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**Assessing the research base for the policy debate over
the effects of food advertising to children¹**

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Abstract

This article argues that the long-running and hotly-contested debate over the effects of food promotion, especially television advertising, on children is mired in two misconceptions. First, a vision of the 'ideal experiment' persistently leads research in the field to be judged as flawed and inadequate, at times according to unrealistic standards of evidence, with the result that the two sides to the debate seem locked in an unproductive methodological argument. Second, that the theoretical debate is rather narrowly framed in terms of singular media effects, thereby polarising discussion into pro-effects/null-effects camps instead of recognising the multiplicity of determinants of children's eating behaviour in everyday contexts, and locating the role of television advertising within this. It is also suggested, however, that academic and policy commentators are often in greater tacit agreement than their much-publicised conclusions would indicate, opening the way for a more complex and negotiated consensus over the role of television advertising as one among several contributors to children's ill-health and obesity.

Assessing the research base for the policy debate over the effects of food advertising to children

The debate over the effects of food advertising on children

There have been widespread academic, public and policy concerns expressed regarding the decline in key aspects of children's health in recent decades and the possible causal role played by the promotion of 'unhealthy' foods (specifically foods high in fat, sugar and salt) to children through the mass media. While previous food-related concerns have centred on nutrition, dental health, dieting and anorexia, high levels of concern in the UK and other Western countries currently centre on the evidence of rising obesity among children (WHO 2000). The 1997 National Diet and Nutrition Survey for 4-18 year olds found one in five were classified as overweight or obese (Gregory, 2000), and the Royal College of Physicians reports that obesity has doubled among 2-4 year olds between 1989 and 1998, and trebled among 6-15 year olds between 1990 and 2002 (see Kopelman 2004, Ambler 2004, Kaiser Foundation 2004).

Many factors have been identified as possible influences on children's food choice and, consequently, on obesity. The present article concerns the evidence for one of these putative factors, namely food promotion including, particularly, television advertising. Put simply, many are asking whether television advertising is, in part, to blame for the growing problem in childhood obesity. The food industry is one of the major players in the field of advertising, with food advertising on television dominated by breakfast cereals, confectionary, savoury snacks, soft drinks and fast-food restaurants; advertising for staples and fresh foods, by contrast, is in decline. Total UK advertising spending per annum in the categories of food, soft drinks and chain restaurants is £743 million, with £522 million spent on television advertising and £32 million spent in children's airtime (OFCOM 2004).² While little appears to be known about forms of promotion other than television advertising, making it difficult to map the ways in which children are targeted by food promotions or by a promotional culture more broadly, a considerable amount of research has been conducted on television advertising. In reviewing this research, the World Health Organisation (2003: 11) report on prevention of non-communicable diseases states that:

'Food advertising affects food choices and influences dietary habits. Food and beverage advertisements should not exploit children's inexperience or credulity. Messages that encourage unhealthy dietary practices or physical inactivity should be discouraged, and positive healthy messages encouraged. Governments should work with consumer groups and with the industry (including the advertising sector) to develop appropriate approaches to deal with the marketing of food to children.'

Others agree:

‘A large and growing body of evidence ... has established significant associations between media exposure and a variety of health risk behaviours in children and adolescents’ (Rich and Bar-on 2001:156).

‘Clearly advertising tends to affect knowledge, preferences and behaviour of its target market since that is the reason for doing it’ (Ambler 2004: 5).

On the other hand, Young (2003a, see also 2003b) states:

‘After a rigorous examination of the research literature we concluded that there is no serious and methodologically sound evidence that shows that food advertising leads to an increase in the consumption by children of whole categories of foods.’

In the UK, the latest developments in this controversial public policy debate have been led by the key self-regulatory bodies, including the food regulator (the Food Standards Agency), the communications regulator (the Office of Communications) and the advertising regulator (the Food Advertising Unit of the Advertising Association). A range of independent experts has been brought in to advise the regulators from a range of academic disciplines – psychology, marketing, nutrition and health, and media and communications. As a result, we are in the midst of an academic debate over theory, methods and evidence which parallels and informs the ongoing policy debate over policy tools and possible interventions.

This article focuses on the research debate, in order to understand how evidence may guide the policy debate. Policy-makers must decide whether to intervene and if so, in which ways, if levels of childhood obesity are to be reduced. Should the focus be on restricting food promotion (especially television advertising) to children, on balancing food promotion for unhealthy foods with that for healthy foods, or on improving food labelling to identify clearly the nutritional value of products? Should efforts instead be devoted to supporting media literacy to enhance children’s critical analysis of promotional messages, or to targeting healthy eating messages to opinion leaders within the peer group? In weighing the merits of these and other policy options, the evidence base on the effects of promotional messages is undergoing detailed scrutiny, this being a crucial factor in determining their likely success.

Specifically, a critical evaluation is offered of key claims made in the literature review recently commissioned by the Food Standards Agency and conducted by Hastings et al (2003). Following a rigorous and systematic search process, Hastings et al address first, the nature and extent of food promotion messages to children aged 2-15 and second, the effects of such promotions on children’s food preferences, knowledge and behaviour. As regards this second, more controversial question, they conclude that ‘food promotion is having an effect, particularly on children’s preferences, purchase behaviour and consumption. This effect is independent of other factors and operates at both a brand and category level’ (Hastings et al 2003: 3).³ The findings of this substantial and up-to-date review are compared with the critique of Hastings et al commissioned by the Food Advertising Unit (FAU) of the Advertising Association. Conducted by Paliwoda and Crawford (2003: 3), this critique concludes, ‘we cannot

find the evidence within this Hastings Review that TV advertising has a strong influence on children's food consumption behaviour'. Other reviews are also drawn upon in the discussion that follows (Kunkel et al 2004, Livingstone 2004, Livingstone and Helsper 2004, Story et al, 2002, Young et al 1996, Young, 2003).

It will be argued that the research debate over the question of whether advertising affects children's food choices is mired in two misconceptions. First, a vision of the 'ideal experiment' persistently leads research conducted in the field to be judged as flawed and inadequate, at times according to unrealistic standards of evidence, with the result that the two sides to the debate seem locked into an unproductive methodological argument. Second, the theoretical debate is rather narrowly framed in terms of singular media effects, thereby polarising debate into pro-effects/null-effects camps, instead of recognising the multiplicity of determinants of children's eating behaviour in everyday contexts, and locating the role of television advertising within this. It is also observed, however, that academic and policy commentators are often in greater tacit agreement than their much-publicised conclusions would indicate, opening the way for a more complex and negotiated compromise, even consensus, over the role of television advertising as one among several contributors to children's ill-health and obesity.

The field of research

The research evidence regarding the effects of food promotion to children extends over forty or more years, much of it produced by applied developmental and social psychologists and, more recently, by those in the academic fields of marketing and advertising, in response to fluctuating levels of concern in different countries and in order to inform varying policy options. Most research in this field, as in other investigations of media effects, broadly follows Lasswell's original model (1948), asking 'who says what to whom on what channel and with what effect?' The point is that each element of Lasswell's question makes a difference, and so evidence must be carefully evaluated in relation to the specific research question asked, as follows (see Table 1).

Table 1 about here

Despite the range of relevant factors to be considered, as Hastings et al (2003), Paliwoda and Crawford (2003), Young (2003b) and others make plain, the body of available research on food promotion to children is neither as comprehensive nor as even in coverage as one might wish. It contains a number of gaps and biases: most research is conducted in America, with little research in other countries or cultural contexts; most research concerns television advertising solely, with little on other promotional channels or on the effects of cross-promotion; most research concerns direct effects rather than indirect effects; more research examines the effects of promoting unhealthy rather than healthy foods; children are defined differently in different studies; and so forth. This means that some conclusions can be drawn with greater confidence than others. More positively, we may observe that most research has been conducted on the direct effects on (young) children of the promotion of 'unhealthy foods' via television advertising, this being precisely where the most public and policy concern is focused.

The body of available research is also less than ideal. Many studies are designed to identify correlations not causes. Possible confounding factors tend to be examined where convenient to measure (e.g. age, gender) while key factors may be neglected (e.g. parental diet, peers' exposure to media, peer norms). Restrictions on research funding are evident in the plethora of studies with small samples and simple measures, in the paucity of longitudinal designs and the lack of good replications. However, this research may be no more flawed than others, such limits being endemic to studies of media effects (Calvert 1999, Carlsson 1997, Durkin 1995, Gunter and McAleer 1997, Livingstone 1996). On the positive side, much of the research has been funded by public bodies, conducted by independent researchers, and published in peer-reviewed journals available in the public domain. Given the considerable number of studies addressing the core question of advertising effects, it may surely be argued that sufficient knowledge is now available to determine the 'balance of probabilities' if not to reach a judgement 'beyond all reasonable doubt'. Or, are we still awaiting the ideal experiment?

The ideal experiment

Hastings et al (2003: 23) note the Chief Medical Officer's advocacy of the 'precautionary principle', namely that regulation should rest on a judgement of probable influence rather than awaiting a scientific 'answer' to the question of the harmful effects of food promotion. Notwithstanding this view, debate in this field frequently if implicitly refers to hopes of an ideal demonstration of effects. This possibility is implicit in much discussion in the literature – that if only we could resolve the methodological issues undermining research studies, we could determine for once and for all whether or not television advertising affects children's food choice. Yet, as each new study is published, it too seems vulnerable to immediate and sometimes devastating critique (e.g. Young, 2003b). One simple problem, of course, is that different experiments concern different children (age, gender, etc), different food choices, different cultural contexts, different kinds of media exposure, and so forth. In other words, the key question is really a number of distinct questions. Yet there is a more important point here, making it crucial to understand why the ideal experiment has not been, and will not be, conducted, and why methodological critique will always accompany new empirical research.

The claim for media effects must first establish a correlation between the supposed influence and the supposed effect, preferably under naturalistic conditions (through observations or a survey), and it must then examine the hypothesised causal relations between the two under controlled conditions. Certainly, there is ample evidence that hours spent watching television correlates with measures of poor diet, poor health and obesity, among both children and adults.⁴ However, only an experiment can demonstrate causality, as only an experiment controls for the many confounding factors that may also explain why children make particular food choices or why some are exposed to many and others are exposed to few, promotional messages in their everyday lives. Ideally, the experiment controls for, or eliminates the effect of, these confounding variables through the random allocation of participants to experimental and control conditions in order to balance out any influence of such variables. Additionally, the use of blind or double blind administration to prevent the introduction of new confounds is – or should be -standard in experimental studies.

However, even if these exacting conditions are met in practice (resulting in high internal validity), experiments remain vulnerable to the charge that they do not realistically reflect the conditions of everyday life – in other words, that their findings have low external validity and are not generalisable. Indeed, it has been argued that the more an experiment achieves internal validity, the more it sacrifices external or ecological validity (Hearold 1986). Nonetheless, the literature contains many attempts to make an experimental finding generalisable, by seeking to conduct the experiment in as realistic conditions as possible. In relation to television advertising and food choice, this usually means exposing children to controlled messages in ordinary rather than laboratory circumstances, randomly assigning children to, say, ‘high promotion’ and ‘low promotion’ conditions (i.e. experimental and control groups) in a convincingly naturalistic fashion, and taking measures over the long-term rather than short-term.

Attempts to conduct naturalistic or field experiments typically encounter two difficulties. First, it is more difficult than in laboratory experiments to eliminate extraneous or confounding factors, reducing certainty when drawing conclusions that the observed effects are due to variation in the independent measure (message exposure). Second, if one seeks to expose children over the longer-term to hypothesised harmful exposure, one encounters serious ethical difficulties which make it unlikely that such an experiment would be permitted by a human subjects or ethics committee.

Both academic conclusions and policy decisions must therefore be made in the absence of the perfect test. This is not just the case for food promotion, but holds also for tobacco and alcohol promotion, among many other domains. In the inevitable absence of the perfect experiment, one must resort to a judgement based on the balance of probabilities. It has been argued that the convergence of findings between correlational and experimental studies strengthens the case for effects.⁵ This seems fair, for both are central to the claim of effects. With purely correlational evidence, the direction of causality and the question of third causes, cannot be resolved. With purely experimental evidence, the claim that findings can be generalised to the everyday lives of children cannot be sustained. Or, to put the same point more positively, with a correlational study, one can demonstrate the existence of an association between exposure and behaviour under naturalistic conditions. With an experiment one can demonstrate the existence of a causal effect of exposure on behaviour under controlled conditions. Hence, although Paliwoda and Crawford (2003: 15) express a lack of understanding as to why Hastings et al (2003) compare naturalistic/observational studies with experiments, as we have noted, the difficulty endemic to this field is that observational studies bear a closer relation to the ordinary circumstances of viewers, while experiments permit an investigation of causality. Thus it seems appropriate for Hastings et al to examine any convergence in findings that exists across these two methods, though it must be recognised an inference will always be required to link these two kinds of evidence – the one with greater internal validity, the other with greater external validity – for they are not both to be found in the same study under exactly the same conditions..

Hastings et al (2003) identify a series of empirical studies documenting correlations between exposure to food promotion and variables measuring children’s food preferences, knowledge and behaviour (e.g. Ritchley and Olson 1983). In some,

though not all, of these careful attempts are made to control for the effects of potentially confounding factors through statistical means. It appears that even when such care is taken, the correlation of interest generally remains (e.g. Bolton 1983, Dietz and Gortmaker 1985). Hence, through the use of surveys, often with large samples of children, research reveals a fairly consistent, statistically significant, albeit low correlation between exposure to food advertising (variously measured) and food preferences and behaviour (here, usually self-report data).⁶

Since only an inference can link the demonstration of effects in the laboratory with the demonstration of an association in the field, it should be clear why in the field of media effects much of the debate is methodological. Not only is one dealing with complex social variables – exposure to subtle media messages, desire to accede to group norms, taste preferences, consumption habits – for which there are no simple and obvious measures and for which, as a result, there may be little consensus over measurement. But more importantly, debate centres firstly on the ‘ecological validity’ of experimental studies (the generalisability of experimental findings to everyday situations) and secondly, on the reliability, direction of causality and possible confounding of correlational studies. In this respect, many of Paliwoda and Crawford’s (2003) criticisms of Hastings et al (2003) are widely echoed in literature (Barker and Petley 1996, Cumberbatch and Howitt 1989, Young et al, 1996). Put simply, experiments are rejected for lacking external validity, correlational studies are rejected for lacking internal validity. It would seem that there is little resolution to be had here.

Some experiments are widely regarded as providing convincing evidence of the effects of food promotion on children. These include Borzekowski and Robinson’s (2001) experimental study showing effects of food promotion on brand choice, Goldberg et al’s (1978a/b; study 1) experiment showing the effects of food advertisements on food selection (this resulting in children choosing more sugared snacks than those in the control group), and Gorn and Goldberg’s (1982) naturalistic experiment, conducted over two weeks, which found that adverts for fruit resulted in children drinking more orange juice, while adverts for sweets resulted in them drinking less orange juice (in this experiment, healthy public service announcements did not have the desired effect). Serious attention is also merited by Kaufman and Sandman’s (1983) non-naturalistic but carefully conducted experiment with a large sample of American children, which found that children exposed to advertisements for sugared food make fewer healthy food choices (they chose roughly half and half healthy/nonhealthy options) compared to those who are exposed to counter advertisements (healthy messages) (who choose roughly healthy/unhealthy options with a 60/40 ratio).⁷ Note that while some experiments (e.g. Borzekowski and Robinson 2001; Goldberg 1978a/b) are conducted in the non-naturalistic setting of the laboratory, raising the question of applicability to everyday settings, other experiments (e.g. French et al, 2001, Galst 1980, Gorn and Goldberg 1982) are conducted in field settings (e.g. in schools), often with the intervention lasting a matter of weeks (rather than minutes). Considerable efforts have been deployed in some of these studies, in the attempt to maximise generalisability.

Six possible conclusions

Although, as has been argued, the legitimacy of research inferences can always be contested, this does not mean that in practice, no conclusion can ever be drawn. Indeed, on the basis of the available research evidence in relation to food promotion and children, several conclusions may be drawn (Livingstone, 1996). First, it must be determined whether there is sufficient reliable and valid evidence on which to draw any conclusion. Hence, one possibility is:

1. *Don't know.* Given the methodological problems, the available research evidence is too flawed for robust conclusions to be drawn that might reasonably inform policy.

If this is rejected, at least on the basis of 'a balance of probabilities', one must decide which of these two conclusions has the greater merit:

2. *Pro-effects.* The available research evidence shows that food promotion has a causal effect on children's food preferences, knowledge and behaviour.
3. *No effects.* Notwithstanding a few exceptions, the weight of the available research evidence suggests that food promotion has little or no effect on children's food preferences, knowledge or behaviour.

The above three conclusions are clearly mutually incompatible. The 'pro-effects' conclusion, if advocated, may be subdivided into a claim regarding the extent or size of the effects, leading to:

4. *Modest effects.* The available research evidence shows that food promotion has a causal effect on children's food preferences, knowledge and behaviour, though this is a modest effect by comparison with more influential factors such as parental diet, peer pressure, exercise, etc.
5. *Strong effects.* The available research evidence shows that food promotion has a strong causal effect on children's food preferences, knowledge and behaviour, particularly by comparison with other factors.

Lastly, and characteristic of the media effects debate more generally, one may concede that experiments do show effects, but then contest their relevance to real world contexts, thus:

6. *No real effects.* Research conducted using experimental designs does reveal effects of food promotion (in the main, of television advertising), but these occur only in artificial circumstances and so cannot be generalised from the peculiar situation of the 'laboratory experiment' to the reality of children's everyday lives.

These six conclusions do not exhaust the set of logical or empirical possibilities, but they do encompass the main conclusions advocated by different parties to the present debate. Which is most reasonable, or most balanced, is precisely the issue at stake though, confusingly, it seems that across the academy and doubtless also among industry and policy stakeholders, it is always possible to find advocates for each of

these conclusions. Hastings et al (2003), while being careful not to reach categorical conclusions, and being sensitive to the complexities and limitations of the research domain, come down in favour of the second, 'pro-effects' conclusion; they do not consider in detail the question of strong versus modest effects (conclusions four versus five). Paliwoda and Crawford (2003), by contrast, reject this second solution and advocate, at various times, the first (don't know), third (no effects), fourth (modest effects) and sixth (no real effects) conclusions.

An implicit consensus in favour of 'modest effects'

It is also possible, and more helpful perhaps, to interpret each of these reviews as agreeing on the fourth conclusion. In other words, notwithstanding the many contested arguments regarding methodology, comprehensiveness, bias, and so forth, I suggest that a careful reading of these apparently conflicting reports suggests that a tacit consensus exists in favour of modest effects.

Note first that some of the differences among the reports depend on the precise formulation of the research question. Young et al (1996: 1) argue strongly against one extreme case, saying that:

'there is no evidence to suggest that advertising is the principal influence on children's eating behaviour' (p.1).

This is undoubtedly the case, though it is not clear who they are arguing against, since no references are cited in which the claim is made that food promotion is the *principal* influence. Hastings et al (2003 :executive summary conclusions), instead, argue against the idea that food promotion has *no effect* (the opposite extreme case), claiming that:

'food promotion is having an effect, particularly on children's preferences, purchase behaviour and consumption'

However, they make no claim regarding the relative importance of food promotion among other influences. Paliwoda and Crawford (2003: 16-17) would seem to agree that food promotion or, more specifically, television advertising, has a modest effect on children's food choices. For example, discussing studies by Bolton (1983), and Ritchey and Olson (1983), they quote uncritically the claim that:

'parental behaviour had a much greater effect on children's food consumption than did television... in essence the finding was that marketing variables have a small effect and non-marketing variables a much greater effect'.

The expressed concern here is that this small effect is inappropriately talked up in the executive summary and, especially, the press release for Hastings et al; yet Paliwoda and Crawford do not appear to contest the existence of this small effect. Similarly, on p. 21 of their review, the claim that food promotion accounts for 2% of the variation in children's food choice (c.f. Bolton, 1983) is reported without criticism.

Paliwoda and Crawford's conclusions (2003: 3) again appear to grant the existence of effects when they quote, apparently approvingly, Hastings et al's statement (2003: 20)

that food promotion need not undermine children's health and 'could just as easily be positive as negative'. If we distinguish the existence of effects (yes or no) from the nature of the effect (positive i.e. pro-healthy versus negative i.e. pro-unhealthy foods), it would seem that, in agreeing here with Hastings et al that effects could as easily be positive as negative, Paliwoda and Crawford grant the existence of effects – i.e. that food promotion influences children's diet (for example, neither they nor Young et al, 1996, criticise Goldberg et al's 1978a/b study 2 finding that prosocial television has a positive effect by encouraging healthy eating among children). Young et al (1996: 86) also appear to conclude in favour of modest effects when they say that:

'Such studies [laboratory experiments] demonstrate that, in the short term, children will prefer and choose what they've just seen but this doesn't adequately simulate the role of advertising in real life. Children are surrounded by advertising for different products and brands and will utilise mental representations of this information, together with other information from peers, and past experience with foods in order to negotiate food choice within the family'.

This is not to say that there is no ambivalence evident in Young et al's conclusions (1996: 77 and 97). Describing the study by Goldberg (1990), they summarise the findings thus:

'although this experiment tells us nothing about the processes occurring between watching and purchase, it demonstrates that a link does exist although the power of advertising's influence relative to other sources of influence cannot be determined with this study'.

In other words, the study may not be able to explain the link between television advertising, and nor does it show the effect to be large; but the existence of the link is apparently accepted.

Whether an effect is positive (pro-health) or negative (promoting unhealthy food) clearly depends on the nature of food promotion. A number of studies reviewed in Hastings et al (2003) indeed suggest that 'healthy' messages increase healthy food choices while unhealthy messages increase unhealthy food choices. The point of combining the two systematic reviews in their review is to link the nature of food promotion with the effect of food promotion. The overwhelming evidence regarding the nature of food promotion is, to quote Hastings et al, that 'the advertised diet is less healthy than the recommended one' (executive summary, conclusions).

Apart from their justifiable concern that most research included in Hastings et al's first systematic review is American and that it focuses on television advertising rather than food promotion more generally, it is important to note that Paliwoda and Crawford do not contest Hastings et al's conclusion that the advertised diet is less healthy than the recommended one. Implicitly then, if not explicitly, Paliwoda and Crawford appear to agree with Hastings et al that most television food advertising is for comparatively unhealthy products (i.e. those high in fat, sugar and salt). In essence, then, Paliwoda and Crawford implicitly grant both Hastings et al's main arguments: (1) that television advertising affects children's food choice (potentially, positively or negatively) and (2) that much if not most television food advertising is

for unhealthy products. The implication, then, is that in practice television advertising is having an adverse effect on children's food choice.

The consensus is not complete: one disagreement centres on the size of the effect (i.e. conclusions four versus five). Specifically, the academic seminar hosted by the Food Standards Agency disagreed with the modest effects conclusion, claiming instead more major effects when they state that 'the meeting considered that Young's view that advertising plays a comparatively minor role in influencing children as compared to, for example, parents and school was not supported by evidence'. Problematically, however, the evidence base for the relative influence of television advertising compared with other influences is small-to-absent. Is it 'comparatively minor'?

Unfortunately, few of the studies reviewed by Hastings et al (2003) note the effect size of the significant findings reported (Emmers-Sommers and Allen, 1999). However, available comparisons with other factors suggest that the measurable, direct effect of food promotion on children's food preferences, knowledge and behaviour is comparatively small. It must be remembered that findings that are statistically significant may or may not be socially significant in policy terms. Requiring statistical significance is a means of ensuring that the findings are highly unlikely to have been obtained by chance. Socially significant findings, on the other hand, are those that make a difference that matters – and this is of course, a question of judgement.⁸

In conclusion, I suggest that there is in Hastings et al and Paliwoda and Crawford (reporting on behalf of the Food Standards Agency and the Advertising Association respectively) a consensus that television advertising has a modest effect on children's food choice, a conclusion that is, moreover, generally supported by the evidence.. In other words, although a fair number of the studies reviewed by Hastings et al are, as Paliwoda and Crawford, Young and others fairly point out, flawed in design or confused in their findings (leading towards the 'no view' conclusion), a number of other studies offer more convincing support. While some academics may remain reluctant to draw this conclusion explicitly, it will doubtless be pertinent to policy considerations, if not to the academic debate, that the public is unlikely to consider it credible that an industry that spends huge sums each year advertising food to children on television does so with no actual (or intended) effect on children's food consumption. So, how can we take things forward?

Turning the question around

The possible harms (or benefits) of food promotion is a valid and important research question, part of the study of social influence and persuasion more generally. However, the central policy concern here is with children's diet, health and the rise in obesity. If one asks, as in much of the literature, '*does* food promotion affect children's food preferences, knowledge and behaviour?', different sides to the debate will continue to be polarised, with continued calls for new and better research followed by continued methodological dispute. Alternatively, one can ask *what* factors affect children's food preferences, knowledge and behaviour?

Food preferences and diet are obviously multiply determined. Whether or not food promotion plays a role – and as we have seen, the evidence does appear to point to a modest role – research can consider which factors should be taken into account to

gain a more complete picture of the determinants of children's diet and health? How do these various factors interact? Which are more important, for whom and under what circumstances? And which are more or less amenable to policy intervention? This approach, I suggest, opens up some more fruitful avenues for inquiry without revisiting the polarised effects/no effects debate. As Kline (2003) observes:

‘rather than the causal hypothesis, the driving force behind the risk factors approach is the quest to understand what it all depends on’.

Particularly, a refocusing on a probabilistic assessment of range of risks to children's health takes us into a broader and potentially more productive discussion of the various factors involved in children's food choice. Notably, an attempt to identify the comprehensive range of possible factors influencing children's diet is missing from (or beyond the remit of) Hastings et al (2003), though widely discussed in the research literature, particularly the more social and cultural literature. Few appear to disagree with Young et al (1996: 2) when they conclude that:

‘future research must evaluate the relative contribution of each domain [social, physiological, etc] to the development of food choice patterns, food preferences, and eating style’.

In their conclusion, Hastings et al concur, noting that more research is needed to answer this question. Both Hastings et al and Paliwoda and Crawford follow the research literature in concluding that parental diet or food preferences may have an influence. Less is said about the influence of other children in the peer group in either report. This is striking given the popular, if anecdotal, view that it is the fear of standing out that leads many children, supported by their parents, to join in with the peer norms in favour of sweets, crisps, fizzy drinks, etc. Since these peer norms may, in turn, be influenced by food promotion and advertising, resulting in an indirect effect on children's food choices, these other factors and their interrelations require further examination.

In the wider research literature, however, much of which is American, many commentators are agreed that multiple factors affect children's food choice as part of a larger web of causality concerning parenting, socialisation and health. Story, Neumark-Sztainer and French (2002) suggest that the factors influencing food choice operate at four distinct levels. (1) Individual - psychosocial, biological and behavioural factors. (2) Interpersonal - family, friends and peer networks. (3) Community - accessibility, school food policy and local facilities. (4) Societal - mass media and advertising, social and cultural norms, production and distribution systems and pricing policies.

If we classify the factors identified in recent literature reviews in these terms (Hastings et al 2003; Kaiser Foundation 2004, Kunkel et al 2004; Livingstone and Helsper 2004, Story et al 2002, Young et al 1996, Young 2003), we can see more clearly the influences on children's food choice (see Table 2). This usefully locates food promotion, and television advertising, as one factor among others in explaining childhood food choice and obesity. However, it should be noted that, for each factor identified, the body of findings is generally small and not always clear-cut. Hence Table 2 also maps out the research agenda ahead.

Table 2 about here

In moving forward, two key questions are crucial. First, as we have seen, too little is known of the range and relative importance of these factors. Particularly, little research has addressed the question of relative influence of diverse factors. Second, how shall we conceptualise the mode of operation of these factors, given that they are likely to interact with each other, indirectly affecting children's food choice? The research literature abounds in models of the influences on food choice, and this is not the place to review these. However, it is too simple to posit that these multiple factors each plays a separate role in accounting for variation in food choice. Rather, it is worth distinguishing between:

- Models that hypothesise multiple factors which have a single point of influence (as in Young et al 1996: 2), where food promotion, parental diet, peer preferences, etc all converge to influence children's food preferences. It is then assumed that a purely individual, linear, cognitive process results (in Young et al: wants → requests → parental decision → further requests). On p.3, this model is repeated, now as a flow chart, but again no social influences are shown to affect children's requests, taste preference, consequences of eating, or further requests.
- Models that hypothesise multiple factors which have multiple points of influence. This would take issue with the model in Young et al by positing not only that social influences affect children's wants but also children's requests, parental decisions, children's further pestering, and so forth. In other words, social influences, including media influences, may affect the acceptability or conventions governing the expression of wants as requests, the familial and peer cultures governing actual purchase decisions, and even perhaps the perceptions of 'nice', 'cool' or 'fun' foods once eaten.⁹ For this category of model, food promotion may influence children's food choices directly (as we have seen, a modest effect), and it may influence these indirectly by influencing cultural conventions, food perceptions, familial decisions, peer culture, and so forth (as we have seen, a set of largely-unexamined hypotheses in which food promotion is believed by many to play a less modest role).

This latter category of model prioritises the crucial problem of indirect effects. Recent trends in marketing practices are shifting from attempts to influence one-off behaviours towards attempts to gain long-term loyalty through lifestyles, habits, peer norms, cultural expectations, etc. These are fundamentally social, and cannot be understood as purely individual phenomena. Most academic commentators on the broader rise in promotional (or consumer) culture take the view that multiple sources of promotional messages increase the effectiveness of the communication and make it more difficult to evade any effect (Kinder, 1999; Kline, 1993; Wernick, 1991). This would call for a review of a different kind of research: not solely the direct effect of promotion on individuals but also mapping the range of direct and indirect influences among all the relevant factors (Story et al 2002).

Conclusions

This commentary has suggested that there is a modest body of fairly consistent evidence demonstrating the direct effect of food promotion (in the main, television advertising) on children's food preferences, knowledge and behaviour, and that the key players on opposing sides of the policy debate tacitly if not explicitly agree on this. However, the indications are that this evidence explains only a small amount of the variance. Hence, it is likely that other factors can be identified which have a greater direct effect. Future research priorities should concentrate on attempts to replicate the better-quality experimental studies and on a concerted effort to identify and research these other factors, weighing their influence in relation to that of food promotion.

It has also been suggested that food promotion may have greater indirect than direct effects. However, this cannot be demonstrated easily, if at all, using the experimental designs required for causal claims. For many, the pervasive nature of promotional culture is obvious, though others contest this. Yet for social scientists, the challenge is to produce rigorous evidence for (or against) such a claim. This is because the outcomes of interest here (children's food knowledge, preferences and behaviour) are multiply determined, requiring the simultaneous investigation of the effects of multiple interacting factors, preferably under naturalistic conditions. Even more difficult to investigate is the possibility that advertising and promotion serves more to reinforce or sustain existing levels of product awareness or interest than it does to increase them (Gerbner et al 1982).

In commenting on this contested field of research, a range of future research directions have been identified. The immediate question for the policy makers, however, is whether these modest findings of direct effects, together with the likelihood of (but difficulty of establishing) greater indirect effects, are or are not sufficient to justify intervention in the commercial business of food promotion to children.

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Table 1: Theory and Method in Researching Media Effects

Question	Typical Methods	Main Factors Researched
Who	Analysis of range of message sources	Advertisers. Broadcasters. Health education bodies. Governments. Etc.
Says What	Message (content) analysis	Persuasive strategies. Balance of un/healthy messages. Food labelling. Etc.
To Whom	Range of sampling strategies	Children (variously defined). Young people. Parents. Peers. By age, gender, ethnicity, socio-economic status. Etc.
On What Channel	Mapping of range of promotional channels (extent, expenditure)	Television advertising. Public service messages. Signs and packaging. M, merchandising. Cross-promotions. Etc.
With What Effect	Experiments, quasi-experiments, observations, interviews, surveys	Short/long term effects, direct/indirect effects, cognitive/behavioural/emotional effects. Effects on food knowledge, purchase intention, preference, attitudes and liking. Purchase behaviour. Pester power. Memory for advertisements and products. Etc.

Table 2: A multi-level model of factors affecting children's food choice

Level	Factor/argument
INDIVIDUAL	
Social psychological	Food preferences (especially if established early)
	Taste/ sensory/food perceptions (more emphasised by some)
	Health and nutrition (less important among teens)
	Meanings of food (associations with friendship, fun, etc)
	Self-efficacy (higher self-efficacy associated with healthy choices)
	Food knowledge (though weak relation to diet)
Biological	Heredity
	Hunger (especially when growing fast)
	Gender (boys eat more, girls may under-eat)
Lifestyle	Time and convenience (actual/perceived constraints on choices)
	Cost (teens highly price-sensitive)
	Meal patterns (especially, habit of skipping meals)
	Dieting (especially among girls)
	Exercise (trend of reduced physical exercise among youth)
INTERPERSONAL	
Family	Poverty (income linked to diet)
	Family meals (eating together associated with healthier diet)
	Food availability (a matter of habits and convenience)
	Parental weight, diet, food preferences and nutritional knowledge
Peers	Influence of friends (link with peers' diets)
	Conformity to peer norms/peer pressure
COMMUNITY	
Schools	Type of school (healthier diet in primary schools)
	Finance (selling snacks, compete with commercial food sources)
	Commercial contracts (vending machines, soft drinks, etc)
	Advertising/ sponsorship in schools
Commercial sites	Fast-food restaurants (cheap, fun, part of teen lifestyle)
	Vending machines (snacking vs meals)
	Convenience stores (located near schools, etc)
	Worksites (teens' part-time jobs, discounted food, etc)
	Leisure opportunities (snacks, few physical exercise opportunities)
SOCIETAL	
Consumerism	Youth market (pocket money, discretionary spending power)
	'Pester power' (children influence parents who seek to please)
Media	Media-rich environment (at home/bedroom/leisure)
	Food advertising (much devoted to foods high in sugar, salt and fat)
	Multiple forms of promotion/promotional culture/cross-promotions
	Television exposure (viewing habits, often unmediated by parents, associated with snacking)
	Media literacy (more viewing encourages more food requests, critical literacy develops slowly)
	Influence body image (norms of beauty/thinness, dieting as normal)

Endnotes

¹ This article is based on a more detailed commentary commissioned by Ofcom from the author as an independent expert (Livingstone, 2004; Livingstone and Helsper, 2004).

² Indeed, three quarters of all spending on food promotion through the mass media in the UK (to all audiences) is spent on television advertising (Hastings et al, 2003), and these spending figures increase substantially if other forms of promotion are included (Paliwoda and Crawford, 2003).

³ Unfortunately, typical research designs do not seek to operationalise this distinction, rendering the evidence difficult to relate to the marketing distinction between brands and categories. Instead, being more oriented towards health policy, they tend to compare the effects of food promotion on children's choices of healthy and unhealthy foods.

⁴ See Gortmaker, Must, Sobol, Peterson, Colditz and Dietz (1996), Kaiser Foundation (2004), Klesges, Shelton and Klesges (1993), Wong, Hei, Qaqundah, Davidson, Bassin and Gold (1992) and Bar-on (2000). However, exactly what this correlation indicates is unclear. It may be that (1) television viewing is a sedentary activity that reduces metabolic rates and displaces physical exercise; (2) television viewing is associated with frequent snacking, pre-prepared meals and/or fast food consumption; (3) television viewing includes exposure to advertisements for food products high in fat, sugar or salt; or (4) some third case – e.g. social class – is correlated with both high viewing and poor food choice.

⁵ See the conclusions of the FSA's academic research seminar (26/11/2003). http://www.foodstandards.gov.uk/multimedia/webpage/academicreview#h_5

⁶ In correlational designs, statistical techniques of partial and multiple regression and path analysis are used when one wants to hold one or more variables constant while examining the effects of the others or to understand the relationships among a set of predictor variables and a single dependent variable (Hays, 1988: 608). Yet this too permits only inferences about, rather than conclusive demonstration of, causal relations among variables among everyday conditions, and such inferences remain only as plausible as the theory that guides them (Bordens and Abbott, 1988).

⁷ This study suggests that advertisements affect category choices (increasing overall market size for a product category) as well as brand choices (increasing market share for one brand over another within a category) and, further, that prosocial messages can counter the effects of advertisements. Other examples include Ross et al's (1981) a non-naturalistic but carefully conducted experiment which showed that adverts for soft drinks with artificial fruit flavour increase children's confusion about the existence of fruit in the product, and Stoneman and Brody's (1982) experimental finding that children who watched food advertisements made more subsequent attempts to influence their mother's purchases in the supermarket, compared with the control group.

⁸ In the case of television violence, meta-analysis shows that both correlational and experimental studies tend to reveal fairly consistent, but fairly modest effects, accounting for some 5% of the variance in the dependent variable (Hearold, 1986). Bolton's (1983) finding that television advertising accounted for 2% of the variation in children's food choice (compared with 9% for the influence of parental diet on children's diet) is thus in line with findings for media effects elsewhere.

⁹ See Livingstone and Helsper (2004) for a review of the evidence for mediating factors relevant to a complex explanation of children's food choice.