11).

Children's own experiences of **exercise** were more mixed. In one study children of all body sizes responded positively when asked how exercise made them feel. However, while the children in the 'optimal' and 'moderate' risk groups voiced very few negative associations, many overweight girls and very overweight children of both sexes were 'becoming negative' (4, p228). Sometimes this related to difficulties in performing gymnastic tasks in school physical education classes or having to work harder and having less stamina than peers with smaller body sizes. The majority of clinically obese children in another study thought they would do better in games and sports if they lost weight (15).

Similarly, 'physical inability' was a factor that children identified as affecting their success on a formal weight-loss programme. These children also identified '[inadequate] access to sports facilities' as problematic (11, p922).

In two studies, the difficulty of taking off and putting on clothes for exercise was also highlighted. One clinically obese boy said that the idea of being able to 'take my top off and not get laughed at' motivated him to lose weight (11, p921). A lack of privacy when changing in classrooms was described as 'a source of embarrassment and humiliation' for the overweight children in Edmunds' (4) study. One girl in this study said that getting changed 'makes me look bad' (p228).

Furthermore, overweight children described being taunted, especially when they exercised. One girl described how, 'When I'm running round like and everybody runs past and shouts fatty 'n all that, it makes me feel bad' (4, p229).

Given all of the above, exercise seems a very unattractive activity for many overweight children, especially if it takes place in school. Despite this, one boy remained positive,

*'Some people calls me fat ... but if you're active it gets you fit and people more like you then'* (4, p228).

Overweight children also talked about their experiences of **support**, from their peers, family and others. This was both in terms of support for helping them to lose weight and for helping them cope.

Very overweight children who were attempting to lose weight emphasised the importance of continual support for helping them feel they could be successful, and for keeping them going (11). In another study all but one of the children who were attempting to lose weight thought that they could not lose weight on their own. Half were hopeful that they could lose some weight with help (15).

Children were asked to talk about whether their friends helped them to feel good or feel bad (4). Overweight children saw friends as an essential social support in contrast to children with an optimal weight, who described them as company and playmates. One very overweight girl illustrated the role of friends thus,

*'Friends say that I'm pretty ... I'm not overweight, I'm in the middle. Some people that I don't like, take the micky and makes me all upset and I start thinking that I'm overweight ... my friends help me. They make me laugh.'* (4, p234)

Children's views about the role of their parents were mixed. Girls in one study described mothers and female carers as particularly important sources of support. They said they countered specific criticisms and provided reassurance about more general anxieties (5).

The stories of the overweight children in another study, however, again described parents providing reassurance, but sometimes with denial that a child was overweight (4). As was described above in 'children ,, assess their actual size', several children felt that their parents were not judging their weight appropriately. In one case, a very overweight girl reported conversations with a parent that gave very mixed messages about her body's size,

*'I don't think you're fat anyway, you're slightly overweight, but I wouldn't say slightly anyway. You're not even overweight.'* (4, p235)

Another child reported that a parent did not deny her weight status, but instead told her not to worry about it,

*'I just say to her, I'm fat and she says don't worry about it because there's other people your age fatter than you and that it don't matter.'* (4, p236)

These experiences of conflict when seeking support can be contrasted with one very overweight girl's experience of being helped to feel good. This girl described how her mother acknowledged her distress but then put it into context. Her mother then also encouraged her to feel good about herself, regardless of her weight,

*'My mum says cheer up it's not the end of the world. I look good as I am now. She's proud of me. My mum says if I stay the same weight when I'm older, I'd be quite skinny. My mum reckons I should be proud of what I am, and I am.'* (4, p235)

Teachers were mentioned only once by children, and this was in the context of support (4). Here, one child, when talking about fat-related ridicule, said, 'They don't do very much about it' (p252).

As well as seeking support from their parents and friends, children described a range of other **coping strategies**. A particular strategy was seen among girls who were intent on resisting media pressure around body size,

*'I want to be a model but I'm not going to think that I've got to be thin.'* (3, p210).

Other children reported ways of dealing with size-related teasing and bullying (4). While the children did not talk about how they felt as a result of the teasing and bullying, a list of these strategies illustrates again the various impacts of size-related ridicule. As well as talking with friends and parents, the strategies included:

Dismissing people's words,

*'I takes no notice.'* (4, p233)

Removing oneself from the scene,

*'I just walk away.'* (4, p233)

Expressing emotions in private,

*'I tell my mum and she talks to me and if that doesn't make me better, I go upstairs to listen to my music and write my feelings.'* (4, p234)

Doing something else to take your mind off it,

*'... so that I stop thinking about it 'cos it makes me feel worsser.'* (4, p234)

Withdrawing,

*'Sometimes I eat (crisps, biscuits, toast) when I feel miserable ... I just sits down in a corner and does nothing.'*

*'I get frustrated. I goes off in a moody.'* (4, p234)

Wearing over-size clothes,

*'I wear baggy T-shirts. I try to hide it.'* (4, p233)

And (among boys) using humour/acting up,

*'If I be naughty, make em laugh, then they might not call me names.'* (11, p921)

Boys were also reported to have used humour when talking in the focus groups run by Grogan and Richards (6). The authors judged that this enabled the boys to express their distress at feeling overweight without being judged as 'narcissistic' by other boys (p227). Boys were also described as resorting to more insular and disruptive coping behaviour than girls (4).

### *What needs to be done?*

In three studies children stated their views as to what they think needs to be done. In only one study was this about supporting children around body size.

Here a girl describes what she feels children in general need to do:

*'Think ahead because if you start eating everything you put on weight and you get teased you need to stop and think.'* (9)

This was said in the context of other girls, with healthy weights, describing extreme dieting behaviour. Again it indicates how problems with body size are seen to be related to social pressures, and how individual action is required by children themselves.

Children in two studies made recommendations when asked about the weighing and measuring of children (2, 12). These views are presented in Chapter 7 of this report.

## 5 Findings: aggregative synthesis

As described at the start of Chapter 4, a total of 28 UK-based studies of children’s views about obesity, body size, shape and weight were identified during this review and subsequently synthesised in two ways, reflecting the methods employed in the original studies.

This chapter presents the second synthesis. This synthesis contains findings from a subset of 16 studies and explores the circumstances in which children might hold given views about body size.

We have labelled this synthesis as ‘aggregative’. Children in these 16 studies were asked to respond to questions by selecting from responses that had already been set. Their answers could then be brought together (‘aggregated’) to answer very precisely defined questions. Our ‘aggregative’ synthesis, in turn, brought together the answers from the different studies to seek answers to these same questions (see Chapter 4 for the results of the first, ‘interpretive’ synthesis of studies, and Chapter 6 for how the two syntheses together help address this review’s questions).

Table 5.1 assigns a number to each of the studies in this synthesis. These numbers are referred to throughout this chapter.

**Table 5.1** Studies in the aggregative synthesis (N=16)

Number	Study name
4*	Edmunds (2000)
13*	Robinson (2000)
15*	Walsh-Pierce and Wardle (1997)
16	Arshad (2007)
17	Currie et al. (2004)
18	Currie et al. (2008b)
19	Franklin (2002)
20	Harris (2002)
21	Hoare and Cosgrove (1998)
22	Parkinson et al. (1998)
23	Penny and Haddock (2007)
24	Phillips and Hill (1998)
25	Pine (2001)
26	Truby and Paxton (2008)
27	Turnbull et al. (2000)
28	Waterston (2001)

\* These studies also contributed to the interpretive synthesis. There were approximately 240 children in the three studies that contributed views to both syntheses.

The findings of all but one of the 16 studies in this synthesis relate only to the first question asked by this review:

- What are children’s views about the meanings of obesity or body size, shape or weight (including their perceptions of their own body size)?

In particular, as is covered in detail below, these studies asked children to estimate their own body size, to select preferred or ideal body sizes, and to rate their body size. Another group of studies

asked children for their agreement with stereotyping responses around body size. A small number asked other questions related to psychological well-being.

The second of the review's questions, 'What are children's views about influences on body size' is addressed by one study. No studies in this synthesis address the review's third question about what changes children think might help them achieve or maintain a healthy weight.

Few of the studies were judged to be of a high quality in terms of their reliability and the usefulness of their findings for understanding children's views. All but two of the studies (17, 18) were judged to have either a medium or low reliability. Many lacked detail of their sampling methods and/or their sample of children. The findings of all but one study (13) – which were judged to be medium – were judged to have findings that were low in usefulness, largely because the studies did not report methods that might privilege the perspectives and experiences of children. (See Section 2.2 in Part II for further detail of this quality appraisal, and Chapter 6 for how the results of quality appraisal were used.)

## 5.1 The children and studies in the aggregative synthesis

The studies involved over 13,800 children aged from four to eleven. Appendix D describes the children in each study. As with the studies using open-ended questioning, most children were aged seven or over, although one study included children at a nursery aged up to five (27), and two further studies included children aged from five upwards (23, 25). All studies used mixed-sex samples, apart from three (15, 19, 24) which surveyed girls only.

Most of the children were involved in two very large studies, which surveyed separate, representative samples of children from Scotland, England and Wales (17, 18). These studies each included around 5,000 children from the UK, and were conducted four years apart from each other as part of the International Health Behaviour in School-aged Children (HBSC) study. Many of the other children (N=2,189) came from studies set in the North of England, although studies were also conducted in the South West and South of England (4, 13, 15, 25, 26) and in Wales (23) and Scotland (21, 27).

Children were recruited through their schools in all but one study, which also recruited children through a weight-loss clinic (15). One further study focused on the views of very overweight children (4). Children's body sizes were described in a further seven of the studies, most of which appear to have involved children with ranges similar to national norms. In all of these, BMI was calculated from measurements of height and weight conducted as part of the study, although procedural details for this measurement were often missing. Mention of either the children's socio-economic status or their ethnicity was missing from half (N=8) of the studies. One study specifically set out to explore how minority ethnic children's views (described as 'South Asian') differed from those of white children (16); other studies claimed to include children from a range of ethnic backgrounds (15, 18, 17, 19) or described samples that were solely, or predominantly, white (4, 13, 22, 24, 25). No studies aimed to focus on children with a lower socio-economic status. While several studies claimed to include children from a range of socio-economic groups, three included children from middle to high socio-economic groups only (21, 25, 27).

All of these studies sampled children at one point in time so as to test hypotheses about relationships between the children's characteristics (such as their gender or age) and their views. No

studies followed children over time. Otherwise, studies ranged considerably in size and approach. In addition to the two very large HBSC surveys mentioned above, one further study (22) involved over 1,000 children. Six studies involved between 250 and 400 children and seven involved fewer than 150.

Children's views were collected using a variety of measures and tools (detailed in Appendix E). In two studies, children were observed completing tasks only (23, 27) and in one study children were interviewed in pairs (13). Otherwise, children filled-in self-complete questionnaires, usually in classrooms, or took part in one-to-one interviews. In eight studies, children were also asked to select body shapes using pictorial scales (16, 19, 20, 22, 24, 25, 26, 28). Six studies used stories or pictures to prompt children's responses or involved children in picture or word sorting activities (13, 16, 20, 23, 25, 27).

## 5.2 What were the views of the children in these studies?

A narrative synthesis resulted in these findings being grouped under seven main questions that had been asked by the study's researchers. These related to: children's estimations of their own body size; the body shapes and weights that they selected as preferred or ideal; satisfaction with body size; stereotyping around body sizes; body esteem; importance of and concern about body shape and weight; and other views to do with body size (see Appendix F). These are reported in the following sections.

### 5.2.1 How do children's estimations of their body size vary?

*Children, on the whole, were relatively able to estimate their actual body shape. Studies were conflicting as to whether or not a child's gender makes a difference to this perception. Children who had experienced weight-related taunting or bullying appeared to be more likely to overestimate their body size.*

Eight studies addressed variation in children's estimation of their own body shape or weight (13, 16, 19, 20, 22, 24, 26, 28). The studies explore variation with actual body shape, age, gender and ethnicity. All but one (13) asked children to select from a set of pre-determined body shapes the shape that they considered to be most like their own.

Five studies correlated **objective measurements with children's own estimations** (13, 20, 22, 24, 26). These used BMI, weight or skin-folds and sometimes grouped children into classes (e.g. underweight, average, overweight, very obese). This relationship could tell us if children considered themselves to be a different size than they really were, and if being a certain size (e.g. very obese) tended to skew their views.

One study set out to test the qualities of one body shape scale and found that there was a high correlation between children's estimations of their body shape and their actual BMI (26). Girls were 'quite accurate': regardless of their **age**, they tended to slightly underestimate their body size. Boys were less accurate, again in the same direction, and older boys appeared more accurate than younger ones. Most other studies that correlated children's estimations with objective measures agreed that children were aware, on the whole, of their body shape. The one study where children estimated their weight, as opposed to their shape, found that children, on average, underestimated it (20).

One other study considered the effect of variation in other factors on children's accuracy about their own body shape. This explored children's experiences of being teased or bullied for being overweight and found that children who had been victimised were more likely to overestimate their actual body shape (as measured by BMI) than children who had not (28).

Three other studies explored variation in estimated body size with other factors, but did not take BMI into account (16, 19, 20).

### 5.2.2 How do children's preferred and ideal body sizes vary?

*Before the age of 12 gender appeared to influence children's ideas about desirable body sizes. Girls aspired to thinner body shapes than boys. Children's ideas about ideal body sizes changed as they got older in ways that varied with their own gender as well as the age and gender of the body they were considering. A child's ethnicity also appeared possibly to affect their preferred shape for their own body. Both girls and boys often indicated a preference for unusually lean body sizes.*

'Preferred' body shape has been used here to mean how children would like their own body to be, currently or in the future, and is a relatively personal construction. Children in these studies were also asked about the more abstract idea of an ideal body size for others.

Nine studies explored variation in preferred and ideal body shapes or weights (13, 16, 19, 20, 22, 24, 25, 26, 28). The studies explore variation with gender, age and actual body shape.

Four studies examined how preferred and ideal body shapes varied with **gender** (13, 20, 22, 25). When asked for the children's body shape they would most like to have, girls, on average, preferred a thinner shape than did boys (13, 20). The boys in one study were more likely than girls to indicate a preference for muscles (13). One study (26) contrasted these preferred shapes with the actual norms for children's BMI and found that over three-quarters of children wanted bodies the same or smaller than the 25% of children at the 'leanest' end of the scale. In this study, boys and girls had similar preferences.

This valuing of a thin body shape was also in evidence when girls were asked about ideal shapes for adolescent and adult females. Girls consistently selected thinner shapes for females than for males. Boys did not indicate a similar valuing of thinness for older males (22, 25).

The influence of gender was also examined for children of different **ages**. In one study (22), children's preferred current body size for themselves was found to increase with age for girls but not for boys. However, as boys got older, their ideal shape for adult males became increasingly bulky, and their ideal shape for adult females became increasingly thin. This was in contrast to the girls, whose perception of ideal shapes stayed relatively constant. In another study (25), children's ideal body size for both adult females and adult males increased with the children's age.

Two studies explored how preferred shape varied with **actual weight status**, using BMI or other objective weight measures, with mixed results. One study found children's preferred body shapes became increasingly thin as their own weight increased (13). Another found that preferred shape stayed the same regardless of children's own BMI (24).

Studies also explored children's preferred body shapes in conjunction with ethnicity (16), dieting behaviour (19) and whether or not children had experienced size-related victimisation (28). Asian

children (both boys and girls) were found to prefer thinner body shapes than white children. Both of the two other studies found no evidence that preferred shape varied with the variables studied.

### 5.2.3 How does children's satisfaction with their own body sizes vary?

*Girls consistently wanted their bodies to be leaner than they actually were. Boys had lower levels of dissatisfaction, and their dissatisfaction was of a different nature. Some younger boys, in particular, wanted to be bulkier. Higher levels of body dissatisfaction were seen in children who reported higher levels of other kinds of psychological distress.*

Twelve studies provided findings about the ways in which body satisfaction might vary. The studies explored variation with gender, age, actual body shape, ethnicity or place of residence, and psychological variables.

Nine studies explored how body satisfaction varied with **gender** (4, 13, 16, 17, 18, 20, 22, 26, 28). These found that higher numbers of girls than boys wanted a body shape different from the one they perceived they had, or more girls than boys described their bodies as 'too heavy' or 'too big'.

Girls consistently wanted their bodies to be 'leaner'. When boys were dissatisfied with their body shape it was often because they wanted to be 'bulkier' (13, 20, 22), although the most recent study of boys (26) found 'dissatisfied' boys more often wanted to be thinner, rather than larger. Only one study (20) explored differences between boys' and girls' satisfaction with their weight (as opposed to shape). It found no difference.

One study examined body shape satisfaction and **gender** for children across a range of **ages** (eight to twelve) (22). This found that many girls as young as eight wanted their body to be leaner than it was, and this did not differ across the age groups. In contrast, boys changed from having a preferred figure bulkier than their perceived size when younger, to having a preferred figure that was leaner than their perceived size when they were older.

Other studies found that boys' satisfaction with their body shape sometimes increased when their **actual body size**, as measured by BMI or skin-folds, rose above levels recognised to be healthy (4, 13). In contrast, the satisfaction of girls whose actual BMI classified them as overweight was consistently lower than other girls (4, 13, 19, 24), and in one study underweight girls wanted to be bigger (24).

When examining variation between **ethnic groups**, one study found no difference between Asian and white children's satisfaction with their body shape (16). Two further studies explored the body satisfaction of 11-year-old children surveyed in **England, Scotland and Wales** for the 2002 Health Behaviour of School Children Survey. Again, exploring results by gender, the survey found that more girls than boys, in both Scotland and Wales, reported feeling a bit, or much too, fat (17). The survey did not, however, find a difference between boys and girls in England. This finding was repeated in the 2006 run of the survey (18).

Four studies investigated how body satisfaction varied with other measures related to **psychological well-being**. Children who reported weight-related victimisation reported higher levels of dissatisfaction with their body shape, even after actual BMI was taken into account (28). In another study, children were asked to rate their concern about their body size and to indicate how important this was to them. Children reporting high levels of concern were also those most likely to have low

satisfaction with both their body shape and weight. Satisfaction did not vary with children's rating of the importance of their body size. In both cases, variation in children's BMI was taken into account (20). In two studies, dissatisfaction was linked with dieting, although the role of differences in BMI is unclear. In one of these, girls were most dissatisfied with both their body shape and weight if they also reported extreme levels of dieting to lose weight (19). In the other, girls were more likely to predict that they would diet in future if they had low satisfaction with their body shape, but no such relationship was seen among boys (25).

#### 5.2.4 How do children's stereotyping responses about body size vary?

*Children provided stereotyping responses when they were asked to generalise about fat or about overweight people. Again, gender appears to be important: boys were more negative in their responses to obesity than girls, and overweight female characters received more negative responses than did overweight male characters. Results exploring the effect of age were mixed.*

Six studies explored variation in these stereotyping responses. These studies explore variation with gender, ethnicity and age.

All studies examined whether children's stereotyping responses varied with **gender**. Five studies compared how boys and girls differed in their stereotyping of different body shapes (13, 16, 20, 23, 27). Two studies explored ideas about masculinity and femininity (25, 27). Children provided consistently negative evaluations of overweight people, with boys being more negative than girls. One study (27) found that bulkier female figures received more negative assessments than leaner female figures. In another study (25), children attributed fewer feminine characteristics to overweight figures. In both studies, the size of male figures made no difference to childrens' assessments.

One study also examined stereotyping responses and **ethnicity**, by looking at how both Asian and white children attributed positive and negative behavioural traits to thin and overweight body shapes (16). The study found that all children linked negative traits with the overweight figure and that there was no difference between the two groups.

Two studies examined how stereotypes change with **age**. One compared the views of children aged four to eight with those of children aged nine to ten (23). The other studied two groups of very young children (aged 30 to 44 months and 45 to 60 months) (27). Both reported negative stereotypes across the age groups. The older children's responses were more negative in the first study, but the older children were less negative than the younger children in the second.

#### 5.2.5 How does children's body esteem vary?

*Children's body esteem may be lower if they have overall low self-esteem, or if they have extreme beliefs about dieting.*

One study asked overweight children whether or not they agreed with the statement 'Because of my weight I'm ashamed of my body'. It found that children who agreed were more likely to have low **self-esteem** (15). The other study (19) found a positive relationship between low body esteem and extreme **dieting behaviour** in girls with a range of body sizes. Neither study examined whether these relationships still stood if variation in BMI was taken into account.

### 5.2.6 How does the importance of, and concern with, body size, vary?

*Two studies explored the importance to children of body size and children's levels of worry about body size. The studies suggest that concern may be higher for certain groups and may rise with actual size and certain markers of psychological well-being. The importance of body size may vary with ethnicity.*

One study explored **ethnicity**, comparing Asian with white children, and found that Asian children gave greater importance to being thin and were also more concerned about their body size (16). Being thin was also more important for **girls** than for **boys**. The second study, conversely, found no significant differences between girls and boys or between children of different **ages**, either in terms of concern with body size or its importance. Concern about size did increase with **BMI** and among children who were **dieting**, however, and was negatively correlated with **self-esteem** (20).

### 5.2.7 How do other views held by children about body size vary?

*Three studies explored and reported variations in other views which did not readily fit into the other categories described above.*

Overweight children were asked to choose between internal – 'I eat too much'; 'I don't exercise enough' – and external – 'It runs in my family'; 'A medical cause' – reasons for being overweight (15). Most, but not all, children considered that they were themselves at fault for being overweight, selecting internal and not external causes as being the reason for their size. Children who selected external causes had a higher **self-esteem**. This study also asked these children about the consequences of being overweight. Most, but not all, considered that they were socially excluded as a result of being overweight (not being liked as much or excluded from games and having fewer friends). Children who did not hold these views again had higher **self-esteem**.

In another study, children were asked if they would ever go on a diet, or if they knew anyone who had been on a diet, and differences were explored by **gender** (25). No significant relationship was found for boys, but girls who were **dieting** were more likely to say they knew someone else on a diet.

Finally, children's reports of being victimised because of their size were compared with a measure of **self-esteem** (28). Children who had been teased or bullied in this way felt less competent and had lower self-worth than those who had not, regardless of their actual BMI.

## 6 Findings: how do the two syntheses answer our review questions?

This chapter provides an overview of the previous two chapters so as to provide findings for the review as a whole. It does this in four stages:

It first looks at the coverage of the findings to identify which children contributed views. It then explores which themes from the two syntheses, if any, become less prominent if lower quality studies are excluded from our analysis. It then presents an overview of the results of a consultation with a group of young people to explore some of the review's findings. The final part of this chapter juxtaposes the two syntheses and examines each of the review's three questions in turn to ask which questions have been addressed by the findings in the two syntheses and how.

### 6.1 Which children have contributed to the findings of this review?

*It is not always easy to describe the children who participated in the studies in this review. Children's ethnicity and socio-economic status, in particular, were frequently not stated by the study authors. While it is clear that a range of children had been involved in many of the studies, some children, in particular children not at school, socio-economically disadvantaged children and young children appear to be underrepresented. Very overweight children were the focus of a small number of studies; otherwise, views are most likely to have come from children with body sizes within the healthy range.*

Children from all four constituent countries of the UK participated in the two syntheses as a whole, although most studies involved children from England. Both syntheses contain medium to large studies that used sampling techniques to recruit children from schools in areas that varied in socio-economic status (Currie et al. 2004, Currie et al. 2008b, Ludvigsen and Sharma 2004, National Children's Bureau 2005, Robinson 2000).

However, nearly all studies recruited children through school, meaning that children who were excluded from school, who do not attend or who attend less frequently than others are less likely to be represented. Furthermore, there appears to be a slight bias among the smaller studies in the aggregative synthesis towards selecting schools from medium or higher socio-economic areas, and no studies in either synthesis focused solely on children from socio-economically disadvantaged backgrounds. With only one study focused on studying ethnicity (Arshad 2007), and over a third (N=12) of studies not describing children's ethnicity at all, it is also unclear how sufficiently these studies cover children from the UK's ethnic mix.

The review's inclusion criteria deliberately excluded studies where children all had multiple, complex health needs. One study in the review described how some participating children had significant current or past health needs (Cole et al. 2005); for the rest this aspect of participating children's lives is not reported.

The numbers of very young children contributing views are also low. Eight studies included children under the age of seven (Burrows et al. 1999, Cole et al. 2005, Mulvihill et al. 2000b, National Children's Bureau 2005, Penny and Haddock 2007, Pine 2001, Stewart et al. 2006, Turnbull et al. 2000). However, all but one of these studies involved older children as well, and all but two included fewer than 100 children overall.

In addition, while less than half of the studies (N=12) described children's body sizes, most of these studies involved children with body size ranges similar to national norms. Since only three studies sampled so as to focus on very overweight children, the numbers of very overweight children are low in comparison to children with more healthy body sizes.

## 6.2 How robust are the synthesis findings to differences in study quality?

*Removal of the lowest quality studies from each of the syntheses would not modify the synthesis findings to any great extent. The strength of findings related specifically to girls, very overweight and very young children would be reduced.*

As mentioned in the two previous chapters, the quality of study findings varied between studies. A few studies were a noticeable step lower in quality than the others (see Part II, Section 2.2 for a study by study breakdown). The contribution of each study to its relevant synthesis was also explored to see how including lower quality studies might influence synthesis findings. Tables that overview the contribution of each study's findings are presented as Appendices C and F.

In the interpretive synthesis, the findings of four studies were judged to be low both in terms of reliability and usefulness (Burrows et al. 1999, Girlguiding 2007, National Children's Bureau 2005, Walsh-Pierce and Wardle 1997). For these studies both the rigour of their methods was low (or uncertain because they were not reported in any detail) and the usefulness of their findings was low, because they were lacking in richness or complexity or took no steps to privilege children's views. In the aggregative synthesis, two studies were judged as being low in both quality areas (Hoare and Cosgrove 1998, Turnbull et al. 2000).

All of the themes in the interpretive synthesis arise in more than one study (see Appendix C). This means that removing the four low quality studies mentioned above would reduce the fine detail, rather than change the themes of the synthesis or its overall messages. It would reduce confidence in some of the findings that relate solely to girls and children who are overweight, because two of these studies focused upon these children (Girlguiding 2007, Walsh-Pierce and Wardle 1997).

Each theme in the aggregative synthesis also arises from more than one study (see Appendix F). The two low quality studies mentioned above each contributed to only one of the seven questions outlined in Chapter 5. The removal of these two studies from the synthesis would again mainly remove fine detail from the synthesis rather than change its messages. Findings about the effect of age on children's stereotyping views would be available from only one study and the representation of very young children in the review as a whole would be reduced, since one of the two low quality studies explored age and was focused solely on nursery age children (Turnbull et al. 2000).

## 6.3 How credible are the review findings? Results from the consultation with young people about the findings of the interpretive synthesis

*Overall, the young people considered that the findings were credible and fitted somewhat with their beliefs. They identified some possibly missing themes. While the themes within the interpretive synthesis remained unchanged following these discussions, the synthesis was double-checked to ensure its accuracy.*

The young people participating in the consultation felt the themes were likely to have covered the most important issues for children. They described how the findings appeared believable because the themes were ones that were often spoken about.

Areas that they felt might be missing from the themes were the influence of the media and the effectiveness of strategies for achieving and maintaining a healthy size.

Following the consultation, these areas were searched for in the study data, to see if they had been overlooked or had not been given sufficient emphasis. Children in the studies had not talked about the effectiveness of action aimed at a healthy body sizes; however, they had referred in several instances to the media. The write-up of the interpretive synthesis was already in draft form and the report's first author examined the way in which this data had been described in the narrative written around the synthesis themes. References had been made by children to celebrities or to television programmes and these appeared in the draft report under the themes 'acceptable and ideal bodies', 'body comparisons' and 'generalised anxiety and pressure'. However, study authors had not described or quoted children as talking specifically about feeling influenced by the media. It did not seem appropriate, therefore, to turn this idea into a theme or modify the synthesis structure further.

#### **6.4 Which of the review's questions have been answered by the two syntheses?**

*The synthesis findings are strongest by far for the review's first question that asks about the meanings of body size for children, their perceptions about their own body sizes and their reported experiences in this area. The review's second question, about what children think influences body size, is addressed by fewer of the synthesis findings. The third question, which asks what children think should be done to help them reach or maintain a healthy weight, is not addressed directly at all, although some findings relate to children's views about initiatives focused on child measurement.*

The review's three questions are presented below in turn, and include a summary of the findings from the two syntheses that relate to each question. [The numbers in square brackets refer to chapter sections that contain findings that are relevant to the question.]

##### **6.4.1 What are children's views about the meanings of obesity or body size, shape or weight (including what are their perceptions of their own body size?) and what experiences do they describe relating to these issues?**

- Children, unless they were very overweight, often did not see body shape as an immediately relevant issue. Children in general did see body size as an issue for others, and some reported negative feelings around body size.
  - The relevance of body size varies among different children. Some children did not mention body size at all when asked about issues that were important for them or for their health or well-being. [4.2.1: 'The salience of body size']
  - Some children who were not overweight reported negative emotions around body size, including anxiety related to their own size and feeling under pressure to be thin. The immediacy of size, and concern about size, both appeared to increase with

## 6. Findings: how do the two syntheses answer our review questions

actual size and concern may differ with ethnicity. [4.2.1: 'The salience of body size', 4.2.2: 'Embodied experiences', 5.2.6]

- Children were aware of media representations of body sizes and debates about ideal and acceptable sizes. [4.2.1: 'Judged bodies', 4.2.2: 'Evaluating my body', 4.2.2: 'Embodied experiences']
- Children, whatever their body size, did not place much emphasis on the health implications of being overweight. Instead they saw and experienced overweight bodies as having problematic social and psychological consequences.
  - When encouraged specifically to talk about the consequences of being overweight, children did not, on the whole, talk in terms of physical health. Children saw the main consequences as being social in nature, from not fitting in and being unpopular, to being teased and bullied. [4.2.1: 'The salience of body size']
  - Very overweight children described how their body size had a big impact on their lives. Again, these impacts were mainly social in nature. In particular, size-related abuse was implicated in psychological distress and negative changes to behaviour. Clinically obese children with very high self-esteem may be less likely to consider that they are socially excluded because of their size. [4.2.2: 'Embodied experiences', 4.2.3: 'Experiences of taking action', 5.2.7]
- Children assessed their own and others' body sizes critically.
  - Children described how they compared their bodies over time and with other children's bodies. Very overweight children spontaneously described their own bodies as being a larger size. Very overweight children also reported how others (parents) sometimes described their bodies as not overweight, and these children disagreed with this evaluation. Children of all sizes generally also produced relatively accurate estimations of their own body shapes, when prompted to do this with pictorial scales that showed actual body sizes. [4.2.2: 'Evaluating my body', 5.2.1]
- Children's responses to body fat were almost exclusively negative and were infused with moralistic ideas involving blame, responsibility and due punishment.
  - Most children described being overweight as undesirable. [4.2.1: 'Judged bodies']
  - Children attributed a wide variety of negative personal and social characteristics to generalised representations of overweight children and adults. This reproduction of negative stereotypes was seen in children as young as five. [4.2.1: 'Judged bodies', 5.2.4]
  - While there was discomfort about its occurrence, children saw fat-related teasing as normal. This view was reported by very overweight children as well as others. [4.2.1: 'Discrimination is normal']
- Many, but not all, children's experiences of their own body size were negative.

## 6. Findings: how do the two syntheses answer our review questions

- A significant proportion of children, including many with body sizes within 'healthy' ranges, aspired to different body shapes to the ones they perceived they had or reported feeling 'too fat'. This was seen in children as young as eight. [4.2.2: 'Embodied experiences', 5.2.3]
- Very overweight children generally described greater levels of dissatisfaction with their bodies. [5.2.3, 4.2.1: 'Judged bodies']
- Very overweight children also described shame and frustration with their bodies. They experienced their bodies as marking them out as different, and as getting in the way of physical activity that they could otherwise enjoy. Some wanted to hide their bodies. [4.2.1: 'The salience of body size', 4.2.1: 'Judged bodies', 4.2.2: 'Embodied experiences', 4.2.3: 'Experiences of taking action', 5.2.3]
- Very overweight children reported the marginalising effects of being overweight. Their bodies were the focus of ridicule and abuse. They got in the way of their making friends, were instrumental in their missing out on school activities and led to them withdrawing from others. [4.2.1: 'The salience of body size', 4.2.1: 'Embodied experiences', 4.2.3: 'Experiences of taking action']
- More positively, some very overweight children liked their bodies and others felt their bodies did not need to be perfect. Some girls expressed defiance at a modelling and celebrity culture they saw as valuing thinness. Children may have lower esteem for their bodies if their self-esteem is lower in other areas or if they have extreme views about dieting. [4.2.2: 'Embodied experiences', 4.2.3: 'Experiences of taking action', 5.2.5].
- While attitudes to thinness and dieting for weight loss were not always positive, girls, in particular, were aware of social pressures to be thin and were sometimes applying them to themselves. Boys may also have been picking up on these ideas.
  - Many children, when asked how they would like their current body to look, aspired to body shapes that were at or below the lowest end of the healthy range. This was sometimes true for boys as well as girls. [5.2.2]
  - Judgements about others' underweight bodies were sometimes, but not always, negative. [4.2.2: 'Judged bodies', 4.2.3: 'Experiences of taking action']
  - Children were highly aware about, and sometimes seemed favourably inclined towards, dieting for weight loss. This was particularly the case for girls. Children reported concern about mothers' dieting so as to lose weight. Children were also aware of eating disorders. [4.2.2: 'Body size and health', 'Embodied experiences', 5.2.7]
- Gender plays a large role in children's views about body size.
  - Boys' and girls' aspirations for their bodies differed. Girls were consistently less satisfied with their body sizes than were boys. Boys emphasised muscle and fitness. Boys also sometimes appeared to value bulk, especially when younger. When girls

## 6. Findings: how do the two syntheses answer our review questions

were dissatisfied with their body shapes, it was because they wanted to be leaner. [4.2.2: 'Embodied experiences', 5.2.2, 5.2.3]

- Both boys and girls selected ideal shapes for adolescent and adult females that were thinner than those for males of the same age. [5.2.2]
- Boys were less critically aware of their own body sizes than girls, sometimes being less accurate when estimating their own body size, noting an increase in their own size only when it impacted on their stomachs, and not always distinguishing between muscle and fat. [5.2.1, 4.2.2: 'Evaluating my body']
- Boys were more negative in their responses to fictionalised overweight characters than girls. Overweight fictionalised female characters received more negative responses than did overweight male characters. [5.2.4]
- Boys appeared to respond differently to being very overweight. They were more likely to try to cope with difficulties on their own or to use humour, and were more likely to retaliate when bullied about their size. [4.2.3: 'Experiences of taking action']

### 6.4.2 What are children's views about influences on body size?

- Very overweight children and those who are not overweight had very different ideas about children's control over their body sizes.
  - Children who were not overweight presented children's body sizes as either inescapable (due to genetic or 'natural' factors) or due to individual behaviour. They also presented children's body sizes as something that was under their own control. This emphasis on individual control over weight was accompanied by moralistic generalisations about overweight people, including ideas that people are fat because they are lazy and greedy. [4.2.1: 'Judged bodies', 4.2.2: 'Influences on body size']
  - In contrast, very overweight children talked about their body sizes as being resistant to their own attempts at weight loss. They described often extended attempts at modifying their own behaviour and the difficulties they had experienced with these attempts. When reflecting on their own attempts at weight loss, they described processes involving other people as well as the negative impact of factors that were outside of their own control. When very overweight children blamed themselves for being overweight, this was linked to low self-esteem. [4.2.3: 'Experiences of taking action', 5.2.7]
- Children identified multiple influences on their body size and discussed some in complex terms. Children's recommendations for other children who seek to lose weight, however, focused mainly on eating.
  - Children named a wide variety of factors that influence body size. These included biological mechanisms, their own behaviour, the behaviour of others, and the accessibility of healthy food and places to exercise. [4.2.2: 'Influences on body size', 4.2.3: 'Experiences of taking action']

## 6. Findings: how do the two syntheses answer our review questions

- Children who were not very overweight, however, focused mainly on dieting rather than physical activity as a means for reducing weight. [4.2.3: 'Appropriate strategies']
- Children emphasised the importance of support for helping them deal with pressures around body size and helping them have a healthy weight.
  - Girls in general described the importance of support from their friends and others around body size and self-esteem. [4.2.3: 'Appropriate strategies']
  - Obese children described support, from parents in particular, as essential in helping them lose weight. [4.2.3: 'Experiences of taking action']
  - Obese children described experiences, however, of not receiving sufficient emotional and informative support, for example when teachers have not taken action about size-related teasing, when dietitians have not listened to them, when parents have dealt with the fall-out of size-related teasing by denying that their weight is a problem, and when parents have refused to consider children's appraisals of themselves as overweight. [4.2.2: 'Embodied experiences', 4.2.3: 'Experiences of taking action']
- Very overweight children identified other barriers to and facilitators of their own attempts at weight loss.
  - Perceived barriers to obese children reaching a healthy weight included: dietary guidelines that they see as unrealistic; the lengthy time period required for change to happen; and limited access to material resources, for example when facilities for exercise or healthy meals are too expensive. [4.2.3: 'Experiences of taking action']
  - In terms of facilitators, obese children were very positive about the support they received from friends. [4.2.3: 'Experiences of taking action']

### 6.4.3 What are children's views about changes that may help them to achieve or maintain a healthy weight?

No studies asked this question directly of children. Children were asked about the measurement of their body sizes, however. [These views are presented in Chapter 8.]

## 7 Discussion

### 7.1 Discussion of principal findings

The research examined in this review shows that children in the UK see body fat as a big problem because of the impact it has on their lives as social beings. Children identify very overweight children as being less popular and see fat-related teasing and bullying as commonplace.

However, in contrast with the current emphasis in public health and the general media on obesity, children with healthy body sizes often do not have body size high on their everyday agendas. Furthermore, the health consequences of obesity appear to be largely irrelevant, even for those children who are very overweight. These findings resonate with several recent large-scale consultations that show that children often do not bring up health issues when given a blank sheet on which to identify the priorities for action in their lives (Ofsted 2008, The Children's Society 2009). Similarly, physical health outcomes of healthy behaviours have previously been found not to be that salient for children, compared with other aspects of their lives, such as friendships and enjoyment (Brunton et al. 2005, Thomas et al. 2003).

That said, this research indicates that children are highly aware of our society's heightened interest in bodies. They actively assess their own sizes and are generally accurate when given validated tools for assessing their own shape. This research also shows that children hold complex views on a variety of influences on body size. Many children, including those who are not overweight, are anxious and concerned about body size. Many wish their bodies were leaner, aspiring to body shapes that are unattainable and likely to be unhealthy. These kinds of responses were seen in research conducted with children in the UK and elsewhere in the early 1990s (Grogan and Wainwright 1996, Hill et al. 1994). These kinds of responses have led many to recommend health promotion initiatives that, for example, encourage children to attain greater awareness about diversity in body size and develop skills to counter unhealthy media representations of bodies, and female bodies in particular (e.g. Crisp 1988). The research evidence suggests that, despite health promotion initiatives, and despite their often having perfectly healthy body sizes, children of a young age continue to dislike their own bodies and feel worried about what might happen to their bodies in the future.

Furthermore, whereas public health concerns around body size used to be focused on girls and problems with anorexia, now both boys and girls appear preoccupied with body size. In this body of research, both boys and girls expressed anxiety around the possibility of having an inappropriate body size exposed in front of peers, for example being weighed at school and found to be 'fatter than you think you are' (National Children's Bureau 2005).

One of the most prominent findings in this research is the way in which children with healthy body sizes apply moralistic ideas when talking about children who are overweight. Overweight children were blamed for being overweight in the first place, and were considered responsible for sorting this out. Along with other negative attributions, these children characterised overweight children as greedy and lazy. These attributions fit with views, expressed elsewhere in the review, of body size as being something that can be controlled and that results mainly from individual choices around food and exercise. Negative stereotyping of overweight people has been reported in numerous studies of

adults and children in the USA (Puhl and Latner 2007). Two studies in the UK, conducted earlier than this review's chronological scope, reported similar findings for children aged 11 and under (Hill and Silver 2009, Wardle et al. 1995).

Unfortunately, the experiences of the very overweight children in this review confirm many of the perceptions of their healthy sized peers. They report a range of different kinds of size-related abuse and describe how this impacts seriously on their well-being and behaviour at school and elsewhere. One of the studies in this review looked at the extent of size-related teasing for overweight and obese children and found that half had experienced it from their peers (Waterston 2001). While children can be called size-related names regardless of their actual size, this study found it was almost four times more likely for overweight and obese children. In a separate, large-scale UK study, obese children were found to be over one-and-a-half times more likely to be recipients of physical and verbal abuse from their peers (Griffiths et al. 2006).

Very overweight children in this review also saw other key aspects of their social lives as being affected by their size: they had trouble making and keeping friends, and did not always have clothes that fitted. They reported hiding their body size or tempering their behaviour so as to be more acceptable to others. Studies of parents' experiences of bringing up children who are very overweight identify similar problems for their children (Edmunds 2008).

The very overweight children in this review found there were significant barriers in the way of reducing their size and far fewer sources of help. They were taunted and bullied when they exercised with their peers and found their bodies limited them physically so that exercise became problematic. Adults, especially mothers, were seen as providing essential motivation and support; however, parents were also seen to not always help their children deal with their body size and the bullying they experienced. Parents were even implicated in the bullying themselves. Professionals, including dietitians and teachers, were also not seen in a good light. Research from the USA indicates that negative attitudes towards obesity are widespread among healthcare and educational professionals in that country, and that this leads to discriminatory treatment as well as increased psychological distress from those at the receiving end. Reports of abuse from parents and siblings are also common (Neumark-Sztainer et al. 2002, Puhl et al. 2008, Puhl and Latner 2007). Parents have also previously been found to provide underestimates when asked to describe the weight of their children in research studies (Parry et al. 2008). Some have questioned the extent to which parents' responses truly reflect perceptions of children as being smaller than they actually are (Jain et al. 2001). They note that parents, who themselves are aware of the social stigma attached to obesity, may sometimes want to avoid their child being labelled as overweight. They may also distrust methods of measurement or consider them irrelevant or fear being judged a bad parent. A parent faced with an overweight child's distress at being taunted has the further challenge of supporting a child's developing self-esteem and knowledge about themselves and the world, while avoiding making them feel further stigmatised.

While obesity levels among children are forecast to continue to rise, it cannot be assumed that being very overweight will become less of a problem socially for children. It has been noted that the increases seen in levels of obesity in the US population do not appear to have made obesity less of a target for stigma and discrimination (Rudd Center 2008).

In terms of differences among children, the contrast in views of very overweight children and other children in this body of research seem to be the starkest. Children with healthy body sizes talked in terms of individual children's choices and behaviours. Very overweight children described higher levels of frustration and distress about their bodies, and saw their own body size as influenced by factors out of their own control and resistant to their attempts at weight loss. These differences most probably reflect simple differences in actual experience, but could also be affected by the way that very overweight children are socially excluded by their peers. It is interesting to note that the only example of healthy weight children discussing how hard life must be for an overweight child is seen in one study that deliberately worked with children who had disabilities or complex health needs and who themselves may have experienced being marginalised (Cole et al. 2005).

Gender is also vital to understanding children's views about body size. In this review girls' and boys' aspirations for their bodies differed, and girls were consistently more dissatisfied with their size. The interest in a 'lean' body shape seen among girls in this review resonates with findings from earlier research in the UK (Hill et al. 1994), and is in line with 'feminine' ideals presented in the media (Hesse-Biber et al. 2006, Orbach 2006). The aspiration of some, especially older, boys in this review for bulkier body shapes possibly indicates an impact of the idealised muscular male torso (Kearney-Cooke and Steichen-Asch 1990), a body shape that they are unlikely to have developed by the age of 11 (Malina and Bouchard 1991). As well as ideas in the wider population about ideal 'feminine' and 'masculine' shapes, these differences possibly reflect differences between girls and boys in the onset and effects of puberty. The boys in this body of research appeared far more relaxed than girls about their own body sizes, both when estimating their size and when judging whether or not they were appropriate.

## 7.2 Strengths and weaknesses of this review

This is the first review of which we are aware that attempts to analyse and synthesise, in a systematic way, the findings from studies of children's views about body size. As with all reviews, it is possible that this review has missed some relevant literature and it is impossible to gauge the impact that this might have had on its findings. To reduce the likelihood of missed studies, very sensitive searches of bibliographic databases were supplemented by other methods to seek out less easily found literature such as theses and unpublished reports. This included individual contact with over 50 authors of studies of children's and young people's views in the UK and overseas. These methods resulted in the inclusion of six theses in the review. Analysis of the sources of included studies indicates that seven of the twenty-eight included studies would not have been found if searches had been limited to bibliographic databases alone.

The review is limited, however, by a striking lack of studies that serve to privilege children's views. The review identified only a small body of research literature and the studies within it that could be characterised as largely being research 'of' children, rather than 'for' them (Hood et al. 1996). No studies directly asked children what they thought should be done to support them in developing or maintaining a healthy body size. This kind of research, which aims to engage people in the public health agenda, has been found with previous systematic reviews of studies of young people's views (Harden et al. 2001).

Furthermore, few of the studies reported both rigorous methods and methods that can serve to privilege children's own framing of issues in their lives. The studies included, especially those

contained within the review's aggregative synthesis, had often been conducted by researchers disciplined in psychology and/or clinical research and often aimed primarily to explore or test a theory that had been developed previously by other researchers. Very few studies started from the position that children themselves may usefully contribute ideas and analyses so as to help develop theories about their own lives.

Other weaknesses of this literature include the lack of studies of very young children. The findings of this review therefore relate mainly to children aged between eight and twelve.

Unfortunately, this review also provides very little evidence that can be used to consider inequalities in obesity among children. Girls and boys have different levels of obesity at the age of 11 (Health and Social Care Information Centre 2008), and yet the literature that is focused either on the views of girls or boys is limited. Of the four studies that focused solely on girls (Franklin 2002, Girlguiding 2007, Hoare and Cosgrove 1998, Phillips and Hill 1998), only one (Girlguiding UK 2007) was judged to have taken any steps to privilege children's views. However, this study presented only minimal detail of its research methods, lowering confidence in its findings. Only one study focused on the views of boys (Grogan and Richards 2002). Children from several minority ethnic groups are also more likely to experience obesity (Department of Health Public Health Consortium et al. 2007), yet only one study was found that could provide information about how children's views might vary with their ethnicity (Arshad 2007). This study found greater levels of concern and higher ratings of the importance of body size among Asian children compared with white children.

There are a few clues in the wider literature as to how differences in socio-economic status might influence children's views. One study from the early 1990s found attitudes to obesity to be less favourable among children from UK schools in areas with a higher socio-economic status (Wardle et al. 1995). More recent work with Scottish teenagers about diet, weight and health indicates that differences in the way people from different social classes see and live their lives underpin their eating habits and contribute to inequalities in health. The security of the lives of many middle-class teenagers and their parents was found to contrast with the lives of working-class families that were, instead, characterised by risk, insecurity and a strong focus on the 'here and now'. While the views of the first group of families included assumptions that they would always be able to make choices and fulfil aspirations, in the second group, concerns about food, weight and health took a backseat to more pressing worries about everyday life (Wills et al. 2009).

The review is also novel in that it includes studies that have widely different approaches to data collection and analysis, and then attempts to use findings from both, while distinguishing between them. The aggregative synthesis had the potential to supplement the integrative synthesis of views rooted in children's own perspectives, by providing generalisable findings as to how children's views vary.

Most studies in the aggregative synthesis, however, appear to have used convenience samples of children from local schools to run small-scale tests of possible relationships. Then they have not described the characteristics of the children in these samples, meaning that any generalisations need to be very cautious ones. Furthermore, the issues brought up by children in the integrative synthesis do not always map onto those raised by the studies in the aggregative synthesis. In both syntheses, children provide views that estimate their own size, capture ideal or preferred sizes and satisfaction, and children's stereotyping responses. The aggregative synthesis does not, however,

ask questions about children's views about influences on body size, or what children think should be done to support them around body size. As such, research that provides us with a greater understanding of children's views about what is important for preventing or dealing with obesity, as well as helping us explore variations between children in these views, is sorely lacking.

## 8 Conclusions and implications for policy, practice and research

### 8.1 Conclusions and general implications

#### 8.1.1 Conclusions

##### *Children experience obesity largely as a social problem*

This review indicates that children in the UK who have a healthy body size may often not have body size very high on their everyday agendas. When these children see body fat as a problem it is because of the impact it has on children's lives as social beings. Children identify very overweight children as being less popular.

Many very overweight children, however, experience body size as a big problem. They are likely to experience unhelpful responses to their own body sizes from other children, as well as adults. Fat-related name calling and bullying is currently considered by children, whatever their body size, to be a normal occurrence.

Children, whatever their body size, may often not consider the health consequences of obesity to be important.

##### *Children appear to be aware of the influence of both food and exercise on body size but emphasise food the most. They appear most aware about influences on body size when they are themselves very overweight*

Children hold complex views about influences on body size that tend to focus on individual behaviours. Overweight children are likely to be perceived by their peers as being responsible for their own size. Children with healthy body sizes appear less aware than their very overweight peers of the potential influence of factors other than individual behaviour on their own body size.

##### *Children appear to be critical about their own body sizes and are highly aware of our society's heightened interest in body size*

Children appear to be aware of the actual size of their own bodies. They are likely to have judged the acceptability of their own body by the time that they are twelve and many are dissatisfied. Girls are likely to want to be leaner, regardless of their size. Boys and girls with body sizes within the healthy range may be feeling anxious when considering their own bodies and the negative reactions their bodies might produce if they are exposed in some way to their peers. They may often feel they should aspire to very lean body shapes that are unattainable and likely to be unhealthy.

##### *The adult world does not appear to be helping children much with the different problems that can arise around body size*

Very overweight children are likely to experience considerable social and physical difficulties as a result of their size. They also encounter many barriers, and a lack of support, when they try to take action. Parents and friends appear to be the most helpful source of support, but this is not always unproblematic.

*Actual body size and gender are central to understanding children's views around body size*

While very overweight children and girls bear the brunt, the combined impact of our obesogenic environment and our society's ongoing preoccupation with body size now appears to be affecting the body image ideals and body satisfaction of boys as well. Girls and boys aged under 12 differ both in their aspirations for their bodies and ideas about others' bodies.

*Research that has asked children for their views about body size has often been of a low methodological quality*

**Studies of children's views have not always reported rigorous methods nor have they adequately described the children involved. The data from individual studies has often not been very detailed.**

*Research has so far failed to engage children properly in the debate about obesity and public health*

There is a striking lack of studies that can serve to privilege children's views. No studies appear to have been done that directly ask children what they think should be done to support them in developing or maintaining a 'healthy' body size. Few studies appear to have used methods that can serve to privilege children's own framing of issues in their lives. Many reports make no mention of seeking children's informed consent for participation.

### **8.1.2 General implications**

Children in this review's syntheses were often not encouraged to go into much detail about their views and experiences. This review has also not considered available or evaluated interventions (although see 8.2 below). As a result, the implications of the above conclusions need to be general in form, relating to areas that need to be addressed, rather than specific ways in which issues might be addressed. Any work to develop or implement specific interventions should be informed by reviews of evaluations of relevant interventions, as well as research into the views of those who have first-hand experience of the topic in hand. Parents and professionals who work with children, in particular, might be expected to have useful insights.

### **8.1.3 Implications for public health and health promotion practice**

Very overweight children experience taunting and bullying that is related to their size. Initiatives that aim to support very overweight children need not only to **consider bolstering overweight children's self-esteem and assertiveness skills**, but also to **target commonplace, unhelpful beliefs, attitudes and discriminatory behaviours around body size**. This might include action to **increase understanding among children and adults about multiple influences on body size** resulting from the obesogenic nature of our current environment, so as to **modify beliefs about the limits to an individual's control over their own body size** and to **encourage action to tackle obesity at community and other important levels**.

Because of the stigma associated with body size and children's anxieties and concerns, and because of children's interests in social, rather than health outcomes, developers and advertisers of

initiatives that aim to prevent and deal with obesity need to consider children's sensitivities to, and likely engagement with, the issues they deal with. They should **consider reducing the emphasis on body size and physical health as an intervention outcome when marketing initiatives** so as to help avoid increasing the stigma already felt by very overweight children. They should also **consider the role of positive social outcomes, such as friendship, support and social inclusion, in attracting children to interventions and maintaining their interest and commitment.**

While it is clear that children are highly aware of the social impact of obesity on individuals, **those who run or develop initiatives should consider exploring with children the full range of consequences, including those for mental and physical health.**

Initiatives will need to **develop materials and processes that are appropriately responsive to the differing values, aspirations and concerns held by girls and boys around their own body sizes.** The value that some boys place upon increased bulk and the higher sensitivity of girls to the topic of body size suggests the need for different approaches that take into account the gender of target groups of children.

#### 8.1.4 Implications for policy

The marginalisation of overweight children by their peers will act only to increase gaps that already exist between children in their understanding of the influences on body size as well as about the experiences of very overweight children. There is therefore a need, especially given the projected increases in the prevalence of obesity among children, to consider **population-level efforts that counter and aim to reduce the stigma associated with very large body size.**

There is a need to **consider initiatives to address the support needs of parents, other adults and children in their discussions of children's body sizes.**

It will also be important to **involve diverse groups of children in the development and evaluation of initiatives** to appraise, prevent and deal with obesity. This can help ensure that aims and means build upon children's experiences of dealing with body size and allow children to act as an important part of our society's response to the challenge of obesity.

#### 8.1.5 Implications for research

Researchers do not appear to have asked children what they think could be done to help tackle obesity or to support children around body size. And yet, very overweight children report problems with the support they receive from professionals and from others around them. Children who have a healthy weight describe feeling anxious and concerned about size. The social interactions children describe make clear the potential for adding to the stigma already experienced by overweight children. **There is a need for research that actively engages children in identifying forms of support around body size that they consider might be appropriate.** These approaches would then need to be explored for their actual effects with rigorous experimental research. It would be helpful, **in particular, to rigorously explore the views of very overweight children about their support needs, for example about possible ways of supporting their social inclusion and psychological health, as well as modifications to their exercise and diet.** Research is also required that seeks children's views on how public health campaigns and interventions can help children understand influences

**on obesity, as well as the full range of its negative consequences, without contributing to the stigma felt by those most adversely affected.**

There are also gaps in the research of the views of specific types of children. In particular, **more research is needed that involves and focuses on younger children, children from minority ethnic groups and children who are experiencing a lower socio-economic status, or who are disproportionately vulnerable to obesity in other ways.**

Analysis of the quality of existing research on children's views on body size identifies that **there is a need for more attention to description and analysis in research findings, and that there is a need for research to explore with children the contexts for their views and the rationales they consider to be important.** At the very least, **those who conduct research with children should aim to clarify and report the meanings these children ascribe to the descriptive terms that they use.**

If we are truly to put children at the centre of their own health-related decisions, then **research on body size needs to be influenced more by the children who participate, and be more sensitive to children's rights and engagement** (for example, framing research around questions and topics that children identify as important, asking children for their consent and describing this process in research, and using methods recommended as 'children friendly').

**There is also a need for studies that aim for more generalisable findings about children's views.** These would ask questions of representative samples of children. The **questions in these population-based studies would most usefully be derived from studies that have themselves used methods that aim to privilege children's views.**

## 8.2 Implications for specific ongoing initiatives

We were asked to consider the implications of the review's findings on two specific Government initiatives: the National Child Measurement Programme and Change4Life. Brief overviews of these initiatives are presented in Section 1.4 of this report. In addition to the related research studies mentioned below, reviewers examined publicly available materials for these two initiatives to explore whether any findings from studies of children's views appeared to resonate with, or contradict, the more explicit approaches or messages used within the initiatives.

### 8.2.1 Implications for the National Child Measurement Programme (NCMP)

These implications arose through examining the findings from this review and are supplemented by messages from two further studies that were not appraised in the review. Two studies that asked children hypothetical questions about being weighed and measured were examined in the interpretive synthesis. They are described further in Chapter 4 (Cole et al. 2005; National Children's Bureau 2005). A further two relevant studies were identified after the review's searches had been completed. These have been referred to here because they contained the views of children who had actually experienced a weighing and measurement episode in their school (BRMB Social Research 2007, Grimmett et al. 2008). Care needs to be taken in interpreting their findings, however, as they have not been appraised for their quality as part of this review. The findings of these two studies are therefore only presented in outline form below.

### *Overview of implications*

As can be seen from the detailed description below of the views of children about being weighed and measured, concerns about confidentiality and privacy were uppermost when children were asked about measurement of their body size. Children also raised concerns about being informed before and after measurement, reported feeling anxious before being measured, and were concerned at possibly being singled out afterwards.

The emphasis on confidentiality, information and children's accompanying anxiety has implications for the NCMP's distribution of measurement results by letter to parents as well as for the materials that encourage children to participate. Steps to ensure that relevant aspects of local practice match national guidance should be considered as some materials seen by the research team appear to be contradictory with respect to confidentiality, and this may reduce trust in the initiative. Posters produced for distribution in schools (Department of Health 2009) state that results will not be shown to anyone other than the NCMP. Many PCTs, however, will now be sending parents a letter which, while addressed to parents, is likely to be seen, at least in some cases, by their children. Given children's concerns about confidentiality, both letter and poster, in their current forms, could reduce trust and increase anxiety among children.

### *Detail of findings about measurement from studies of children's views about weighing and measuring*

The children in the two studies of views about weighing and measuring that were appraised during this review (Cole et al. 2005; NCB 2005) provide clear recommendations for policy-makers as to how weighing and measuring programmes should be run. In both cases, they asked that children be afforded privacy when being measured and confidentiality over the results. Several children went further and said that they wanted to be able to choose whether to participate or not, wanted full information about the process and wanted individual needs, such as any physical difficulties in being measured, to be taken into account.

In the two other studies mentioned above, dissatisfaction among children was reported to be low. The reported concerns of children again focused mainly around confidentiality and the potential for teasing.

### *In greater detail:*

**Gaining consent for children's participation and/or ensuring children are informed about what is involved.** Children said that they would be happy to be weighed and measured 'as long as they were kept informed of what was happening, the results and who would see the results' (NCB 2005, p5). Children in Cole et al.'s study, in contrast, are described as feeling 'very strongly' that they wanted to be able to choose whether to be weighed and measured (Cole et al. 2005, p17). One child said, 'I don't want the Government to know how heavy I am; they can't make me be weighed' (p15). In this study's facilitated activity about whether or not all children should be weighed, an anti-weighing group formed that was 'extremely adamant that weighing children was a bad idea and it was a rights issue, and no-one should make children be weighed, especially at school' (p15).

**Where weighing and measuring takes place.** In both studies children were worried about this being done in front of their peers. Several children in Cole et al.'s study felt 'somewhere really crowded, or ... school' would be the worst place (p13). One child put this in context by saying being weighed 'near crocodiles' would be worse (p13). Several said that children younger than ten should be weighed at home. In both studies, children emphasised the need for a private place.

**Who accompanies children when they are measured?** The children in the NCB's study said they would like to be accompanied by a parent or carer to reduce their anxiety. In Cole et al.'s study, children wanted only their immediate family present. No children wanted their friends with them.

**Who would see the results?** As mentioned above, children in the NCB's study are described as saying they would be happy as long as they were kept informed about who saw the results. In contrast, several children in Cole et al.'s study did not want anyone other than immediate family to see their results and several wanted control themselves over who would see them. One child is reported as saying that 'only she should know unless the doctor says someone needs to know then they must tell us first' (p14). Another is reported as saying that 'even if they asked you if they could tell someone else that wasn't okay' (p14). Another felt she should choose who she told. The specific concerns of one girl in NCB's study were that, 'If you are weighed and are too heavy other people will laugh' (p5).

### 8.2.2 Implications for Change4Life

The main target for the Change4Life campaign is currently the parents of young children aged five to eleven. That said, the timing of televised adverts for the campaign as well as the visual approach used (cartoon characters) make it likely that children themselves will be attracted to the campaign. The following comments are restricted to the possible implications of the findings of this review for children's direct responses to the Change4Life campaign:

- Children might not relate to the campaign's emphasis on the health implications of not eating well and being active. There is also little emphasis on children's social life outside of their families, which might act to reduce children's interest.
- Change4Life does not appear to make reference to the negative social consequences of obesity. It would seem appropriate that the overwhelmingly negative perspectives that children appear to have on body size should not be referred to in this or any kind of 'short, simple message' campaign.
- The campaign's emphasis on factors that are external to individuals (e.g. historical changes in food production and modes of transport) could be helpful in modifying children's perceptions of body size as being completely within an individual's control and, as a result, their attributions of blame to overweight children.
- There appears to be an increased emphasis in some campaign materials on physical activity. This might complement the emphasis on food seen among children in this review.
- There also appears to be a focus in materials on activities that include exercise, without an emphasis on exercise per se. This could resonate with the finding from this review that children already had quite complex understandings about how food and exercise could

influence body size. Activities, as long as they are interesting to children, might be able to raise interest more than a reiteration of lessons learnt long ago about healthy eating and physical activity.

## **Part II: Technical description of the review**

## 1 Detailed methods

As described in Part I of this report, our review sought to identify studies of the views of children in the UK aged from four to eleven on obesity and on body size, shape or weight so as to answer the following questions:

- What are children's views about the meanings of obesity or body size, shape or weight (including their perceptions of their own body size) and what experiences do they describe relating to these issues?
- What are children's views about influences on body size?
- What are children's views about changes that may help them to achieve or maintain a healthy weight?

This section of the report describes in detail the methods used during the review to seek, identify, describe and appraise this kind of study, and to synthesise study findings. It also provides supplementary detail on the studies that were examined during the review. Our presentation of this information aims to help open up the review and the reviewed studies' methods to scrutiny and put the review's findings into the context of the broader literature.

### 1.1 User involvement

For systematic reviews to be relevant to policy and practice, potential users of the review must be involved in key stages of the review process (Peersman et al. 1999, Rees and Oliver 2007). User involvement was sought for this review through the Steering Group of the Health Promotion Reviews Facility at the EPPI-Centre. At the end of the review, we also consulted a group of young people to discuss some of the review's findings.

The Steering Group, which oversees all of the work conducted by the Health Promotion stream, met when the review's questions were being set and again when preliminary findings were being drafted. The Group was also sent a copy of a draft protocol for the review for comment. Feedback concentrated on the review's proposed methods and included suggestions for databases to search and details to collect so as to describe studies. There was no representation of children or young people on this Group.

An outline of the findings of the one of this review's syntheses (the 'interpretive synthesis' – see below) was also presented to a group that had been convened by the National Children's Bureau – the NCB Young People's Public Health Group. The aim of this consultation was twofold. It was hoped these young people could help us explore the validity of the review's findings by commenting on whether the findings appeared credible to them or fitted their own beliefs and whether they considered anything to be missing. It was also hoped that the young people would offer their perceptions of the implications of the findings about children's views that could then be used when drawing up implications in the review's final report.

Participants in the NCB Young People's Public Health Group had previously met as part of an ongoing project to discuss public health issues and to inform the Public Health Research Consortium (see NCB 2009, PEAR 2009 for further detail of the Group). To help inform this and another review being

conducted by the EPPI-Centre, two workshops involving the young people were arranged by NCB staff. One member of the research team (KO) presented details of the reviews and led much of the discussion. Work with the groups lasted approximately three hours on both occasions. Presentation and discussion of the current review of children's views followed a session where participants learned the basics of systematic review approaches. Another session then followed that explored an additional, separate review about possible links between obesity and attainment. In both workshops, participants were seated in two groups around tables.

One workshop was held in Leeds with seven young people, the other in London with a further ten young people. The young people were aged between 12 and 17, most being towards the upper end of this range.

After a brief discussion of the review's findings, participants were each presented with a copy of Figure 4.1 (the diagram reproduced in this report that presents the themes from the interpretive synthesis). A poster-sized version of the themes was put up on the wall. Participants were asked, 'Do the findings seem credible and believable to you?', 'Do you agree with them?', 'Why?', 'Why not?', 'Have we missed anything important?', 'Are there any major themes that need adding/removing?' The young people were encouraged first to think individually and to write comments on their own copies of the figure. To encourage active engagement, participants were also given stickers and asked to put them next to the five themes they thought most important. After a short while the reviewer went around the groups to help ensure that everyone had a chance to say something if they wanted. The results of this exercise are presented as Section 6.3 in Part I of this report.

The workshop participants then took part in an exercise to consider the possible implications of the findings about children's views. The results of this part of the workshops were considered by this report's first author when drawing up the implications of the review as a whole. The young people's perceptions about implications are still being analysed for presentation elsewhere. For details of other reports relating to this consultation, please contact the EPPI-Centre.

## 1.2 Inclusion and exclusion criteria

To be included in the review, reports of studies had to meet all of the following criteria:

- studies had to be about obesity, body size, shape or weight;
- studies had to report children's views about obesity, body size, shape or weight;
- the study population:
  - had to be children between the ages of four and eleven (when the age-range of a study went beyond these boundaries the average age had to be between four and eleven, or data needed to be presented separately for this age group);
  - should not all have multiple, complex health needs;
- studies had to be published in 1997 or later;
- studies had to be conducted in the UK;
- studies had to be published in English.

Reports were excluded if they met all of the above criteria but:

- focused solely on developmental growth in infancy or birthweight;
- were a non-systematic review of literature;
- focused solely on the development or validation of a measurement tool without also presenting views separately from the validation of the tool;
- reported trials or other outcome evaluations, unless it was clear from the abstract that they collected data about views as part of a process evaluation;
- did not provide a description of their methods of data collection or of their methods of data analysis.

To identify studies when screening titles and abstracts (see Section 1.4), the following rule of thumb was used:

- The abstract or title should contain one or more of the following concepts: obesity, body weight, body size, body shape or fatness, body image, body dissatisfaction, dieting.

*Views* were defined as attitudes, opinions, beliefs, feelings, understanding or experiences, as opposed to measurement of health or weight status, behaviour or factual knowledge. Views could be reported as a point on a scale, as agreement with a statement, as an answer to a closed question (where the question or answer related to obesity, body size, shape or weight) and as answers to and discussion around open-ended questions. Views could be collected in written or oral form.

As a result of applying the above criteria (see section 1.4), the review included:

- studies where researchers specifically sought to explore children's views on obesity or body size, shape or weight;
- studies where the research question was framed around another topic (such as physical activity or healthy eating) but at least one of the views expressed by participating children referred to obesity or body size, shape or weight.

### 1.3 Searching

Full details of all search methods are listed in Appendix G. Systematic searches were conducted on 18 electronic databases from the fields of health, public health, education, social science and social care. These databases include several major commercial databases as well as more specialised ones which index dissertation and conference abstracts and focus on UK literature. A highly sensitive search using both indexing and free-text terms was developed in Medline. This was then tailored to individual databases. Searches were carried out in June and July 2008.

Searches were also made of the web (using the Google and Google Scholar search engines), three journals (by hand – these were selected because they were focused on obesity and were not accessible to us in electronic format), sixteen selected websites, and by asking authors and key contacts. Relevant studies were scanned for other possibly relevant studies and used to run citation searches.

Studies were managed during the review using EPPI-Reviewer, the EPPI-Centre's online review software (Thomas 2006).

### 1.4 Screening for eligibility

Reviewers piloted the inclusion criteria by applying them to a subset of 20 studies and discussing decisions as a team. Following this, a two-stage process was used to screen studies. First, one of four reviewers (JW, TL, CS and RR) applied inclusion criteria to titles and abstracts. If reviewers were unsure whether a report should be included from its title or abstract, then the full report was retrieved for screening. A sample of 75 titles and abstracts was screened by a different reviewer (RR) at the start of this process and discrepancies were fed back to the review team. The criteria were applied again to all full reports that were retrieved.

### 1.5 Characterising the studies and extracting their findings

Relevant studies were described using a standardised classification system developed by the EPPI-Centre for public health and health promotion research (Peersman et al. 1997). Codes cover study type (e.g. survey, process evaluation), the focus of the study (e.g. obesity, physical activity, health promotion) and the study population (e.g. gender, age group). Each study was described further using another set of questions developed specifically for the review. This built upon frameworks used in previous reviews examining the barriers to, and facilitators of, health behaviour change among children and young people (e.g. Harden et al. 2004). The areas covered included the study's focus, the study population (e.g. sample size, details of weight status), and sampling, data collection and data analysis methods.

Reviewers also selected those parts of the findings and conclusions from each study which addressed the review's questions. When views were textual in form, this text was entered word for word into EPPI-Reviewer. Reviewers produced cross-tabulations of the views and other variables from each study that had been correlated, using Excel spreadsheets. One reviewer (RR) typed up the findings of these analyses into a table in Word. For all of the other tasks, two reviewers worked independently on each study, comparing their descriptions and extractions of findings and coming to a consensus.

## 1.6 Appraising the quality of study findings

Before studies were entered into a synthesis, they were examined to appraise the quality of their findings. Quality was assessed using a modified set of criteria that had been developed for examining the findings of evaluations of intervention processes in a review of behavioural interventions for sexually transmitted diseases in young people (Shepherd et al. 2010) (see Appendix H for full details). The criteria were based on previous work at the EPPI-Centre on assessing the quality of qualitative research and process evaluations (Harden 2007a, Harden 2007b) and the work of others in the field (Popay et al. 2003). Again, when appraising quality, reviewers worked first independently and then compared their decisions.

Reviewers assessed each study according to the extent to which:

- 1 steps were taken to increase rigour in sampling;
- 2 steps were taken to increase rigour in data collection;
- 3 steps were taken to increase rigour in data analysis;
- 4 findings were grounded in/supported by the data;
- 5 there was good breadth and/or depth achieved in the findings;
- 6 the perspectives of children were privileged.

As a final step in the quality assessment, reviewers assigned to the studies two types of 'weight of evidence'. First, they assigned a weight (low, medium or high) to rate the reliability or trustworthiness of the findings (the extent to which the methods employed were rigorous and so could minimise bias and error in the findings). This weighting focused on the criteria numbered 1 to 4 above. Secondly, they assigned a weight (low, medium, high) to rate the usefulness of the findings (how rich and complex the description and analysis of children's views was in a study's findings and whether or not data threw light on children's own explanations around body size). This weighting focused on the criteria numbered 5 and 6 above. Guidance was given to reviewers to help them reach an assessment on each criterion and the final weight of evidence.

## 1.7 Synthesising study findings

In order to deal with the diversity of studies identified, findings were synthesised in two, separate analyses. The aims and approaches, and the detailed methods of the two syntheses are presented below.

### 1.7.1 Synthesis aims and approaches

The first of these syntheses was labelled ‘interpretive’ to reflect both the methods employed in the primary studies and those used to synthesise them. The aim for this synthesis was to identify study findings where children had been allowed to describe their views in their own words and then to interpret these findings. This interpretation would then develop themes that were recurrent or contrasting among studies and explore possible relationships between themes and between different kinds of children and their views. Study findings were eligible for this synthesis when they resulted from children having been asked open-ended questions. The children’s responses had been interpreted by study authors, using both qualitative and quantitative analytical techniques. Children’s views had then been presented in study reports as predominantly qualitative data (narrative accounts of children’s views from authors and quotes from children). These data were then further interpreted by reviewers. (See further detail of interpretive synthesis methods below.)

The second synthesis was labelled ‘aggregative’ in recognition of the emphasis on summarising data in its included studies and the synthesis itself. The aim for this synthesis was to explore the circumstances in which children might hold given views about body size. Study findings were eligible for this synthesis when they resulted from children having been asked to answer questions about body size by selecting from pre-determined responses. The responses had been set by individual study researchers to help them answer very precisely defined research questions. The study researchers had taken the responses of the children in their sample as a whole and looked to see how they varied when other factors varied (such as measured body size, age and gender). Researchers had presented the directions and strengths of these correlations as study findings. Our synthesis, in turn, brought together the correlations from the different studies. Our synthesis, therefore, asked the same questions about variation in views about body size that had been asked by the individual study researchers (see further detail of aggregative synthesis methods below).

### 1.7.2 Synthesis methods

Two reviewers (RR and KO) worked on the syntheses.

The method we used in the interpretive synthesis has been used in previous EPPI-Centre reviews of children’s views; termed *thematic synthesis*, it is described in detail elsewhere (Thomas and Harden 2008). Using this method, the findings and conclusions were analysed using the inductive coding tool in the EPPI-Centre’s EPPI-Reviewer software. Both reviewers carried out the synthesis, meeting on a total of 12 occasions (for periods of between two and four hours) over a six-week period. For this review the reviewers examined the findings of each study in turn, assigning one or more codes to describe each sentence or paragraph within the text. When all studies had been looked at once, each of the studies was revisited and examined to see if any of the codes could be applied. When all studies had been looked at in this way, the reviewers looked at the resulting codes and their associated text to question the appropriateness of each code, the possible similarities and differences between codes and their relationship to the review’s questions about meanings and experiences, influences and changes that might be helpful (see Section 2.2). Through this process the reviewers grouped codes into a hierarchical tree structure. The process ultimately resulted in a tree structure with several layers to organise a total of 17 themes. The narrative account of the synthesis was written up by one of these reviewers (RR) and examined for consistency by the other.

For the aggregative synthesis of studies, the two reviewers grouped the correlational analyses that had been reported into categories according to the type of view that had been collected. A narrative account of the findings of the analyses was then written for each category by both reviewers working together.

The findings from the two syntheses were then juxtaposed by one reviewer (RR). Each finding from the two syntheses was looked at in turn, to see if it related to a theme or question in the other synthesis. This brought together findings about perceptions and experiences of body size rooted in children's perspectives with findings about the circumstances in which children might hold these and other kinds of views about body size.

## 2 Detail of studies encountered in the review

### 2.1 Flow of studies through the review

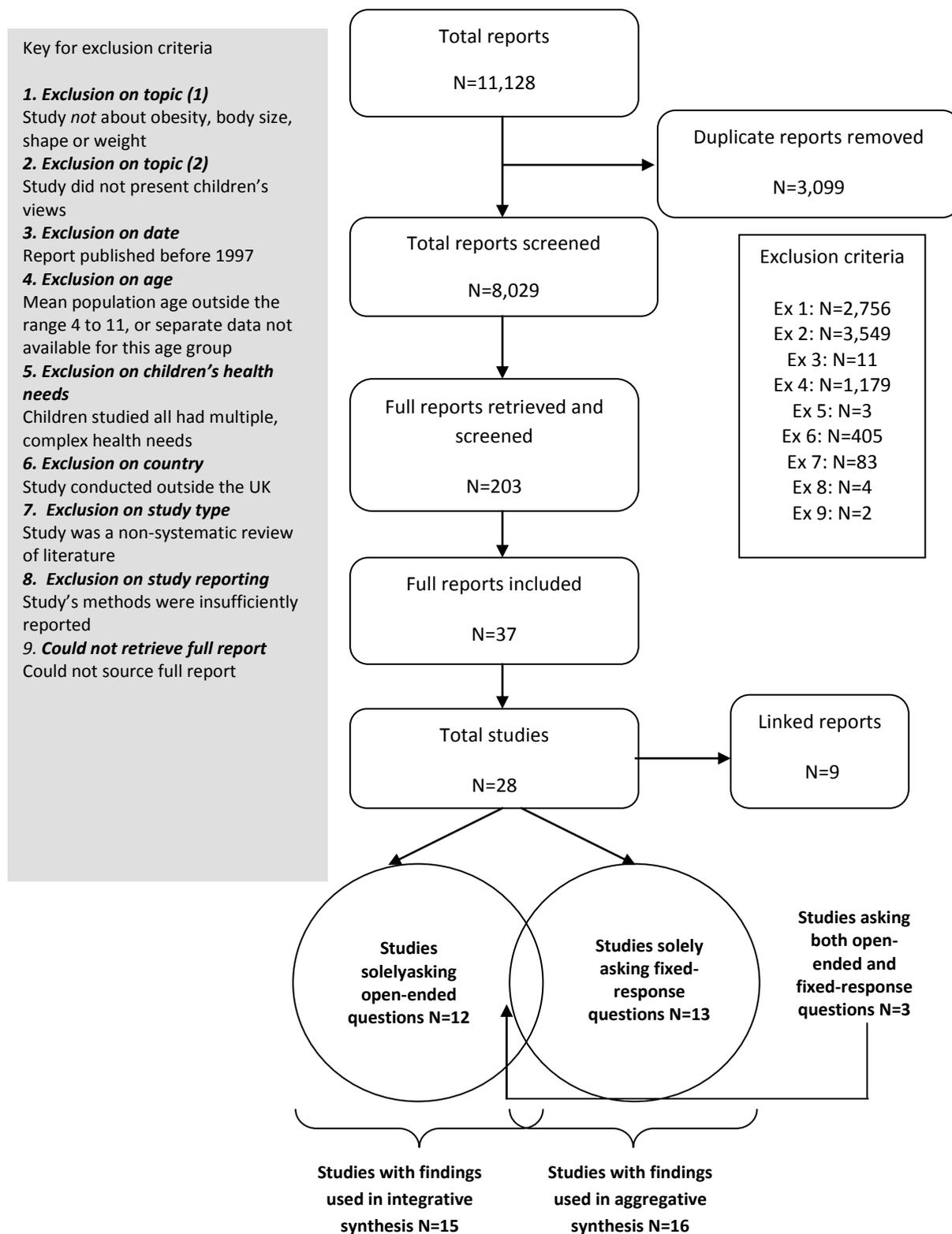
Our searches identified a total of 11,128 citations. After removing 3,099 duplicates, the titles and abstracts of 8,029 records remained. Full reports were obtained for 203 of these records, the rest were screened using title and abstract alone. Most reports did not meet the inclusion criteria and were excluded from the review (N=7,993; 99.6%). A high proportion were excluded because they were not about obesity, body size, shape or weight (N=2,756; 34.3%) or did not report children's views (N=3,549; 44.2%); 1,179 (14.7%) reports were excluded because they did not include the age-range of interest to the review (children aged between four and eleven); 405 (5%) were excluded on the grounds that the study did not involve children from the UK; 83 (1%) reports were excluded because the study design was not appropriate to our review (i.e. there was a review of the literature but systematic methods were not used); 11 were excluded because they were published prior to 1997; three reports were excluded because they only included children with complex health needs (two were about burn victims, the other about children with cystic fibrosis); and a further four reports were excluded because they reported no detail of either their methods of data collection or their methods of data analysis. A total of two reports could not be obtained within the timescale of the review.

A number of reports were found to be linked to others, in that they described the same study, reporting on different aspects of it. A total of nine reports were consequently coded as linked (secondary) reports (Currie et al. 2008a, Dixey et al. 2001b, Fox and Edmunds 2000, Harris and Hill 2003, Hill and Franklin 1998, Hill and Waterston 2002, Mulvihill et al. 2000a, Rudolf undated, Truby undated). At the end of this process, a total of 37 reports of 28 separate studies had been identified for inclusion in the review. Figure 2.1 summarises the flow of studies through the review.

Studies varied as to how or whether they had been published. Almost half of the studies (13) were reported solely in either student theses (Arshad 2007, Edmunds 2000, Franklin 2002, Harris 2002, Robinson 2000, Waterston 2001) or were published by charities or by local authorities or research units (Cole et al. 2005, Currie et al. 2004, Currie et al. 2008b, Girlguiding 2007, Kurtz and Thornes 2000, Ludvigsen and Sharma 2004, National Children's Bureau 2005). The remainder had been reported in peer-reviewed journal articles.

Two additional studies of children's views that would have met all the inclusion criteria for the review were identified too late for inclusion. These are described briefly in Section 8.2.1. One report had been missed because its title implied only parents' views had been collected (BRMB Social Research 2007). The other was published after the searches were conducted (Grimmett et al. 2008).

Figure 2.1: The flow of studies through the review



## 2.2 The quality of the study findings in the syntheses

### 2.2.1 Overview of study quality

Reviewers' judgements about quality of the study findings were based upon considerations of reliability and usefulness. The ratings differed between the studies within each of the two syntheses, but there was also a distinct difference in patterns of quality between each of the two syntheses. As described in Part II, Section 1.6, reviewers judged the reliability of individual studies' findings by looking at the extent to which the methods employed in each study were rigorous and so could minimise bias and error in the findings. When judging the usefulness of findings, reviewers looked for richness and complexity in descriptions and analyses of children's views and for whether or not data threw light on children's own explanations around body size. Tables 2.1 and 2.2 describe the quality of the individual studies' findings in the two syntheses.

**Table 2.1** Interpretive synthesis weight of evidence judgements for a) reliability of findings, and b) usefulness of findings (N=15)

No.	Study	Weight of evidence					
		Reliability of findings			Usefulness of findings		
		Low	Medium	High	Low	Medium	High
1	Burrows et al. (1999)	✓			✓		
2	Cole et al. (2005)	✓				✓	
3	Dixey et al. (2001)	✓				✓	
4	Edmunds (2000)		✓			✓	
5	Girlguiding UK (2007)	✓			✓		
6	Grogan and Richards (2002)		✓			✓	
7	Kurtz and Thornes (2000)		✓			✓	
8	Ludvigsen and Sharma (2004)		✓			✓	
9	McKinley et al. (2005)			✓		✓	
10	Mulvihill et al. (2000b)			✓		✓	
11	Murtagh et al. (2006)		✓				✓
12	National Children's Bureau (NCB) (2005)	✓			✓		
13	Robinson (2000)		✓		✓		
14	Stewart et al. (2006)			✓		✓	
15	Walsh-Pierce and Wardle (1997)	✓			✓		
<b>TOTAL</b>		<b>6</b>	<b>6</b>	<b>3</b>	<b>5</b>	<b>9</b>	<b>1</b>

**Table 2.2** Aggregative synthesis weight of evidence judgments for a) reliability of findings, and b) usefulness of findings (N=16)

No.	Study	Weight of evidence					
		Reliability of findings			Usefulness of findings		
		Low	Medium	High	Low	Medium	High
16	Arshad (2007)		✓		✓		
17	Currie et al. (2004)			✓	✓		
18	Currie et al. (2008b)			✓	✓		
4	Edmunds (2000)		✓		✓		
19	Franklin (2002)		✓		✓		
20	Harris (2002)		✓		✓		
21	Hoare and Cosgrove (1998)	✓			✓		
22	Parkinson et al. (1998)		✓		✓		
23	Penny and Haddock (2007)		✓		✓		
24	Phillips and Hill (1998)		✓		✓		
25	Pine (2001)		✓		✓		
13	Robinson (2000)		✓				✓
26	Truby and Paxton (2008)		✓		✓		
27	Turnbull et al. (2000)	✓			✓		
15	Walsh-Pierce and Wardle (1997)		✓		✓		
28	Waterston (2001)		✓		✓		
<b>TOTAL</b>		<b>2</b>	<b>12</b>	<b>2</b>	<b>15</b>	<b>1</b>	<b>0</b>

### 2.2.2 The reliability of study findings

The most notable result of the quality assessment is that very few of the studies in either of the two syntheses were considered to have findings that were highly reliable.

In the interpretive synthesis, only three of the fifteen studies had findings that were weighted as having a high reliability (see Table 2.1). These studies contain children's views about body size as a result of children being questioned largely about food (McKinley et al. 2005, Stewart et al. 2006) or exercise (Mulvihill et al. 2000b). None of the studies that actually aimed to explore body size per se were judged to be highly reliable. Reviewers judged that the majority of the studies as a whole had a reliability that was either medium (N=6) or low (N=6).

The quality criterion met the least often for the interpretive findings of these 15 studies was the rigour in data analysis (see Table 2.3 for a breakdown of each study's rating against each criterion). Over half (N=7) reported nothing at all about their data analysis methods. In addition, many presented no detail of their sampling methods (N=5) or described only a few steps that might increase rigour in their sampling (N=6). These limitations mean that readers can have only limited confidence in these studies' interpretations of the views contributed by children, and may be left uncertain as to which kinds of children actually provided views.

The reliability of findings used in the aggregative synthesis was also judged to be lacking (see Table 2.2). Only two of the sixteen studies were weighted as high (Currie et al. 2004, Currie et al. 2008b). These were both large-scale surveys that used stratified sampling of schools and described other aspects of their sample and methods in considerable detail, including participant characteristics and response rates, piloting of questionnaires and methods for analysis. The remaining studies were rated as either medium (N=12) or low (N=2) on this measure.

In contrast to the interpretive synthesis, the criterion met the least often in the aggregative synthesis was related to sampling, with two-thirds of studies not reporting steps that could have increased sampling rigour (N=11). Details about sampling that were often missing included key characteristics of the sample or descriptions of sampling methods, such as the study's sampling frame, how schools were sampled from within it and how children were sampled from these schools. Again, this leads to uncertainty as to which children were ultimately included in these studies. Data analysis was considered a source of concern less frequently in these studies, when compared with the interpretive synthesis. Reviewers judged that nearly all studies took either several steps (N=11) or made a thorough attempt (N=2) to increase rigour when analysing data.

The findings of three studies (Edmunds 2000, Robinson 2000, Walsh-Pierce and Wardle 1997) appeared in both syntheses. In the first case, the study had two phases: a survey of a large sample of children followed by in-depth interviews with a smaller number of the initial sample. Findings from both phases were judged to have a medium reliability. The two other studies used both fixed-response and open-ended questioning methods with one sample of children. Both types of finding in Robinson's study were rated as having medium reliability. Walsh-Pierce and Wardle's interpretive findings were rated lower quality than their aggregative findings (at low and medium reliability respectively).

### 2.2.3 The usefulness of study findings

The usefulness of findings for the review was also often judged as lacking. The findings of only one study in the interpretive synthesis (Murtagh et al. 2006) were rated high in this respect. Reviewers judged that its findings had a good breadth and depth, in that the authors had covered a range of topics and were proposing further theoretical developments as a result of their analyses. The study was also considered to have taken a relatively large number of steps to privilege children's perspectives, for example aiming to put children at ease during their interviews and aiming for them to develop their own ideas.

Breadth and depth was sometimes lacking in the findings of the other studies in this synthesis. For example, while children's views were presented, there was little explanation of the context of those views and no evidence of exploration with children of the meanings that they attached to terms that they used. For example, children's views contained descriptive terms such as 'skinny', 'thin', 'slim', 'fat', 'overweight', 'obese' and 'chubby' in every study, but not one study reported children's discussions of what they meant by these words. Studies also reported children using the term 'diet', without reporting further investigation of its meaning.

In addition, even though two studies in the interpretive synthesis emphasised the importance of listening to children, they reported taking only a few methodological steps to privilege children's views (Girlguiding 2007, National Children's Bureau 2005). Two of these studies were written up as consultation reports and not as academic publications. The findings of a further two studies were considered less useful because they used pre-determined analytical frameworks to classify children's views (Burrows et al. 1999, Dixey et al. 2001a).

Again, to examine study approaches to engaging with children's perspectives, reviewers looked for evidence of children having been involved in pilot studies and for their participation in consent procedures. Most studies did specify pilot work and it was made clear in five studies that children's responses had influenced the way that study was done (Edmunds 2000, Grogan and Richards 2002, McKinley et al. 2005, Mulvihill et al. 2000b, Robinson 2000). Only four reports stated that children were asked for their consent for participation (Ludvigsen and Sharma 2004, Murtagh et al. 2006, Stewart et al. 2006, Walsh-Pierce and Wardle 1997). Six reported seeking parental consent alone (Burrows et al. 1999, Edmunds 2000, Grogan and Richards 2002, Kurtz and Thornes 2000, McKinley et al. 2005, Robinson 2000) and five (Cole et al. 2005, Dixey et al. 2001a, Girlguiding 2007, Mulvihill et al. 2000b, National Children's Bureau 2005) made no mention of consent at all.

The findings of studies from the aggregative synthesis were judged to be even more lacking in terms of their usefulness. All but one of the studies used for the aggregative synthesis was rated as low in this respect. This was because of the review's emphasis on the privileging of children's views in comparison to the views of researchers or others. All but one study in this synthesis used frameworks for interpretation and/or questioning that were determined by study researchers alone. The one study that scored medium in this respect (Robinson 2000), included an initial piloting of data collection tools which resulted in children influencing the questions that were asked in the main study, as well as interactive 'say and see' techniques, where children directed the drawing of body shapes by the researcher who then asked them to classify them using a pre-determined set of answers. Only four other studies reported pilot work (Currie et al. 2008a, Currie et al. 2004, Edmunds 2000, Harris 2002) and none reported whether children's responses had influenced the

## *2. Detail of studies encountered in the review*

way that the study was ultimately done. Only one study reported seeking children's consent for their participation (Walsh-Pierce and Wardle 1997). In most other studies, authors reported seeking parental consent, but in five cases, details of consent procedures were missing altogether (Currie et al. 2008a, Currie et al. 2004, Hoare and Cosgrove 1998, Pine 2001, Turnbull et al. 2000).

**Table 2.3** Quality of studies of children’s views – interpretive (I) and aggregative (A) studies meeting each criterion

Quality appraisal question	Study type	Answer options (Studies) (See foot of table for key to study numbers)			
		Not at all/Not stated	A few steps	Several steps	A thorough attempt
<b>1) Were steps taken to increase rigour in the sampling?</b>	I	N=5 1, 5, 6, 11, 15	N=6 2, 3, 4, 7, 8, 12	N=2 13, 14	N=2 9, 10
	A	N=11 15, 16, 19, 20, 21, 23, 24, 25, 26, 27, 28	N=2 4, 22	N=1 13	N=2 17, 18
<b>2) Were steps taken to increase rigour in the data collected?</b>	I	N=2 5, 12	N=2 2, 3	N=8 1, 4, 6, 7, 8, 11, 13, 15	N=3 9, 10, 14
	A	N=0	N=8 16, 4, 19, 20, 23, 25, 26, 27	N=6 13, 15, 21, 24, 22, 28	N=2 17, 18
<b>3) Were steps taken to increase rigour in the analysis of the data?</b>	I	N=7 2, 3, 5, 7, 8, 12, 15	N=0	N=6 1, 4, 6, 10, 13, 14	N=2 9, 11
	A	N=0	N=3 4, 20, 27	N=11 13, 15, 16, 19, 21, 22, 23, 24, 25, 26, 28	N=2 17, 18
<b>4) Were findings of the study grounded in/supported by data?</b>	I	N=0	N=3 1, 5, 15	N=3 2, 3, 12	N=9 4, 6, 7, 8, 9, 10, 11, 13, 14
	A	N=0	N=1 27	N=3 19, 15, 28	N=12 4, 13, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26

	Limited breadth and depth	Good/fair breadth, limited depth	Good/fair depth, limited breadth	Good breadth and depth	
<b>5) Breadth and depth of findings?</b>	I	N=7 1, 2, 5, 7, 12, 13, 15	N=3 3, 8, 10	N=1 6	N=4 4, 9, 11, 14
	A	N=14 4, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 28	N=0	N=1 23	N=1 13
<b>6) To what extent does the study privilege the perspectives and experiences of children?</b>		Not at all	A little	Somewhat	A lot
	I	N=0	N=5 1, 3, 5, 12, 15	N=7 2, 4, 6, 7, 8, 9, 13	N=3 10, 11, 14
	A	N = 15 4, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25 26, 27, 28,	N=0	N=1 13	N=0
<b>Key:</b>					
1. Burrows et al. (1999); 2. Cole et al. (2005); 3. Dixey et al. (2001); 4. Edmunds (2000); 5. Girlguiding UK (2007); 6. Grogan and Richards (2002); 7. Kurtz and Thornes (2000); 8. Ludvigsen and Sharma (2004); 9. McKinley et al. (2005); 10. Mulvihill et al. (2000b); 11. Murtagh et al. (2006); 12. NCB (2005); 13. Robinson (2000); 14. Stewart et al. (2006); 15. Walsh-Pierce and Wardle (1997); 16. Arshad (2007); 17. Currie et al. (2004); 18. Currie et al. (2008b); 19. Franklin (2002); 20. Harris (2002); 21. Hoare and Cosgrove (1998); 22. Parkinson et al. (1998); 23. Penny and Haddock (2007); 24. Phillips and Hill (1998); 25. Pine (2001); 26. Truby and Paxton (2008); 27. Turnbull et al. (2000); 28. Waterston (2001).					

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## Appendix A. Details of interpretive studies: aims and sample characteristics (N=15)

Study	Aims and objectives	Characteristics of children of interest to this review
<b>Burrows et al. (1999)</b>	To elicit children's perceptions of exercise	<p><b>Location:</b> Hertfordshire, England</p> <p><b>Sample number:</b> 74</p> <p><b>Age-range:</b> 6-11</p> <p><b>Gender:</b> Mixed (23 boys, 51 girls)</p> <p><b>Class:</b> Not stated</p> <p><b>Ethnicity:</b> Not stated</p> <p><b>Weight status:</b> Not stated</p> <p><b>Other information:</b> Children came from 5 state primary/middle schools and 5 independent primary preparatory schools. Children from independent single-sex schools likely to be over-represented.</p>
<b>Cole et al. (2005)</b>	<p>To explore children's concept of being healthy.</p> <p>To ask if being weighed and measured was related to being healthy.</p> <p>To ask children the best way to weigh and measure them.</p>	<p><b>Location:</b> Brighton, England</p> <p><b>Sample number:</b> 10</p> <p><b>Age-range:</b> 6-10</p> <p><b>Gender:</b> Mixed (4 boys, 6 girls)</p> <p><b>Class:</b> Not stated</p> <p><b>Ethnicity:</b> There were 8 white and 2 black children; 6 non-disabled and 4 disabled children</p> <p><b>Weight status:</b> Not stated</p> <p><b>Other information:</b> 6 children had significant current or past health needs; 7 lived with birth families, 1 was adopted, 2 were in foster care; 8 were in mainstream education, 2 attended special schools. Children were part of a specially convened panel that had participated previously in several consultations.</p>
<b>Dixey et al. (2001a,b)</b>	To explore children's thoughts and attitudes about body weight to understand children's weight concerns	<p><b>Location:</b> Leeds, England</p> <p><b>Sample number:</b> 300</p> <p><b>Age-range:</b> 9-11</p> <p><b>Gender:</b> Mixed (155 boys, 145 girls)</p> <p><b>Class:</b> Not reported</p> <p><b>Ethnicity:</b> Not reported</p> <p><b>Weight status:</b> Not stated</p> <p><b>Other information:</b> Children were from 10 schools. This study is linked to a randomised controlled trial (RCT) evaluating a healthy eating intervention, so it seems likely that these children would have been exposed to intervention.</p>

Study	Aims and objectives	Characteristics of children of interest to this review
<b>Edmunds (2000)</b>	To gain insight into children's awareness of being overweight, associated feelings and behaviours, and the importance of adiposity	<b>Location:</b> Two cities in South-West England <b>Sample number:</b> 78 <b>Age-range:</b> 9-10 <b>Gender:</b> Mixed (37 boys, 39 girls) <b>Class:</b> Sample represented a range of socio-economic backgrounds <b>Ethnicity:</b> Mostly Caucasian (96%) <b>Weight status:</b> Children categorised as optimal (N=41), moderate (N=15), high (N=10) and very high (N=12) health risk categories on the basis of skin-folds <b>Other information:</b> Children were from 3 schools selected from a larger sample of 10 used for an earlier phase of the study
<b>Girlguiding UK (2007)</b>	To explore the many complicated and sensitive issues surrounding mental health and emotional well-being	<b>Location:</b> Northampton, London and Disley near Stockport <b>Sample number:</b> 8 focus groups, we can assume at least 5 in each, total sample >40 <b>Age-range:</b> 7-10 <b>Gender:</b> Girls only <b>Class:</b> Not stated <b>Ethnicity:</b> Not stated <b>Weight status:</b> Not stated <b>Other information:</b> All girl guides, although composition of the expert panel is not clear
<b>Grogan and Richards (2002)</b>	To explore body shape ideals, body esteem, exercise, and diet in a series of focus groups	<b>Location:</b> Sheffield, Yorkshire, England <b>Sample number:</b> 4 (20 in study as a whole) <b>Age-range:</b> 8 (study also surveyed 13, 16 and 19-25-year-olds) <b>Gender:</b> Boys <b>Class:</b> Working and middle-class backgrounds <b>Ethnicity:</b> White <b>Weight status:</b> All were 'of average build' <b>Other information:</b> The children came from a state school. Authors indicate when views were held by all focus groups, or only by a selection. They also label ages when quoting individual children
<b>Kurtz and Thornes (2000)</b>	To explore the health needs and priorities of children and young people	<b>Location:</b> 4 Healthy School Programme sites in South West, North East, Midlands and South of England <b>Sample number:</b> 46 (89 in study as a whole) <b>Age-range:</b> 6 and 10-11 (study also surveyed 12-18-year-olds, parents and other stakeholders) <b>Gender:</b> Mixed (number of boys and girls not reported separately) <b>Class:</b> Range of SES represented <b>Ethnicity:</b> Ethnicity reported for each location, overall percentages not reported <b>Weight status:</b> Not reported <b>Other information:</b> The children aged 6 and 10-11 came from 4 schools in locations described as rural, suburban, inner city and mixed country town/rural. Data presented separately for primary and secondary school children

Study	Aims and objectives	Characteristics of children of interest to this review
<b>Ludvigsen and Sharma (2004)</b>	To investigate whether children link lifestyles with types of food, and whether food matters to their identity	<p><b>Location:</b> England (Inner London and North West), South Wales</p> <p><b>Sample number:</b> 92 (174 in study as a whole)</p> <p><b>Age-range:</b> 9-10 (study also surveyed 15-year-olds about food and body size)</p> <p><b>Gender:</b> Mixed (numbers of boys and girls not reported separately for 9-10-year-olds)</p> <p><b>Class:</b> Gives percentage of free school meals at each school (40, 48, 65 and 70)</p> <p><b>Ethnicity:</b> Not stated</p> <p><b>Weight status:</b> Not reported</p> <p><b>Other information:</b> Children aged 9-10 came from 4 schools (2 in North West England). Authors indicate when views were held by secondary school children only. They also label ages when quoting individual children</p>
<b>McKinley et al. (2005)</b>	To gain an insight into children's views about food and nutrition	<p><b>Location:</b> 7 schools in Northern Ireland and 4 in England</p> <p><b>Sample number:</b> 106</p> <p><b>Age-range:</b> 11-12</p> <p><b>Gender:</b> Mixed (52 boys, 54 girls)</p> <p><b>Class/Ethnicity:</b> The schools represented a range of socio-economic backgrounds</p> <p><b>Weight status:</b> Not stated</p> <p><b>Other information:</b> Backgrounds for 11 schools: demographic (6 urban, 5 rural), academic abilities (3 grammar, 7 mixed ability, 1 special needs), single- and mixed-sex schools (7 mixed, 2 all-boys, 2 all-girls)</p>
<b>Mulvihill et al. (2000b)</b>	To explore the views of primary-age children and parents on physical activity	<p><b>Location:</b> Manchester/Durham in the North, Leicester/Birmingham in the Midlands, and London/Devon in the South of England</p> <p><b>Sample number:</b> 67</p> <p><b>Age-range:</b> 5-11</p> <p><b>Gender:</b> Mixed (34 boys, 33 girls)</p> <p><b>Class:</b> Sample was selected to reflect diversity in terms of socio-economic background, ethnicity and levels of physical activity/inactivity. There was a bias towards lower socio-economic groups</p> <p><b>Ethnicity:</b> Proportions not given, but each quote is accompanied by the age and ethnicity of the child</p> <p><b>Weight status:</b> Not stated</p> <p><b>Other information:</b> Children classified as 'active' or 'very active'. Selected from 3 urban and 3 rural/suburban areas</p>
<b>Murtagh et al. (2006)</b>	To identify the physical and psychological levers and barriers to weight loss experienced by obese children using qualitative techniques	<p><b>Location:</b> Leeds, England</p> <p><b>Sample number:</b> 20</p> <p><b>Age-range:</b> 8-14</p> <p><b>Gender:</b> Mixed (14 boys, 6 girls)</p> <p><b>Class:</b> Not stated</p> <p><b>Ethnicity:</b> Not stated</p> <p><b>Weight status:</b> All children were clinically obese. Mean BMI (standard deviation) = 3.09 (0.49)</p>

Study	Aims and objectives	Characteristics of children of interest to this review
<b>National Children's Bureau (NCB) (2005)</b>	To consult children aged 4-11 on the implementation of the government's proposals to measure children's height and weight at primary school	<b>Location:</b> Schools in Lambeth and Hillingdon Boroughs of London; and Hingham, Norfolk, England <b>Sample number:</b> 219 <b>Age-range:</b> 4-11 <b>Gender:</b> Mixed (numbers not given separately for boys and girls) <b>Class and ethnicity:</b> Included children from black and minority ethnic communities and low-income families <b>Weight status:</b> Not stated <b>Other information:</b> Areas described as inner city, suburban and rural
<b>Robinson (2000)</b>	To explore 9-year-old children's perceptions of body image, their perceptions of the link between body size and food, and their perceptions of the control of children's eating.	<b>Location:</b> Several schools in South-East England <b>Sample number:</b> 98 <b>Age-range:</b> 8-11 <b>Gender:</b> Mixed (40 boys, 58 girls) <b>Class:</b> 34 children came from schools classified as high socio-economic status (SES), 33 children from schools classified as medium SES and 31 children from schools with a low SES <b>Ethnicity:</b> The author restricts analysis to white children, although children of all ethnic groups were interviewed <b>Weight status:</b> BMI calculated by author for each child. Most children were normal weight and the rest were more likely to be over- than underweight. Author reports that sample is close to national norms. Sub-group analysis (by BMI) conducted
<b>Stewart et al. (2006)</b>	To explore how 6-11-year-olds in Cardiff think about food and nutrition, and how this affects their preferences	<b>Location:</b> Cardiff, Wales <b>Sample number:</b> 74 <b>Age-range:</b> 6-11 <b>Gender:</b> Mixed (38 boys, 36 girls) <b>Class:</b> Not stated <b>Ethnicity:</b> Not stated. Brief demographic overview of city from which schools were sampled says it has the highest percentage of minority ethnic groups in Wales <b>Weight status:</b> Averages close to national averages <b>Other information:</b> 1 child excluded due to a food allergy
<b>Walsh-Pierce and Wardle (1997)</b>	To explore cause-and-effect beliefs, and self-esteem of overweight children	<b>Location:</b> London, England <b>Sample number:</b> 67 <b>Age-range:</b> 9-11 <b>Gender:</b> Mixed (26 boys, 41 girls) <b>Class:</b> Not stated <b>Ethnicity:</b> Approx 50% white, 40% black, rest 'oriental, Latins, and Asian' <b>Weight status:</b> 32 clinically obese children and 35 'controls' <b>Other information:</b> Children attended state supported schools. The clinically obese children had been referred to a hospital or community dietitian for obesity, but none had had treatment. Children in control group came from the same school

## Appendix B. Details of interpretive studies: methods and study quality (N=15)

Study	Study design summary	Sampling, recruitment and consent	Data-collection methods	Data analysis methods	Study quality
<b>Burrows et al. (1999)</b>	This paper reports on part of a questionnaire to explore children's views about exercise.	<p><b>Sampling frame</b> All schools in one district invited to participate.</p> <p><b>Selection</b> Not clear how children were selected for participation in study as a whole. This paper reports on the sub-sample of children who responded in writing to one of the study's questions.</p> <p><b>Recruitment</b> Letters sent to schools. Recruitment of children not stated.</p> <p><b>Consent</b> Requested of parents.</p>	<p>Study as a whole used a self-complete questionnaire to examine barriers to children's leisure-time physical activity. Paper focuses on written answers from one, open-ended question, 'Is there anything else you would like to write or draw about exercise?' Children completed questionnaire without conferring.</p> <p>Questionnaire was piloted. Questions and definitions were explained to children prior to starting the exercise.</p>	Two researchers coded the data according to two predefined frameworks based on motivations and barriers described by adults.	<p><b>Reliability:</b> Low</p> <p><b>Usefulness:</b> Low</p>
<b>Cole et al. (2005)</b>	To consider the implications of the government's Body Mass Index proposals, a range of strategies were used. Study design not clear.	<p><b>Sampling frame</b> tStudy involved children from an established, ongoing panel, part of 'All join in' group.</p> <p><b>Selection</b> Not specified. Aimed for diversity.</p> <p><b>Recruitment</b> Letter sent to children.</p> <p><b>Consent</b> Not stated.</p>	<p>Range of strategies used to ensure all children could participate. Communication included speech, drawing, writing, playing, signing, making things, gesturing, eye pointing, showing, acting out and trying things out. One subgroup also used a 'standing on a line' game to try and persuade each other to change views.</p> <p>Researcher role described as facilitating, and enabling communication of children with diverse needs.</p> <p>Questions (in two phases) covered: (Phase 1) What is 'being healthy?', Healthy and unhealthy foods, What makes a healthy or unhealthy person; (Phase 2) How would you feel about being weighed and measured?, Show us the best and worst way to do this, Who would you want and not want there?, Where would be the best and worst place?, Would you want to be told the results?, If so, when, before, during or after?, Who should be told the results?</p>	Not reported	<p><b>Reliability:</b> Low</p> <p><b>Usefulness:</b> Medium</p>

Study	Study design summary	Sampling, recruitment and consent	Data-collection methods	Data analysis methods	Study quality
Dixey et al. (2001a,b)	A cross-sectional survey collecting qualitative data from children in 10 schools in Leeds on their understanding of diet, health, fatness and thinness, including focus groups to explore children's weight concerns.	<p><b>Sampling frame</b> The 10 schools taking part in the intervention arm of an RCT ('APPLES').</p> <p><b>Selection</b> Not stated how children were selected from the schools, but six focus groups were carried out in each school from two year groups.</p> <p><b>Recruitment</b> Not stated.</p> <p><b>Consent</b> Not stated.</p>	<p>60 focus groups, each with 5 children (single sex, mixed ability, same school year). Facilitated by medical students. Focus group guide covered 14 questions (e.g. What does 'healthy' mean to you?; Do you think people exercise to get thin or to get fit?; Do you think that fat people are always healthy?; Do you think that thin people are always healthy?; Do you think it matters whether someone is fat or thin?; Do you think he/she will make many friends?; What problems do you think he/she will have?; What do you think he/she should do about his/her size?; Is there pressure to be a particular shape?</p> <p>Focus groups tape-recorded and transcribed on the same day; followed a standard protocol; same two facilitators ran each group; a senior researcher monitored the focus groups.</p> <p>Questions piloted; facilitators tried to encourage children to express themselves freely.</p>	Not reported.	<p><b>Reliability:</b> Low</p> <p><b>Usefulness:</b> Medium</p>

Study	Study design summary	Sampling, recruitment and consent	Data-collection methods	Data analysis methods	Study quality
Edmunds (2000)	Phase II of two phase study including semi-structured interviews to explore children's view about weight. Details related to fixed-response questioning in this study (in Phase I) described in Appendix E.	<p><b>Sampling frame</b> Sample for the interviews was selected from within those from Phase I of the study.</p> <p><b>Selection</b> Not clear how sub-sample was selected from the larger study. States that children were chosen from the moderate, high and very high health risk categories, but methods not stated.</p> <p><b>Recruitment</b> Selection of children from within larger sample. Details not reported.</p> <p><b>Consent</b> Requested of parents.</p>	A sub-sample from Phase I of this study was selected for piloting of individual interviews and closed-response questioning. These methods were then used on a sample of 78 children. Harter's importance questions had been completed in Phase I, focusing thinking around four themes (how I look, making friends, schoolwork, being active). Statements were printed out and children were asked to place each one on an 'Importance rating indicator', with multicoloured bands scored from 1 at the centre (most important) to 8 on the periphery (least important). Children invited to add their own statements. Interviews included discussion of the positive and negative feelings related to each statement, starting with most central. Researcher pursued enquiry about body size only if the child raised this as a topic. Interviews lasted 20 minutes on average and were taped and transcribed.	Content analysis of transcriptions. The four statements formed initial framework, other categories were defined from themes that emerged from the interview data. Categories were defined, comments were classified and the process repeated one week later by same researcher. Questions for analysis: To what extent are overweight children aware of their body as either different from others or overweight? How central is an overweight body to an overweight child? To what extent does an overweight body impact on the everyday life of overweight children?	<p><b>Reliability:</b> Medium</p> <p><b>Usefulness:</b> Medium</p>

Study	Study design summary	Sampling, recruitment and consent	Data-collection methods	Data analysis methods	Study quality
<b>Girlguiding UK (2007)</b>	Focus groups to explore girls' views about mental health and self-esteem.	<b>Sampling frame</b> Sampling process unclear, although all girls were contacted through GirlGuiding UK. <b>Selection</b> Not stated. <b>Recruitment</b> Not stated. <b>Consent</b> Not stated.	The group sessions lasted between sixty and ninety minutes and were facilitated by researchers from Opinion Leader. Focus groups were divided by age so that girls could have age-appropriate discussions with their peers. Eight group discussions were held in three different areas of the country, in order to ensure the views collected reflected a diversity of regions. At the start of the discussion the girls were split into two groups. Each group was given a picture of a globe; one group was told that this was Planet Happy while the other group had Planet Sad. Both groups were asked to illustrate what the people on their planets might look like, what they might do, what they might say and how they might be feeling. Girls were shown pictures of six different girls and asked whether they thought they would be happy and popular with their peers. Discussion explored which external factors make the girls feel happier, more confident and better equipped to seize all the opportunities open to them. To examine the role peer relationships play in building self-esteem, the groups were asked how they might help a friend who seemed worried about their appearance.	Methods not reported. However, the findings were discussed with a panel (young experts - including representatives from Girlguiding UK's peer education programme and the eating disorder charity Beat's Young Ambassadors Panel - made recommendations for action).	<b>Reliability:</b> Low  <b>Usefulness:</b> Low
<b>Grogan and Richards (2002)</b>	Focus groups to explore ideas about body shape and body esteem	<b>Sampling frame</b> Participation was chosen on a volunteer basis. <b>Selection</b> Not stated. <b>Recruitment</b> Not stated. <b>Consent</b> Parents gave consent.	Focus groups, with questions piloted and discussions taped. Pilot conducted; discussions with men and boys in these groups confirmed to researchers that they would find it less threatening to have females as facilitators. Group size was limited, and there were separate groups for each age, facilitators with similar regional accents, from the same schools, ethnicity and social class. Groups started with semi-formal chat to help participants feel at ease (before tape recorder turned on)	Thematic analysis, described in detail. All speech (including that of the interviewer) was transcribed, and the interviewees' speech was submitted to a 'thematic decomposition'. This separates the transcript into coherent stories or 'themes'.	<b>Reliability:</b> Medium  <b>Usefulness:</b> Medium

Study	Study design summary	Sampling, recruitment and consent	Data-collection methods	Data analysis methods	Study quality
<b>Kurtz and Thornes (2000)</b>	Separate focus groups with children, parents and school staff in a primary and a secondary school at each site.	<b>Sampling frame</b> Sites selected so as to vary in terms of geographical setting, ethnic mix, SES of locality. <b>Selection</b> Participating schools were able to choose children from any age group, with the proviso that each group comprised children who were willing to put their views forward. <b>Recruitment</b> Recruitment through selection by schools. <b>Consent</b> Parental consent sought.	Semi-structured focus groups with initial pair discussions by children to identify main interests and gaps and 'informal headings', which included what is health; how is health maintained and promoted; what are the causes of unhealthiness and how can it interfere with daily life; and where to go for help and advice, to prompt researchers/ensure they covered a set of central health need questions. Not piloted, but child-led discussions were ensured.	Not reported.	<b>Reliability:</b> Medium  <b>Usefulness:</b> Medium
<b>Ludvigsen and Sharma (2004)</b>	Interviews to explore children's views and stereotypes about food.	<b>Sampling frame</b> Not stated. Majority of schools contacted with the help of Barnardo's services who often work with schools in areas of high deprivation . <b>Selection</b> Not stated. <b>Recruitment</b> The majority were contacted with the help of Barnardo's services. Barnardo's works closely with schools in areas of high deprivation, a factor that influences the significantly high percentage of children receiving free school meals (FSM) in some of the participating schools. <b>Consent</b> Consent procedure for both parents and school-age children described.	The structure of the sessions varied according to the age groups, with informal and creative methods, such as play with food, toys and drawing being used with nursery children. All focus groups were tape-recorded, except on one occasion where the children did not give their permission for the session to be recorded. The sessions took the format of: a lunch questionnaire; semi-structured interview guide focused on food; ranking photos of individuals in terms of food behaviour; describing, using sticky notes, people who would eat a (pictured) healthy and unhealthy meal.	Not reported.	<b>Reliability:</b> Medium  <b>Usefulness:</b> Medium

Study	Study design summary	Sampling, recruitment and consent	Data-collection methods	Data analysis methods	Study quality
McKinley et al. (2005)	Focus groups to explore children's views about food and nutrition.	<p><b>Sampling frame</b> Purposive sampling set up to include a set of schools that varied on a range of social characteristics. All schools agreed to participate.</p> <p><b>Selection</b> Children selected randomly from within each school, and participated on a voluntary basis.</p> <p><b>Recruitment</b> Not stated.</p> <p><b>Consent</b> Written informed consent was obtained from the parents/guardians of all pupils who participated. Effect of parental consent process is not reported.</p>	Each child took part in 2 focus group sessions (each 30-40 mins long and 7-14 days apart) with 10-12 children per group. Open-ended questions were developed by the research team and pre-tested for clarity in a pilot. Participants directed the conversation and facilitator encouraged elaboration on issues raised.	'Cut & paste technique' (Stewart and Shamdasini 1990) with 2 researchers grouping and coding text from transcripts independently, to identify major issues and themes. Not clear whether any analytical framework existed prior to this process, or if it evolved from the transcripts themselves.	<p><b>Reliability:</b> High</p> <p><b>Usefulness:</b> Medium</p>
Mulvihill et al. (2000b)	Semi-structured interviews to explore the views of primary-age children and parents on physical activity.	<p><b>Sampling frame</b> Not clear how participating schools selected.</p> <p><b>Selection</b> Within participating schools, children were selected by their teachers. There were also 7 children sampled from outside areas, including a youth centre and a shopping centre. These respondents 'were recruited by the field worker after a brief talk explaining the purpose of the focus group sessions'.</p> <p><b>Recruitment</b> School recruitment not stated. Children selected by teachers.</p> <p><b>Consent</b> Not stated.</p>	Children were interviewed in pairs using semi-structured interviews. Pair interviewing may have increased children's engagement, pilot done of interview schedule with children (with changes made), consent for children described, as is assurance of anonymity, standard pro-forma used to record key points of interviews, tape-recording also used to clarify points and identify suitable quotations.	A written record of key points arising in each interview was produced using a standard pro-forma based on the interview topics guides. Data were analysed thematically in relation to the main aims and objectives of the study. Tapes were reviewed to clarify certain points and to identify suitable quotations from respondents.	<p><b>Reliability:</b> High</p> <p><b>Usefulness:</b> Medium</p>

Study	Study design summary	Sampling, recruitment and consent	Data-collection methods	Data analysis methods	Study quality
<b>Murtagh et al. (2006)</b>	A series of interviews and focus group sessions to identify the physical and psychological levers and barriers to weight loss experienced by obese children.	<p><b>Sampling frame</b> Sampled on basis of availability.</p> <p><b>Selection</b> Not clear: abstract states that children were selected randomly, although the main text says children were chosen on the basis of availability.</p> <p><b>Recruitment</b> From weight-loss clinic.</p> <p><b>Consent</b> Written consent obtained from parents and children.</p>	<p>Participants took part in individual interviews, lasting approximately 20 mins. 1 took up the option of having parent present. Focus groups were also carried out, 17 of the 20 participants took part. The authors emphasise their commitment to non-judgemental and permissive approach to focus groups and aim for all children to have opportunity to participate in their group.</p> <p>During their time spent with the research team, children were encouraged to discuss their views on the following issues of major interest:</p> <p>When they first became aware of their weight problem;</p> <p>What instigated the process of behavioural change;</p> <p>The presence of barriers to behavioural change;</p> <p>Whether attempts to lose weight had been made previously;</p> <p>Why they felt the need to lose weight;</p> <p>What helps them lose weight;</p> <p>What makes it difficult to lose weight.</p>	Highly interconnected stages of systematic and disciplined data analysis, enabling the researcher to sift, chart and sort large volumes of qualitative data identifying issues key to the subject matter. Specific method of framework analysis referred to aims for balance between initial framework and emergence of themes from data, and checking of themes. Also had access to semi-transcription of discussions with children.	<p><b>Reliability:</b> Medium</p> <p><b>Usefulness:</b> High</p>
<b>National Children's Bureau (NCB) (2005)</b>	An individual interview, a group interview and a whole-class interview to explore views about being weighed and measured.	<p><b>Sampling frame</b> Sought children from a range of backgrounds, including children from black and minority ethnic communities and low-income families.</p> <p><b>Selection</b> Not stated.</p> <p><b>Recruitment</b> Not stated.</p> <p><b>Consent</b> Not stated.</p>	3 different activities used: individual, group and whole-class exercise. It's not stated, but assume all activities took place in classrooms. Detail of specifics of data collection not reported.	Not reported	<p><b>Reliability:</b> Low</p> <p><b>Usefulness:</b> Low</p>

Study	Study design summary	Sampling, recruitment and consent	Data-collection methods	Data analysis methods	Study quality
Robinson (2000)	Paired interviews. Details related to fixed-response questioning in this study described in Appendix E.	<p><b>Sampling frame</b> Electoral wards and schools within them.</p> <p><b>Selection</b> Wards sampled purposively to represent three levels of socio-economic status. Schools selected by schools co-ordinator of local teacher training institution to build upon existing contacts. Selection of children from within schools not reported.</p> <p><b>Recruitment</b> Letters sent to parents.</p> <p><b>Consent</b> Sought from parents.</p>	<p>A range of data collection methods were used; open-ended questionnaire, closed questionnaire (survey), group interview/ focus group, drawing, and 'food cards'.</p> <p>These were piloted, there was a consent process and time was spent with participants. They also used participant pairing - all these were argued by the author to increase quality of data collected.</p>	The study used qualitative methodology which entailed the analysis of words from which meaning might emerge. However, at the level of specific methods it adopted techniques of data measurement which ranged from being quantitative to qualitative. This was because it was thought that the categorisation and quantifying of words would help to show useful patterns of meaning. Also, in order to best interpret children's perceptions it was decided to look at them within the context of some objective criteria such as their perceptions of their body image against a measurement of their actual body, their BMI.	<p><b>Reliability:</b> Medium</p> <p><b>Usefulness:</b> Low</p>

Study	Study design summary	Sampling, recruitment and consent	Data-collection methods	Data analysis methods	Study quality
Stewart et al. (2006)	Semi-structured one-to-one interviews to explore how 6-11-year-olds in Cardiff, Wales, think about information they receive about food and nutrition.	<p><b>Sampling frame</b> Quarter of schools invited to participate responded positively and 4 schools selected so as to represent demographically diverse areas of the city. All children in Years 2 and 6 were eligible to participate.</p> <p><b>Selection</b> Completed screening questionnaire (completed by parents) only excluded 1 child due to a severe food allergy. Impact of process of parental consent as a whole is not discussed</p> <p><b>Recruitment</b> Quarter of schools invited to participate responded positively and four schools selected so as to represent demographically diverse areas of the city.</p> <p><b>Consent</b> Requested of children.</p>	Individual interviews with children. Tape-recording where encouraged by children. Researchers emphasise importance of eye-level communication, sitting on floor, enabling children to turn tape-recorder on/off, describe interviews in quiet area, prior introduction of researcher to children, consent (assent) procedure for children; avoiding loaded questions; seeking awareness of and responding to each child's developmental requirements and language levels; probing only on issues already ID by child; aiming to avoid appearing judgemental.	Framework approach used. No explicit mention in text of methods for checking analysis. Data interrogated for emergent themes according to the project aims and objectives.	<p><b>Reliability:</b> High</p> <p><b>Usefulness:</b> Medium</p>

Study	Study design summary	Sampling, recruitment and consent	Data-collection methods	Data analysis methods	Study quality
Walsh-Pierce and Wardle (1997)	Interviews with children and parents to explore cause-and-effect beliefs about overweight, and self-esteem of overweight children. Details related to fixed-response questioning in this study described in Appendix E.	<p><b>Sampling frame</b> 9-11-year-old children from state London schools. Obese children also had to have an absence of any treatment for obesity including psychological or psychiatric treatment. The comparison children had no specific health problems, and were from the same age band, geographic and socio-economic settings' and school frame.</p> <p><b>Selection</b> Not clear. Doctors of obese children likely to have withheld permission for children with complex needs, and anyone who had had any 'treatment for obesity' (p646) so likely to be an unusual subset of obese children attending state schools in London. The children in comparison group came from a single school with a persuasive headteacher, and are likely to be different from the wider population of children with ideal body-weight.</p> <p><b>Recruitment</b> Dietitians in London used to recruit obese participants.</p> <p><b>Consent</b> Physician approval requested before children's parents contacted. '67% of the 60 initially approached' agreed to participate. Written consent required from parents, verbal consent from children.</p>	Individual interviews with parents and children were conducted (only children's views examined here). Interview appointments were co-ordinated with parents after school hours and took place at hospital/community health clinics, or at the child's school. Parents and children were interviewed in separate rooms. The total mean time of the interview was 90 minutes, including measuring height and weight and completion of the self-esteem measure. The interviews were not recorded but interviewers made notes and wrote down as much of what was said as quickly as possible during and after the interviews, taking care to avoid making the interviewee nervous by the recording process. In order to put the interviewees at ease, the first items presented to the children were those which children in the pilot study had had ready answers for. The interviewer tried to minimise embarrassment and to maximise the response in individual cases by enquiring into the overweight child's general beliefs about obesity before directly referring to their beliefs about their own fatness. The interview was usually initiated by asking if they knew any children who were overweight. If the response was yes, they would then be asked why they thought they were overweight. At that point, whether the response had been yes or no, the interviewer would ask why they thought they were overweight.	Not reported.	<p><b>Reliability:</b> Low</p> <p><b>Usefulness:</b> Low</p>

## Appendix C. Themes from the interpretive synthesis: the contribution of each study

No.	Study name*	Relevance of body size varies	Health consequences	Size matters later	Popularity/fitting in	Body size and judging people	Acceptable/ideal bodies	Blame/responsibility for fat	Stereotypes	Discrimination is normal	Body size and health	Diet & exercise as influences	Other influences	Body comparisons	Assessing actual size	Adult control	Satisfaction	Size- related ridicule	Clothes & body size	Generalised anxiety/pressure	Appropriate strategies	Experiences of taking action	What needs to be done?	
1	Burrows et al. (1999)		✓									✓												
2	Cole et al. (2005)						✓		✓					✓	✓	✓				✓	✓			✓
3	Dixey et al. (2001)		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓		
4	Edmunds (2000)	✓			✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		
5	Girlguiding UK (2007)	✓			✓	✓	✓	✓	✓	✓				✓			✓	✓		✓	✓	✓	✓	✓
6	Grogan and Richards (2002)						✓	✓		✓		✓										✓		
7	Kurtz and Thornes (2000)	✓		✓																				
8	Ludvigsen and Sharma (2004)				✓		✓		✓		✓		✓			✓				✓				
9	McKinley et al. (2005)						✓			✓		✓								✓		✓	✓	
10	Mulvihill et al. (2000b)											✓												
11	Murtagh et al. (2006)		✓		✓		✓			✓			✓		✓			✓	✓			✓		
12	NCB (2005)		✓		✓						✓	✓		✓						✓	✓			✓
13	Robinson (2000)						✓		✓			✓					✓							
14	Stewart et al. (2006)			✓								✓									✓			
15	Walsh-Pierce and Wardle (1997)				✓		✓			✓		✓					✓	✓				✓		

\*Shading indicates a study was rated as having a low quality, both in terms of reliability and usefulness for this review.

## Appendix D. Details of aggregative studies: aims and sample characteristics (N=16)

Study	Aims and objectives	Characteristics of children of interest to this review
<b>Arshad (2007)</b>	To compare the views of British-born South Asian children and Caucasian children and the views of their parents to obesity and importance of thinness. To investigate the role of the family in terms of levels of conflict between children and parents and also the role of 'culture clash'	<b>Location:</b> West Yorkshire, England <b>Sample number:</b> 353 <b>Age-range:</b> 9-11 <b>Gender:</b> Mixed (167 boys, 186 girls) <b>Class:</b> Not stated <b>Ethnicity:</b> 169 Asian and 147 Caucasian <b>Weight status:</b> BMI range from 18.30 to 19.39 kg/sqm. <b>Other information:</b> Children came from 5 schools
<b>Currie et al. (2004)</b>	To inform and influence health promotion and health education policy and practice for young people at the national and international levels, and to advance scientific knowledge	<b>Location:</b> Range of sites in England, Scotland and Wales <b>Sample number:</b> 5,333 aged 11 in UK part of study <b>Age-range:</b> 11 (mean age 11.5, study also surveyed 13- and 15-year-olds) <b>Gender:</b> Mixed (numbers of boys and girls not reported separately for 11-year-olds but likely to be roughly equivalent) <b>Class:</b> Socio-economically representative sample <b>Ethnicity:</b> Socio-economically representative sample <b>Weight status:</b> Not stated <b>Other information:</b> Children came from a large number of schools. Part of International HBSC Survey conducted every 4 years. Data and analyses presented separately for 11-year-old children
<b>Currie et al. (2008b)</b>	To highlight where health differentials (inequalities) exist by quantifying gender, age, geographic and socio-economic status. To inform and influence policy and practice and to help improve health for all young people	<b>Location:</b> Range of sites in England, Scotland and Wales <b>Sample number:</b> 4,851 aged 11 in UK part of study <b>Age-range:</b> 11 (mean age 11.5, study also surveyed 13- and 15-year-olds) <b>Gender:</b> Mixed (numbers of boys and girls not reported separately for 11-year-olds but likely to be roughly equivalent) <b>Class:</b> Socio-economically representative sample <b>Ethnicity:</b> Socio-economically representative sample <b>Weight status:</b> Not stated <b>Other information:</b> As for Currie et al. (2004) above

<b>Edmunds (2000)</b>	To examine more closely those aspects of obesity that are open to change: a) diet, b) physical activity, and c) self-perceptions	<p><b>Location:</b> Two cities in the South-West of England  <b>Sample number:</b> 349 (for collection of set-response data)  <b>Age-range:</b> 9-10  <b>Gender:</b> Mixed (171 boys, 178 girls)  <b>Class:</b> Sample represented a range of socio-economic backgrounds  <b>Ethnicity:</b> Mostly Caucasian (96%)  <b>Weight status:</b> Author states sample should be 'representative of UK children with regard to their anthropometry' (p149). Breakdown of skin-fold and BMI measurements provided by gender and school  <b>Other information:</b> Children came from 8 schools</p>
<b>Franklin (2002)</b>	To investigate dieting motivation and underlying attitudes to weight and shape between mothers and their young adolescent daughters	<p><b>Location:</b> North of England  <b>Sample number:</b> 40  <b>Age-range:</b> 11-12 (study also included children aged 12)  <b>Gender:</b> 40 girls  <b>Class:</b> Low to middle-class background  <b>Ethnicity:</b> 90% Caucasian, 10% Asian  <b>Weight status:</b> Weight, height and BMI presented separately for girls in study's comparison groups. Mean BMI (standard error) 20.3 (0.8) and 18.1 (0.6) respectively  <b>Other information:</b> Children came from 1 urban state school</p>
<b>Harris (2002)</b>	To develop an assessment of children's body shape and weight over-concern	<p><b>Location:</b> North Yorkshire, England  <b>Sample number:</b> 333  <b>Age-range:</b> 8-10  <b>Gender:</b> Mixed (181 boys, 152 girls)  <b>Class:</b> Not stated  <b>Ethnicity:</b> Not stated  <b>Weight status:</b> BMI range is from 17.1 to 19.1 kg/m<sup>2</sup> (boys) and 17.2 to 18.6 kg/m<sup>2</sup> (girls). All the study's comparison groups are described as having a mean BMI higher than referenced norms  <b>Other information:</b> Children came from 10 schools</p>

<b>Hoare and Cosgrove (1998)</b>	To explore eating habits, body-esteem, and self-esteem	<b>Location:</b> Edinburgh, Scotland <b>Sample number:</b> 80 aged 10-12 (299 in study as a whole) <b>Age-range:</b> 10-12 (study included children aged 10-16, except for one girl who was aged 18) <b>Gender:</b> 80 girls aged 10-12 <b>Class:</b> Implicitly stated, all children attended a single sex independent school <b>Ethnicity:</b> Not stated <b>Weight status:</b> Not stated <b>Other information:</b> Children came from one school. Raw data presented separately for 10-12-year-old children. Statistical analyses presented for sample as whole
<b>Parkinson et al. (1998)</b>	To explore age and gender effects on body figure perceptions in a non-referred preadolescent and young adolescent population	<b>Location:</b> Tyne and Wear, England <b>Sample number:</b> 1,150 aged 7-12 (1,380) in study as a whole <b>Age-range:</b> 7-12 (study also surveyed ages 12-13) <b>Gender:</b> Mixed (575 boys, 575 girls) <b>Class:</b> A range of socio-economic statuses represented <b>Ethnicity:</b> Majority Caucasian <b>Weight status:</b> Not stated <b>Other information:</b> Children came from 17 schools. Raw data presented separately for children in different school years. Results of statistical analyses were for sample as a whole
<b>Penny and Haddock (2007)</b>	To assess the content, favourability and generality of perceptions held about overweight children.	<b>Location:</b> South Wales <b>Sample number:</b> 73 <b>Age-range:</b> 5-10 <b>Gender:</b> Mixed (26 boys, 47 girls) <b>Class:</b> Not stated <b>Ethnicity:</b> Ethnicity <b>Weight status:</b> Not stated <b>Other information:</b> Children came from 2 schools
<b>Phillips and Hill (1998)</b>	To carry out a detailed analysis of body weight influences on self-esteem and peer acceptance in pre-adolescent girls	<b>Location:</b> Leeds, England <b>Sample number:</b> 313 <b>Age-range:</b> 9-10 <b>Gender:</b> 313 girls <b>Class:</b> Low to middle social class, urban background <b>Ethnicity:</b> Over 80% were white Caucasians <b>Weight status:</b> 4 categories (underweight N=31; normal weight N=235; overweight N=31; obese N=16) <b>Other information:</b> Children came from 9 schools

<b>Pine (2001)</b>	To explore children's ideas about body weight, shape and gender	<b>Location:</b> Hertfordshire, England <b>Sample number:</b> 140 <b>Age-range:</b> 5-11 <b>Gender:</b> mixed (75 boys, 65 girls) <b>Class/ethnicity:</b> Predominately white, middle-class backgrounds <b>Weight status:</b> Not stated <b>Other information:</b> Children came from 2 schools
<b>Robinson (2000)</b>	To explore 9-year-old children's perceptions of body image, their perceptions of the link between body size and food, and their perceptions of the control of children's eating.	<b>Location:</b> South-East of England <b>Sample number:</b> 98 <b>Age-range:</b> 8-11 <b>Gender:</b> Mixed (40 boys, 58 girls) <b>Class:</b> 34 children came from 1 school classified as high SES, 33 children from 2 schools classified as medium SEP and 31 children from 1 school with a low SEP <b>Ethnicity:</b> The author only reports results from white children although children of all ethnic groups were interviewed <b>Weight status:</b> BMI calculated by author for each child. Most children were normal weight and the rest were more likely to be over- than underweight. Author reports that sample is close to national norms. Sub-group analysis (by BMI) conducted. <b>Other information:</b> Children came from 4 schools
<b>Truby and Paxton (2008)</b>	To test the reliability of the Children's Body Image Scale (CBIS)	<b>Location:</b> Surrey, England <b>Sample number:</b> 283 <b>Age-range:</b> 7-11 <b>Gender:</b> Mixed (142 boys, 141 girls) <b>Class:</b> A range of socio-economic status (SES) areas <b>Ethnicity:</b> Not stated <b>Weight status:</b> 'Mean BMI = 17.9, SD = 2.8'(p121) <b>Other information:</b> Children came from 4 schools
<b>Turnbull et al. (2000)</b>	To investigate gender differences in attitudes to obesity in pre-school children	<b>Location:</b> Edinburgh, Scotland <b>Sample number:</b> 25 <b>Age-range:</b> 4-5 (study also included 2- and 3-year-olds) <b>Gender:</b> Mixed (12 boys, 13 girls) <b>Class:</b> Social classes 1 and 2 <b>Ethnicity:</b> Not stated <b>Weight status:</b> Not stated <b>Other information:</b> Raw data reported separately for different age groups. Results of statistical analyses presented for sample as a whole. Children came from 1 nursery attached to a University Clinical Psychology Department

<p><b>Walsh-Pierce and Wardle (1997)</b></p>	<p>To explore cause and effect beliefs and self-esteem of overweight children</p>	<p><b>Location:</b> London, England  <b>Sample number:</b> 67  <b>Age-range:</b> 9-11  <b>Gender:</b> Mixed (26 boys, 41 girls)  <b>Class:</b> Not stated  <b>Ethnicity:</b> 51% white, 41% black, 3% Oriental, 3% Latin, and 2% Asian... 'In the comparison group' racial distribution consisted of 51% black, 40% white, and 3% of Oriental, Asian, and Latin  <b>Weight status:</b> 32 clinically obese children and 35 'controls'  <b>Other information:</b> All children attended state supported schools. The clinically obese children had all been referred to a hospital or community dietitian for treatment for obesity, but none had had treatment. All children in the control group came from the same school</p>
<p><b>Waterston (2001)</b></p>	<p>To investigate the frequency of overweight-related victimisation and its psychological correlates in preadolescent boys and girls</p>	<p><b>Location:</b> Leeds, England  <b>Sample number:</b> 400  <b>Age-range:</b> 9-11  <b>Gender:</b> Mixed (200 boys, 200 girls)  <b>Class:</b> Not stated  <b>Ethnicity:</b> Not stated  <b>Weight status:</b> BMI reported separately for girls and boys and for each of two comparison groups (NORV, ORV): Girls mean kg/m<sup>2</sup> (SE): 17.44 (0.26), 20.86 (0.72); Boys mean (SE): 17.14 (0.2), 20.34 (0.76)  <b>Other information:</b> Children from several schools (number not stated)</p>

## Appendix E. Details of studies in aggregative synthesis: methods, findings and quality (N=16)

Arshad (2007)	<b>Reliability:</b> Medium <b>Usefulness:</b> Low
<b>Study methods</b>	<b>Findings by theme</b>
<p><b>Design</b> Self-complete questionnaire administered to school classes or year group. Measurement of height and weight.</p> <p><b>Sampling</b> School selection process not reported. Selection of children from within schools not reported. Parental consent sought. 34% of children participated.</p> <p><b>Data collection</b></p> <ul style="list-style-type: none"> <li>• Used 'Body figure rating scale' (Stunkard et al. 1983) of 7 line drawings (extremely thin to obese, with 1-7 visual analogue scale underneath). Children asked which figure: a) do you feel is most like you now? (size estimation); b) would you most like to look like? (preferred size). Body shape satisfaction measured as difference between a) and b).</li> <li>• Children attributed descriptions (e.g. she/he has no friends - she/he has many friends, she/he is not healthy at all - extremely healthy) to two silhouetted body shapes of children (one underweight, one overweight).</li> <li>• 'Over-concern with shape and weight' measured with items from McKnight risk factor survey (Shisslak et al. 1999) (e.g. 'In the past year, how often have you: tried to lose weight/starved (not eaten) for a day or more to lose weight/worried about having fat on your body/worried about gaining two pounds? (options: never, a little, quite a lot, a lot)').</li> <li>• Importance of thinness measured with 3 questions, 'In the past year, how important has it been to you that you should be thin/ ... how important ... to your mother .../ ... how important ... to your father that you be thin? (options: never, a little, quite a lot, a lot)'.</li> <li>• Children were also questioned about conflicting attitudes in their families and their cultural orientation.</li> </ul> <p><b>Data analysis</b></p>	<p><b>Estimations of size, by:</b></p> <p><b>Ethnicity</b> No significant difference was found between Asian and Caucasian children's choice of the figure they thought represented their body shape. [The effect of actual variation in BMI on this relationship was not explored.]</p> <p><b>Perceptions of preferred/ideal body size, by:</b></p> <p><b>Ethnicity</b> Both Asian girls and Asian boys selected a preferred shape that was thinner than that chosen by Caucasians of the same gender.</p> <p><b>Satisfaction with own body size, by:</b></p> <p><b>Gender</b> Girls had much higher rates of body dissatisfaction than did boys (p51). Both Asian and Caucasian girls wanted a thinner figure than the one they perceived they had. No significant difference reported between these two measures for boys from either ethnic group.</p> <p><b>Ethnicity</b> No significant differences in satisfaction were seen between the ethnic groups or between Asian girls and Caucasian girls.</p> <p><b>Stereotypes about body size, by:</b></p> <p><b>Gender</b> Males rated both figures as being less fit and eating less healthy foods compared with girls.</p> <p><b>Ethnicity</b> Asian children rated the obese figure as eating more healthy foods and the thin figure as eating less healthy foods when compared with</p>

Analysis groups: female Caucasian, female Asian, male Caucasian, male Asian.	Caucasian children's ratings of same figure. <b>Perceived concern with and importance of body size, by:</b>  <b>Gender/ ethnicity</b> Asian children scored more highly on the 'over-concern with shape and weight' scale than Caucasian children. Of the 4 study groups, Caucasian boys scored the lowest.  Being thin was more important to girls than to boys. The Asian children gave greater importance to being thin than the Caucasian children.
<b>Currie et al. (2004)</b>	<b>Reliability:</b> High <b>Usefulness:</b> Low
<b>Study methods</b>	<b>Findings by theme</b>
<p><b>Design</b> Self-complete questionnaire administered at 4-yearly periods in schools across over 40 participating countries. Piloting of questionnaires. No physical measurements taken.</p> <p><b>Sampling</b> Stratified sampling of schools to ensure geographical coverage. Schools weighted according to number of eligible classes. Children selected from within schools or classes using a clustered sampling design. Consent process not reported. ≥95% of children in sample frame participated.</p> <p><b>Data collection</b></p> <ul style="list-style-type: none"> <li>• Body shape satisfaction measured directly through responses to question 'Do you think your body is... (Much too thin/A bit too thin/About the right size/A bit too fat/Much too fat)'. Last two responses were combined as indicator of perceived dissatisfaction with body weight.</li> <li>• A wide range of other health behaviours, beliefs and outcomes.</li> </ul> <p><b>Data analysis</b> Narrative comparisons of frequencies in text. Raw data is presented separately for girls and boys from England, Scotland and Wales, but no comparative analysis is reported. Standard errors corrected for clustering within samples.</p>	<p><b>Satisfaction with own body size, by:</b></p> <p><b>Gender</b> '[For some countries including England] levels are similar in boys and girls [within a range of 5%] ... In the remainder, [which includes Scotland and Wales] 8-12% more girls than boys report feelings of dissatisfaction with their body' (p121).</p>

<b>Currie et al. (2008b)</b>	<b>Reliability:</b> High <b>Usefulness:</b> Low
<b>Study methods</b>	<b>Findings by theme</b>
<b>Design/Sampling/Data collection/Data analysis</b> As for Currie et al. (2004) above.	<b>Satisfaction with own body size, by:</b>  <b>Gender</b> Taking less than 5% difference as ‘similar levels of dissatisfaction’ (as in Currie et al. 2004), levels of dissatisfaction were similar for girls and boys in England and higher for girls than boys in Scotland and Wales. However, report states, ‘It is a universal finding that girls are more likely than boys to judge themselves as a bit or much too fat’ (p81).
<b>Edmunds (2000)</b>	<b>Reliability:</b> Medium <b>Usefulness:</b> Low
<b>Study methods</b>	<b>Findings by theme</b>
<b>Design</b> Phase I of two phase study. Self-complete questionnaire administered in school class groups. Parents also surveyed. Measurement of height, weight, skin-folds and hip width. In Phase II children interviewed with open-ended questions (see Appendix B).  <b>Sampling</b> Schools selected by systematic random sampling within two cities. 40% schools participated. Selection of children from within schools not reported. Parental consent sought. 49% children participated.  <b>Data collection</b> <ul style="list-style-type: none"> <li>Items from ‘perceived overweight scale’ [tool developed and piloted for this study] integrated into Harter’s Self-Perception Profile for Children (S-PPC-C, the other items of which measure self-esteem). Scale asked whether children recognised phrases as describing themselves. Terms included ‘feel fat’, ‘never feel too thin’, ‘never feel too small’, ‘feel overweight’ and ‘[have received] weight comments’. Responses included, ‘very like me’ (p197).</li> </ul>	<b>Satisfaction with own body size, by:</b>  <b>Objective shape or weight status/gender</b> Perceptions of ‘over fatness’ increased with increasing health risk for boys and girls, ‘but the relationship was linear for girls and non-linear for boys as the high [risk] group [of boys] reported ... [feeling] less fat’ (p166).  <b>Self-esteem</b> ‘Global self worth was significantly correlated with overweight [sub-scale measuring dissatisfaction with size]’ (p201). [Authors’ note: the direction of the relationship is unclear.]

<ul style="list-style-type: none"> <li>Children also asked about physical activity, diet and TV viewing.</li> </ul> <p><b>Data analysis</b> Skin-fold measures used to create ‘health risk’ groups (optimal, moderate, high, very high) (Lohman 1992).</p>	
<b>Franklin (2002)</b>	<b>Reliability:</b> Medium <b>Usefulness:</b> Low
<b>Study methods</b>	<b>Findings by theme</b>
<p><b>Design</b> Girls and their mothers interviewed at home individually, using self-complete questionnaires. Measurement of child’s height and weight.</p> <p><b>Sampling</b> Children selected from existing cohort recruited two years previously from a single year group in one school. Selection of school or cohort not reported. See ‘Data analysis’ below, for selection within cohort. Parental consent. 89% children participated.</p> <p><b>Data collection</b></p> <ul style="list-style-type: none"> <li>‘Body shape preferences scale’ (Hill, Draper and Stack 1994 - adapted from Stunkard et al. 1983) of 7 line drawings arranged as described for Arshad above. Children were asked which figure: <ul style="list-style-type: none"> <li>a) is most like you now? (size estimation);</li> <li>b) would you most like to look like? (preferred size).</li> </ul> </li> <li>Girls also asked to describe their current and ‘ideal’ body weights without reference to a pictorial scale. [Authors’ note: the latter has been classified as a preferred weight for the purposes of this synthesis.]</li> <li>Satisfaction with body weight measured directly using 7 point Likert scale: ‘Do you feel yourself to be ... (very underweight to very overweight)’</li> <li>Body shape and weight satisfaction respectively measured indirectly as <ul style="list-style-type: none"> <li>o difference between a) and b) on the ‘Body shape preferences scale’;</li> <li>o difference between answers to the questions: what is your current weight? what would be your ideal weight?</li> </ul> </li> </ul>	<p><b>Estimations of size, by:</b></p> <p><b>Dieting behaviour</b> The ‘high restraint’ group perceived themselves as having a larger body shape. They saw themselves having a body shape almost 1 line drawing larger than the ‘comparison’ group. However, the effect of actual variation in BMI on this relationship was not explored and girls in the high restraint group weighed more and had a higher BMI on average than the comparison group.</p> <p><b>Perceptions of preferred/ideal body size, by:</b></p> <p><b>Dieting behaviour</b> Ideal body shape: No difference in preferred shape found between the ‘high restraint’ group and the ‘comparison’ group using the pictorial scale (p55).</p> <p>Ideal body weight: Unclear whether following describes ideals or satisfaction with weight. States that all girls wanted to weigh less than they currently did. Girls in the ‘high restraint’ group ‘wanted to weigh an average 4kg less than the comparison group’ (p62). The effect of actual variation in BMI on this relationship was not explored and girls in the high restraint group weighed more and had a higher BMI on average than the comparison group.</p> <p><b>Satisfaction with own body size, by:</b></p> <p><b>Objective shape or weight status</b> Body shape preferences negatively correlated with BMI for girls.</p>

<ul style="list-style-type: none"> <li>• Body esteem scale (Mendelson and White 1982): children answered yes or no to a series of 24 statements, including, I like: what I see when I look in the mirror/what I look like in pictures, what I weigh; and I am happy with: what I weigh/my weight; my looks.</li> <li>• Children also questioned about other aspects of self-esteem, dietary restraint (see below), family factors, their perceptions of their attractiveness in comparison with other girls of their age, and their perception of their mother's attractiveness.</li> </ul> <p><b>Data analysis</b> Dietary Restraint Questionnaire (Garner and Garfinkel 1979) used to create 'high restraint' group (20 girls from the sampling frame with the highest score) and 'comparison' group (20 girls with score in 25th to 50th percentile for measure). Items recorded, for example whether ever fasted, skipped meals, avoided certain foods in order to lose or not put on weight.</p>	<p><b>Dieting behaviour</b> In terms of the direct measures of satisfaction:</p> <ul style="list-style-type: none"> <li>• 65% of the 'high restraint' group said they felt overweight, compared with 15% of the comparison group.</li> <li>• Girls in the 'high restraint' group 'perceived themselves as slightly overweight compared to the comparison group' (p62).</li> </ul> <p>Indirect measurement of satisfaction with body shape found that girls in the 'high restraint' group were significantly less satisfied than those in the comparison group (p55). Raw data only are presented for indirect measurement of satisfaction with weight.</p> <p>However, the effects of actual variation in BMI on these relationships do not appear to have been explored and girls in the 'high restraint' group weighed more and had a higher BMI on average than the comparison group.</p> <p><b>Body esteem, by:</b></p> <p><b>Dieting behaviour</b> Girls in the 'high restraint' group were found to have significantly lower body esteem compared to the comparison group.</p> <p>The effect of actual variation in BMI on this relationship was not explored and girls in the 'high restraint' group weighed more and had a higher BMI on average than the comparison group.</p>
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<b>Harris (2002)</b>	<b>Reliability:</b> Medium <b>Usefulness:</b> Low
<b>Study methods</b>	<b>Findings by theme</b>
<p><b>Design</b> Self-complete questionnaire administered in school, following a pilot. Measurement of height and weight.</p> <p><b>Sampling</b> School selection process not reported. All children from Year 5 of participating schools invited to participate. Parental consent sought. 92% children participated.</p> <p><b>Data collection</b></p> <ul style="list-style-type: none"> <li>• Used ‘Body shape preferences scale’ (see Franklin above).</li> <li>• Body shape satisfaction measured indirectly as difference on ‘Body shape preferences scale’ (see Franklin above).</li> <li>• Children also asked to describe their weight and height without reference to pictorial scales.</li> <li>• Height and weight satisfaction measured directly using two, 7 point Likert scales for: (i) height (much too tall - much too short); (ii) weight (very overweight - very underweight) (Edmunds and Hill 1999).</li> <li>• ‘Implicit Attitudes Test’ to identify ‘anti-fat’ and ‘pro-fat’ bias. This involved against-the-clock assignment of adjectives (e.g. slim, excellent, awful, podgy, skinny, great, fat, lovely, nasty, heavy, horrible, thin) to groups: 1) ‘Thin people + Good’; 2) ‘Fat people + bad’; 3) ‘Thin people + bad’, and 4) ‘Fat people + good’, following explicit, pre-specified rules.</li> <li>• Two, 6-item self-report scales devised for study to measure concern and importance of body shape and weight. Scales asked children whether phrases described themselves. Phrases included: worry a lot about (becoming fat, my body shape or weight, feeling fat, being thin, seeing shape of body in the mirror, being able to lose weight); and it is important to/importance of (not to become fat, shape or weight, feeling fat, being thin, not look at their body shape in the mirror, to lose weight). Responses included ‘really true for me/sort of true’.</li> <li>• Self-esteem measured using the Self-Perception Profile for Children (Harter 1985)</li> </ul>	<p><b>Estimations of size, by:</b></p> <p><b>Gender</b> Girls generally described themselves on the pictorial scale as having a thinner figure than boys. This effect of gender remained when BMI was included as a covariate. However, the accuracy of individual children was not explored.</p> <p><b>Objective shape or weight status</b> The accuracy of individual children’s estimation of their shape was not examined.</p> <ul style="list-style-type: none"> <li>• When asked to quantify their weight or height, on average children in all groups underestimated both, except for boys in the Low concern and High importance sub-group. The accuracy of self-report did not differ between boys and girls and did not differ with shape and weight concern or importance.</li> </ul> <p><b>Shape and/or weight concern</b> Children in the High shape and weight concern groups rated their current figure as significantly bigger than those in the Low concern groups. When BMI was included as a covariate, this effect disappeared (p46).</p> <p><b>Shape and/or weight importance</b> Children’s perceptions of their current body shape did not differ with differences in shape/weight importance.</p> <p><b>Perceptions of preferred/ideal body size, by:</b></p> <p><b>Gender</b> Girls’ preferred shapes were significantly thinner than boys’. This effect of gender remained when BMI was included as a covariate.</p> <p><b>Shape and/or weight concern</b> Authors present tabulated data only.</p>

<ul style="list-style-type: none"> <li>• Dieting behaviour/dietary restraint measured with 10 items from the Dutch Eating Behaviour Questionnaire (Van Strien et al. 1985).</li> </ul> <p><b>Data analysis</b> Children classified into four groups (High concern and High importance; High concern and Low importance; Low concern and High importance; Low concern and Low importance) using scales described above.</p>	<p><b>Shape and/or weight importance</b> Children’s ideal body shape did not differ with differences in shape/weight importance.</p> <p><b>Satisfaction with own body size, by:</b></p> <p><b>Gender</b> The mean difference between ideal and perceived current body shape was negative for girls in all four body shape and weight concern/importance groups, but was only negative for boys in the two High concern groups. The difference scores for boys in the two Low concern groups, in contrast, indicated that these boys had a desire to be ‘broader’. [Mean BMI for all of these groups were higher than referenced norms.] No significant difference in satisfaction with either weight or height (as opposed to shape) was found between boys and girls.</p> <p><b>Shape and/or weight concern</b> Children in the High weight and shape concern groups were significantly more dissatisfied with both their body shape and weight than those reporting ‘low’ concern. These effects remained when BMI was included as a covariate. Satisfaction with height did not vary with weight or shape concern.</p> <p><b>Shape and/or weight importance</b> Satisfaction with weight did not vary with children’s rating of the importance of weight and shape. Satisfaction with height did not vary with weight or shape importance.</p> <p><b>Stereotypes about body size, by:</b></p> <p><b>Gender</b> No difference was found between girls’ and boys’ scores.</p> <p><b>Perceived concern with and importance of body size, by:</b></p> <p><b>Gender/age</b> No significant difference was found between girls and boys or between children of different ages, either for their concern with body shape and weight scale, or the importance of body shape and weight scale.</p>
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	<p><b>Objective shape or weight status</b> Concern with body shape and weight increased with BMI.</p> <p><b>Self-esteem</b> Children categorised as having High concern, had significantly lower self-worth and significantly lower perceived self-competence. These effects remained when BMI was included as a covariate. No significant differences in self-esteem were found with variation in the importance to children of body shape and weight.</p> <p><b>Dieting behaviour</b> Children's concern about body shape/weight and the importance to them of body shape/weight were both highly and positively correlated with dietary restraint. These effects remained when BMI was included as a covariate.</p>
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<b>Hoare and Cosgrove (1998)</b>	<b>Reliability:</b> Low <b>Usefulness:</b> Low
<b>Study methods</b>	<b>Findings by theme</b>
<p><b>Design</b> Process of administering questionnaires not reported. Likely to be self-complete. No measurement of child's height and weight.</p> <p><b>Sampling</b> Process not reported.</p> <p><b>Data collection</b></p> <ul style="list-style-type: none"> <li>• Body esteem scale (Mendelson and White 1982) (see Franklin above) and modified Harter self-esteem scale (Hoare et al. 1993).</li> <li>• Dutch Eating Behaviour Questionnaire.</li> </ul> <p><b>Data analysis</b> One-way ANOVA for age and body esteem, but inclusive for 10-16 age group. Raw data (means and SDs) presented separately for each school year.</p>	<p><b>Body esteem, by:</b></p> <p><b>Age</b> Raw data presented only.</p>
<b>Parkinson et al. (1998)</b>	<b>Reliability:</b> Medium <b>Usefulness:</b> Low
<b>Study methods</b>	<b>Findings by theme</b>
<p><b>Design</b> Children 'tested' individually in school. Children responded verbally to investigator's reading aloud of scale questions. Investigator recorded responses on pictorial scales. Measurement of height and weight. Participating schools were informed of the results.</p> <p><b>Sampling</b> School selection process not reported. All children from 5 school years in participating schools invited to participate. Parental consent sought. 47% children participated.</p> <p><b>Data collection</b></p> <ul style="list-style-type: none"> <li>• Used pictorial scale (of child's own gender) from extremely thin to extremely</li> </ul>	<p><b>Estimations of size, by:</b></p> <p><b>Gender</b> Raw data presented only.</p> <p><b>Age</b> Raw data presented only.</p> <p><b>Objective shape or weight status</b> There was a highly significant positive association between perceived body size and BMI for both girls and boys (p130).</p>

<p>obese with ruled numbers 1-7 underneath, each subdivided by 0.5 numerically with 10 subdivisions not marked (Collins 1991). Children were asked which picture:</p> <p>a) do you think looks the most like you? (size estimation); b) shows the way you would most like to look? (preferred size).</p> <ul style="list-style-type: none"> <li>• Body shape satisfaction measured as difference between (a) and (b).</li> <li>• Perceptions of ideal body shape for older adolescents measured with two, 9-point pictorial scales showing figure drawings of older adolescents (1 scale for each gender - used by Phelps et al. (1993) to reflect average pubertal development for 15-year-olds). Children asked 'which picture is nearest to the way you think it is best for older girls/boys to look like?' Children were asked both about their own and the opposite gender.</li> </ul> <p><b>Data analysis</b> As well as statistical analyses, data presented separately for children in each of 5 school year groups (mean ages 8, 9, 10, 11 and 12).</p>	<p><b>Perceptions of preferred/ideal body size, by:</b></p> <p><b>Gender/age</b> Current preferred shape</p> <ul style="list-style-type: none"> <li>• 'the [preferred] body shape for [own age in] girls increases with year group whereas [preferred] body shape for boys remains fairly constant over time.' (p133).</li> </ul> <p>Ideal shape for older adolescents</p> <ul style="list-style-type: none"> <li>• 'Overall, girls preferred significantly leaner older adolescent figures than boys' (p133).</li> <li>• 'Whereas the ideal shapes for older males and females remain fairly constant for girls across the year groups with preferred female shape heavier than preferred male shape, boys prefer an increasingly leaner female figure and increasingly heavy male figure across year groups and this three-way interaction is significant' (p133).</li> </ul> <p><b>Satisfaction with own body size, by:</b></p> <p><b>Gender</b> A highly significant gender difference in body satisfaction was observed. 'Many more boys than girls indicated a desire to have a heavier body shape than their current perceived body shape, more boys indicated satisfaction with their current perceived body shape than girls, but many more girls than boys indicated a desire to have a leaner body shape than their current perceived body shape' [finding Finding relates to children aged from 8 up to 12] (p130).</p> <p><b>Age</b> 'Girls in all age groups indicated a desire to be leaner than their perceived current shape. Boys in the younger age groups indicated a desire to be heavier than their perceived current shape, whereas boys in the older age groups indicated a desire to be leaner than their perceived current shape' (p126).</p>
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<b>Penny and Haddock (2007)</b>	<b>Reliability:</b> Medium <b>Usefulness:</b> Low
<b>Study methods</b>	<b>Findings by theme</b>
<p><b>Design</b> Individual interviews at school. No measurement of height or weight.</p> <p><b>Sampling</b> School selection process not reported. All children aged between 5 and 10 from participating schools invited to participate. Parental consent sought. Participation rate not reported.</p> <p><b>Data collection</b></p> <ul style="list-style-type: none"> <li>Children were read a story describing 2 children of same gender, 1 high and 1 low in 1 of 4 ability areas (athletic, academic, artistic, social). Children were asked to point to a picture that looked most like one of the characters in the story, then the picture that looked like the other characters. They selected each time from pairs of contrasting cards showing the same child but either with an average weight or overweight. This was conducted for 12 stories, with 8 pairs of cards, with the cards and story order varying for each child.</li> </ul> <p><b>Data analysis</b> Children classified into three age groups (5-6, 7-8 and 9-10).</p>	<p><b>Stereotypes about body size, by:</b></p> <p><b>Gender</b> Negative evaluations of the athletic ability of overweight figures were more pronounced for boys than girls. No other differences reported.</p> <p><b>Age</b> '5-8-year-olds were significantly less likely to choose an overweight picture to represent the characters with high athletic, academic, artistic and social ability. In contrast, 9- to 10-year-olds were significantly less likely to choose an overweight figure to represent the characters with high athletic ability, did not differentiate on the basis of weight for the academic and artistic stories and were significantly more likely to choose an overweight picture as having high social ability.'</p>
<b>Phillips and Hill (1998)</b>	<b>Reliability:</b> Medium <b>Usefulness:</b> Low
<b>Study methods</b>	<b>Findings by theme</b>
<p><b>Design</b> 'Assessments' administered in school classes by a psychologist over 2 separate sessions, usually on different days. Measurement of height and weight done in a third session.</p> <p><b>Sampling</b> School selection process not reported. All children from Year 5 of participating schools invited to participate. Parental consent sought. 97% children participated.</p>	<p><b>Estimations of size, and Perceptions of preferred/ideal body size by:</b></p> <p><b>Objective shape or weight status</b> 'The girls differed in their perception of current body shape [with larger girls choosing bigger body shapes] but not in their preferred shape' (p289).</p>

<p><b>Data collection</b></p> <ul style="list-style-type: none"> <li>• ‘Body shape preferences scale’ used for perceptions of own current body shape and preferred shape (see Franklin above).</li> <li>• Satisfaction with body shape measured indirectly using method outlined for Franklin above.</li> <li>• Children also asked to rate their fellow female classmates in terms of popularity and attractiveness using a 4-item peer nomination questionnaire.</li> </ul> <p><b>Data analysis</b></p> <p>BMI used to allocate girls to one of four groups: underweight (&lt;10% of sample), normal weight (10±85%), overweight (85±95%) and obese (&gt;95%).</p>	<p><b>Perceptions of preferred/ideal body size, by:</b></p> <p><b>Objective shape or weight status</b></p> <p>‘The girls differed in their perception of current body shape [with larger girls choosing bigger body shapes] but not in their preferred shape’ (p289).</p> <p><b>Satisfaction with own body size, by:</b></p> <p><b>Objective shape or weight status</b></p> <p>‘Body shape satisfaction was significantly different between weight groups ... In comparison with the normal weight girls, those underweight wanted to be bigger, while those overweight and obese, significantly thinner’ (p289).</p>
<p><b>Pine (2001)</b></p>	<p><b>Reliability:</b> Medium <b>Usefulness:</b> Low</p>
<p><b>Study methods</b></p>	<p><b>Findings by theme</b></p>
<p><b>Design</b></p> <p>Individual interviews in areas away from main classroom. Child and experimenter sat alongside each other, stimulus material on table before them. No measurement of height or weight.</p> <p><b>Sampling</b></p> <p>Process not stated.</p> <p><b>Data collection</b></p> <ul style="list-style-type: none"> <li>• Used pictorial scale of 9 figures (Fallon and Rozin 1983, Cohn et al. 1987 developed from study by Stunkard et al. 1983). Children asked to identify: <ul style="list-style-type: none"> <li>(i) their ideal female and male adult body shapes (each child was asked about both genders);</li> <li>(ii) the body shape they aspired to for adulthood.</li> </ul> </li> <li>• Children rated their body shape on a 5-point scale from ‘much too fat’, to ‘much too thin’.</li> <li>• Experimenter also rated each child using the same scale.</li> <li>• Children asked: ‘Would you ever go on a diet?’ and ‘Do you know anyone else who diets?’</li> </ul>	<p><b>Perceptions of preferred/ideal body size, by:</b></p> <p><b>Gender/age</b></p> <p>Ideal shape for adults</p> <ul style="list-style-type: none"> <li>• Girls and boys agreed about what is the ideal adult male shape at all ages.</li> <li>• At ages 5, 9 and 11 girls chose a significantly thinner ideal adult female figure than did boys.</li> <li>• The age groups differed significantly in their perception of the ideal adult female shape, with 5-year-olds having the lowest mean scores. The interaction between gender and age was not significant.</li> </ul> <p><b>Preferred/aspired to shape when older</b></p> <ul style="list-style-type: none"> <li>• The girls in all age groups aspired to a thinner adult figures for themselves than did boys.</li> </ul>

<ul style="list-style-type: none"> <li>Male' and 'female' traits assigned to male/female figures by children to decide which traits were possessed by children thought of as stereotypically masculine or feminine. These gendered traits were then applied to figures 3 and 7 (thin and overweight respectively) from two pictorial scales (both genders), to examine relationship between gender and obesity.</li> </ul> <p><b>Data analysis</b> Children classified into four groups: 5, 7, 9 and 11 years old.</p>	<p><b>Satisfaction with own body size, by:</b></p> <p><b>Gender/dieting behaviour</b> For girls there was a significant correlation between their rating of their body shape and a positive response to being questioned about future dieting (it is not stated, but reviewers assume girls who rated their body shape as too fat were more likely to say they would diet in future). For boys, no relationship was found.</p> <p><b>Objective shape or weight status</b> Children's rating of their own body shape (as too fat/too thin) 'did not differ significantly from the ... same rating made by the experimenter' (p532).</p> <p><b>Stereotypes about body size, by:</b></p> <p><b>Age</b> Raw data presented only.</p> <p><b>Views about gender</b> 'Significantly more stereotypically feminine traits were associated with a thinner female figure than with a fatter one, while masculine traits were not associated with any particular male somatotype' (p519).</p> <p><b>Other views (intention about/awareness of dieting), by:</b></p> <p><b>Gender</b> Girls who said they would diet were also more likely to say they knew somebody else who dieted. For boys, the correlation between the two measures was not significant.</p>
<p><b>Robinson (2000)</b></p>	<p><b>Reliability:</b> Medium <b>Usefulness:</b> Medium</p>
<p><b>Study methods</b></p> <p><b>Design</b> Pairs of children interviewed, using 'say and see' techniques, card sorting activities and questioning. Measurement of height and weight. Methods piloted. When children's views were reported verbatim these have been entered instead</p>	<p><b>Findings by theme</b></p> <p><b>Estimations of size, by:</b></p> <p><b>Gender</b> 'The boys described themselves as having muscley arms and legs more</p>

<p>into this study's interpretive synthesis (see Appendix B).</p> <p><b>Sampling</b> Three electoral wards sampled purposively to represent three levels of socio-economic status and schools selected from wards by author's institution so as to build upon existing contacts. Selection of children from within schools not reported. Parental consent sought. Response rate not reported.</p> <p><b>Data collection</b></p> <ul style="list-style-type: none"> <li>To determine perceptions of current and ideal body shape respectively, children were asked:             <ol style="list-style-type: none"> <li>'Imagine you are on the beach in your trunks/swimming costume on a hot summer's day. If you could have any body that you wanted, what would it look like? Think about the outline of the body - the shape ...'</li> <li>'Describe your own body. What do you think you look like on the beach?'</li> </ol> </li> <li>Researcher listened to each participant's description and drew what was being described. Children asked to select one response from the following: i) thin; ii) medium; iii) fat; iv) muscly.</li> <li>Participants asked, 'Is there anything that you don't like about the shape and size of your body?' Responses classified into pre-specified categories: Nothing/no/satisfied; Want to be thinner; Want to be fatter; Want to be more muscly; Arms - too fat/want to be thinner; Arms - too thin/want to be fatter; Arms - want to be more muscly; Tummy - too fat/want to be thinner; Tummy - too thin/want to be fatter; Legs - too fat/want to be thinner; Legs - too thin/want to be fatter; Legs - want to be more muscly; Bottom - too fat/want to be thinner; Other.</li> <li>Indirect measurements of satisfaction made through comparison of answers to questions (a) and (b) above.</li> <li>Children asked to draw someone called 'Mr Thin' (if a boy)/ 'Miss Thin'(if a girl) and someone called 'Mr Fat' (if a boy)/ 'Miss Fat'(if a girl). Shown food cards and asked to place them on pictures to identify: Who would eat this (Mr/Miss fat; Mr/Miss thin; Both?)</li> </ul> <p><b>Data analysis</b> Height and weight measurements used to classify children as: 'underweight';</p>	<p>frequently than the girls' (p108).</p> <p><b>Objective shape or weight status</b> 'Both boys' and girls' perceptions of their own body images were reasonably accurate in terms of what one would expect based on their actual weight, with the exception that some boys and girls perceived themselves to be thinner than they probably were. There were no statistically significant ... differences between the "normal weight" girls and boys' (p116). 'When describing themselves, the descriptions seemed to be less accurate among the "underweight" and "overweight" children' (p119).</p> <p><b>Perceptions of preferred/ideal body size, by:</b></p> <p><b>Gender</b> 'Girls seemed to want a thin to medium body image, while the boys seemed to want a medium to muscly one. The boys particularly wanted extra muscularity in their arms and legs' (p108).</p> <p><b>Objective shape or weight status</b> 'Most of the children of all weights rejected fatness for their ideal body image ... Having muscularity seemed to be important to most boys of all weights' (p135-6).</p> <p>'With increasing weight the desire for a thin body image increased among both girls and boys. Also, with increasing weight, they indicated that they wanted an ideal body image which was thinner than their own weight would suggest that they had themselves' (p116).</p> <p><b>Satisfaction with own body size, by:</b></p> <p><b>Gender</b> '[For answers to direct questioning] the differences between the sexes, in terms of the frequency of individual answers [about body parts] did not differ to a statistically significant degree, with the exception that the boys [said there was] ... nothing that they didn't like ... more often than the girls' (p122).</p>
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<p>'normal weight'; and 'overweight' (p109). [Further detail not found.]</p>	<p>[Author argues that indirect data suggest that] 'Girls indicated that they wanted thinner body parts ... significantly more [often] than the boys, ... and the boys mentioned that they wanted more muscley body parts significantly more than the girls ... Significantly more girls than boys described their ideal arms in the same way as their own ... and significantly more girls ... than boys ... described their ideal arms as fatter than their own (p120).</p> <p><b>Objective shape or weight status</b>  'Normal weight' girls and 'overweight' boys were most satisfied with their body image, and 'overweight' girls were the most dissatisfied' (p136).</p> <p><b>Stereotypes about body size, by:</b></p> <p><b>Gender</b>  Girls and boys differed in the foods that they said would be eaten the most by the overweight and underweight characters (girls said overweight person would eat cauliflower more often than did the boys, boys said the overweight person would eat lettuce more than did the girls; girls said the underweight person would eat cheese more than did the boys and more girls than boys thought that both people would eat peas.....).</p>
<p><b>Truby and Paxton (2008)</b></p>	<p><b>Reliability:</b> Medium  <b>Usefulness:</b> Low</p>
<p><b>Study methods</b></p> <p><b>Design</b>  Individual interviews with trained assessor. Location not stated, but likely to be school. Measurement of height and weight. 50% children re-tested after 3 weeks. Test with children for construct validity previously found tool to be sound.</p> <p><b>Sampling</b>  Schools selected randomly. All children aged 3-6 invited to participate. Parental consent sought. Participation rate not reported.</p> <p><b>Data collection</b></p>	<p><b>Findings by theme</b></p> <p><b>Estimations of size, by:</b></p> <p><b>Gender/objective shape or weight status</b>  'Children [were] aware of their body shape and size' (p122). Girls were more accurate in choosing a body figure like their own than boys. Girls picked a figure on average 0.4 CBIS category less than their measured BMI. The boys' average was 0.8 category less than their measured BMI.</p>

<ul style="list-style-type: none"> <li>Used 'Children's Body Image Scale' (CBIS - Truby and Paxton 2008) comprising 7 photographic figures of children ranging from very thin to obese. Question wording not reported, but children were asked to pick the figure they:             <ol style="list-style-type: none"> <li>believed closest to their own (estimated body size);</li> <li>would most like to have (preferred body size).</li> </ol> </li> <li>Body shape satisfaction measured indirectly as difference between a) and b).</li> </ul> <p><b>Data analysis</b> Children classified into 5 age groups based on their actual age (7-11). Comparisons made with BMI norms.</p>	<p><b>Age/objective shape or weight status</b></p> <p>Girls' accuracy did not vary with age ... 'for boys there was a significant effect of age with post hoc testing suggesting that 9- and 10-year-old boys were significantly different from each other in their ability to choose a BMI figure close to their own.' (p121)</p> <p><b>Perceptions of preferred/ideal body size, by:</b></p> <p><b>Gender</b> '84% of boys and 71% of girls identified an "ideal figure" that was <math>\leq</math> the 25th percentile of BMI population norms' (p121).</p> <p><b>Satisfaction with own body size, by:</b></p> <p><b>Gender</b> 'Both boys and girls wished to have a smaller body size than their own, with girls being slightly more dissatisfied than boys' (p121). For girls, 39% selected an ideal body figure the same as their perceived figure, 52% wished to have a body size thinner, and 9% larger. For boys 41% chose a figure of the same size, 49% a thinner size, and 10% wished for a larger size.</p>
<p><b>Turnbull et al. (2000)</b></p>	<p><b>Reliability:</b> Medium <b>Usefulness:</b> Low</p>
<p><b>Study methods</b></p> <p><b>Design</b> Interview format not reported. Conducted in a nursery setting. No measurement of height or weight.</p> <p><b>Sampling</b> Process of selecting nursery not reported (a choice of convenience?). Consent process and participation rate not reported.</p> <p><b>Data collection</b></p> <ul style="list-style-type: none"> <li>Children were asked to ascribe a statement (about a 'positive' or 'negative' personal, social or behaviour trait, described as used by previous researchers) to pairs of line-drawn figures ('dolls'). One doll was 23% larger than the other, with proportions retained. This was repeated for another, opposite</li> </ul>	<p><b>Findings by theme</b></p> <p><b>Stereotypes about body size, by:</b></p> <p><b>Gender</b> No significant difference found.</p> <p><b>Age</b> 'The only significant effect was age on prejudice against the fat female doll ...; the older boys and girls were more prejudiced' (p1706).</p>

<p>gender, doll. Orders of presentation randomised and counterbalanced. Children were first ‘trained’ by putting gender-specific paper clothing on the appropriate gendered doll. Actual statements not described.</p> <p><b>Data analysis</b> Children classified by their responses into prejudiced (N=19) and non-prejudiced (N=6) and by age into younger (30-44 months) and older (45-60 months).</p>	
<p><b>Walsh-Pierce and Wardle (1997)</b></p>	<p><b>Reliability:</b> Medium <b>Usefulness:</b> Low</p>
<p><b>Study methods</b></p>	<p><b>Findings by theme</b></p>
<p><b>Design</b> One-to-one, semi-structured interviews with 2 types of children: a) clinically obese children; b) a comparison group of children of same age, but BMI within 10% of ideal. Measurement of height and weight. Parents also interviewed. Views from children that fell into the ‘other comments’ category mentioned below have been entered in this study’s interpretive synthesis (see Appendix B).</p> <p><b>Sampling</b> Dietitians known to treat childhood obesity in London recruited first group of children. Physician approval required before contact. Physician response rate not reported. One school selected for comparison group (because of convenience?) and children selected ‘in series’ from school nurse’s list. Parental consent sought. Verbal consent required from children. 67% of obese children participated. 100% of comparison children participated.</p> <p><b>Data collection</b></p> <ul style="list-style-type: none"> <li>• 4 questionnaire items measured causal beliefs about obesity: ‘do you think you’re overweight because: (2 x internal causal beliefs) I eat too much; I don’t exercise enough; (2 x external causal beliefs) It runs in my family; A medical cause.’</li> <li>• Children were asked about negative social consequences: ‘Because of my weight ... a) I’m not liked as much; b) not included in games and sports; c) I have fewer friends.</li> <li>• Children also asked to respond to ‘Because of my weight ... I’m ashamed of my body’ (answer options: yes/agree; no/disagree; unsure; other comments).</li> </ul>	<p><b>Body esteem, by:</b></p> <p><b>Self-esteem</b> Lower self-esteem was found in children who were ashamed of their body because they were overweight.</p> <p><b>Other views (causes of obesity and negative social consequences), by:</b></p> <p><b>Self-esteem</b> Both of the internal causal belief items were strongly and negatively correlated to self-esteem. Correlation between self-esteem and the medical (external) cause item was strong and significant. The relationship between self-esteem and the item ‘it runs in the family’ was strong.</p> <p>Lower self-esteem was found in children who believed that being overweight is why they had fewer friends, were not included in games and sports, and were ashamed of their body</p>

<ul style="list-style-type: none"> <li>Self-esteem measured using Piers-Harris Children's Self-Concept scale (Piers 1984).</li> </ul> <p><b>Data analysis</b> Relationship between self-esteem and beliefs examined for obese children only.</p>	
<p><b>Waterston (2001)</b></p>	<p><b>Reliability:</b> Medium <b>Usefulness:</b> Low</p>
<p><b>Study methods</b></p>	<p><b>Findings by theme</b></p>
<p><b>Design</b> Self-complete questionnaire administered in classroom. Measurement of height and weight.</p> <p><b>Sampling</b> School selection process not reported. All children from Year 5 of participating schools invited to participate. Parental consent sought. 91% children participated.</p> <p><b>Data collection</b></p> <ul style="list-style-type: none"> <li>Perceptions of own current body shape and preferred shape measured with 'Body shape preferences scale' (as for Franklin above).</li> <li>Body shape satisfaction measured indirectly as difference between (a) and (b) on the 'Body shape preferences scale' (as for Franklin above).</li> <li>Body weight satisfaction measured directly using a 7-point Likert scale (see entry for Harris above).</li> <li>Responding to teasing scale developed for study from research conducted by Scambler et al. (1998). Children asked, 'A sometimes teases B about wearing glasses/being fat/being stupid/being a swot. A calls him names and laughs at him. What would you do if you were B?' (Answers: changing something about themselves, also get upset, ignore it, tease back, turn it into a joke, tell a friend or adult.)</li> <li>Whether victimised for being overweight was measured by responses to a three-item self-report scale derived from Peer victimisation scale (Neary and Joseph 1994). Scales asked children whether phrases described themselves. Phrases included 'some children are often/not teased about being fat'; 'some children are often/not bullied for being fat'; 'some children are often/are not called horrible names for being fat'. Responses included, 'really true for</li> </ul>	<p><b>Estimations of size, by:</b></p> <p><b>Experience of victimisation for being overweight</b> If victimised for being overweight, children perceived their current shape to be larger than their non-victimised counterparts (effect remained after controlling for BMI).</p> <p><b>Perceptions of preferred/ideal body size, by:</b></p> <p><b>Experience of victimisation for being overweight</b> Children's preferred shape did not vary between the group that had experienced being victimised for being overweight and the group that had not.</p> <p><b>Satisfaction with own body size, by:</b></p> <p><b>Gender</b> Girls had a greater desire to be thinner than did boys. This effect remained when BMI was included as a covariate.</p> <p><b>Experience of victimisation for being overweight</b> Both body shape satisfaction and body weight satisfaction decreased with experience of weight-related bullying (effect remained after controlling for BMI).</p> <p><b>Other views (how would you respond to teasing), by:</b></p> <p><b>Experience of victimisation for being overweight</b> Author presents raw data only.</p>

<p>me/sort of true for me’.</p> <p><b>Data analysis</b> Children classified into 2 groups (victimised for overweight; not victimised for overweight) using response to the 3 items listed immediately above.</p>	<p><b>Other views (experience of victimisation for being overweight), by:</b></p> <p><b>Self-esteem</b> Self-esteem was lower for children with experience of size-related ridicule or bullying. Effect remained when BMI was controlled for.</p>
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## Appendix F. Themes from the aggregative synthesis: the contribution of each study

No.	Study name*	Estimations of body size	Preferred and ideal sizes	Satisfaction	Stereotyping	Body esteem	Importance / concern	Other views about size
4	Edmunds (2000)**			√				
13	Robinson (2000)**	√	√	√	√			
15	Walsh-Pierce and Wardle (1997)**					√		√
16	Arshad (2007)	√	√	√	√		√	
17	Currie et al. (2004)			√				
18	Currie et al. (2008b)			√				
19	Franklin (2002)	√	√	√		√		
20	Harris (2002)	√	√	√	√		√	
21	Hoare and Cosgrove (1998)					√***		
22	Parkinson et al. (1998)	√	√	√				
23	Penny and Haddock (2007)				√			
24	Phillips and Hill (1998)	√	√	√				
25	Pine (2001)		√	√	√			√
26	Truby and Paxton (2008)	√	√	√				
27	Turnbull et al. (2000)				√			
28	Waterston (2001)	√	√	√				√
<b>TOTAL</b>		8	9	12	6	3	2	3

\* Shading indicates a study was rated as having a low quality, both in terms of reliability and usefulness for this review.

\*\*These studies also contributed to the interpretive synthesis

\*\*\* Age-range (10–16) went higher than the scope of this review. Authors reported only raw data for children aged 10–12.

## Appendix G. Search strategies and sources

All searches were limited to studies published between 1997 and 2008 and to studies published in the English language, using the date and language filter. Where search sources allowed for citations to be electronically imported into our database, we imported the total number of records generated. When this was not possible, we handsearched the total search results and manually uploaded only the potentially relevant results (appeared to be on topic, appropriate age of population and UK based). If there were not enough data in the abstract to tell if a record was potentially relevant, we uploaded it and retrieved the full text.

The figures below do not include any internal duplicates. However, duplicates between databases were only removed once records had been uploaded.

### Electronic database searches

#### 1. ASSIA

Searched on 03.06.08. Search generated 625 records which were all uploaded.

((TI=(children\* OR schoolchild or schoolchildren OR kid or kids OR Boy or boys OR Girl or girls OR Prepubescent OR child OR child's)) or (AB=(children\* OR schoolchild or schoolchildren OR kid or kids OR Prepubescent OR child OR child's OR "young boys" or "young children" or "young girls"))) or (DE=("boys" or "children" or "girls" or "young boys" or "young children" or "young girls"))) and ((TI=("weight" and "body")) or (AB=("weight" and "body")) or (DE=("body mass index" or "body shape" or "body size" or "obesity" or "underweight" or "weight"))) or (body within 3 size OR body within 3 shape OR overweight OR thin OR thinness OR skinny or body weights or obese or obesogenic or obesity))) or (DE=(obese children))

#### 2. BIBLIOMAP

Searched on 02.06.08. No date filter used. Search generated 16 records of which 12 were uploaded.

(What type of study does this report describe?: survey OR process evaluation OR Other design) AND Which language is the study in?: English AND Focus of the report: obesity.

#### 3. BRITISH LIBRARY INTEGRATED CATALOGUE

Searched on 10.07.08.

We handsearched the results from the following searches and uploaded 9 potentially relevant records.

Search A: 'obesity' as title word

Search B: 'obesity' as subject

Search C: 'body size' as title word

Search D: 'body image' as title word

Search E: 'body size' as subject word

Search F: 'body size' as subject word

#### **4. BRITISH EDUCATION INDEX**

Searched on 09.07.08. Searches generated 61 records which were all uploaded.

Search A: (Body NEAR size OR body NEAR shape OR overweight OR thin OR thinness OR skinny OR body weights OR obese OR obesogenic OR obesity)

Search B: weight AND body

Search C: fat and body

Search D: (DE=("body weight" OR "obesity" OR "body composition"))

#### **5. BRITISH INDEX TO THESES**

Searched on 24.07.08. We handsearched the results of the following searches and uploaded 16 potentially relevant records.

Search A: (ti contains Obesity OR body size OR body shape OR obese OR obesogenic OR body weight OR overweight OR body mass index OR thin OR thinness OR skinny OR body weights OR fat OR weight ) AND (ti contains children – OR girls OR boys OR school children OR children OR kid OR kids OR children OR schoolchild OR schoolchildren OR child OR preadolescent OR prepubescent)

Search B: ((Obesity OR body size OR body shape OR obese OR obesogenic OR body weight OR overweight OR body mass index OR thin OR thinness OR skinny OR body weights OR fat OR weight) and (girls OR boys OR school children OR children OR kid OR kids OR children OR children – OR schoolchild OR schoolchildren OR child OR preadolescent OR prepubescent))

#### **6. CHILD DATA**

Searched on 22.07.08. We handsearched the results from the following searches and uploaded 15 potentially relevant records.

(Keyword = body image OR obesity) or (abstract = obesity OR body shape OR obese OR obesogenic OR body weight OR overweight OR body mass index OR BMI OR thin OR thinness OR fat OR weight)

#### **7. CINAHL**

Searched on 04.06.08. Searches generated 1,703 records which were all uploaded.

A: (MH "Body Mass Index") or (MH "Body Weight") or (MH "Body Constitution") or (MH "Obesity") or (TI ("body N3 size" OR "body weights" OR "body N3 shape" OR "obesity" OR "overweight" OR "thin" OR "thinness" OR "skinny" OR "obesity" OR "obese" OR "obesogenic")) or (AB ("body N3 size" OR "body weights" OR "body N3 shape" OR "obesity" OR "overweight" OR "thin" OR "thinness" OR "skinny" OR "obesity" OR "obese" OR "obesogenic")) or (MH "Body Weight+") or (MH "Body Weight Changes+") or (AB ( fat OR weight ) or TI ( fat OR weight ))

AND

B: (MH "Child") or (MH "Child, Preschool") or (TI (children OR children's OR schoolchild\* OR boy OR boys OR girl OR girls OR prepubescent OR child OR child's OR preadolescent OR kid OR kids)) or (AB (children OR children's OR schoolchild\* OR boy OR boys OR girl OR girls OR prepubescent OR child OR child's OR preadolescent OR kid OR kids))

AND

C: (MH "Qualitative Studies") or (MH "Focus Groups") or (MH "Discourse Analysis") or (MH "Field Studies") or (MH "Constant Comparative Method") or (MH "Thematic Analysis") or (MH "Content Analysis") or (MH "Observational Methods+") or (MH "Purposive Sample") or (MH "Qualitative Validity") or (MH "Ethnography") or (MH "Cluster Sample+") or (MH "Qualitative Studies+") or (MH "Qualitative Validity+") or (TX(life experiences OR human science OR discourse\* analysis OR narrative analysis OR lived experience\* OR field research OR field studies OR field study OR focus group\* OR purpos\* sampl\* OR constant comparison OR constant comparative OR grounded research OR grounded studies OR grounded study OR grounded theor\* OR phenomenol\* OR ethnon\* OR qualitative)) or (AB (interview OR interviews OR interviewer OR interviewing OR interviewed OR "in depth" OR "case study" OR view OR views OR perception OR perceptions OR perceive OR perceives OR perceived OR attitude OR attitudes OR attitudinal OR belief OR beliefs OR concept OR concepts OR idea OR ideas OR perspectives OR perspective OR meaning OR meanings OR dissatisfaction OR behavioral research)) or (TI (interview OR interviews OR interviewer OR interviewing OR interviewed OR "in depth" OR "case study" OR view OR views OR perception OR perceptions OR perceive OR perceives OR perceived OR attitude OR attitudes OR attitudinal OR belief OR beliefs OR concept OR concepts OR idea OR ideas OR perspectives OR perspective OR meaning OR meanings OR dissatisfaction OR behavioral research)) or (MH "Attitude to Health") or (MH "Attitude to Life") or (MH "Attitude") or (MH "Emotions") or (MH "Behavioral Research")

OR

( (MH "Attitude to Obesity") or (MH "Body Image") ) and B (above)

3) A and C and Age Groups: Child, Preschool 2–5 years, Child, 6–12 years

## 8. DISSERTATION ABSTRACTS

Searched on 03.06.08. We handsearched the results from the following searches and uploaded 7 potentially relevant records.

("body weight" OR "body size" OR weight OR "body shape" OR overweight OR thin OR thinness OR "body mass index" OR "overnutrition" OR "obese" OR obesity OR obesogenic) and (attitudes OR interviews OR "in-depth" OR "case study" OR qualitative OR questionnaires OR view OR views OR perception OR perceptions OR perceive OR perceives OR perceived OR idea OR ideas OR perspectives OR perspective OR meaning OR meanings OR "focus group") and (children OR children's OR child OR preschool OR "school child" OR "school children" OR girl OR girls OR boy OR boys)

## 9. ERIC

Searched 04.06.08. Search generated 468 records which were all uploaded.

Query: (((TI=(children\* OR schoolchild or schoolchildren OR kid or kids OR Boy OR boys OR Girl OR girls OR Prepubescent OR child OR child's)) or (AB=(children\* OR schoolchild OR schoolchildren OR kid OR kids OR Prepubescent OR child OR child's OR "young boys" OR "young children" OR "young girls")))) or (DE=("young children" OR "children" OR "preschool children" OR "early adolescents" OR "Preadolescents")) and ((TI=(body within 3 size OR body within 3 shape OR overweight OR thin OR thinness OR skinny OR body weights OR obese OR obesogenic OR obesity) or AB=(body within 3 size OR body within 3 shape OR overweight OR thin OR thinness OR skinny OR body weights OR obese OR obesogenic OR obesity)) or (TI=(weight and body) or AB=(weight and body)) or (DE=("body weight" OR "obesity" OR "body composition"))))

## 10. HEALTH PROMIS

Carried out on 07.07.08. We handsearched the results from the following searches and uploaded 1 potentially relevant record.

Search A: 'obesity' in title or abstract or keyword

Search B: 'weight AND children AND views' in abstract

Search C: 'weight AND children AND perspective' in abstract

Search D: 'weight AND children AND understandings'

Search E: 'weight AND children AND interviews' in abstract

Search F: 'fat AND children AND interviews' in abstract

Search G: 'size AND children AND interviews' in abstract

Search H: 'image AND children AND interviews' in abstract

Search I: 'weight AND child AND interviews' in abstract

Search J: 'weight AND child AND understanding' in abstract

Search K: 'weight AND child AND perspective' in abstract

Search L: 'weight AND child AND view' in abstract

Search M: 'weight AND girls AND vie' in abstract

Search N: 'weight AND boys AND view' in abstract

Search O: 'shape AND child AND view' in abstract

## 11. INTERNATIONAL BIBLIOGRAPHY OF THE SOCIAL SCIENCES

Searched on 09.07.08. Search generated 402 records which were all uploaded.

(fat.mp. OR obesity.mp. OR Obesity OR "Representations of the body" OR body size.mpx OR "body shape" OR "obesity" OR "obese" OR "obesogenic" OR "body weight" OR "overweight" OR "body mass index" OR "thin" OR "thinness" OR "skinny" OR "body weights".mp. OR weight.mp.) and (children OR children\* OR schoolchild OR schoolchildren OR child OR child's OR preadolescent OR prepubescent OR "young boys" OR "young girls".mp. OR boy OR girl OR boys OR girls.m\_titl. OR kid or kids.mp.)

## 12. NATIONAL YOUTH AGENCY LIBRARY

Searched on 10.07.08. The results from the following search were handsearched and none were found to be potentially relevant.

Obesity OR body size OR weight

## 13. PSYCINFO

Searched on 05.06.08. Search generated 1691 records.

TI (interview OR interviews OR interviewer OR interviewing OR interviewed OR "in depth" OR "case study" OR view OR views OR perception OR perceptions OR perceive OR perceives OR perceived OR attitude OR attitudes OR attitudinal OR belief OR beliefs OR concept OR concepts OR idea OR ideas OR perspectives OR perspective OR meaning OR meanings OR dissatisfaction or behavioral research) or AB (interview OR interviews OR interviewer OR interviewing OR interviewed OR "in depth" OR "case study" OR view OR views OR perception OR perceptions OR perceive OR perceives OR perceived OR attitude OR attitudes OR attitudinal OR belief OR beliefs OR concept OR concepts OR idea OR ideas OR perspectives OR perspective OR meaning OR meanings OR dissatisfaction OR behavioral research) or KW (interview OR interviews OR interviewer OR interviewing OR interviewed OR "in depth" OR "case study" OR view OR views OR perception OR perceptions OR perceive OR perceives OR perceived OR attitude OR attitudes OR attitudinal OR belief OR beliefs OR concept OR concepts OR idea OR ideas OR perspectives OR perspective OR meaning OR meanings OR dissatisfaction OR behavioral research) or ((DE "Attitudes" OR DE "Eating Attitudes" OR DE "Health Attitudes") or (DE "Comprehension") or (DE "Self Concept" OR DE "Self Perception")) or TX (life experiences OR human science OR discourse\* analysis OR narrative analysis OR lived experience\* OR field research OR field studies OR field study OR focus group\* OR purpos\* sampl\* OR constant comparison OR constant comparative OR grounded research OR grounded studies OR grounded study OR grounded theor\* OR phenomenol\* OR ethnon\* OR qualitative)

AND

((DE "Body Weight" OR DE "Body Size" OR DE "Overweight" OR DE "Underweight" OR DE "Body Mass Index") or (TX (weight OR fat) and TX body) or (TI (body size OR body shape OR obesity OR obese OR obesogenic OR overweight OR thin OR thinness Or skinny OR overweight OR weight OR body weights) or AB (body size OR body shape OR obesity OR obese OR obesogenic OR overweight OR thin OR thinness OR skinny OR overweight OR weight OR body weights) or KW (body size OR body shape OR obesity OR obese OR obesogenic OR overweight OR thin OR thinness OR skinny OR overweight OR weight OR body weights))) or (DE "Body Awareness") or DE "Weight perception" or DE "Obesity (attitudes toward)"

Search A AND B

#### 14. MEDLINE (PUBMED)

Searched on 02.06.08. Search generated 3703 records.

"Body Weight"[Mesh] OR "Body Size"[Mesh] OR "obesity"[mh] OR "body mass index"[mh] OR "overnutrition"[mh]

OR

"body size"[TIAB] OR "Body weights"[TIAB] OR "body shape"[TIAB] OR "overweight"[TIAB] OR "thin"[TIAB] OR "thinness"[TIAB] OR "skinny"[TIAB] OR "obese"[TIAB] OR "obesogenic"[TIAB] OR "obesity" [TIAB] OR (("weight" and "body")[TIAB])

AND

"attitude"[mh] or (interview[TIAB] OR interviews[TIAB] OR interviewer[TIAB] OR interviewing[TIAB] OR interviewed[TIAB] OR "in depth"[TIAB] OR "case study"[TIAB] OR qualitative[TIAB]) OR "Qualitative Research"[mh] OR "Questionnaires"[mh]) or ("self concept"[mh] OR "comprehension"[mh] OR "health knowledge, attitudes, practice"[mh] OR "awareness"[mh] OR "emotions"[mh]) or (view[TIAB] OR views[TIAB] OR perception[TIAB] OR perceptions[TIAB] OR perceive[TIAB] OR perceives[TIAB] OR perceived[TIAB] OR attitudes[TIAB] OR attitudinal[TIAB] OR attitude[TIAB] OR belief[TIAB] OR beliefs[TIAB] OR concept[TIAB] OR concepts[TIAB] OR idea[TIAB] OR ideas[TIAB] OR perspectives[TIAB] OR perspective[TIAB] OR meaning[TIAB] OR meanings[TIAB] OR dissatisfaction[TIAB])) or behavioral research[tw] OR narration[tw] OR "interviews as topic"[MeSH Terms] OR "focus groups"[MeSH Terms] OR "ethnopsychology"[MeSH Terms]

AND

Child limiter OR (("child"[MeSH] OR "Minors"[MeSH]) OR Children OR children's OR schoolchild\* OR Boy OR boys OR Girl OR girls OR Minors OR Prepubescent OR child OR child's OR preadolescent Field: Title/Abstract]

**15. SCIRUS**

Searched 03.06.08. The first 201 records were uploaded.

(child OR children OR young person OR young people) and (views OR attitudes OR perceptions OR qualitative) and (obesity OR fat OR thin OR "body size" OR "body weight")

**16. SOCIAL CARE ONLINE**

Searched on 09.07.08. Search generated 150 records

(topic="obesity" OR freetext="body size" OR freetext="body shape" OR freetext="obesity" OR freetext="obese" OR freetext="obesogenic" OR freetext="body weight" OR freetext="overweight" OR freetext="body mass index" OR freetext="thin" OR freetext="thinness" OR freetext="skinny" OR freetext="body weights" OR freetext="fat" OR freetext="weight") and (topic="girls" OR topic="boys" OR topic="school children" OR topic="children" OR freetext="kid" OR freetext="kids" OR freetext="children" OR freetext="children\*" OR freetext="schoolchild" OR freetext="schoolchildren" OR freetext="child" OR freetext="preadolescent" OR freetext="prepubescent")

**17. SOCIAL SCIENCE CITATION INDEX**

Searched on 06.06.08. Search generated 1915 records

(TI=(boys OR boy OR girl OR girls) or TS=(child OR children OR childs OR childrens OR schoolchild OR schoolchildren OR "young boys" OR "young boy" OR "young girl" OR "young girls" OR preadolescent OR prepubescent OR kid OR kids) )

AND

TS=(body size) or TS=(body weight) or TS=(overweight OR thinness OR obese OR obesity OR obesogenic) or TS=(body weights) or TS=(body shape) or TS=(body SAME weight) or TS=(body SAME fat)

AND

(TS=(understanding OR understand OR opinion OR opinions OR concept OR attitude OR interview OR interviews OR interviewer OR interviewing OR interviewed) or TS=(in depth) OR TS=(case study) OR TS=(qualitative) OR TS=(Qualitative Research) OR TS=(Questionnaires) OR TS=(Questionnaire) OR TS=(self concept) OR TS=(comprehension) OR TS=(awareness) OR TS=(emotions) OR TS=(view OR views OR perception OR perceptions OR perceive OR perceives OR perceived OR attitudes OR attitudinal OR attitude OR belief OR beliefs OR concept OR concepts OR idea OR ideas OR perspectives OR perspective OR meaning OR meanings OR dissatisfaction) OR TS=(behavioral research) OR TS=(ethnology OR narration OR interviews) OR TS=(focus groups) OR TS=(ethnopsychology)) OR TS=(life experiences or human science) OR TS=(discourse\* analysis) OR TS=(narrative analysis) OR TS=(lived experience\*) OR TS=(field research) OR TS=(field studies) OR TS=(field study) OR TS=(focus group\*) OR TS=(purpos\* sampl\*) OR TS=(constant comparison) OR TS=(constant comparative) OR TS=(grounded research) OR TS=(grounded studies) OR TS=(grounded study) OR TS=(grounded theor\*)

AND Document Type=(Article OR Abstract of Published Item)

### **18. ZETOC (British Library database of journals and conference abstracts)**

Searched on 10.07.07. We handsearched results from the following searches and uploaded 12 potentially relevant records.

Search A: fat AND children AND body

Search B: body AND size AND girls

Search C: body AND size AND boys

Search D: obesity AND boys

Search E: obesity AND girls

Search F: obesity AND children (conferences only)

### **Search Engines**

#### **1. GOOGLE**

Searched 08.07.08. No language or date limits. We handsearched the first 100 records and uploaded 2 potentially relevant records.

(child OR children OR young person OR young people) (views OR attitudes OR perceptions OR qualitative) (obesity OR fat OR thin OR "body size" OR "body weight")

#### **2. GOOGLE SCHOLAR**

Searched on 28.05.08. We handsearched the first 300 records and uploaded 10 potentially relevant records.

(child OR children OR young person OR young people) (views OR attitudes OR perceptions OR qualitative) (obesity OR fat OR thin OR "body size" OR "body weight")

### **OTHER SEARCHES**

We conducted the following other searches:

We systematically checked the bibliographies of all included studies for potentially relevant records.

We systematically checked to see if all included studies were indexed on the Web of Knowledge and if they were, if any other studies had cited the included studies in their bibliography (future citation search). We uploaded all records that were generated by this search.

We contacted the authors of all included studies, and of those studies which met all our inclusion criteria apart from the age of the population as well as people recommended by our steering group

and other consultants on the team. We asked these authors and experts if they knew of any more potential studies or unpublished data. In total we contacted over 50 people.

We handsearched the following 16 websites for studies in May 2008:

- Association for the Study of Obesity (ASO)  
<http://www.aso.org.uk/portal.aspx>
- Barnado's  
<http://www.barnardos.org.uk/>
- Centre for Disease Control and Prevention (DCC)  
[http://www.cdc.gov/nccdphp/dnpa/qualitative\\_research/index.htm](http://www.cdc.gov/nccdphp/dnpa/qualitative_research/index.htm)
- Children's Research Centre (The Open University)  
<http://childrens-research-centre.open.ac.uk/>
- European Commission  
<http://ec.europa.eu/>
- Economic and Social Research Council: Society Today  
<http://www.esrc.ac.uk/ESRCInfoCentre/index.aspx>
- Girlguiding UK  
<http://www.girlguiding.org.uk/>
- International Association for the Study of Obesity (IASO)  
<http://www.iaso.org/>
- The North American branch of the International Life Sciences Institute (ILSI North America)  
<http://www.ilsina.org/>
- International Obesity Taskforce  
<http://www.ietf.org/>
- International Physical Activity and the Environment Network  
<http://www.ipenproject.org/>
- NHS National Library for Health  
<http://www.library.nhs.uk/Default.aspx>
- National Obesity Forum  
<http://www.nationalobesityforum.org.uk/>
- Ofcom: Office of Communications  
<http://www.ofcom.org.uk/>
- Preventive Medicine UK  
<http://www.preventivemedicine.org.uk/>
- World Advertising Research Centre  
<http://www.warc.com/>

We handsearched three journals from 1997 to 2008 for any potentially relevant studies (Obesity Review; International Journal of Obesity and Related Metabolic Disorders; and International Journal of Pediatric Obesity).

## Appendix H. Criteria used for appraisal of study quality

<p>1 Were steps taken to increase rigour in the sampling?  <i>Consider whether:</i>  <i>*the sampling strategy was appropriate to the questions posed in the study (e.g. was the strategy well reasoned and justified?);</i>  <i>*attempts were made to obtain a diverse sample of the population in question (think about who might have been excluded; who may have had a different perspective to offer);</i>  <i>*characteristics of the sample critical to the understanding of the study context and findings were presented (i.e. do we know who the participants were in terms of, for example, basic socio-demographics, characteristics relevant to the context of the study, etc.).</i></p>	<p>Yes, a fairly thorough attempt was made          Yes, several steps were taken          Yes, a few steps were taken          No, not at all/ Not stated/Can't tell</p>
<p>2 Were steps taken to increase rigour in the data collected?  <i>Consider whether:</i>  <i>*data collection tools were piloted/(and if quantitative) validated;</i>  <i>*(if qualitative) data collection was comprehensive, flexible and/or sensitive enough to provide a complete and/or vivid and rich description of people's perspectives and experiences (e.g. did the researchers spend sufficient time at the site/with participants? Did they keep 'following up'? Was more than one method of data collection used?);</i>  <i>* steps were taken to ensure that all participants were able and willing to contribute (e.g. processes for consent, language barriers, power relations between adults and children/young people).</i></p>	<p>Yes, a fairly thorough attempt was made          Yes, several steps were taken          Yes, minimal few steps were taken          No, not at all/ Not stated/Can't tell</p>
<p>3 Were steps taken to increase rigour in the analysis of the data?  <i>Consider whether:</i>  <i>* data analysis methods were systematic (e.g. was a method described/can a method be discerned?);</i>  <i>*diversity in perspective was explored;</i>  <i>* (if qualitative) the analysis was balanced in the extent to which it was guided by preconceptions or by the data);</i>  <i>*the analysis sought to rule out alternative explanations for findings (in qualitative research this could be done by, for example, searching for negative cases/exceptions, feeding back preliminary results to participants, asking a colleague to review the data, or reflexivity; in quantitative research this may be done by, for example, significance testing).</i></p>	<p>Yes, a fairly thorough attempt was made          Yes, several steps were taken          Yes, minimal few steps were taken          No, not at all/ Not stated /Can't tell</p>

<p>4 Were the findings of the study grounded in/ supported by the data?  <i>Consider whether:</i>  <i>*enough data are presented to show how the authors arrived at their findings;</i>  <i>*the data presented fit the interpretation/support claims about patterns in data;</i>  <i>*the data presented illuminate/illustrate the findings;</i>  <i>*(for qualitative studies) quotes are numbered or otherwise identified and the reader can see that they don't just come from one or two people.</i></p>	<p>Good grounding/support  Fair grounding/support  Limited grounding/support</p>
<p>5 Please rate the findings of the study in terms of their breadth and depth.  <i>Consider whether:</i>  <i>(NB: it may be helpful to consider 'breadth' as the extent of description and 'depth' as the extent to which data has been transformed/analysed);</i>  <i>*a range of issues are covered;</i>  <i>* the perspectives of participants are fully explored in terms of breadth (contrast of two or more perspectives) and depth (insight into a single perspective);</i>  <i>*richness and complexity has been portrayed (e.g. variation explained, meanings illuminated);</i>  <i>*there has been theoretical/conceptual development.</i></p>	<p>Limited breadth or depth  Good/fair breadth but very little depth  Good /fair depth but very little breadth  Good/fair breadth and depth</p>
<p>6 To what extent does the study privilege the perspectives and experiences of children?  <i>Consider:</i>  <i>* whether there was a balance between open-ended and fixed response options;</i>  <i>*whether children were involved in designing the research;</i>  <i>* whether there was a balance between the use of an a priori coding framework and induction in the analysis;</i>  <i>*the position of the researchers (did they consider it important to listen to the perspectives of children?);</i>  <i>* whether steps were taken to assure confidentiality and put young people at ease.</i></p>	<p>Not at all  A little  Somewhat  A lot</p>
<p>7 Overall, what weight would you assign to this study in terms of the reliability/trustworthiness of its findings?  <i>Guidance:</i>  <i>Think (mainly) about the answers you have given to questions 1 to 4 above.</i></p>	<p>Low  Medium  High</p>

8 What weight would you assign to this study in terms of the usefulness of its findings for this review?

*Guidance:*

*Think (mainly) about the answers you have given to questions 5 and 6 above and consider:*

*\*the match between the study aims and findings and the aims and purpose of the synthesis;*

*\*its conceptual depth/explanatory power.*

Low

Medium

High

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