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Developmental issues in attitudes to food and diet

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As a rule, children and most adults eat what they like and leave the rest. They like and consume foods high in fat and sugar. Parental behaviour shapes food acceptance, and early exposure to fruit and vegetables or to foods high in energy, sugar and fat is related to children's liking for, and consumption of, these foods. Some parents are imposing child-feeding practices that control what and how much children eat. However, over-control can be counter-productive, teaching children to dislike the very foods we want them to consume, and generally undermining self-regulation abilities. The external environment is also important, with concerns expressed about food advertising to children and girls dieting for an ideal thin body shape. Up to one-quarter of young adolescent girls report dieting to lose weight, their motivation driven by weight and shape dissatisfaction. For some, dieting and vegetarianism are intertwined and both legitimised as healthy eating. For others, striving for nutritional autonomy, the choice of less-healthy foods is not just because of their taste, but an act of parental defiance and peer solidarity. The determinants of what children choose to eat are complex, and the balance changes as children get older. A better understanding is crucial to informing how we might modify nutritional behaviour. Adults occupy a central position in this process, suggesting that children should be neither the only focus of nutritional interventions nor expected to solve the nutritional problems with which adults around them are continuing to fail.

Food choice: Child-feeding practices: Food advertising: Dieting: Adolescence

The publication of nutritional surveys, such as that on British 4–18 year olds (Gregory *et al.* 2000), is usually something of a mixed blessing. The broad message of the report, that the majority of children and adolescents in the UK have adequate intakes of most nutrients, was overshadowed by examples of less-than-perfect nutrition. The low intakes by older adolescent girls of Zn, K, Ca, Fe, fibre and some B vitamins reflect a diet that is low in fruit, vegetables, milk and meat. These girls consume about three-quarters of the recommended daily amount of energy, implying some self-imposed food restriction or incipient eating disorder that accompanies micronutrient undernutrition. In addition, children's high snack intake (about 25 % total energy) and higher-than-desired intake of saturated fatty acids and non-milk extrinsic sugars appears related to rising levels of childhood obesity (Chinn & Rona, 2001; Rudolf *et al.* 2001). Cataloguing imperfect nutrition demands a response. Just how do we encourage teenage girls to consume a sufficient and balanced diet, and children generally to exchange their snack food choices for fresh fruit and vegetables? A start would be an overview of research evidence on the main determinants of children's food choice.

The purpose of the present paper is to describe and discuss some of the competing influences on food choice and eating behaviour. The excellent existing research reviews (for example, see Birch & Fisher, 1998; Birch, 1999; Koivisto Hursti, 1999) have tended to focus on younger children. The present paper will summarise some of the main influences on young children and then move forward to consider older children and adolescents.

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The social context

Birch and her co-workers have been especially active in analysing the early determinants of food preference and choice. Birch's (1999) position is that children are biologically predisposed to respond to novel foods in systematic ways and to prefer some tastes over others. In addition, they are similarly predisposed to learn preferences for foods made available to them. In other words, innate tendencies are readily shaped by the situations in which food is made available.

Neophobia

Food neophobia is a good example of this interplay. The reluctance to eat, or avoidance of, novel foods has a protective function that, via learning mechanisms, can lead to acquired preferences or learned aversions. The research evidence suggests that neophobia is minimal during infancy, increases through early childhood, and then declines until low in adulthood. Young children's reluctance to try foods familiar to the rest of the family can be frustrating and lead to concern about the adequacy of the child's diet. Persistence in presenting foods often pays off, although it may take five to ten exposures to increase liking for a new food (Birch & Marlin, 1982).

Exposing children to others who eat the foods they do not like can also modify food acceptance. Birch (1980) let preschool children observe other children choosing and eating vegetables that the observing children did not like. This opportunity for 'modelling' led to an increase in vegetable preference. Similarly, Hendy & Raudenbush (2000) showed that teacher's positive response to new foods could increase novel food acceptance by enthusiastic verbal comments on the first few occasions of presentation. Care had to be taken, especially for the girls, to avoid seating them next to 'picky' eaters who modelled a powerful alternative response to the new foods.

A further strategy is to combine new foods with familiar flavours. Pliner & Stallberg-White (2000) looked at the liking of 10–12-year-old girls for novel and familiar dips and crisps. Their results confirm what, they argue, many parents (and children) already recognise; i.e. covering a new food in a familiar and liked sauce, such as tomato ketchup, makes it more acceptable.

Access and availability

Underpinning familiarity is the access and availability children have to particular foods. Birch & Fisher (1998) argue that early and repeated exposures to foods high in energy, sugar and fat are important in establishing preferences for these foods, as children are already predisposed to learn to prefer energy-dense foods over energy-dilute foods. The argument is that children learn to associate the flavours of these foods with the positive biological consequences of eating energy-dense foods, especially when hungry. This process may be highly adaptive for growing children who need to maintain energy balance and who live in a nutritionally impoverished environment. In access to food energy at least, this is not the case for most children in Western societies.

Energy-dense high-fat foods are amongst the most common household foods. This situation is unsurprising, since adults like and consume them too. The added complication is that foods such as crisps, cake and ice cream are treat or celebration foods. Moreover, they taste very good. Offering such foods is a sign of affection, and their withdrawal interpreted as punishment.

Availability also shapes preference and consumption of fruit and vegetables. Hearn *et al.* (1998) found that children ate more fruit and vegetables at schools where more fruit and vegetables were offered. They also found the same for home-based access and availability. If a food is not available it is unfamiliar, and children will like it less. If, on the other hand, fruit and vegetables are regularly presented at meals they are more preferred and more likely to be eaten (Domel *et al.* 1993).

Child-feeding practices

The greatest research contribution Birch and colleagues have made is in our appreciation of the power of parental child-feeding practices. Parental imposition of control over what and how much children can eat influences food preferences, but sometimes in a counter-intuitive and possibly counter-productive direction. For example, it is common practice to attempt to restrict the availability of certain foods, such as chocolate and other confectionery. Such restriction can make those foods even more attractive and more likely to be selected and eaten in situations where parents are not present (Fisher & Birch, 1995). In addition, making rewards contingent on eating foods that parents want children to eat can have unforeseen effects. One such tactic is to require the child to eat a food in order to obtain a reward, e.g. 'Eat your vegetables, then you can watch TV'. In this situation, children's preferences for the food eaten went down relative to a control food (Birch *et al.* 1984). An alternative strategy is to use food rewards in a positive social context. To test this approach, Birch *et al.* (1980) presented preschool children with foods that were neither liked nor disliked as rewards for good behaviour or paired with positive adult attention. Following several presentations over a 6-week period children's preference for these foods increased. The irony is that we apply these contingencies to different foods. Sweets are used in a positive context to reward good behaviour. In contrast, vegetables are used in a negative context to obtain access to something pleasurable. The result is that sweets, already well liked, are even more rewarding, while initially-disliked vegetables become even more disliked.

What this research implies is that restricting children's consumption of 'bad' foods and encouraging eating of 'good' foods does not achieve the desired dietary objectives. Instead, it reinforces an emotion-laden categorisation and sends out mixed messages. For example, forbidden foods are offered in positive social contexts such as parties and eating out, but may be restricted in others such as at

home. One conclusion might be that all attempts by parents to exert control over children's eating will fail or prove counter-productive. This is not the case. What the research described earlier demonstrates are the differences between what we intend to happen and what actually does. One problem is that Birch makes no distinction between control and over-control. These studies should not be a platform for abandoning parental attempts at guiding children's food choice and consumption. Children need guidance with regard to eating as they do with their other activities. Rather, the research outcome should serve as a reminder of the centrality of parental attitudes and behaviour in determining those of their children.

The external environment

The contradiction in parental attitudes to children's consumption of treat foods is characteristic of the conflicting messages about eating, shape and weight that pervade our daily lives. Full-fat, delicious cookery is broadcast into our homes, while health experts call for us to dine on a moderate low-fat menu. Our ideals of female body shape remain unattainably thin for the majority, while all body fat is stigmatised regardless of whether the bearer is normal weight or obese, feeding a growing diet industry. Increasingly, children bear witness to adults struggling to justify their own eating and expressing discontent with their appearance.

Two examples of how the external environment influences children's choice and consumption of foods will be used to illustrate this conflict. The adoption of dieting and other weight-control strategies in an attempt to conform to aesthetic body shape standards will be considered. First, should we be worried about the commercial promotion of food to children?

Marketing of food to children

A good deal of concern has been expressed over the influence of industry, advertising and the media on children's eating. It comes at a time when the media generally, and television in particular, stands accused of undoing the social connectedness that underpins civil life (Putnam, 1996), dissolving childhood (Postman, 1994), promoting violent and aggressive behaviour in children, alcohol and tobacco use, and hastening the onset of sexual activity (Villani, 2001).

The food issue most widely debated in this context is that of food advertising to children. Strong feelings are expressed by opposing parties. In the preface to Adrian Furnham's (2000) monograph, *Children and Advertising*, the charge is that arguments against advertising are based on sentimentality rather than evidence. These beliefs '... suggest a moral drama with a three character cast: the grasping capitalist, the innocent child and the helpless, bystanding parent. It has an almost perfect villain and the archetypal victim. It is a parable of lost innocence'. The food industry asserts that advertising does not increase sales in any product sector but serves to maintain sales of that product within a sector or encourages customers to switch brands. In contrast, pressure groups such as Sustain in the UK argue that the type of foods advertised during children's programming is itself evidence of a grossly-imbalanced nutritional message, creating conflict with national dietary recommendations (Sustain, 2001). They argue that '... the cumulative effect of this imbalance in advertising is to reinforce children's consumption of these foods and undermine the efforts of parents and health professionals to encourage healthier patterns of eating'.

There can be little doubt that consumer-group concerns have substance. Food advertisements are the largest single category of products advertised during children's television, amounting to approximately half all the advertisements shown (Fig. 1). Looking at the types of food products, adverts for confectionery, snack foods and breakfast cereals make up more than half adverts in most of the recent studies (Table 1). This pattern is similar in the UK, USA and Australasia. It is of note that the UK has relatively fewer adverts for fast-food outlets, and that there appears to be some recent diversification, with more adverts for foods outside these main categories (such as sauces and ready-prepared foods).

Lewis & Hill (1998) looked at the style and content of advertisements broadcast during children's television. Compared with non-food advertisements, food adverts were more likely to contain animation, humour, tell a story and suggest product consumption was associated with fun, happiness or mood improvement. Interestingly, animation has been linked to greater attention in children (Barcus, 1980). Furthermore, a story format makes the advert familiar, easier to follow, more enjoyable (especially if humorous) and increases children's emotional response (Rajecki *et al.* 1994). Differences in adverts aimed primarily at children and those aimed at adults were also examined (Lewis & Hill, 1998). Child-orientated product adverts were more likely to include people, pace, animation, magic and fantasy, together with a wide range of emotional appeals. Moreover, these adverts were shown repeatedly. That the contrast between food and non-food adverts revealed fewer differences in style is a reminder that food adverts are not made exclusively for a child audience. Audience composition data showed that $>50\%$ of those viewing at the survey times were over 16 years. One interpretation is that marketing a product while children and parents are viewing together is an excellent way of influencing parental purchasing decisions.

The main concern expressed by consumer bodies and certain health professionals is that the content and exposure of food advertising to children is in conflict with recommended dietary guidelines, such as the plate model launched by the Health Education Authority (Department of Health, 2001). The target of fruit and vegetables making one-third of food choices contrasts with the absence of any UK adverts for these products (Sustain, 2001). It is noted that the majority of advertised foods are high in sugar and fat, while low in fibre. However, it is not that these foods on their own are unhealthy. Rather, the overall nutritional focus does not correspond with what the Government advises us to feed our children, and what they are taught at school; the external curriculum is at odds with the school internal curriculum.

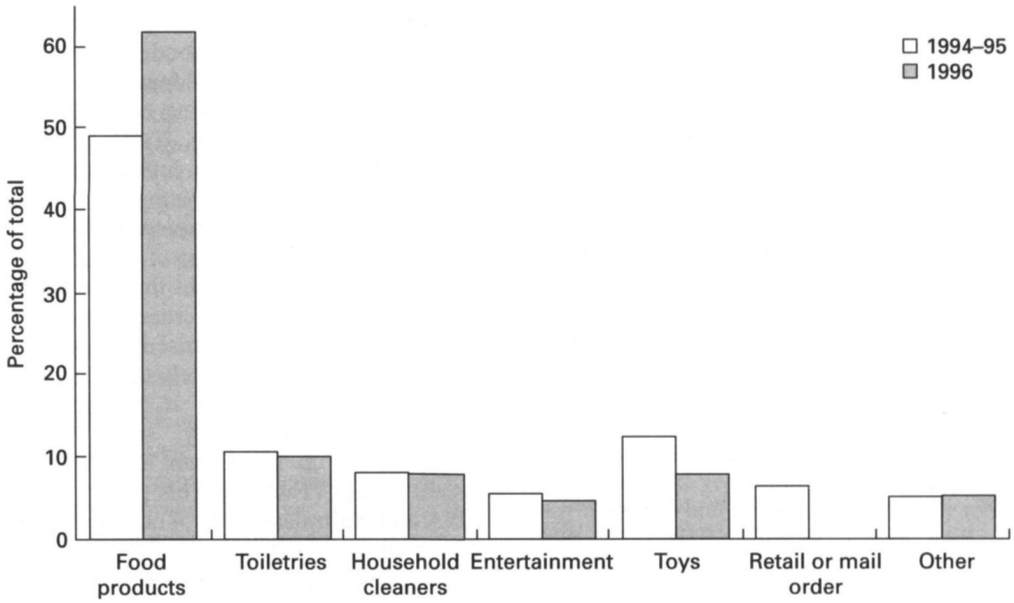

Fig. 1. Products advertised during children's viewing times on British television. (Adapted from Lewis & Hill, 1998.)

Table 1. Advertised food products on children's television (%)

	UK*			US†	New Zealand‡
	1995	1996	2000	1993	1995
Confectionery, snack foods	39·5	29·8	44·9	29·0	30·8
Breakfast cereals	21·4	30·1	7·0	34·1	12·0
Fast-food outlets	8·5	5·8	7·5	15·6	27·5
Others	30·6	34·3	40·6	21·3	29·7

* Dibb & Castell (1995), Lewis & Hill (1998), Sustain (2001).
† Taras & Gage (1995).
‡ Hammond *et al.* (1999).

Those in the business of nutritional health promotion are further dismayed by the imbalance of power. In the year up to April 2000 the UK food industry spent £190 million advertising the top ten products in the soft drink, confectionery, crisp and snack, and cereal sectors (Marketing, 2001). This sum represents only 4·6 % of the UK sales of these products. It also ridicules the tiny sum of money available to those working to improve children's nutritional behaviour. The commentary accompanying these sales and advertising data notes the sales promotion strategies used by the snack-food sector in that year. They include product tie-ins with a major children's film, further investment in the books for schools promotion, and the first UK joint advertising with a major soft drink, with the intention of building the association between soft drinks and snacks.

This major discrepancy between food marketing and health promotion aside, just what is the evidence that food advertising impacts on children's eating? Reviewing the research up to the late 1980s Young (1990) drew the following three conclusions. First, there was evidence that food advertising influences children's knowledge and attitudes about food. Second, the more children watch such advertising, the more they are affected. Third, children ask for food products advertised on television and parents often comply with these requests. In a more recent review commissioned by the Ministry of Agriculture, Fisheries and Food, Young *et al.* (1997) argue that there is no published evidence to suggest that such advertising is the principal influence on children's eating behaviour. Rather, food advertising is just one influence among others. For younger children, parents are the primary determinants of food choice, while peers become increasingly important as the child gets older. It is also worth noting that food appears on television in more than just adverts. Dickinson (1997) observed that there was an average of ten references to food per h on UK television compared with four food adverts for every 1 h of commercial television. Television programmes generally transmit healthier messages than adverts, showing individuals eating (but not finishing) meals and snacks. In addition, 30 % of the foods depicted in programmes were fruit or vegetables.

Definitive causal evidence of advertising on children's food choice is a near impossibility. Laboratory-based research will never be accepted by industry as generalisable to real-life situations. The public research purse is too small to fund the research programme necessary for extensive

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field studies. However, concerns remain, and concerns are increasing as food manufacturers are moving into schools. In-school marketing, such as the provision of vending machines, sponsors' logos on school materials, and tokens for equipment schemes, is well in place in UK secondary schools. In the USA, commercial access to the classroom is even greater (Johnson, 2001). Continued vigilance is important, especially as we know little about the changing balance between the influence of marketing *v.* parental influence as children get older. Importantly, research has not adequately addressed the question of whether certain groups of children, by virtue of their age, background, social or psychological characteristics, are more susceptible than others to advertising.

Weight concern, dieting and food choice

It appears that some extent of body dissatisfaction is the experience of most individuals raised in Western culture (Grogan, 1999). Gender shapes this experience, as more women are dissatisfied with their bodies than men. Age is also a factor, with adolescence being the peak time of these dissatisfactions. Furthermore, these dissatisfactions drive behaviour and lead to attempts to change, most commonly via some attempt at dieting. The routes to children's acquisition of shape and weight concerns and resultant dieting are discussed in detail elsewhere (Hill, 2002*a*). The focus of this short section will be on how many, and how, children and adolescents respond to dissatisfaction by changing what they eat, on how externally-set body-shape standards influence their food choice and eating behaviour.

Surveys of UK teenagers consistently show >50% of girls feeling fat and wanting to lose weight (for example, see Wardle & Marsland, 1990). Only about one-fifth of same-age boys are similarly dissatisfied. There is also substantial evidence that body-shape concerns are apparent in younger age-groups. Hill *et al.* (1994), for example, found that 41% of 9-year-old girls, using a series of scaled drawings, placed their preferred body shape at a thinner point than their current body shape. This preference for slimness is strongly influenced by the child's current body weight. About 80% of overweight or obese 9-year-old girls and boys express a desire to be thinner (Hill *et al.* 1994). However, this preference is also expressed by 35% of average-weight pre-teenage girls and 10% of underweight pre-teenage girls.

Body-shape and weight dissatisfaction are strongly associated with reports of dieting. Prevalence estimates vary widely according to what is asked (Hill, 2002*b*). General questions (e.g. Are you trying to lose weight?) produce higher levels of endorsement than more specific ones (Are you currently dieting to lose weight?). Summarising the published literature, Table 2 shows that >40% of young adolescent girls report a past attempt at dieting to lose weight, while 23% are currently dieting to lose weight. These levels are somewhat higher in older adolescents.

There is a good deal of variability in the intensity and duration of teenage diets. Roberts *et al.* (1999), in a study of UK 11–15-year-old girls, found that of those who were currently dieting, 30% had made up to two previous attempts, 17% up to four previous attempts and 6% were dieting most of the time. For one-fifth of these dieting adolescents, their diet only lasted a few days, while one-quarter reported dieting for ≥4 weeks.

Table 2. The prevalence (%) of dieting (from Hill, 2002*b*)

	Adolescent girls		Women
	11–15 years	16–18 years	
Past dieting to lose weight	42	58	55
Currently trying to lose weight	29	53	39
Currently dieting to lose weight	23	29	24

Studies of US teenagers have related dieting to more extreme weight-loss practices. French *et al.* (1995) found that decreasing fat intake was reported by 26% of adolescent girls, 25% reduced snacking and 22% reduced their energy intake. However, 12% skipped meals, 8% fasted, 5% used diet pills and 4% vomited. Overall, 15% of these girls had used at least one extreme weight-loss practice in the past year, and those who had used one were most likely to have used others. The dietary strategies used by teenage dieters include skipping meals, most commonly breakfast, increasing fruit and vegetable intake, reducing the amount of confectionery, salty snacks and high-fat foods while increasing soft drink intake, especially that of diet drinks (French *et al.* 1995; Brugman *et al.* 1997; Story *et al.* 1998).

The issues of dieting and food choice have been addressed in a rather different way by Contento *et al.* (1995). They asked a large group of female and male adolescents to rate twenty foods on nine attributes (taste, healthy, eaten by friends, etc.) and correlated these with actual food choices from a food-frequency scale. For a majority of food-choice criteria there was an apparent influence of the rater's body weight as an independent variable. However, when dieting status was included, the effect of body weight disappeared, leaving dieting to dominate food choices. The authors concluded that adolescents were demonstrating a 'psychology of dieting', involving wanting to be thinner and then making food choices believed to accomplish this goal. In particular, these adolescent dieters were more likely to eat food judged as healthy, and to eat less sugar and less fat.

As the research by Roberts *et al.* (1999) indicates, adherence to such dietary change is rare, with most attempts at dieting being short-lived. The choice of a vegetarian diet may, therefore, represent one way of sustaining a reduced-energy menu by some dieters. About 15% of teenage girls say they are vegetarian, although the exact definition is uncertain, and may at best represent red meat avoidance. In adults it has been suggested that for some individuals, vegetarianism is an attempt to mask their dieting from others (Martins *et al.* 1999). A further research finding is that young female vegetarians are more restrained in their eating, but no more likely to be currently dieting (Gilbody *et al.* 1999). This finding suggests that for this group of young women at least, meat avoidance was a watching or weight-maintenance strategy rather than a weight-loss strategy. This rather benign view of vegetarianism may be less accurate for some adolescent girls. In a study of US adolescents, vegetarians were twice as likely to report

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frequent dieting, four times more likely to vomit for weight control and eight times more likely to use laxatives than non-vegetarians (Neumark-Sztainer *et al.* 1997). Although some aspects of diet quality, such as fruit and vegetable intakes, were good, for several of these girls their vegetarianism may be entwined with chaotic or disordered eating.

The rise of nutritional autonomy

The need for children to eat healthily continues on entering adolescence. However, parental attempts to influence eating may stop, especially after years of apparent ineffectiveness or accusations of nagging. It may be especially distressing to see previously-healthy food choices and eating patterns disappear almost overnight, to be replaced by convenience food and takeaways; all that hard work undone and lost forever. How should these changes be understood and responded to?

It is important to acknowledge the dynamics of offering and receiving food in a family context. Preparing food for someone is not simply an act of catering, it can be seen as a gift. Cooking a meal is a labour of love and commitment, given with the expectation that others will appreciate the effort in preparation by eating well and expressing thanks (Lupton, 1996). The latter is not always the case, and the cook is left with a feeling of being taken for granted. A rejection of offered food is equivalent to a rejection of the provider and their love, resulting in resentment and conflict. This position is an extremely powerful one for a child of any age to occupy.

A proper understanding of the psychology of adolescence is also necessary. Adolescence is a period of role transition. The bearer has to accommodate changes within current roles, such as the difference in being an elder sibling at 9 years *v.* 15 years, while trying out new roles. It is an age when major life decisions can be left open. The adolescent is free to experiment with alternative possibilities without having to face up to the full role consequences. In psychodynamic terms it is a period of transition, moving from role confusion to an achievement of personal identity. Contemporary approaches describe the adolescent as serially addressing changing challenges, and as active in pacing themselves through this life period. Adolescence is neither chaos nor anarchy; but all adolescents will experience periods of disaffection, low motivation, self-doubt and anxiety.

Key to adolescence is finalising autonomy. The emphasis here is on finalising, since this stage is completed often before parents either realise or accept that their child sees themself as a separate individual with adult freedoms. Demanding autonomy over food and eating can be part of this process. When an adolescent rejects a meal in favour of an instant snack or says, 'Oh no, don't cook for me, I'll make something for myself', they are casting off parental influence and authority. In a state of powerlessness and lack of control some adolescents (especially girls) express this change by literally refusing to eat or by eating the wrong food in defiance. So-called bad foods are pleasurable not just because of their taste, but because they are 'junk food' prohibited by adults.

Qualitative research gives credence to this view. In a study of Canadian adolescent girls eating and liking junk food was regarded as normal for adolescents and healthy food as an oddity (Chapman & Maclean, 1993). Junk food was positively associated with enjoyment, pleasure, parties, snacks, being with friends and being away from parents or home. However, in accord with the contradiction of adolescence, junk food was also characterised for girls by associated anxieties about gaining weight, overeating, guilt and self-disgust.

Early adolescence also sees a change in the balance of social support, moving from parents to peers. From the age of 12 years and onwards parents become less important as support providers, although they rarely become unimportant (Berndt & Hestenes, 1996). Peers are important to understanding why adolescent girls initiate dieting. Research has identified social triggers to dieting, such as social and self-comparison (comparing self with peers, models, family), being teased by others or being invited to go on a diet with someone else (Muir *et al.* 1999). Peers might also be expected to heavily influence adolescent food choice. Snack food choice aside, there is no strong evidence for this influence. Rather, looking at food choice in general and fat intake in particular, Feunekes *et al.* (1998), for example, found strong similarities in habitual intakes between adolescents and their parents, and far less resemblance between adolescents and their best friends. This issue is one in need of more research attention.

Conclusions

The present review started by arguing that there is still a need to modify children's food choices and eating behaviour. Some of the competing influences have been illustrated, showing how they change in type and character as the child matures. Parents play a key role throughout, although their influence is at different times conscious or unconscious, certain or uncertain, helpful or a hindrance. However, parents should not be held wholly responsible for their child's eating, nor blamed when it is less than perfect. Instead, they need reassurance, guidance and suggestions that can be individualised according to their needs and their child's situation.

As noted earlier, advice to parents about exerting control over children's eating is not straightforward. If Birch's research suggests that control can undermine children's self-regulatory abilities, then a lack of family food rules is associated with eating more fat and sweet foods, more snacks, and less-healthy food choices (De Bourdeaudhuij, 1997). From the child's perspective, 9-year olds in the UK perceive that adults have a high extent of control over what and how much they eat (Robinson, 2000). However, the truth lies in the detail. About 90% said they had some control over choosing their breakfast, two-thirds had control over choosing their snacks and one-third had complete control over how much food they ate. Most parents would agree that today's children have substantially more control over their food choices than they had when they were a similar age. This permissiveness is not just offered, it is demanded, and often demanded because their children's peers have these freedoms.

Finally, what implications does this analysis have for interventions aimed at improving children's eating? Additional to impacting on food choice, the ideal intervention would have three objectives: acknowledge, empower and avoid. Thus, it would acknowledge parental influence, the impact of gender, age, inequality and other competing interests. It would empower by giving skills as well as knowledge. Also, it would avoid both requiring children to solve problems with which their parents continue to fail, and taking the pleasure out of preparing and eating food.

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