Body image of primary school children

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7.1 Introduction

Children's dissatisfaction with the way they look is an issue of increasing concern. Negative self-evaluation of body shape may affect children's feelings and thoughts, and lead them to modify their behaviour and develop physical and psychological problems (Cash, 2002b). Studies have shown that children who are dissatisfied with their body size are more likely to follow unhealthy diets (Cash, 2002a; Stice, Mazotti, Krebs, & Martin, 1998), use anabolic steroids (mainly among boys; Cohane & Pope, 2001), and have excessive levels of physical activity (Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006). Dieting and excessive exercise in turn can lead to other health problems, such as fatigue and gastrointestinal problems, as well as joint or bone injuries (Neumark-Sztainer et al., 2006). Body dissatisfaction has also been found to be associated with a variety of risky behaviours, including early sexual activity, self-harm, and suicide planning (Cook, MacPherson, & Langille, 2007). Dissatisfaction with one's own body not only affects physical health and behaviours but also may cause psychological distress. Children who report concerns with their body size are likely to report lower levels of global self-worth and poorer self-esteem (Tiggemann, 2005). Low self-esteem in turn might lead to limited engagement in everyday life and the development of social anxiety and depression (Stice, Hayward, Cameron, Killen, & Taylor, 2000; Stice & Shaw, 2002; Tiggemann, 2005).

To develop effective interventions, researchers have focused on identifying characteristics of children who are likely to develop body image dissatisfaction (Edwards George, & Franko, 2010). It has been consistently found that gender and body mass index (BMI)[1] are the main factors associated with body image dissatisfaction (Gardner, Friedman, Stark, & Jackson, 1999; Smolak, 2004). Although the majority of research has found that girls are more likely to be dissatisfied with their body, recent studies have indicated that boys experience dissatisfaction with their body as frequently as girls (Schur, Sanders, & Steiner, 2000). However, a difference has been observed in desired body image. Girls primarily desire thinner bodies than boys, whereas boys have greater variability, with some boys wanting to be thinner and others wanting to be heavier and more muscular (Cohane & Pope, 2001; McCabe & Ricciardelli, 2001). It has also been found that children with a higher BMI are more likely to be dissatisfied with their body image (Thomas, Ricciardelli, & Williams, 2000; Tiggemann, 2005). These associations increase with age and are consistent for both boys and girls (Davison, Markey, & Birch, 2003; McCreary, 2002).

To date, the majority of research has mainly focused on correlates and consequences of body image dissatisfaction in adolescence, as this is the period when puberty begins and the most dramatic body changes are experienced (Cash, 2002b). However, a "thin" ideal is already present among children in primary school years, and children as young as 7 years old report dissatisfaction with their bodies (Levine & Piran, 2004). In a study of 87 girls from South Australia, one in four primary school girls reported dieting to lose weight (Dohnt & Tiggemann, 2006). In the United States, data from the Pittsburgh Girls Study[2] found that 35% of 9-year-olds and 38% of 10-year-olds

[1] BMI is a function of weight and height used to classify people as underweight, normal weight, overweight, or obese.

[2] The Pittsburgh Girls Study is a longitudinal, community-based study of 2,451 girls who were initially recruited when they were between the ages of 5 and 8 years.

reported dissatisfaction with their bodies (Liechty, 2010). Skemp-Arlt, Rees, Mikat, and Seebach (2006) interviewed 261 pre-adolescent children from public and private schools in the United States and found that approximately 50% of the children in primary school felt some sort of body dissatisfaction, with 25% wanting to lose weight and 4% having already developed eating disorders.

There is no consistent evidence on whether younger children who are dissatisfied with their body show signs of negative physical and psychological effects. But, if children in middle primary years experience socio-emotional problems (such as low self-esteem or negative mood) that are associated with dissatisfaction with their body, then prevention programs should take place earlier rather than later (Irving, 2000; McCabe, Ricciardelli, & Salmon, 2006; Stice & Shaw, 2004).

This report seeks to build on previous research and, using longitudinal data from a large representative sample of children aged 8–11 years, address the following questions:

- How accurately do underweight, normal weight and overweight boys and girls perceive their body size at 8–9 and 10–11 years old?
- What is the desired body image of underweight, normal weight and overweight boys and girls at 8–9 and 10–11 years old?
- What is the direction and size of body image dissatisfaction of underweight, normal weight and overweight boys and girls at 8–9 and 10–11 years old?
- Are boys and girls aged 10–11 years who are dissatisfied with their body image more likely to control their weight than those who are satisfied?
- To what extent is physical health and socio-emotional wellbeing of underweight, normal weight and overweight boys and girls associated with body image dissatisfaction at age 10–11 years?

This chapter is structured as follows. First, the sample and key measures are introduced. This is followed by an overview on how accurately children perceive their body size and what the desired body image of children is. The next section discusses the size and direction of body image dissatisfaction. Using children's and mothers' reports, children's weight control strategies and eating habits are described in the following section. The associations between children's physical health and socio-emotional wellbeing and the body image dissatisfaction of children of different body status are examined in the final section. A summary of the results concludes the chapter.

7.2 Data and measurement

Sample

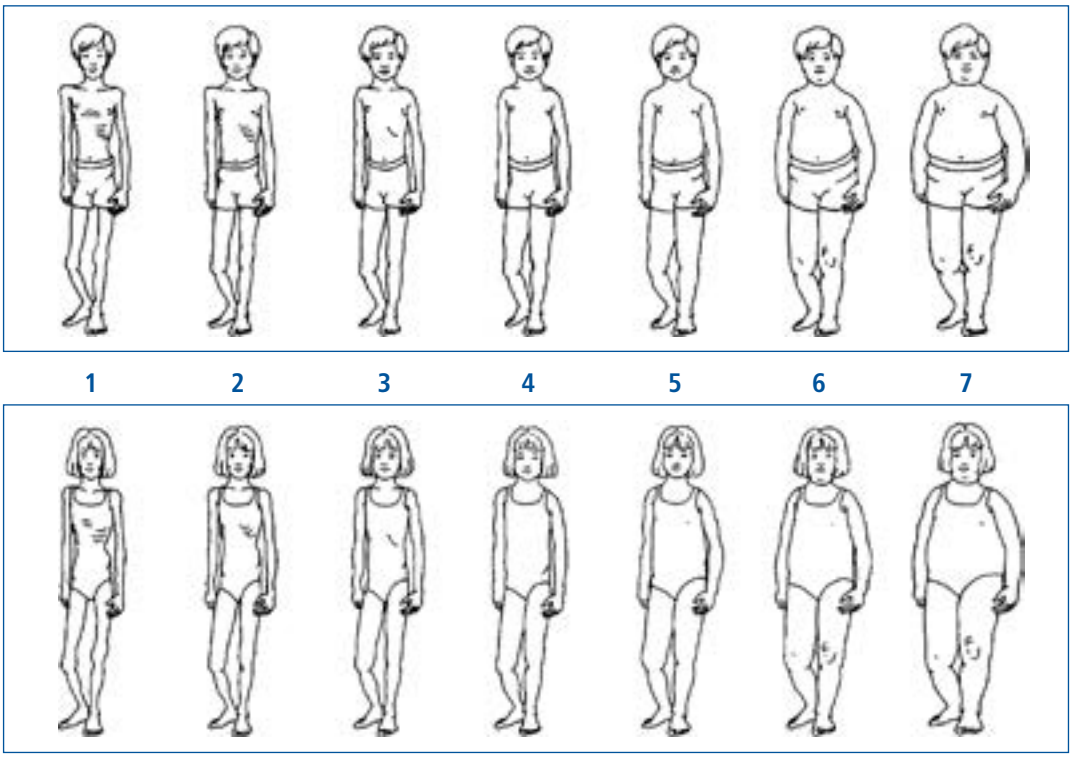
This chapter uses data from K cohort children from the Longitudinal Study of Australian Children (LSAC) when they were aged 8–9 and 10–11 years (Waves 3 and 4, respectively). There were 2,212 boys and 2,119 girls of age 8–9 years and 2,075 boys and 1,975 girls of age 10–11 years who participated in the data collection at Waves 3 and 4. All analyses presented below were conducted separately for boys and girls. Some measures were collected only for 10–11 year old children, therefore the analyses presented in sections 7.5 and 7.6 exclude children at 8–9 years old, whereas sections 7.3 and 7.4 use data from the two waves.

Measurements of body image

In LSAC, body image was measured using the Pictorial Body Image Instrument (Collins, 1991). This is a well-established method for assessing body image dissatisfaction. Boys and girls were presented with a set of seven drawings of children (matched to the respondent's gender), ranging in size from very thin to obese, and numbered from one (very thin) to seven (obese) (Figure 7.1 on page 113).

Collins (1991) did not assign the pictures either to a body mass index range or classify them according to body mass status. For the purpose of this chapter, picture 4 was chosen as the reference and other pictures were classified relative to picture 4:

- picture 1 or 2 = thin;
- picture 3 = thinner than average;
- picture 4 = average;
- picture 5 = larger than average; and
- picture 6 or 7 = large.



Source: Collins (1991)

Figure 7.1: The children's pictorial body image scale, by gender

Perceived body image

During the LSAC interview, every child was asked two questions about their body size. Firstly, the child was asked to choose the picture that looked most like him/her. This picture was identified as the *perceived body image*. The perceived body image was derived for 2,171 boys and 2,075 girls aged 8–9 years and 2,032 boys and 1,937 girls aged 10–11 years.

Desired body image

Then, the child was asked to choose the picture that showed the way he/she wanted to be. This picture was identified as the *desired body image*. The desired body image was derived for 2,169 boys and 2,073 girls aged 8–9 years and 2,035 boys and 1,938 girls aged 10–11 years.

Body image dissatisfaction

The discrepancy between the perceived and the desired body images was used to measure the degree of *body image dissatisfaction*. A positive score suggested that the child wanted to be thinner, a negative score suggested that the child wanted to be larger, and a score of zero suggested that the child was satisfied with their size (their current self-perception matched their desired body shape). For the body image dissatisfaction measure, the absolute discrepancy was also calculated to remove the direction and the extent of dissatisfaction.

Some studies suggest that pictorial images are insufficient on their own for measuring body image dissatisfaction, as a discrepancy between perceived and desired body image may not actually indicate dissatisfaction with body (Vander Wal & Thelen, 2000). Current research emphasises the need to collect attitudinal information on body image dissatisfaction rather than only relying on any discrepancy between perceived and desired body images.

Note also that this chapter only focuses on one aspect of body dissatisfaction; that is, dissatisfaction with body size. Dissatisfaction with facial features, skin colour and physical attractiveness are not addressed.

Body mass index and body mass status

One of the key measures used in this chapter is body mass index. At each wave, trained interviewers measured the child's weight and height, and the BMI was calculated as weight divided by height squared (kg/m^2; for details, see Wake & Maguire, 2012). In this chapter, boys and girls were categorised as being underweight, normal weight or overweight according to their body mass status. The child was classified as being overweight or obese following the International Obesity Taskforce age- and sex-specific BMI cut-off points (Cole, Bellizzi, Flegal, & Dietz, 2000) and as underweight using the Cole cut-off points derived using comparable methods (Cole, Flegal, Nicholls, & Jackson, 2007). All other children were classified as being of normal weight. Table 7.1 reports on the proportion of children with different body mass status by gender and age. The proportion of underweight children in the LSAC sample reflects the proportion of underweight children in the population. However, it should be kept in mind that the sample size for this group is small.

Table 7.1: Proportion of underweight, normal weight, and overweight children, by age and gender

	Age 8–9 years		Age 10–11 years	
Body mass status	**Boys (%)**	**Girls (%)**	**Boys (%)**	**Girls (%)**
Underweight	4.9	6.1	4.7	6.9
Normal weight	71.8	67.2	66.5	65.1
Overweight	23.3	26.6	28.8	28.0
Total	100.0	100.0	100.0	100.0
No. of observations	2,166	2,072	1,982	1,870

Notes: Percentages may not total exactly 100.0% due to rounding.
Source: K cohort, Waves 3 and 4

7.3 Perceived and desired body images of 8–11 year olds by body mass status

This section examines how accurately children reported their body size (perceived body image). It also examines the desired body size of children and whether underweight, normal weight and overweight children all wanted to have a similar desired body size. Note that as different sets of pictures were used for boys and girls, their results are presented separately.

As pictures were not assigned either to body mass index or body mass status, direct comparison between pictures and child's BMI cannot be made. To assist the correspondence between pictures and BMI, the results are presented separately for children of different body mass status (underweight, normal weight and overweight). Table 7.2 outlines the categories that were developed to evaluate how accurately children of different body mass status perceived their body size.

Table 7.2: Accuracy of how children perceived their body size, by body mass status

	Body mass status		
Perceived body size	**Underweight**	**Normal weight**	**Overweight**
Picture 1 or 2	Accurate	Inaccurate	Inaccurate
Picture 3		Relatively accurate	
Picture 4	Relatively accurate	Accurate	Relatively accurate
Picture 5	Inaccurate	Relatively accurate	Accurate
Picture 6 or 7		Inaccurate	

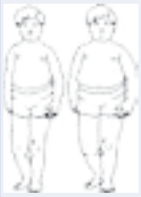
It was considered that underweight children perceived their body size accurately if they chose picture 1, 2 or 3, relatively accurate if they chose picture 4, and inaccurately if they chose picture 5, 6 or 7 as their current body size. Normal weight children were considered to perceive themselves accurately if they chose picture 4, relatively accurate if they chose picture 3 or 5, and inaccurately if they chose picture 1, 2, 6 or 7. Lastly, overweight children were considered to report their current

body size accurately if they chose picture 5, 6 or 7, relatively accurate if they chose picture 4, and inaccurately if they chose picture 1, 2 or 3.

Body images of boys

Table 7.3 describes the perceived and the desired body images of underweight, normal weight, and overweight boys aged 8–9 and 10–11 years.

Table 7.3: Perceived and desired body images of boys, by age and body mass status

		Body image						
								
Body mass status		Thin (%)	Thinner than average (%)	Average (%)	Larger than average (%)	Large (%)	Mean	Total (*N*)
Age 8–9 years								
Underweight	Perceived	25.7	41.7	28.0	4.6	0.0	3.02	108
	Desired	22.7	20.8	42.5	14.1	0.0	3.40	108
Normal weight	Perceived	11.5	33.4	47.1	7.5	0.5	3.48	1,585
	Desired	18.5	32.2	41.4	7.2	0.7	3.32	1,585
Overweight	Perceived	2.7	9.3	46.6	35.0	6.4	4.33	470
	Desired	20.2	38.2	37.1	4.2	0.2	3.17	468
All	Perceived	10.1	28.2	46.1	13.7	1.9	3.66	2,163
	Desired	19.1	33.0	40.4	6.9	0.5	3.29	2,161
Age 10–11 years								
Underweight	Perceived	15.5	57.5	27.1	0.0	0.0	3.09	93
	Desired	7.2	41.5	45.8	5.5	0.0	3.48	93
Normal weight	Perceived	5.5	36.8	49.8	7.9	0.1	3.59	1,362
	Desired	9.9	39.2	46.0	4.7	0.2	3.44	1,361
Overweight	Perceived	0.5	4.7	32.4	50.0	12.4	4.70	535
	Desired	8.9	34.9	49.9	5.5	0.8	3.52	539
All	Perceived	4.5	28.5	43.7	19.6	3.6	3.90	1,990
	Desired	9.5	38.1	47.1	5.0	0.3	3.47	1,993

Notes: Percentages may not total exactly 100.0% due to rounding.
Source: K cohort, Waves 3 and 4

Underweight boys

The majority of underweight boys aged 8–9 years (68%) were able to report their body size accurately (i.e., chose picture 1, 2 or 3). Twenty-eight per cent of the boys perceived their body size relatively accurately (chose picture 4) while 5% clearly overestimated their body size (chose picture 5). At age 10–11 years, more boys (73%) reported their body size accurately. Compared to 8–9 year olds, a similar proportion were able to report their body size relatively accurately (27%) and none overestimated their body size.

More than half of the underweight boys aged 8–9 years (64%) wanted to have a "thinner than average" or "average" body size (i.e., chose picture 3 or 4). About 23% wanted to be "thin" (chose picture 1 or 2) and 14% wanted to be "larger than average" (chose picture 5) and none wanted to be "large" (chose picture 6 or 7). As the boys grew up, a smaller proportion of these underweight

boys wanted to be thin (7%) or larger than average (6%). The majority (88%) wanted to be either thinner than average or average.

The average perceived and desired body images for underweight boys at age 8–9 years were 3.02 and 3.40 respectively, and at age 10–11 years were 3.09 and 3.48 respectively.

Normal weight boys

Among normal weight boys aged 8–9 years, almost 90% reported their body size accurately or relatively accurately (i.e., chose picture 3, 4 or 5). Just over 10% of boys clearly underestimated their body size (chose picture 1 or 2) and 1% overestimated (chose picture 6 or 7). At age 10–11 years, 95% of normal weight boys reported their body size accurately or relatively accurately. Only 6% of boys clearly underestimated their body size and less than one per cent clearly overestimated.

The largest group of normal weight boys aged 8–9 years (41%) comprised those who wanted to be average in size (chose picture 4), followed by 32% of boys who wanted to be thinner than average (chose picture 3). Almost one in five boys (19%) wanted to be thin (chose picture 1 or 2). Only 7% of boys wanted to be larger than average (chose picture 5) and less than 1% wanted to be large (chose picture 6 or 7). Compared to 8–9 year olds, more 10–11 year old boys wanted to be average (46%) or thinner than average (39%) and fewer boys wanted to be thin (10%), larger than average (5%) or large (less than 1%).

The average perceived and desired body images for normal weight boys at age 8–9 years were 3.48 and 3.32 respectively, and at age 10–11 years were 3.59 and 3.44 respectively.

Overweight boys

Among overweight boys aged 8–9 years, around 40% accurately reported their body size (i.e., chose picture 5, 6 or 7). Almost half (47%) reported their body size relatively accurately (chose picture 4), while 12% underestimated their current body size (chose picture 1, 2 or 3). Compared to 8–9 year olds, more overweight boys of age 10–11 years (62%) accurately reported their body size. Also, a smaller proportion of 10–11 year olds (5%) underestimated their body size.

Among overweight boys aged 8–9 years, 75% wanted to be thinner than average or average (i.e., chose picture 3 or 4). One in five boys wanted to be thin (chose picture 1 or 2) and only 4% wanted to be larger than average or large (chose picture 5, 6 or 7). At age 10–11 years, more overweight boys wanted to be average in size (50%) and fewer wanted to be thin (9%) compared to 8–9 year olds. The proportions of those who wanted to be thinner than average, larger than average or large remained relatively similar.

The average perceived and desired body images for overweight boys at age 8–9 years were 4.33 and 3.17 respectively, and at age 10–11 years were 4.70 and 3.52 respectively.

Body images of girls

Table 7.4 (on page 117) describes the perceived and the desired body images of underweight, normal weight, and overweight girls aged 8–9 and 10–11 years.

Underweight girls

The majority of underweight girls aged 8–9 years (63%) were accurate in reporting their current body size (i.e., chose picture 1, 2 or 3) and 36% perceived themselves relatively accurately (chose picture 4). Two per cent of underweight girls clearly overestimated their body size (chose picture 6 or 7). None slightly overestimated their size (chose picture 5). At age 10–11 years, 70% of underweight girls were able to report their body size accurately. Compared to 8–9 year olds, a similar proportion of 10–11 year olds (29%) reported their body size relatively accurately, while only 1% clearly overestimated their body size.

At age 8–9 years, 45% of underweight girls wanted to be average in size (chose picture 4), 30% wanted to be thinner than average (chose picture 3) and 19% wanted to be thin (chose picture 1 or 2). A very small proportion of girls (6%) wanted to be larger than average or large (chose picture 5, 6 or 7). A different outcome was observed when girls got older. One in two older girls (54%)

Table 7.4: Perceived and desired body images of girls, by age and body mass status

		Body image						
Body mass status		Thin (%)	Thinner than average (%)	Average (%)	Larger than average (%)	Large (%)	Mean	Total (*N*)
Age 8–9 years								
Underweight	Perceived	29.8	32.6	35.7	0.0	1.9	3.06	120
	Desired	19.4	29.9	44.5	5.4	0.8	3.33	120
Normal weight	Perceived	12.8	26.2	52.4	8.1	0.5	3.55	1,420
	Desired	23.0	34.3	39.3	3.2	0.1	3.16	1,419
Overweight	Perceived	2.1	11.2	46.2	36.2	4.2	4.30	531
	Desired	20.1	37.1	38.3	4.3	0.1	3.19	530
All	Perceived	11.0	22.5	49.7	15.2	1.6	3.72	2,071
	Desired	22.0	34.8	39.4	3.6	0.1	3.18	2,069
Age 10–11 years								
Underweight	Perceived	26.6	43.0	29.3	1.1	0.0	3.01	131
	Desired	8.1	37.2	53.7	1.0	0.0	3.44	131
Normal weight	Perceived	5.1	24.8	59.2	10.3	0.7	3.76	1,265
	Desired	9.6	32.6	55.4	2.4	0.0	3.49	1,265
Overweight	Perceived	0.5	3.3	36.6	50.3	9.3	4.65	486
	Desired	7.4	29.1	55.9	7.1	0.4	3.63	487
All	Perceived	5.3	20.0	50.8	20.9	3.0	3.97	1,882
	Desired	8.9	32.0	55.4	3.6	0.1	3.52	1,883

Notes: Percentages may not total exactly 100.0% due to rounding.
Source: K cohort, Waves 3 and 4

wanted to be average size, 37% wanted to be thinner than average, 8% wanted to be thin and only 1% wanted to be larger than average. None wanted to be large.

The average perceived and desired body images for underweight girls at age 8–9 years were 3.06 and 3.33 respectively, and at age 10–11 years were 3.01 and 3.44 respectively.

Normal weight girls

At age 8–9 years, one in two normal weight girls (52%) accurately reported their body size (chose picture 4), and 34% reported their body size relatively accurately (chose picture 3 or 5). About 14% of normal weight girls reported their body size inaccurately, with 13% underestimating (chose picture 1 or 2) and 1% overestimating (chose picture 6 or 7). At age 10–11 years, the proportion of normal weight girls who accurately perceived their body size increased by seven percentage points (59%). The proportion of those who perceived their body size relatively accurately remained similar, while the proportion who were inaccurate in their perceptions dropped to 6%.

The majority of normal weight girls aged 8–9 years (57%) wanted to be thin or thinner than average (chose picture 1, 2 or 3). Thirty-nine per cent of 8–9 year old girls wanted to be average (chose picture 4) and 3% wanted to be larger than average (chose picture 5). A smaller proportion of older girls wanted to be thin (10%) and a greater proportion of them wanted to be average (55%) compared to 8–9 year olds. The proportion of girls who wanted to be thinner than average (33%)

remained similar among older girls compared to younger girls. Only 2% of 10–11 year old girls wanted to be large.

The average perceived and desired body images of normal weight girls at age 8–9 years were 3.55 and 3.16 respectively, and at age 10–11 years were 3.76 and 3.49 respectively.

Overweight girls

Among overweight girls 8–9 years old, 40% were able to report their body size accurately (chose picture 5, 6 or 7). Forty-six per cent perceived themselves relatively accurately (chose picture 4) and 13% underestimated their body size (chose picture 1, 2 or 3). The proportion of overweight girls who perceived their body size accurately was greater among 10–11 year olds (59%) compared to 8–9 year olds. Thirty-seven per cent of the older girls reported their body image relatively accurately and only 4% underestimated their body size.

The majority of overweight girls 8–9 years old (57%) wanted to be thin or thinner than average (chose picture 1, 2 or 3). Thirty-eight per cent wanted to be average (chose picture 4) and only 4% wanted to be larger than average (chose picture 5). A different pattern was observed for overweight girls when 10–11 years old. The majority of older girls (56%) wanted to be average, 29% wanted to be thinner than average and only 7% wanted to be thin. A greater proportion of older girls (8%) wanted to be larger than average or large.

The average perceived and desired body images of overweight girls at age 8–9 years were 4.30 and 3.19 respectively, and at age 10–11 years 4.65 and 3.63 respectively.

Main findings

The findings from this section suggest that:

- on average, regardless of age and gender, a greater proportion of underweight children perceived themselves to have a thinner than average body shape compared to normal weight and overweight children;
- on average, regardless of age and gender, a greater proportion of overweight children perceived themselves to be larger than average compared to underweight and normal weight children;
- regardless of age and gender, the proportion of children who perceived their body size accurately was greater among underweight children and smaller among overweight children;
- regardless of age and gender, underweight children were less likely to overestimate their body size;
- regardless of age and gender, normal and overweight children were more likely to underestimate their body size;
- regardless of body mass status and gender, at age 10–11 years children were more likely to report their body size accurately compared to when they were 8–9 years old;
- on average, regardless of gender, the desired body image of 10–11 year olds was similar between underweight, normal weight and overweight children;
- at age 8–9 years, regardless of gender, more children wanted to have a thinner than average body size rather than an average body size;
- at age 10–11 years, the proportion of boys who wanted to be thinner than average (48%) was the same as those who wanted to be average (47%); and
- at age 10–11 years, the proportion of girls who wanted to be of average body size was greater (55%) than the proportion of girls who wanted to be thinner than average (41%).

7.4 Body image dissatisfaction of 8–11 year olds by body mass status

This section examines the direction and the extent to which boys and girls 8–11 years old were dissatisfied with their current body size and whether their level of body image dissatisfaction varied by age and/or body mass status of the child.

As described in section 7.2, body image dissatisfaction was measured by the discrepancy between perceived and desired body size, with positive values suggesting that the child wanted to have a thinner body and negative values suggesting that the child wanted to have a larger body size. For the purpose of the analysis the differences were categorised as follows:

- –2 or more: the child wanted to be much larger than they thought they were; that is, the desired body image was two or more figures larger than the perceived body image;
- –1: a child wanted to be larger; that is, the desired body image was one figure larger than the perceived body image;
- 0: a child wanted to be the same; that is, there was no significant difference between the perceived and desired body images;
- 1: a child wanted to be thinner; that is, the desired body image was one figure thinner than the perceived body image;
- 2 or more: a child wanted to be much thinner; that is, the desired body image was two or more figures thinner than the perceived body image.

Body image dissatisfaction of boys

Table 7.5 presents the prevalence and the direction of body image dissatisfaction among boys of different body mass status by age.

Table 7.5: Prevalence of body image dissatisfaction among boys, by age and body mass status

	2 or more (much thinner) (%)	1 (thinner) (%)	0 (the same) (%)	–1 (larger) (%)	–2 or more (much larger) (%)	Total (*N*)
Age 8–9 years						
Underweight	4.3	6.5	49.6	29.6	10.0	108
Normal weight	7.3	24.9	47.9	16.1	3.9	1,585
Overweight	29.6	42.3	25.4	2.1	0.6	468
All	12.3	28.0	42.7	13.5	3.4	2,161
Age 10–11 years						
Underweight	0.6	3.4	56.7	34.7	4.6	93
Normal weight	4.2	18.7	66.4	9.2	1.5	1,361
Overweight	32.7	47.1	18.8	1.0	0.3	535
All	12.2	26.1	52.3	8.1	1.3	1,989

Notes: Percentages may not total exactly 100.0% due to rounding.
Source: K cohort, Waves 3 and 4

Underweight boys

At age 8–9 years, half of the underweight boys were satisfied with their body size (i.e., 50% of boys wanted to be the same size as they perceived themselves), 30% wanted to be larger and 10% wanted to be much larger. A very small proportion of underweight children wanted to be smaller (7% wanted to be thinner and 4% wanted to be much thinner). At age 10–11 years more underweight boys were satisfied with their body size (57%) and more wanted to be larger (35%), while the proportion of boys who wanted to be much larger decreased (5%). An even smaller proportion of older underweight boys wanted to be thinner (3%) or much thinner (1%).

Normal weight boys

At age 8–9 years, almost half of the normal weight boys were satisfied with their body size (48%), while 25% wanted to be thinner and 7% wanted to be much thinner. Sixteen per cent wanted to be larger and 4% wanted to be much larger. A different pattern is observed when boys were 10–11 years old. Around 66% of normal weight boys were satisfied with their body size, 19% wanted to be thinner and 9% wanted to be larger. The proportion of boys who wanted to be much thinner or much larger also dropped, to 4% and 2% respectively.

Overweight boys

Out of all boys aged 8–11 years, overweight boys were less likely to be satisfied with their body size. Only a quarter were satisfied, while 42% wanted to be thinner and 30% wanted to be much thinner. Only 2% wanted to be larger and less than 1% wanted to be much larger. The proportion of those who were dissatisfied with their body size increased even more when boys grew older. At age 10–11 years, only 19% of overweight boys were satisfied with their body size, while 47% wanted to be thinner and 33% much thinner.

Body image dissatisfaction of girls

Table 7.6 presents the prevalence and the direction of body image dissatisfaction among girls of different body mass status by age.

Table 7.6: Prevalence of body image dissatisfaction among girls, by age and body mass status

	2 or more (much thinner) (%)	1 (thinner) (%)	0 (the same) (%)	–1 (larger) (%)	–2 or more (much larger) (%)	Total (*N*)
Age 8–9 years						
Underweight	3.7	11.9	49.5	24.8	10.0	120
Normal weight	9.9	28.0	51.8	8.6	1.6	1,419
Overweight	31.1	39.6	26.8	1.9	0.6	530
All	15.2	30.1	45.0	7.8	1.9	2,069
Age 10–11 years						
Underweight	0.0	4.4	56.9	30.8	7.9	131
Normal weight	4.1	23.8	66.5	5.4	0.2	1,265
Overweight	24.8	48.8	23.4	2.9	0.0	486
All	9.6	29.4	53.8	6.5	0.7	1,882

Notes: Percentages may not total exactly 100.0% due to rounding.
Source: K cohort, Waves 3 and 4

Underweight girls

At age 8–9 years, 50% of the underweight girls were satisfied with their body size, 25% wanted to be larger and 10% wanted to be much larger. Only 12% wanted to be thinner and 4% wanted to be much thinner. Compared to 8–9 year olds, more girls aged 10–11 years were satisfied with their body size (57%) and more wanted to be larger (31%). A much smaller proportion of older girls wanted to be thinner (4%) and no one wanted to be much thinner. These results are similar to those observed for underweight boys of the same age.

Normal weight girls

Half of the normal weight girls aged 8–9 years were also satisfied with their body size (52%), while 28% wanted to be thinner and 10% wanted to be much thinner. A much smaller proportion of girls wanted to be larger (9%) or much larger (2%). Compared to 8–9 years, a greater proportion of girls 10–11 years were satisfied with their body (67%) and a smaller proportion of older girls wanted to be thinner (24%) or much thinner (4%). Older girls were also less likely to want to be larger; that is, only 5% wanted to be larger and less than 1% wanted to be much larger. Again, these results are very similar to those observed for the same-aged boys of normal weight.

Overweight girls

Compared to underweight and normal weight girls, overweight girls were less likely to be satisfied with their body image. Only 27% of overweight girls aged 8–9 years were satisfied, while 40% wanted to be thinner and 31% wanted to be much thinner. A very small proportion wanted to be larger (2%) or much larger (less than 1%). As was the case for overweight boys, the proportion of overweight girls who were satisfied with their body decreased with age. At 10–11 years old, only 23% of the girls were satisfied, while the proportion who wanted to be thinner or much thinner

increased to 74% (49% and 25% respectively). It is worth emphasising that while the proportion of overweight girls who wanted to be thinner increased (40% at 8–9 years old vs 49% at 10–11 years old), the proportion of overweight girls who wanted to be much thinner decreased (31% at 8–9 years old vs 25% at 10–11 years old).

Main findings

As children grew older, the proportion who were satisfied with their body increased among underweight and normal weight children but decreased among overweight children, regardless of gender.

In general, it is of interest to understand the direction of dissatisfaction; however, the percentage of children who desire a thinner or larger body size might have little meaning on its own. Therefore, the analyses presented in the following sections use the binary measure of body image dissatisfaction: whether a child was dissatisfied or satisfied with their body image regardless of the direction or size of dissatisfaction. This approach also makes the comparison between boys and girls more appropriate.

7.5 Weight management and body image dissatisfaction

This section examines whether weight management was associated with body image dissatisfaction. Children were asked whether they were trying to lose, gain or keep their weight; however, they were not asked exactly how they were doing it (e.g., limiting food intake to lose weight, eating "junk" food or larger quantities to gain weight, or exercising). To understand eating behaviour, mothers' responses were used.[3] Mothers were asked whether they were concerned with the amount of food their children were eating. This section uses the data of 10–11 year olds only, as these questions were not asked in Wave 3. The analysis is presented separately for boys and girls and by body mass status. All the differences reported in this chapter are statistically different at a 5% level of significance.

Weight management strategies

At age 10–11 years, boys and girls were asked about their weight management strategies during the last 12 months before the interview and at the time of the interview. First, they were asked whether they had done anything to control their weight (tried to lose weight or keep from gaining weight) during the last 12 months. Note that children were not asked whether they tried to *lose or gain* weight, but rather whether they *controlled* their weight. The majority of children had tried to manage their weight. This was true for both boys (61%) and girls (56%).

The children were then asked to pick one option that best described what they were trying to do about their weight at the time of the interview. Children could specify whether they were trying to lose weight, gain weight, stay the same, or do nothing. Among 10–11 year olds, 38% of boys and girls were trying to lose weight, 8% of boys and 5% of girls were trying to gain weight, 33% of boys and 31% of girls were trying to stay the same weight, whereas 20% of boys and 26% of girls did nothing. Thus, there were no gender differences among boys and girls who were trying to lose weight, whereas more boys tried to gain weight and fewer did nothing to control their weight compared to girls of the same age.

Table 7.7 (on page 122) shows the weight management strategies used by boys and girls over the previous 12 months and at the time of interview, by whether they were satisfied with their body image and their body mass status.

[3] Only mothers' responses were used, as fathers' were not asked these questions.

Table 7.7: Weight management strategies of boys and girls, by body image dissatisfaction and body mass status

Weight management strategies	Satisfied with body image				Dissatisfied with body image				All (%)
	Under-weight (%)	Normal weight (%)	Over-weight (%)	All (%)	Under-weight (%)	Normal weight (%)	Over-weight (%)	All (%)	
Boys									
Any strategies in last 12 months	29.5	49.1	65.2	50.3	38.5	63.3	83.6	72.3	60.8
Strategies at time of interview									
Lose weight	7.3	17.4	44.3	19.8	6.2	40.0	80.3	58.9	38.5
Gain weight	20.8	4.9	0.0	5.1	47.4	18.1	1.2	10.8	7.8
Stay the same weight	45.2	47.4	37.0	46.1	22.1	27.0	11.9	19.3	33.3
Do nothing	26.7	30.4	18.6	29.0	24.3	14.9	6.7	11.0	20.4
Total (*N*)	52	907	114	1,021	40	453	419	872	1,893
Girls									
Any strategies in last 12 months	21.1	40.6	63.5	42.2	34.9	64.5	86.7	73.2	56.2
Strategies at time of interview									
Lose weight	2.2	15.8	42.8	18.1	5.6	46.7	82.1	60.7	37.7
Gain weight	5.0	3.1	0.7	2.9	51.1	5.7	1.6	6.5	4.7
Stay the same weight	56.0	42.7	34.5	42.8	22.3	26.0	9.3	18.1	31.3
Do nothing	36.8	38.4	22.0	36.3	20.9	21.6	7.1	14.6	26.4
Total (*N*)	82	852	117	1,051	49	406	368	823	1,874

Notes: For each category, children who had not controlled their weight in the previous 12 months or at the time of interview were omitted.

Source: K cohort, Wave 4

Weight management of boys during the last 12 months

The proportion of boys who tried to control their weight within the last 12 months was smaller among boys who were satisfied with their body image compared to those who were dissatisfied. Overall, 50% of boys who were satisfied tried to control their weight compared to 72% who were dissatisfied.

Body mass status was a significant correlate of boys' weight management strategies, regardless of body image dissatisfaction. Regardless of whether boys were satisfied or dissatisfied with their body image, underweight boys were less likely to control their weight compared to normal weight and overweight boys, while overweight boys were more likely to control their weight compared to normal weight and underweight boys. Among boys who were satisfied with their body size, 30% of underweight, 49% of normal weight and 65% of overweight boys tried to control their weight. A similar pattern was observed among those who were dissatisfied with their body; that is, 39% of underweight boys, 63% of normal weight and 84% of overweight boys tried to control their weight.

Weight management of girls during the last 12 months

The same pattern of relationships between weight management strategies during the last 12 months and body image dissatisfaction was observed among girls of different body mass status. Overall, 42% of girls who were satisfied with their body size tried to control their weight, compared to 73% of girls who were dissatisfied with their body. The same relationships as for boys were observed among girls of different body mass status. Among girls of the same status, those who were satisfied with their body size were less likely to control their weight compared to those who were dissatisfied (underweight: 21% satisfied vs 35% unsatisfied; normal weight: 41% vs 65%; overweight: 64% vs 87%). As among boys, the proportion of girls who tried to control their weight during the last

12 months was greater among overweight girls and smaller among underweight girls, regardless of whether they were satisfied or dissatisfied with their body size.

Current weight management strategies of boys

A deeper understanding of children's current weight management strategies comes from children being asked what they aimed to do to control their weight at the time of the interview. Overall, the proportion of boys and girls who were trying to lose or gain weight was greater among those who were dissatisfied with their body image while the proportion of those who were trying to stay the same or did nothing was greater among those who were satisfied with their body size. These results are similar to the children's overall weight control behaviour within the last 12 months.

Among boys who were satisfied with their body size, the majority tried to stay the same (46%), 29% did nothing, 20% were trying to lose weight and 5% were trying to gain weight. Among boys who were dissatisfied, only 11% did nothing with their weight, 19% tried to stay the same, 11% tried to gain weight and the majority (59%) tried to lose weight.

Variations in specific weight management strategies were observed according to the boys' body mass status. The proportion of underweight boys who were trying to lose weight or did nothing to control weight was about the same regardless of whether they were satisfied or dissatisfied with their body size (did nothing: 27% satisfied vs 24% dissatisfied; lose weight: 7% vs 6%). However, the proportion of those who were trying to gain weight was greater among underweight boys who were dissatisfied with their body size (47%) compared to those who were satisfied with their body size (21%). The proportion of those who were trying to stay the same was greater among underweight boys who were satisfied with their body size (45%) compared to those who were dissatisfied (22%).

Among boys of normal weight who were satisfied with their body size, 47% wanted to stay the same and 30% did nothing. The corresponding proportions among normal weight boys who were dissatisfied with their body size were substantially smaller; that is, 27% tried to stay the same and 15% did nothing. At the same time, the proportions of normal weight boys who were trying to lose or gain weight were considerably greater among those who were dissatisfied with their body size (40% and 18% respectively) compared to those who were satisfied (17% and 5% respectively).

A different picture was observed for overweight boys. In this group, regardless of whether they were satisfied or dissatisfied with their body size, the most common weight management strategy was losing weight, followed by staying the same and then doing nothing, though the proportion of those who wanted to lose weight was much greater among overweight boys who were dissatisfied with their body (80%) compared to those who were satisfied (44%).

Current weight management strategies of girls

Similar relationships were observed for girls. Among girls who were satisfied with their body image, 43% tried to stay the same weight, 36% did nothing, 18% tried to lose weight and 3% tried to gain weight. While among girls who were dissatisfied with their body, only 18% tried to stay the same, 15% did nothing, 7% tried to gain weight and the majority (61%) tried to lose weight.

As was the case with boys, differences in weight management strategies were observed by body mass status. Among underweight girls, a majority of those who were satisfied with their body size (56%) tried to stay the same weight, while a majority of those who were dissatisfied (51%) tried to gain weight. Among normal weight girls, staying the same weight was the most common weight management strategy among those who were satisfied with their body (43%), whereas the most common strategy among those who were dissatisfied was to lose weight (47%). Among overweight girls, the most common strategy was to lose weight, though the proportion was greater among those who were dissatisfied with their body size (82%) compared to those who were satisfied (43%).

Mothers' concern about their children's eating habits

To understand whether children who were dissatisfied with their body image had different eating habits compared to those who were satisfied, mothers' responses on the following questions were used:

- Do you have any concerns at the moment that the child eats too little?

- Do you have any concerns at the moment that the child eats too much, or eats unhealthy food?

Table 7.8 describes the distribution of mothers' responses by children's body image satisfaction and body mass status. Around 15% of mothers reported that they were concerned that their child was eating too little and around 40% of mothers were concerned that their child was eating too much or unhealthy food.

Table 7.8: Proportion of boys and girls with poor eating habits, mother reports, by body image dissatisfaction and body mass status

	Satisfied with body image				Dissatisfied with body image				
	Under-weight (%)	Normal weight (%)	Over-weight (%)	All (%)	Under-weight (%)	Normal weight (%)	Over-weight (%)	All (%)	All (%)
Boys									
Child eating too little	35.8	17.7	2.3	16.8	52.5	19.2	1.5	11.9	14.6
Child eating too much/unhealthy	19.3	27.2	59.8	30.2	30.3	33.6	76.7	54.5	41.7
Total (*N*)	52	899	113	1,064	39	452	415	906	1,970
Girls									
Child eating too little	36.8	15.2	4.8	15.3	49.9	13.7	4.7	11.7	13.8
Child eating too much/unhealthy	30.5	25.8	61.2	30.4	17.5	32.5	69.9	49.3	39.1
Total (*N*)	81	848	117	1,046	49	405	367	821	1,867

Notes: For each category, mother reports that they were not concerned about their children's eating habits were omitted.
Source: K cohort, Wave 4

Mothers' concern about their children's eating too little

Overall, the proportion of mothers who were concerned that their child was eating too little was greater among boys who were satisfied with their body image compared to boys who were dissatisfied with their body size (17% vs 12%). Although the difference was relatively small, it is statistically significant. Among boys who were satisfied with their body size, mothers of underweight boys were more likely to be concerned that their boys were eating too little (36%) compared to mothers of normal weight and overweight boys who were satisfied with their body (18% and 2% respectively). The same tendency was observed for boys who were dissatisfied with their body; that is, 53% of mothers of underweight boys were concerned that their boys were eating too little compared to 19% and 2% respectively of mothers of normal and overweight boys. There were no significant differences between boys who were satisfied and dissatisfied with their body image in the proportion of mothers of normal and overweight boys who were concerned that their boys were eating too little. However, mothers of underweight boys were more likely to be concerned that their child was eating too little if the boys were dissatisfied with their body, compared to boys who were satisfied (53% vs 36% respectively).

The results for girls were very similar. Fifteen per cent of mothers of girls satisfied with their body image expressed concerns about girls eating too little, compared to 12% of mothers of girls who were dissatisfied. Also the proportion of mothers who were concerned about their girls eating too little was greater for underweight girls compared to normal and overweight girls, regardless of girls' body image dissatisfaction. Among underweight girls, the proportion of mothers with concerns that their girls were eating too little was greater among girls who were dissatisfied with their body image (50%) compared to girls who were satisfied (37%).

Mothers' concern about their children eating too much or unhealthy food

Substantial differences were also observed in the proportions of mothers who were concerned that their child was eating too much or unhealthy food. The proportions were significantly greater among mothers of both boys and girls who were dissatisfied with their body compared to those who were satisfied (55% vs 30% for boys; 49% vs 30% for girls). Interestingly, among boys and

girls who were dissatisfied with their body, the proportion of mothers who were concerned about their child eating too much or unhealthy food was greater among boys than girls (55% vs 49% respectively); while among boys and girls who were satisfied, there was no significant difference in the proportion of concerned mothers (30% each).

Main findings

In summary, the findings of this section suggest that at age 10–11 years:

- a majority of boys and girls tried to control their weight during the last 12 months, with the proportions being greater among children who were dissatisfied with their body size;
- among underweight boys and girls, 45% and 56% respectively of those who were satisfied with their body tried to stay the same weight, while 47% and 51% respectively of those who were dissatisfied tried to gain weight;
- among normal weight boys and girls, 47% and 42% respectively of those who were satisfied with their body tried to stay the same, while 40% and 47% respectively of those who were dissatisfied tried to lose weight;
- among overweight boys and girls, 44% and 43% respectively of those who were satisfied with their body tried to lose weight, while 80% and 82% respectively of those who were dissatisfied tried to lose weight;
- a greater proportion of mothers of boys and girls who were satisfied with their body size were concerned that their children were eating too little compared to mothers of children who were dissatisfied with their body size;
- a greater proportion of mothers of boys and girls who were dissatisfied with their body size were concerned that their children were eating too much or unhealthy food compared to mothers of children who were satisfied with their body size.

7.6 Children's wellbeing and body image dissatisfaction

Body dissatisfaction can affect different aspects of a child's life. There is strong evidence that adolescents who are dissatisfied with their body image are likely to experience social problems, depression symptoms and poor self-esteem (Tiggemann, 2005). This section addresses the last research question, which aims to examine whether the association between body image dissatisfaction and signs of socio-emotional problems can be observed as early as when children aged 10–11 years and whether these relationships vary among children of different body mass (based on their BMI). Disentangling these relationships improves understanding of the role of positive body image in the socio-emotional development of the child, and the implications for children of having different body mass status. The following aspects of child's wellbeing were examined:

- physical health;
- self-worth;
- peer relationships; and
- emotional and behavioural problems.

This section uses data for 10–11 year olds only as this was the first time children had reported on these measures themselves. The analysis is presented separately for boys and girls by different body mass status. All the differences reported in this section are statistically significant at the 5% level.

Physical health

As the focus of this chapter is on how children's dissatisfaction with their body interacts with their perceptions and feelings about themselves, children's perspectives rather than the objective measures of their physical health were of main interest. The following three questions were asked to gain children's perspective:[4]

- Have you felt fit and well [in the last week]?

[4] The first two questions were from the KIDSCREEN-52 instruments (The KIDSCREEN Group, Europe, 2006).

- Have you felt full of energy [in the last week]?
- How much do you enjoy being physically active (doing things like sports, active games, walking or running, swimming)?

Response options were categorised as "very/extremely" vs "not at all/slightly/moderately" for the first two questions and "a lot" vs "quite a lot/not very much/not at all" for the third question.[5] Perception of physical health was measured as percentages of positive responses. Overall, 70% of boys felt fit and well, 70% enjoyed physical activity, and around 75% felt full of energy. In comparison, a similar proportion of girls (around 70%) felt fit and well and 70% felt full of energy; however, fewer (around 60%) enjoyed physical activity.

Table 7.9 shows that the proportion of girls and boys who felt fit and well, full of energy and enjoyed physical activity was greater among boys and girls who were satisfied with their body image compared to those who were dissatisfied.

Table 7.9: Proportion of boys and girls who had positive perceptions of their physical health, by body image dissatisfaction and body mass status

	Satisfied with body image				Dissatisfied with body image				
	Under-weight (%)	Normal weight (%)	Over-weight (%)	All (%)	Under-weight (%)	Normal weight (%)	Over-weight (%)	All (%)	All (%)
Boys									
Fit and well	75.7	80.4	70.9	78.9	69.0	68.8	44.2	56.3	68.5
Full of energy	88.4	79.7	79.0	80.0	61.6	76.3	69.8	72.5	76.5
Enjoy physical activity	76.1	75.4	70.0	75.0	69.9	66.1	60.1	63.1	69.4
Total (*N*)	52	907	115	1,074	41.0	453	419	913	1,987
Girls									
Fit and well	79.0	81.0	66.2	79.2	77.1	58.8	47.9	54.3	67.9
Full of energy	78.0	74.7	67.8	74.1	85.2	70.4	58.6	66.0	70.3
Enjoy physical activity	62.9	62.8	60.8	62.4	59.3	59.0	51.2	55.0	59.2
Total (*N*)	82	855	117	1054	49	410	368	827	1,881

Notes: For each category, children who provided negative responses to the questions on physical activity were omitted.
Source: K cohort, Wave 4

Among boys who were satisfied with their body image, there were no statistically significant differences in the proportions who felt fit and well by body mass status, while among boys who were dissatisfied with their body image the proportions of overweight boys who felt fit and well was significantly smaller than among underweight and normal weight boys. There were also no statistically significant differences by body mass status in the proportion of those who felt full of energy and enjoyed physical activity, either among boys who were satisfied or among those who were dissatisfied with their body image.

The same picture was observed for girls. Among girls who were dissatisfied with body image the proportion of girls who felt fit and well was significantly smaller among overweight girls (48%) compared to underweight and normal weight girls (77% and 59% respectively). There were no statistically significant differences by body mass status in the proportions of girls who felt full of energy and enjoyed physical activity, either among girls who were satisfied or among those who were dissatisfied with their body image.

Self-concept and self-worth

Previous research has consistently found that, on average, adolescents who are dissatisfied with their body are more likely to have negative thoughts than those who are satisfied (Stice et al., 2000). Here, it has been investigated whether boys and girls in their pre-adolescent years who were

[5] Only around 6% of boys and girls reported enjoying physical activity "not very much/not at all".

dissatisfied with their body size were likely to have a low level of self-worth or negative thoughts about themselves.

The level of self-worth was derived from the child's report on the General Self-Concept scale from the Self-Description Questionnaire-I (Marsh, 1990). The Self-Description Questionnaire is a well validated and widely used Australian measure of multidimensional self-concept in pre-adolescent children. The scale comprises eight items, with response options ranging from 1 (false) to 5 (true). The self-worth score is the mean of the responses to the questionnaire items, with a higher score indicating better outcomes. In this analysis, children in the bottom quintile (20%) of the distribution of mean scores were distinguished from the remainder of the children. This bottom quintile represented a group of children with *relatively* low self-worth.

Two items from the Short Moods & Feelings Questionnaire (Angold et al., 1995) were adapted to measure signs of negative thoughts:

- I feel I am not good.
- I do not enjoy anything at all.

The reference period for these questions was the last two weeks, and response options were categorised as "sometimes true/true" vs "not true". Overall, around 35% of boys and girls felt they were not good, and around 17% of boys and 11% of girls did not enjoy anything at all.

Table 7.10 presents the proportion of boys and girls who had low self-worth and negative thoughts, by body image dissatisfaction and body mass status. The proportions of boys and girls who had low self-worth and negative thoughts were significantly greater among those who were dissatisfied with their body image compared to those who were satisfied.

Table 7.10: Proportion of boys and girls who had low self-worth and negative thoughts, by body image dissatisfaction and body mass status

	Satisfied with body image				Dissatisfied with body image				
	Under-weight (%)	Normal weight (%)	Over-weight (%)	All (%)	Under-weight (%)	Normal weight (%)	Over-weight (%)	All (%)	All (%)
Boys									
Low self-worth	22.3	27.9	26.1	27.4	34.4	38.0	39.2	38.2	32.7
I am not good	25.3	29.0	30.4	29.3	37.5	39.6	41.7	40.2	34.5
I do not enjoy anything	12.9	13.1	17.8	13.6	21.4	22.0	19.5	20.4	17.0
Total (*N*)	52	906	114	1072	41	453	418	912	1,984
Girls									
Low self-worth	27.9	17.7	13.8	17.9	16.3	34.9	29.6	31.9	24.1
I am not good	25.6	28.8	24.6	27.9	23.4	49.0	46.6	46.5	36.4
I do not enjoy anything	15.7	7.5	6.7	8.1	8.2	13.3	13.9	13.7	10.4
Total (*N*)	82	854	117	1053	49	409	368	826	1,879

Notes: For each category, children who did not have low self-worth or negative thoughts were omitted.
Source: K cohort, Wave 4

Among boys who were dissatisfied with their body image, 38% had low self-worth, 40% felt they were not good and 20% did not enjoy anything at all, compared to 27%, 29% and 14% respectively of boys who were satisfied with their body image. There were no significant differences by body mass status, either among boys who were dissatisfied or among those who were satisfied with their body image.

Overall, a similar picture was observed for girls. Among girls who were dissatisfied with their body image 32% had low self-worth, 47% felt they were not good and 14% did not enjoy anything at all, compared to 18%, 28% and 8% respectively of girls who were satisfied with their body image. However, some differences were observed among girls by body mass status. Among girls who were satisfied with their body image, 14% of overweight and 18% of normal weight girls had low self-worth, compared to 28% of underweight girls. Among girls who were dissatisfied with their

body image, overweight and normal weight girls were more likely to have low self-worth (30% and 35% respectively) compared to underweight girls (16%). The proportions of girls who felt they were not good did not vary by body mass status among girls who were satisfied with their body image (underweight: 26%, normal weight: 29%; overweight: 25%). But among girls who were dissatisfied, the proportions who did not feel good about themselves was greater among normal weight and overweight girls (49% and 47% respectively) compared to underweight girls (23%). There were no significant differences by body mass status in the proportions of girls who did not enjoy anything, either among girls who were dissatisfied or among those who were satisfied with their body image.

Peer relationships

Adolescents who are dissatisfied with their body image are less likely to feel confident and more likely to lack social skills than those who are satisfied (Tiggemann, 2005). This subsection examines whether pre-adolescent children who were dissatisfied with their body image were also likely to report poor quality peer relationships and high peer relationship problems.

The measure of the quality of the child's peer relationships was derived from the child's report on the Peer Relations scale from the Self-Description Questionnaire-I (Marsh, 1990). This scale comprises eight items, with response options ranging from 1 (false) to 5 (true). The peer relations score is the mean of the responses to the questionnaire items, with higher scores indicating better outcomes. The peer relations scale items included statements such as "I have many friends", "I get along with kids easily" and "I am popular with kids my own age". Children at the bottom quintile (20%) of the distribution of mean scores were distinguished from the remainder of the children and represent a group of children with *relatively* poor peer relationships.

The measure of whether the child had relationship problems with their peers was derived from the Strengths and Difficulties Questionnaire (Goodman, 2001).[6] This scale measures the degree of reported peer problems a child may be experiencing, and comprises five items with response options ranging from 0 to 10. Higher scores indicate higher levels of socio-emotional problems. The scale includes items such as "picked on or bullied by other children", "gets on better with adults than with other children", and "rather solitary, tends to play alone". To identify children with relatively high peer relationship problems children at the top quintile (20%) of the distribution of mean scores were distinguished from the remainder of children.

As for other outcomes, boys and girls who were dissatisfied with their body image were more likely to report poor quality peer relationships and peer relationship problems compared to boys and girls satisfied with their body image (Table 7.11 on page 129). Among boys who were dissatisfied with their body image, 34% had poor quality relationships and 22% had problems with their peers compared to 22% and 15% respectively among boys satisfied with their body image. Similar proportions were observed among girls. Among girls who were satisfied with body image, 30% reported poor relationships and 18% reported problems with their peers, compared to 22% and 10% respectively among girls satisfied with their body image.

No significant differences were observed by body mass status in the proportions of boys who had poor quality relationships and peer problems, either among boys who were satisfied or among those who were dissatisfied with their body image. A slightly different pattern was observed for girls. There were no significant differences by body mass status in the proportions of girls who had peer problems, either among girls who were satisfied or among those who were dissatisfied with body image. There were also no significant differences in the proportions of girls who had poor quality relationships by body mass status among those satisfied with their body image. However, among girls dissatisfied with their body image, the proportion with poor quality relationships was significantly greater among normal weight and overweight girls compared to underweight girls.

[6] This instrument is a brief screening questionnaire that includes scales assessing conduct problems, emotional symptoms, hyperactivity or inattention, prosocial behaviour and peer relationship problems.

Table 7.11: Proportion of boys and girls with poor quality peer relationships and peer relationship problems, by body image dissatisfaction and body mass status

	Satisfied with body image				Dissatisfied with body image				
	Under-weight (%)	Normal weight (%)	Over-weight (%)	All (%)	Under-weight (%)	Normal weight (%)	Over-weight (%)	All (%)	All (%)
Boys									
Poor quality relationships	15.8	22.0	23.2	21.7	43.2	34.0	32.1	33.5	27.1
Peer problems	11.0	14.8	17.0	15.2	23.8	20.9	23.3	22.2	18.4
Total (*N*)	52	907	114	1,073	41	453	114	608	1,988
Girls									
Poor quality relationships	22.0	22.2	17.9	21.6	14.5	29.8	31.6	30.2	25.4
Peer problems	10.9	10.9	7.4	10.4	10.6	19.0	18.9	18.4	14.1
Total (*N*)	82	855	117	1,054	49	409	117	575	1,880

Notes: For each category, children who did not have poor quality relationships or problems with their peers were omitted.
Source: K cohort, Wave 4

Interestingly, among boys dissatisfied with their body image, the proportion who reported poor quality relationships was greater among underweight boys (43%) compared to overweight boys (32%), while among girls dissatisfied with their body image the corresponding proportion was greater among overweight girls (32%) compared to underweight girls (15%). However, these differences were not significant.

Emotional and behavioural problems

This subsection examines the emotional and behavioural problems of 10–11 year old boys and girls, using their reports on the emotional symptoms[7] and conduct problems[8] subscales from the Strengths and Difficulties Questionnaire (Goodman, 2001). Each subscale has a possible range of 0 to 10, with higher scores indicating higher levels of socio-emotional problems. To identify children with relatively high emotional and behavioural problems, children in the top quintile (20%) of the distribution of mean scores on both subscales were distinguished from the remainder of the children.

Table 7.12 (on page 130) presents the proportions of boys and girls with high emotional and behavioural problems by body image dissatisfaction and body mass status. Overall, the proportions of boys and girls who had high emotional and conduct problems were greater among those who were dissatisfied with their body image, compared to those who were satisfied.

Among boys dissatisfied with their body image, 27% had a high level of emotional problems and 30% had a high level of behavioural problems, compared to 19% and 23% respectively among boys satisfied with their body image. There were no significant differences by body mass status in the proportions of those who had high levels of emotional and conduct problems, either among boys who were satisfied with their body image or among those who were dissatisfied.

Among girls dissatisfied with their body image, 34% had emotional problems and 17% had behavioural problems. Among girls satisfied with their body image, the corresponding proportions were significantly lower (20% and 10% respectively). There were no significant differences by body mass status in the proportions who had high levels of emotional and behavioural problems among girls satisfied with their body image. However, among girls dissatisfied with their body image, overweight girls were more likely to have emotional problems (38%) and behavioural problems (20%) compared to underweight girls (21% and 7% respectively).

[7] The SDQ emotional problems subscale comprises items like: "often unhappy, downhearted or tearful", "nervous or clingy in new situations, easily loses confidence", and "many worries, often seems worried".

[8] The SDQ conduct problems subscale comprises items like: "often has temper tantrums or hot tempers", "often fights with other children or bullies them", and "often lies or cheats".

Table 7.12: Proportion of boys and girls who had high emotional and behavioural problems, by body image dissatisfaction and body mass status

	Satisfied with body image				Dissatisfied with body image				
	Under-weight (%)	Normal weight (%)	Over-weight (%)	All (%)	Under-weight (%)	Normal weight (%)	Over-weight (%)	All (%)	All (%)
Boys									
Emotional problems	17.0	19.5	16.3	19.3	26.2	23.8	30.5	27.2	22.9
Behavioural problems	20.7	21.9	28.9	22.6	26.4	29.3	30.5	30.3	26.0
Total (*N*)	52	907	114	1,073	41	453	420	914	1,988
Girls									
Emotional problems	21.5	20.9	14.6	20.0	20.5	32.0	38.3	34.4	26.6
Behavioural problems	5.8	10.7	8.6	10.1	7.1	14.2	19.6	16.6	12.9
Total (*N*)	82	855	117	1,054	49	409	368	826	1,880

Notes: For each category, children who did not report having high emotional or behavioural problems were omitted.
Source: K cohort, Wave 4

The analyses presented in this section suggest that regardless of gender and body mass status, children who were dissatisfied with their body image were more likely to have poorer physical health and socio-emotional wellbeing compared to those who were satisfied with their body image. Moreover, among children who were dissatisfied with their body, overweight children were more likely to have poorer outcomes compared to normal weight and underweight children.

7.7 Summary and discussion

This study examined perceived and desired body images of primary school children aged 8–9 and 10–11 years, and the relationship between their body image dissatisfaction and physical health and socio-emotional wellbeing. When interpreting the findings it should be taken into account that as children grow older the BMI cut-offs for defining underweight, overweight and obesity also increase. However, we did not control for these differences in the pictorial instrument.

Overall, the main findings were:

- younger boys and girls were less likely to report their body size accurately;
- on average, regardless of age and body mass status, boys and girls wanted to have a slightly thinner than average body size (between pictures 3 and 4);
- at age 8–9 years, a large number of boys and girls experienced dissatisfaction with their body size, with differences observed by body mass status;
- overall, older children were more likely to be satisfied with their body image, though it varied between children of different body mass status;
- at age 10–11 years, the majority of children tried to control their weight, with differences observed by different body mass status and body image dissatisfaction;
- at 10–11 years old, a large proportion of mothers were concerned that their children were not eating properly (too little or too much), with differences observed by body mass status and body image dissatisfaction; and
- at 10–11 years old, there was a strong relationship between physical health and socio-emotional wellbeing and body size dissatisfaction, regardless of body mass status.

As in previous studies (e.g., Truby & Paxton, 2002), it was found that younger children were less likely to report their body size accurately than older children. At age 10–11 years, more than 90% of children were able to report their body size accurately or relatively accurately. Differences were also observed by body mass status. Regardless of age and gender, underweight children were more

likely to accurately report their body size, while normal weight and overweight children tended to underestimate.

Importantly, it was found that at age 8–9 years, a large proportion of children already were experiencing dissatisfaction with their body image. Consistent with previous research (McCabe & Ricciardelli, 2005; Ricciardelli & McCabe, 2001; Tiggemann, 2005), children's BMI was strongly associated with children's satisfaction with their bodies. Around 50% of underweight and normal weight children and 75% of overweight children reported dissatisfaction with their body size. The same pattern was observed for both boys and girls aged 8–9 years. As the children grew older, more underweight and normal weight children were satisfied with their body size, while the proportion of overweight children who were satisfied with their body decreased. These results were consistent among both boys and girls aged 10–11 years.

As in previous research (Dohnt & Tiggemann, 2006; Levine & Piran, 2004), the desire to be thin (choosing pictures 1, 2 or 3) was already being reported by a majority of the children aged 8–9 years. Among underweight children, 16% of girls and 11% of boys wanted to be even thinner than they were, and around 50% of girls and boys wanted to stay underweight. Among normal weight children, 38% of girls and 32% of boys wanted to be thinner than their current body size. On the positive side, though, around 40% of underweight children reported that they wanted to be larger than their current size, and more than 50% of normal weight children were happy with their body size. The majority of overweight boys (70%) also wanted to be thinner than their current body size. From a health perspective, the desire of overweight children to be thinner is a positive one if they want to have a body size within a healthy range. But, at 8–9 years old, 57% of the overweight children wanted to have a thinner than average body size and only 37% wanted to be of average size.

When children grew older, a smaller proportion of underweight and normal weight wanted to be thinner relative to their current body size, though a still substantial proportion wanted to be thinner than average. In contrast, the proportion of overweight children who wanted to be thinner than their current size increased with age, while the proportion of those who wanted to be thinner than average decreased. Interestingly, there were no significant differences by sex observed for weight management goals in underweight and overweight children. However, for normal weight children, the proportion who wanted to be larger than their current size was greater among boys and the proportion of those who wanted to be thinner was greater among girls.

Potentially, it could be positive that underweight children desire to be larger and overweight children desire to be thinner if this spurs them to try and achieve a more healthy weight. However, it is important to note that children's dissatisfaction with their body modifies their behaviour and affects their physical health and socio-emotional wellbeing. It was found that even in the pre-adolescent years, a large proportion of boys and girls were controlling their weight. Whether they were trying to lose, gain or keep the same weight was strongly correlated with body image dissatisfaction, and varied among children of different body mass status. Among children who were satisfied, the majority of underweight children tried to keep their weight the same, the majority of normal weight children tried either to keep the same weight or did nothing, and the majority of overweight children tried to either lose or keep the same weight. A different picture was observed for children who were dissatisfied with their body size. A majority of underweight dissatisfied children tried to gain weight, whereas the majority of normal weight and overweight dissatisfied children tried to lose weight. Not surprisingly, among children dissatisfied with their body size, more mothers of the underweight children were concerned about their children eating too little, while more mothers of overweight children were concerned about their children eating too much or unhealthy foods.

It is quite possible that among those boys and girl who were trying to lose or gain weight, some were engaged in positive strategies (such as limiting their energy-dense food intake, eating more fruit and vegetables, exercising), whereas others could be engaged in unhealthy or dangerous strategies like severely restricting food intake or vomiting after a meal.[9] In the absence of detailed information about the methods children were using to lose, gain or keep the same weight, it is not possible to comment on the positive or negative effects of weight control strategies and their prevalence among children aged 10–11 years.

[9] At these ages, LSAC did not include detailed measures of the particular strategies that might be employed.

Previous research has shown that adolescents who are dissatisfied with their body are likely to develop poor physical and psychological health (Cash, 2002b). The findings of this study suggest that the strong relationships between body image dissatisfaction and children's wellbeing could also be observed among pre-adolescents. Regardless of body mass status, children dissatisfied with their body were more likely to have poor physical health and socio-emotional wellbeing compared to children satisfied with their body size. Boys and girls who were dissatisfied with their body were less likely to feel fit, full of energy or enjoy physical activity. They were also more likely to have low self-worth, feel they were not good at all and not enjoy anything. Also, boys and girls who were experiencing dissatisfaction with their body were more likely compared to those who were satisfied to report poor quality peer relationships and problems with peers as well as high levels of emotional and behavioural problems.

This study shows that dissatisfaction with body image is strongly related to child's body mass status and socio-emotional wellbeing. In particular, dissatisfaction with body size is negatively associated with the socio-emotional wellbeing of children, regardless of their weight, though being dissatisfied with their own body size does not necessarily have only negative effects, especially among severely underweight or overweight children. For example, while children of normal weight who are dissatisfied with their own body are at risk of developing an unhealthy body weight, a desire among overweight children to lose weight or for underweight children to gain weight might motivate them to manage their weight. The main challenge for policies and practice is to encourage children to manage their weight within a healthy range, while maintaining healthy self-worth and socio-emotional wellbeing. Thus, developing targeted intervention programs that concurrently address healthy body image and equip children with healthy weight management strategies as well as boost their self-confidence might help not only to improve children's physical health but also to reduce the negative effects of body image dissatisfaction on the socio-emotional wellbeing of children.

7.8 References

Angold, A., Costello, E. J., Messer, S. C., Pickles, A., Winder, F., & Silver, D. (1995). Development of a short questionnaire for use in epidemiological studies of depression in children and adolescence. *International Journal of Methods in Psychiatric Research*, *5*, 237–249.

Cash, T. (2002a). Cognitive-behavioral perspectives on body image. In T. Cash, & T. Pruzinsky (Eds.), *Body image: A handbook of theory, research, and clinical practice* (pp. 38–46). New York: Guilford.

Cash, T. (2002b). A negative body image: Evaluating epidemiological evidence. In T. Cash, & T. Pruzinsky (Eds.), *Body image: A handbook of theory, research, and clinical practice* (pp. 269–276). New York: Guilford.

Cohane, G. H., & Pope, H. G. (2001). Body image in boys: A review of the literature. *International Journal of Eating Disorders*, *29*(4), 373–379.

Cole, T. J., Bellizzi, M. C., Flegal, K. M., & Dietz, W. H. (2000). Establishing a standard definition for child overweight and obesity worldwide: International survey. *British Medical Journal*, *320*, 1240–1243.

Cole, T. J., Flegal, K. M., Nicholls, D., & Jackson, A. A. (2007). Body mass index cut offs to define thinness in children and adolescents: International survey. *British Medical Journal*, *335*(7612), 194.

Collins M. E. (1991). Body figure perceptions and preferences among preadolescent children. *International Journal of Eating Disorders*, *10*(2), 199–208.

Cook, S., MacPherson, K., & Langille, D., (2007). Far from ideal: Weight perception, weight control, and associated risk behaviours among adolescent females in Nova Scotia. *Canadian Family Physician*, *53*, 678–684.

Davison, K. K., Markey, C. N., & Birch, L. L. (2003). A longitudinal examination of patterns in girls' weight concerns and body dissatisfaction from 5 to 9 years. *International Journal of Eating Disorders*, *33*, 320–332.

Dohnt, H. K., & Tiggemann, M. (2006). Body image concerns in young girls: The role of peers and media prior to adolescence. *Journal of Youth and Adolescence*, *35*(2), 141–151.

Edwards George, J., & Franko, D. (2010). Cultural issues in eating pathology and body image among children and adolescents. *Journal of Paediatric Psychology*, *35*, 231–242.

Gardner, R. M., Freidman, B. N., Stark, K., & Jackson, N. A. (1999). Body size estimations in children six through fourteen: A longitudinal study. *Perceptual and Motor Skills*, *88*, 541–555.

Goodman, R. (2001). Psychometric properties of the Strengths and Difficulties Questionnaire (SDQ). *Journal of the American Academy of Child and Adolescent Psychiatry*, *40*, 1337–1345.

Irving, L. M. (2000). Promoting size acceptance in elementary school children: The EDAP puppet program. *Eating Disorders*, *8*, 3–16.

The KIDSCREEN Group Europe. (2006). *The KIDSCREEN Questionnaires: Quality of life questionnaires for children and adolescents. Handbook.* Lengerich: Pabst Science Publishers.

Levine, M. P., & Piran, N. (2004). The role of body image in the prevention of eating disorders. *Body Image*, *1*(1), 57–70.

Liechty, J. M. (2010). Body image distortion and three types of weight loss behaviors among nonoverweight girls in the United States. *Journal of Adolescent Health*, *47*, 176–182.

Marsh, H. W. (1990). *Self Description Questionnaire-I (SDQ-I) manual*. Sydney: University of Western Sydney.

McCabe, M. P., & Ricciardelli, L. A. (2001). Parent, peer and media influences on body image and strategies to both increase and decrease body size among adolescent boys and girls. *Adolescence*, *36*(142), 225–231.

McCabe, M. P., & Ricciardelli, L. A. (2005). A longitudinal study of body image and strategies to lose weight and increase muscles among children. *Applied Developmental Psychology*, *26*, 559–577.

McCabe, M. P., Ricciardelli, L. A., & Salmon, J. (2006). Evaluation of a prevention program to address body focus and negative effect among children. *Journal of Health Psychology*, *11*, 589–598.

McCreary, D. R. (2002). Gender and age differences in the relationship between body mass index and perceived weight: Exploring the paradox. *International Journal of Men's Health*, *1*, 31–42.

Neumark-Sztainer, D., Paxton, S. J., Hannan, P. J., Haines, J., & Story, M. (2006). Does body satisfaction matter? Five-year longitudinal associations between body satisfaction and health behaviors in adolescent females and males. *Journal of Adolescent Health*, *39*, 244–251.

Ricciardelli, L. A., & McCabe, M. P. (2001). Self-esteem and negative affect as moderators of sociocultural influences on body dissatisfaction, strategies to decrease weight, and strategies to increase muscle among adolescent boys and girls. *Sex Roles*, *44*(3/4), 189–207.

Schur, E. A., Sanders, M., & Steiner, H. (2000). Body dissatisfaction and dieting in young children. *International Journal of Eating Disorders*, *27*, 74–82.

Skemp-Arlt, K. M., Rees, K. S., Mikat, R. P., & Seebach, E. E. (2006). Body image dissatisfaction among third, fourth and fifth grade children. *California Journal of Health Promotion*, *4*(3), 58–67.

Smolak, L. (2004). Body image in children and adolescents: Where do we go from here? *Body Image*, *1*, 15–28.

Stice, E., Hayward, C., Cameron, R. P., Killen, J. D., & Taylor, C. B. (2000). Body image and eating disturbances predict onset of depression in female adolescents: A longitudinal study. *Journal of Abnormal Psychology*, *109*, 438–444.

Stice, E., Mazotti, L., Krebs, M., & Martin, S. (1998). Predictors of adolescent dieting behaviors: A longitudinal study. *Psychology of Addictive Behaviors*, 12, 195–205.

Stice, E., & Shaw, H. (2002). Role of body dissatisfaction in the onset and maintenance of bulimic pathology: A synthesis of research findings. *Journal of Psychosomatic Research*, *53*, 985–993.

Stice, E., & Shaw, H. (2004). Eating disorder prevention programs: A meta-analytic review. *Psychological Bulletin*, *130*(2), 206–227.

Tiggemann, M. (2005). Body dissatisfaction and adolescent self-esteem: Prospective findings. *Body Image*, *2*, 129–135.

Thomas, K., Ricciardelli, L. A., & Williams, R. J. (2000). Gender traits and self-concept as indicators of problem eating and body dissatisfaction among children. *Sex Roles*, *43*, 441–458.

Truby, H., & Paxton, S. (2002). Development of the Children's Body Image Scale. *British Journal of Clinical Psychology*, *41*, 185–203.

Vander Wal, J., & Thelen, M. (2000). Predictors of body image dissatisfaction in elementary-age school children. *Eating behaviours*, *1*, 105–122.

Wake, M., & Maquire, B. (2012). Children's body mass index: Cohort, age and socio-economic influences. In Australian Institute of Family Studies, *The Longitudinal Study of Australian Children: Annual Statistical Report 2011* (pp. 91–100). Melbourne: AIFS.