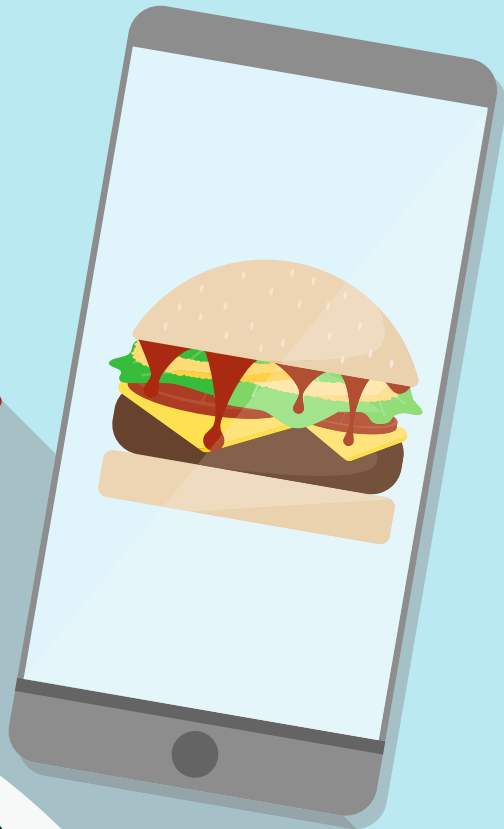


BARRIE GUNTER



FOOD ADVERTISING

Nature, Impact and Regulation



Food Advertising

Barrie Gunter

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What are the Concerns about Food Advertising?

INTRODUCTION

This book will examine research and public policy issues concerning food advertising. Food manufacturers and distributors are among the biggest promoters and marketers of any product category in the mainstream mass media and on other major promotional platforms. The food and non-alcoholic drinks industries buy extensive advertising space on television, radio, on cinema screens, in print media and increasingly online. Their products are prevalent in many major retail outlets and reach people daily through billboards and posters distributed throughout many outdoor and indoor physical environments through which many people pass each day or on the sides of public transportation. Food advertising is ubiquitous. This phenomenon is not in itself illegal, but it has become the source of wider public-policy debate and a target for government intervention when considered in the wider context of emergent food habits and their public health consequences. It is in the latter context that this book takes up its review and analysis. Table 1.1 presents an overview of the topics this book will examine.

THE FUNDAMENTAL HEALTH PROBLEM

One of the most serious and persistent problems facing the world today is to ensure that people consume a healthy diet. While in some parts of the world the central issue is that there is not enough food to go around and that people do not have enough to eat, in many others the main concern

Table 1.1 Synopsis of the structure of the book**Chapter 1: What are the Concerns about Food Advertising?**

This chapter presents an overview of the key issues linked to food advertising in the broader context of growing concerns about adult and childhood overweight and obesity. Food advertising has been identified as a primary target for government intervention. The rationale for this action is that food advertising is believed to shape children's orientations towards food and that most advertising for food products is dominated by energy-dense products deemed to have poor nutritional quality.

Chapter 2: What is the Balance of Evidence for the Effects of Food Advertising?

Major reviews of social scientific research evidence have been conducted over the past 20 years, many of which were sponsored by national governments, national or regional health authorities or international health-advisory and policy-making bodies. These reviews have, therefore, influence policy-makers' thinking about the regulation of food advertising. At the same time, these reviews have produced mixed evidence for the effects of food advertising on children's food choices, preferences and habits and for the specific effects of food advertising on the health and well-being of consumers.

Chapter 3: What is the Potential for Exposure to Food Advertising?

Before food advertising can exert direct influences on consumers, they must be exposed to its messages. This chapter examines empirical evidence about the opportunities for food advertising exposure. This evidence derives extensively from audits of the presence of food advertising in different media as well as the media consumption patterns of consumers. The evidence is quite compelling about the prevalence of food advertising. This is especially true of television, which remains the most important advertising medium for the food industries. There is also clear evidence from a number of countries that programmes that are popular with children are frequently laden with food advertisements and that these advertisements are mainly for energy-dense food products. Such evidence, therefore, opens up real possibilities for products deemed unhealthy to have high visibility to children.

Chapter 4: Food Advertising; Informative, Misleading or Deceptive?

Once exposed to food advertisements, those messages must present content that will have specific effects on consumers. This chapter examine the nature of the information and persuasive content of food advertisements to determine the possible effects that might flow from them. Do food advertisements present information that can help consumers determine their health value? Do these advertisements focus on making brands look appealing without any indication as to whether they could form part of a healthy diet? Does the food sector provide misleading information about their products? These questions are examined through relevant empirical evidence to take us a step further towards defining the possible effects that food advertisements could have on consumers.

(continued)

Table 1.1 (continued)**Chapter 5: Does Food Advertising Influence People's Food Preferences?**

Ultimately, what policy makers, parents and other interested stakeholders need to know is whether food advertising actually influences consumers', and especially children's, food preferences and choices. This chapter shifts attention from potential to actual outcomes of food-advertising exposure. The investigation of food-advertising effects has been conducted through a number of methodologies. Some of these can demonstrate causal connections between food advertising and food choices, while others can simply identify where there are statistical associations between them. Insights can also be gleaned from more impressionistic studies in which consumers offer up their own insights into food advertisements and whether they believe their food tastes and preferences might be shaped by them. The evidence base contains findings that suggest food advertising influences and that render this conclusion less certain. It is important for policy-makers to go beyond simply looking at the findings and to ask serious questions about whether specific studies stand up to critical scrutiny or are based on a type of research that is capable of demonstrating food-advertising influences.

Chapter 6: Does Food Advertising Affect People's Health and Well-Being?

Food advertisements are designed to promote food brands by make them more visible and by imparting persuasive appeals to consumers that render those brands more attractive. In more general terms, however, how important are food advertisements as agents that can influence the general health and well-being of consumers. It is possible that food advertisements could persuade people to buy and use specific brands, but do they represent a major source of social influence over an individual's entire diet. It is that diet that is more significant when considering how eating habits might impact upon general health status.

Chapter 7: How Important are Other Factors in Understanding Consumers'**Responses to Food Promotion?**

Food advertisements do not operate alone to provide information to people about foods. Even if they can exert certain influences over individuals' food preferences, it is impossible to ignore the influences of other social and cultural factors. Although this book does not provide a detailed examination of those factors, the current chapter asks whether social scientists interested in the specific effects of food advertisements have always take sufficient account within their research study designs of the effects of these other, extraneous factors. If they have not, is this a problem for the veracity of their evidence? If they have, has this been done with sufficient flare and skills that adequate controls for other variables were deployed?

Chapter 8: What Regulatory Challenges Does Food Advertising Present?

The focus on regulation of food advertising stems from a belief that it makes a real difference to consumers', and especially children's, food choices and habits. To what extent, however, do politicians and other policy makers in this field appear to call upon valid research to inform any adjustments they make to food promotions regulations and codes of practice? Is there an overblown expectation that greater food marketing restrictions will produce real social changes in people's food habits? Is the effectiveness of specific public policies adequately assessed?

is that people eat too much. Excessive food consumption, especially when coupled with diminishing levels of physical activity, has become more common around the world and underpins an increased prevalence of overweight and obesity. This phenomenon, in turn, can have important health consequences that are bad for citizens and consumers and create heavy financial burdens for societies whose health authorities must pick up the pieces. It is understandable that authorities seek to tackle this growing public health and well-being problem and equally that governments that may be in office for only limited terms should seek quick solutions. Political agendas and needs have, therefore, often driven governments to seek solutions that are most readily attainable through the most visible actions.

Trying to reverse deep-seated cultural norms associated with eating might prove difficult and require long-term strategies and actions that far exceed standard terms of political office. The solutions required here might often need subtle interventions that do not readily lend themselves to bold political statements about outcomes. Finding targets that appear to be (and indeed may in fact be) part of the problem that can be addressed more directly and swiftly, therefore, has great political appeal. Hence, food-marketing practices have come within the sights of governments, often at the urging of international health organisations. Since these practices are presumed to play a part in shaping people's food preferences and habits and in turn appear to promote unhealthy food-related behaviours, then it makes perfect sense to tighten up controls over food promotions to reduce at least one set of factors believed to work against the well-being of a society's population.

The World Health Organization (WHO) has published figures revealing that the prevalence of being overweight or obese has reached worrying proportions among adult and child populations around the world. The basic nature of the problem has been stated in simple terms. The conditions of being overweight or obese result from an imbalance between food energy intake and energy expenditure. If we absorb more calories through food than we burn off through activity, we gain weight. Researchers from many disciplines across the medical and social sciences have further identified multiple genetic, family-related, social and cultural factors at play in relation to why this state of affairs should arise in the first place. One of the key areas that governments and health authorities have focused on most has been the way food and non-alcoholic drinks products are presented and promoted to consumers.

The overweight and obesity problem is global. Although food availability and affordability, family eating practices, and physical activity levels can all vary from one culture to the next, a consistent trend towards increased weight gain across many societies both among adults and children, has led health authorities to seek global explanations. Very often these explanations have focused a great deal—fairly or unfairly—on the actions of the food and drinks industries. It is not the intention of this book to demonise food manufacturers and distributors. Yet national governments and health regulators and other international health advisory and policy-making organisations frequently do.

This is not to say that the marketing activities of the food and drinks industries have no impact of relevance in the context of the status of the health and well-being of consumers. There is little doubt, however, that they are easy targets for governments seeking quick fixes to social problems through highly visible solutions. If the ultimate objective of national governments is to take steps to improve the health and well-being of their populations as a function of changing eating habits, then it is important to address the causal agents that are most significant and not simply the ones that are publicly the most visible.

FOOD HAS BECOME MORE THAN JUST NOURISHMENT

We need food to survive, but in societies where food is plentiful choices are more susceptible to higher-level human needs, such as esteem. In a commoditised world, foods are defined not simply by the nutritional qualities but also by a much bigger social brand image. As with other commodities, there is a social status factor at play with food as well. Some social groups make a point of preferring specific types of foods. Food marketers enter this social arena as well and develop versions or variants of foods that are promoted as ideal for specific consumer groups. This marketing process effectively encourages consumers to make decisions about the purchase of foods on the basis of ‘brands’. Brands represent distinguishing names or labels that help us to differentiate variants of the same type of foodstuff in markets in which many different variants are available. There is nothing inherently wrong with brands or branding processes. They help consumers differentiate between product variants. This can be very important in crowded and competitive marketplaces that offer many food variant choices.

Brands convey messages about the physical qualities of the product, but also about the type of person who makes particular kinds of food variant selections. Brand reputations are learned by us as food consumers. This learning takes place from our parents and other family members with whom we are brought up as children, from our friendship and peer groups, and also from the promotional activities of the food production, distribution and retailing industries. These industries are among the biggest and most powerful in the world. We should not be surprised about this because we all need to eat food.

Furthermore, in developed societies in which food is plentiful and readily accessible, where the range of choices is extensive and diverse, and in which busy lives mean we often seek shortcuts to making personal selections, branding and associated promotional activities provide aids to dietary decision making. The food manufacturers and retailers have been only too willing to bombard us with ‘helpful’ messages to guide our dietary choices. They exist in highly lucrative and yet also highly competitive markets and they are, therefore, willing to make considerable efforts to win our custom and loyalty.

THE FOOD MARKETING FACTOR

The constant exposure we receive to food-marketing messages may be deemed as attempts at helping us as busy consumers on the part of those who sell food to us. Yet it has also been identified in many parts of the world as playing a critical part in shaping dietary patterns, which have created a wide range of health risks, ill-health and even heightened death rates from specific illnesses (Brownell & Horgan, 2004). Although it is perfectly true that social and cultural mores can define food consumption patterns, in a world of global food production and non-local sourcing, branding can become more important to consumers when make food choices. This is where food advertising becomes a potentially significant factor of influence. The fact that food advertising can influence food choices does not make it inherently a bad thing. There is more of a problem though when the brands that receive the most widespread promotions are for foods deemed to be unhealthy.

As we will see, evidence has emerged from social-science research to show that many food brands that receive the most widespread publicity through advertising in mainstream media, event sponsorship, premium offers and associated merchandising are those that have the poorest value

in terms of their nutrient qualities. These are products that often attract the biggest consumer bases because of their pricing structures and simply because the best-known brands in these ranges generate massive revenues for their producers and sellers, which means they can also receive the best resourced promotional campaigns.

These biggest-selling foods tend also to be ones highest in terms of fat, sugar and salt content. Over-consumption of such-energy-dense foods by populations in developed societies that have, because of their comfortable lifestyles, become more sedentary, means that more of their citizens are ingesting far more energy in the form of calories than they burn up each day. As a result, they are gradually but inexorably gaining in weight. The outcomes are the two ‘O’s’—*overweight* and *obesity*.

OVERWEIGHT AND OBESITY ISSUES

Fat gain has been identified as causing a multitude of health problems. These problems can become acute when people grow from being somewhat overweight—that is heavier than a weight that would be optimally healthy for them given their height and other structural characteristics—to being morbidly obese or chronically heavier than is good for them.

According to the WHO, obesity worldwide doubled between 1980 and 2014. The WHO calculated that by 2014, more than 1.9 billion adults aged 18 years and over were overweight. Nearly a third of these (600 million) was classed as obese. Despite concerns about food shortages in certain parts of the world leading to malnutrition of entire communities, obesity was a bigger health risk and killer than being under-fed (WHO, 2015).

Data released by the Organisation for Economic Cooperation and Development (OECD) (2014) showed that the prevalence of obesity varies, sometimes dramatically, from country to country. OECD figures for 2012 for people aged 15 and over showed that, among the most developed nations, the country with the worst obesity problem was also the richest—the United States of America (USA) (35.3 %). The country with the lowest rate of obesity was India (2.1 %). In case anyone might surmise that economic success breeds an overweight population, the world’s second biggest economy, China, had the third lowest obesity rate (2.9 %) and its third biggest economy, Japan, was fourth lowest (3.6 %). The fourth biggest economy, Germany, was in 15th place (14.7 %) but with a far lower obesity rate than the USA.

‘Obesity’ and ‘overweight’ were defined by the WHO in terms of body mass index (BMI). The BMI is an index of weight for height and is calculated by dividing a person’s weight in kilograms by the square of their height in meters. A BMI that is equal to or exceeds 25 is classed as ‘overweight’ and one that is equal to or greater than 30 is classed as ‘obese’. The problem of with overweight or even worse, obese, is that these conditions increase risks of health problems including cardiovascular diseases (e.g., heart disease and stroke), musculoskeletal disorders (e.g., osteoarthritis), and some cancers (e.g., endometrial, breast and colon). The primary causes identified by the WHO are an increase in intake of energy-rich foods, especially ones high in fat, and an increase in inactivity and sedentary lifestyles. People consume more energy than they need and do too little to burn it off (WHO, 2015).

In the United Kingdom (UK), nearly one in ten children aged four or five years were found to be ‘obese’, growing to nearly one in five (19 %) by age 10–11 years. A further one in seven in each age group was classed as ‘overweight’. The risk of being overweight or obese during childhood was not the same for all children and varied especially with the level of social and economic deprivation experienced. The most deprived children in Britain were twice as likely as the least deprived to be obese both at ages four to five and 10–11 (Public Health England, 2015).

In addition to fat gain, constant consumption of foods (and drinks) that are high in terms of their salt and sugar content is also risky. Excess salt intake can result in high blood pressure. Chronic hypertension can then place strain on essential organs leading, for example, to increased risk of stroke and to heart and kidney problems which, untreated, can become life threatening (NHS Choices, 2015). Excess sugar intake can also result in weight gain. In addition, it is linked to increased prevalence of potentially life-threatening illnesses such as diabetes and other chronic conditions such as tooth decay. Many food products have sugar added to them. The main reasons why food producers add these ingredients are to enhance taste for consumers who have grown used to food that has been heavily seasoned in this way and also as preservatives.

Preservatives are important in mass markets in which foods bought locally are not locally sourced. The use of salt and sugar, along with other chemicals, in food production has enabled food products to survive longer without decay or deterioration. Most of us shop in large retail stores called supermarkets. Supermarkets sell multitudes of variances of many food

product ranges. Many of these food products are sold to us in locations that are situated geographically a long way from the site of growth or manufacturer and packaging. Without the use of preservatives, many of these foods would have deteriorated and decomposed rendering them unfit for human consumption by the time they reached their eventual point of sale.

The primary aim for the use of these additives is to prevent foods becoming spoiled and, therefore, safer for human consumption (EUFIC, 2004). The downside can be that these additives can themselves be harmful when consumed in excess and have been linked to obesity (Reardon, 2015). There is a problem for consumers from a health perspective, in particular, when they engage in heavy consumption of foods highly laden with processed sugar. While we all need to ingest a certain amount of carbohydrates as part of a nutritionally balanced diet and salt to maintain the right chemical balance in our bodies, these nutrient levels must be maintained at an optimal level. If either is too low or too high in our blood streams, our bodies cease to function effectively. In the case of sugar, over-consumption not only results in weight gain if energy intake exceeds expenditure through exercise, but it also places a strain on the body's regulatory system, which ensures that sugar levels in the blood stream remain optimal. Any breakdown in this system results in the onset of diabetes which can result in a multitude of other chronic and even life-threatening health problems.

According to the Scientific Advisory Committee on Nutrition (2015), the average population intake of sugar for people age two years and over should not exceed 5 % of total dietary energy. When people consume an unrestricted daily diet, this tends to result in an increase of sugar intake, which in turn can place them at greater risk of developing type 2 diabetes. Increased consumption of sugar-sweetened drinks can result also in weight gain and was identified as a key contributory factor to body mass index increases observed among pre-teenage and teenage children in the UK.

Excessive sugar levels over time can result in a lowering of our natural ability to maintain optimal blood sugar composition giving rise to the condition of diabetes. Diabetes can be controlled but represents a potentially seriously debilitating condition that can undermine the functioning of key organs such as the heart, liver and kidneys, which could eventually become life changing or life threatening. Excessive salt levels cause high blood pressure, which in turn can damage essential organs.

DRIVE FOR A SOLUTION

Because the prevalence of these diet-related health risks has grown significantly in many countries it is understandable that dietary habits and food quality have featured higher on the public-policy agendas of national governments and have attracted the attention of international organisations such as the European Union (EU) and the WHO. These organisations along with national governments and their regulatory bodies have advised consumers to think more carefully about their food choices and in support they have recommended or enacted restrictive legislation and associated codes of practice for food advertisers (Hawkes & Lobstein, 2011).

In its response to the overweight and obesity problem, the WHO put forward a *Global Strategy on Diet, Physical Activity and Health* in 2004 which called upon *all stakeholders* (my italics) ‘at global, regional and local levels to improve diets and physical activity patterns at population level’. In 2011, The Political Declaration of the High Level Meeting of the United Nations on the Prevention and Control of Noncommunicable Diseases further endorsed the need to tackle unhealthy diets and lifestyles. This meeting urged nations around the world to take local actions to improve the status of their populations’ diets and physical activity levels. Subsequently the WHO developed a global action plan to improve the world’s health in the context of noncommunicable diseases spanning 2013–2020 (WHO, 2015).

In tackling this global problem, these national and international bodies have not simply devised campaigns to advise people of the risks associated with certain dietary habits, but have also identified food manufacturers and sellers are bearing a considerable load of public responsibility in this context. Of course, all of us as food consumers need to reflect more on what we eat and how we live our lives to adopt greater personal responsibility over our individual state of health and well-being. In addition, however, officialdom in the form of international bodies empowered or endorsed by national governments, and the legislative and policy making agencies of nation states has acknowledged that temptations to consume the wrong foods must be removed through active interventions designed to restrict the marketing activities of the food and drinks-related industries.

Such interventions have been informed by expert, public and industry consultations and reviews of research evidence concerning the causes of food choices and dietary habits. Much of this investigatory effort has

targeted the promotional activities of food and drinks companies, retailers and their agencies. Food advertising has been placed centre stage in this context and a great deal of empirical social science has been directed at uncovering the types of persuasive appeals that characterise such promotional messages as well as the extent to which consumers might be influenced by them in their food preferences and choices.

Special attention has been devoted to children as food and drinks consumers. This is because their psychological faculties are not as well formed as those of adults in terms of challenging any branding claims that might be made about specific products in advertisements. Yet, as we will see later in this book, children represent an important part of the food industries market. They consume food as much as do adults and they develop specific food preferences early on in life. These preferences can often be shaped by brand images associated with specific food product variants that create impressions about outcomes of consumption that go beyond nutritional ones.

Children are also known to exert considerable influence over family expenditures on food. Because the most heavily promoted food products to children are ones deemed by health experts as nutritionally poor, concerns have grown among societal guardians of children's welfare that the food and drink industries must desist from some of their marketing activities because these activities are believed to represent significant and potentially harmful influences on children's dietary choices and longer-term habits.

The focus of this book is centred, therefore, on an analysis of these concerns and associated research evidence. Before restrictive interventions are imposed upon industries that provide services that enable us all to satisfy our most basic of human needs—to eat and drink—we need to be confident about any research evidence that is offered up in support of them. The fact that certain interventions are enacted by governments does not mean that they are necessarily based on valid or unbiased evidence.

It is important to review the overall balance of findings that support or oppose conclusions that food advertising has specific types of influence over children (or adults). The quality of the social science must be critiqued and not simply accepted at face value simply because it has been published or happens to support pre-existing government policy commitments or social outcome ambitions.

IDENTIFYING FACTORS LINKED TO POOR FOOD CHOICES

As the WHO put it succinctly, the obesity problem around the world has two primary causes—over-consumption of energy-dense foods coupled with inadequate amounts of physical activity (WHO, 2015). There are, of course, many other sub-factors that contribute to these two behaviour patterns that need to be understood if effective affirmative action is to be taken to tackle the health issues that follow on from them.

General concerns about the prevalence of children who are overweight or obese has led to calls for closer monitoring of the dietary habits of young people. Obesity is linked in turn to a range of other health problems including heart disease, cancer and diabetes. In searching for explanations of causes of the obesity problem, health lobbies have identified the nature of people's diets and the amount of exercise they take as two critical areas that need to be addressed.

In countries where an obesity problem exists, there is perceived to be an imbalance between the level of energy intake (through food and drink consumed) and energy expended (through physical activity). To get this equation back into a healthy equilibrium, individuals need either to reduce their energy intake or increase their energy expended each day. Of course, some people who have become grossly overweight may need to follow both of these courses.

Concerns about the prevalence of people being overweight and obese have been brought into sharp focus by statistics showing that this has become an increasing significant problem among children. In the most serious cases, weight problems can begin even before youngsters start school (WHO, 2011). Obesity from early childhood is often closely associated with obesity in the parents (Reilly et al., 2003). It is important that this problem is addressed because being overweight in their early years can store up serious health problems for later in life (Must, 1996). Indeed, some experts have identified adolescence as the 'tipping point' period in early development to tackle and prevent onset of obesity-forming behaviours (Harrington et al., 2010). If this early optimal intervention point is missed it could be far more difficult to tackle obesity problems in later life (Dehgan, Akhtar-Danesh, & Merchant, 2005).

There are no simple solutions to the world's obesity problem. This is because multiple factors are involved in its development. It is essential, therefore, that any critical analysis of the problem should embrace a variety of potentially influential variables. The WHO followed its advice—that

the most direct solution is for people to change their diets, cut back on their consumption of energy-dense foods and at the same time increase their daily physical activity—with recommendations about suitable food consumption and exercise levels (WHO, 2015).

Getting this message across and then getting people to respond by changing their dietary habits is easier said than done. It is clear that many people lack the willpower or the resources to implement such changes to their lives. It is, therefore, necessary for other agencies—usually those operating under the auspices of governments—to intervene by providing constant encouragement and support and, where necessary, to remove temptations to consume the wrong kinds of foods. It is not only governments that have been called upon to take affirmative action, so too have the food and drinks industries. Many governments have taken the view that the latter could alter the nature of food and drinks products to reduce the amount of fat, sugar and salt they contain and that they could also desist from targeting children with their marketing activities.

These requirements might indeed form part of a broader package of interventions that could support consumers in trying to shift their eating habits in a healthier direction. They might not be sufficient on their own, however, to bring about the change objectives governments and health authorities have in mind. There are other social and cultural factors at play in this context that can be more difficult for governments to shift. Change here can move at a slow pace and, for example, can take longer than the usual terms of office for democratically elected governments. Introducing new codes and rules to restrict the marketing and manufacturing activities of food and drinks companies and the retailers that sell their goods can be easier to implement and give the appearance to bringing about accelerated social change. Yet, a big question-mark hanging over such interventions is one that asks whether they are effective. This is a question considered in this book.

Despite long-established cultural variances in food preferences and dietary habits, the emergence of a global marketplace for big-selling food and soft drinks brands has resulted in deteriorating diets across both the developed and developing world (Popkin & Nielsen, 2003). This trend has been associated with the growth of urbanisation not just in the developed world but also in many developing countries. This phenomenon has resulted in lifestyle changes that include the ways people obtain food and make choices about what to eat (Drewnowski & Popkin, 1997; Popkin, 1999).

This pattern of behaviour has resulted in the spread of nutrient deficiencies that have more to do with dietary choices than food shortages. One significant shift that has been noted is that the world's populations have developed a sweet tooth and this taste shift has been catered to by major food and drinks suppliers with widening product ranges of sugar-fortified products (Popkin & Nielsen, 2003). Poor diet has in turn left many countries with populations that have become susceptible to diet-related chronic diseases (WHO, 2005).

In the UK, the National Diet and Nutrition Survey, which reported in 2000, found that young people between the ages of 4 and 18 years consumed far more saturated fat, salt and sugar than health authorities advised (Food Standards Agency, 2000). The proportions of British children between 6 and 15 years deemed to be overweight increased by 7 % and the proportion class as 'obese' increased by 3.5 % over the 5 years from 1996 to 2001 (Department of Health, 2003).

Although these trends cause concern for health authorities laying the blame for them at the door of food advertisements and other marketing activities needs to be carefully scrutinised. One reason for this is that other significant lifestyle changes have been observed in developed countries that have also undoubtedly contributed both to dietary habits and the general health status.

Social and economic changes have seen more women enter the workplace and employees in general working longer hours. These changes have created a convenience-food culture that caters to the needs of cash rich but time poor parents. There was a marked increase in the use of ready-meals across Europe over the last decade of the twentieth century and into the twenty-first century. This trend was perhaps most acute in the UK. Home cooking with natural ingredients came to be replaced in many homes by the warming up of ready-made meals. The expansion in ownership of microwave ovens in British households was further testimony to this home cooking trend (Ofcom, 2004).

Children were also sent to school with packed lunches that often comprised sweet and salty snack foods rather than foods with naturally prepared ingredients (BBC, 2003). These meals were easy to prepare for time-strapped parents and also played to the preferences of children to which parents deferred despite any health-related reservations they might have privately harboured about the nutritional quality of diet they represented. For parents from poorer socio-economic groups, snack pack lunches represented an option they were able to afford (Ofcom, 2004).

Changing circumstances at home and at school have also resulted in lower physical activity levels among children. The increased prevalence of obesity in childhood is not simply a problem linked to diet, but also to levels of energy expenditure through exercise (Hill & Rogers, 1998). Governments have recognised that low physical activity levels combine with diet to create a climate of increased risk of health problems from early in life (Department of Health, 2003).

Schools were once sites of regulatory physical activity and organised sports. In many contemporary modern societies, considerable variance in amounts of time devoted to organised sports in school has been noted, but in many regions such activity has declined (House of Commons Health Committee, 2004). This is bad news given research showing that low levels of physical activity are associated with obesity (Berkowitz, Agras, Korner, Kraemer, & Zeanha, 1985; Rowlands, Eston, & Ingledew, 1999).

This is a problem exacerbated not simply by fewer people playing physically active sports, not helped in part by reductions in sports fields and open playing areas in many schools, but also by the ascendancy of the motor car with fewer people walking distances of any significance (House of Commons Health Committee, 2004; Ofcom, 2004, 2006). It is certainly true that children spend more time on sedentary pursuits such as watching television, playing computer games, surfing the web, and engaging with their friends through social media sites. Equally, far fewer children were found to walk to school in the twenty-first century (10 %) than in the 1970s (90 %) (Ofcom, 2004).

TACKLING DECLINES IN CHILDHOOD HEALTH

Relevant variables might have specific and idiosyncratic effects on obesity that might operate in either a direct or indirect fashion. There are factors that operate at the level of individual, such as family background, local living conditions and membership of social groups. There are also factors that operate at mass-market level such as the general status of a country's economy, cultural traditions linked to food and diet and the activities of food manufacturers and distributors, not least in relation to their marketing activities. There are also global factors that include international food trade relationships, international food branding, marketing and distribution, and global codes and regulations relating to food and health (Hawkes, 2006). We will revisit some of these issues in the final chapter in which the control and regulation of food distribution, marketing and consumption are considered.

Identifying specific variables of this sort is only part of the solution to understanding how food preferences and dietary habits evolve around the world. There is the further possibility that these variables will interact with each other in different ways. Some combinations of agents of influence might magnify their individual effects while other combinations might neutralise each other. It is important to understand the influence of the general food environment in which children live to attain a comprehensive understanding of causes of childhood overweight and obesity (Osei-Assibey et al., 2012). Only then can effective interventions be devised to enable governments, regulators, the food industry and citizens to take appropriate steps to reduce this problem. The debate about obesity, its causes and its cures has been characterised by piecemeal evidence from many different sources. A holistic approach is needed that comprises a number of key stages:

1. Accumulate validated and reliable evidence that identifies relevant variables of influence;
2. Develop effective methods for the measurement of these variables;
3. Create multi-faceted research designs that comprehensively incorporate all relevant variables of influence;
4. Identify, differentiate and establish valid measures of outcomes (e.g., not just volume of food consumption); and
5. Follow through weight development over time rather than assessing it only once.

It is important to define what has been called the ‘obesogenic’ environment of the individual (Swinburn & Egger, 2002). At a local level, this environment can comprise the child’s home life, surrounding neighbourhoods and community facilities and social networks, and school setting. At a national level, there may other factors such as nature and operation of education and health systems, food provision and relevant government regulatory systems (Swinburn, Egger, & Raza, 1999).

There is ample evidence that parental eating habits and their attitudes towards food play a crucial role in the early conditioning of children’s food orientations. A review of 58 studies of social, cultural and environmental factors at family-household level relating to food habits found that whether pre-teenage children ate fruit and vegetables was influenced most by the example of their parents, while among teenagers siblings joined with parents in having a powerful influence over the adoption of healthy eating (Van der Horst et al., 2007).

The food-related habits and preferences of parents can be passed on to their children, but in getting a deeper understanding of why specific habits exist among parents in the first place, it is important to know more about the everyday living routines that characterise particular households and families. For parents to feed their children with the healthiest diet often entails preparing meals with the best ingredients bought separately from good quality food suppliers. For many working families in developed countries, where both parents have jobs and careers, it may be difficult to find the time to devote to this type of food foraging and preparation. It is far more convenient to buy in ready-made meals, to send out for a take-away or to visit a fast-food outlet. Although feeding the family this way may be convenient it does not always result in the healthiest diet.

The findings that children in higher-income households and of working mothers who worked the longest hours had the greatest chance of being overweight is consistent with the conclusion that less attention is being given to the quality of diets in these households (Anderson, Butcher, & Levine, 2003; Gable, Chang, & Crull, 2007). Further evidence for the effects of family setting has come from the USA, where a longitudinal study that followed the same family households over many years found that those households in which the fewest properly prepared family meals were eaten were most likely to experience childhood obesity problems (Hawkins, Cole, & Law, 2008).

One other important area of control that may be lacking in households in which fewer home-cooked meals are prepared and where children are free to snack at times of their own choosing is the average portion size that they consume. Getting portion size under control might help to reduce energy intake by children. Alternatively, if children seek large portions, another solution would be to switch to a lower-energy-density food (Looney & Raynor, 2011). The portion size variable has also been linked to the types of foods children seem most to prefer. These tend to be those products classed as the least nutritious. These are foods high in fat and sugar content. It has been found possible to encourage very young children to eat their vegetables if the vegetable course is presented before a main course with sweeter and tastier ingredients. In this instance, it was also important to get the portion size right because both small and very large portions were less effective at enticing pre-schoolers to eat more carrots than a portion in between (Spill, Birch, Roe, & Rolls, 2010).

If parents are seen eating more of these foods, then their children will often follow suit (Bolton, 1983; Ritchey & Olson, 1983). These behaviours

have also been associated with families in which children lead sedentary lives and watch a lot of television (Gracey, Stanley, Burke, Corti, & Beilin, 1996).

Foods and drinks that are often classed as ‘unhealthy’ are those that deliver high amounts of saturated fat, sugar and salt and low amounts of fibre and essential minerals and vitamins. There is evidence that by controlling their intake of saturated fat children can bring their body weight under control (Bayer et al., 2009; Marcus et al., 2009; Ransley et al., 2007).

FOODS, INGREDIENTS, TASTES AND THE REGULATION OF HEALTH

Foods that are high in fat, salt and sugar content have been identified with increased regularity by the medical and health professions, media regulators and governments as posing serious short- and long-term health risks to all consumers and especially to children where they feature prominently in daily diets. Specific health issues concern the growing prevalence of childhood obesity, diabetes and dental caries linked to dietary habits. There is particularly serious concern about childhood overweight and obesity (Booth et al., 2003; Chinn & Rona, 2001; Lobstein & Frelut, 2003; Magarey, Daniels, & Boulton, 2001; Ogden et al., 2006; Rasmussen, Johansson, & Hansen, 1999; Strauss & Pollack, 2001). Unchecked, these problems can lead to further serious ill-health complications in adulthood including cancer and heart disease. Even among children, however, obesity can place youngsters at greater risk of heart disease, high blood pressure and sleep problems (Freedman, Khan, Dietz, Srinivisan, & Berenson, 2001; Reilly et al., 2003; Rosner, Prineas, Daniels, & Loggie, 2000; Sorof & Daniels, 2002). Ongoing debates about these ingredients have attained a high profile in news agendas around the world. Indeed, sugar has emerged as the new ‘tobacco’ for some health lobbyists and is classed as being equally addictive and damaging to health (Mansey & Ungoed-Thomas, 2014).

National and international health lobbies have challenged food-manufacturing companies as well as retailers who sell food products to consumers for promoting products that offer poor nutritional value (Hawkes, 2004; Hastings, McDermott, Angus, Stead, & Thomson, 2006). Food companies have been accused of failing to provide adequate

labelling of their products so as to warn consumers about what they are eating. Furthermore, major food companies have also been accused of reneging on promises to make their products healthier by cutting back on sugar, salt and fat content. The food industry is also a major advertiser and fills popular mass media with its commercial promotions (Brownell & Horgan, 2004). It has also been quick to adopt newer digital communications platforms, especially social media settings known to be popular with children, within its marketing arsenal (Chester & Montgomery, 2007, 2008; Moore & Rideout, 2007).

There have been calls for governments to introduce new legislation and for relevant regulators to tighten codes of practice for food marketing with special attention devoted to the advertising of food and drinks on television especially when these commercial messages occur alongside or within programmes known to attract large numbers of child viewers. One response to this public pressure on the part of food and drinks companies has been for some of them to introduce their own internal regulatory codes to deal with these issues (Hawkes, 2005, 2007a, 2007b). In doing so, this reveals a willingness of the part of the industry to recognise the importance of diet to children's health and to accept some degree of culpability. In addition, self-regulation has the advantage of being under the control of the food and drinks industries which has also often meant that these codes are selectively applied to areas of marketing activity where they are willing to make these concessions. Government-backed regulations in contrast might place constraints on food and drinks promotions that their manufacturers regard as overly restrictive. Nonetheless, critics have argued that self-regulation often fails to go far enough (Hawkes, 2005; Hawkes & Harris, 2011).

In the UK, where food manufacturers signed up to a Public Health Responsibility Deal in 2011, health campaigners have complained that rather than representing a commitment on the part of the industry to take responsibility for producing healthier foods, it gave them *carte blanche* to self-regulate and in doing so they failed to comply with original health pledges. While large companies such as Coca Cola, Mars, Nestlé and PepsiCola promised to reduce calories in their products, tests had revealed that many of their major brands had not been altered at all three years later. Only in some of their less popular and lesser known brands had calorie levels been reduced (Spencer, 2014).

WHICH FACTORS INFLUENCE CHILDREN'S FOOD CHOICES?

It is axiomatic to say that food is an integral part of all our lives. We need to eat to remain alive. When food supply was neither plentiful nor guaranteed then simply finding it was a major daily pre-occupation for primitive humankind. In modern societies however food supply is taken for granted and choosing which from a wide range of different food types and from varieties of the same food type are the matters that occupy our food-related behaviour. Food has also become more closely integrated with our social lives and does not solely cater to base biological needs. The consumption of food at designated mealtimes lends structure to each day and also present opportunities when members of a family or groups of friends can meet and cohere, and when couples can get to know one another and partnerships develop that result in the continuation and civilising of the species. Despite the focus of critics of the food industry on its marketing activities, the nature and impact of these promotional devices need to be examined against the wider environmental settings in which food choices and consumption take place and the social and cultural contexts in which the importance of food in people's lives can be judged (Story, Kaphinngst, Robinson-O'Brien, & Glantz, 2008).

Food preparation has become an activity that does not just ensure that we satisfy our hunger. It has become rule based to ensure that we do not poison ourselves and has risen also to an art form for some accomplished cooks who seek to produce food that is not simply edible and nutritious, and does not just taste good but also pleases us through our other senses through its aroma, texture and appearance.

As modern societies have changed with families becoming more dispersed, men and women both contributing financially to the home and family and sharing child-rearing responsibilities, and with many people delaying marriage and having children, pressures on time have created markets for food that is convenient both to obtain and prepare. Packaged foods have appeal if their preparation is simple and they provide an adequate nutritional base. Increasingly food that can be consumed quickly whether brought into the home or bought outside of it has great appeal. If it is economically priced as well, so much the better in the case of young people or families who are stretched in terms of disposable income.

Under these changing demographic, economic and social conditions, food sourcing has shifted from reliance on locally produced ingredients in need of careful and time consuming preparation to non-local, pre-packaged

products that merely need to be heated up. Alternatively, instead of paying a fortune for high cuisine food art forms, the majority instead prefer home deliveries, take-aways or fast turnaround on-site food consumption. The increase in generic processing of foods and the introduction of additives to original ingredients designed to delay decay and degradation of food products that are transported over long distances before consumption have introduced a number of concerns about the nutritional quality of the foods we eat. Are they as nutritious and healthy as they could be? Does regular consumption of highly processed foods trigger health risk side effects? Are many mass produced foods simply bad for us?

Health authorities across many developed parts of the world and in many developing parts where mass-processed food has entered local markets have raised concerns that many emergent and increasing health problems can be linked to poor diets. In this case, rather than concerns centring on the problems of food shortages, they have identified over-consumption as a significant issue (World Health Assembly, 2007).

The huge variety of foods that are now available means that more thought is needed to decide which varieties to use. In this context, one factor that cannot be disputed is that foods have become branded. Branding is designed to make specific varieties of a particular food type distinctive. Consumers are aware of brands and make brand-related choices. This awareness emerges during early childhood (Valkenburg & Cantor, 2001; Valkenburg & Buizjen, 2005). It is because of this fact that health lobbyists have understandably turned their attention to the marketing and promotional activities of food manufacturers and distributors and the potential influences of these activities on consumers' food choices. For many consumers, food choices are underpinned by cost factors. Those who seek to control their outgoings will tend to look for competitively priced food brands. Price and marketing messages are not the only factors at play in the food decision-making process and nor are they necessarily the most powerful factors in this context.

It has been observed in a number of different countries, not all with the same eating habits, that food choices are shaped by family negotiations and peer group pressures (Escobar, 1999; Palojoki & Tuomi-Grohn, 2001). Initially parents make food choices for their children. As children grow up and become more aware of their surroundings, they begin to accumulate taste-shaping experiences of their own. This means that they can articulate for themselves their personal food preferences. This does not mean that children's personal food choices are always granted. It does not

mean either that these choices are necessarily shaped by food marketing activities—although they might be.

Price can be important but there are occasions when it is diluted as a variable of influence by other family concerns (Palojoki & Tuomi-Grohn, 2001). In fact, in-depth interviews with family consumers have revealed that economic and marketing factors were much less likely to be mentioned in discussions about how foods are chosen than are other factors such as the personal tastes and preferences of other family members or friends (Stratton, 1997). Children depend on their parents to do and pay for the food shopping as well as for food preparation and will voice their opinions and likes and dislikes. This does not mean, however, that parents are constantly pestered or that they always succumb to that pressure to buy particular foods (Stratton, 1997).

One point that is important is that many of our food preferences become established early in life. Children will adopt the food tastes of their parents and parents in determining what they children initially eat lay down taste foundations for later years (Bora-Giddens & Falciglia, 1993; Young and Hetherington, 1996).

THE ROLE PLAYED BY FOOD MARKETING

Although children's diets are initially controlled by their parents or carers, as they grow older and begin to develop their own food preferences they increasingly assume control over their own dietary habits. Re-educating children (and adults)—into healthy ways of eating when so-called nutritionally rich foods hold less gustatory appeal than foods that are deemed less healthy can be a tough job. This is further complicated by the constant exposure of children to temptations to choose less healthy food options. For health authorities charged with supporting healthier choices among the public, any efforts they make are undermined in part by the promotional efforts of major food manufacturers who market foods that are high in salt, sugar and fat. The food industry is one of the biggest advertisers of any business group and its advertising dominates commercial slots in virtually all the major mass media. Such is the prevalence of this advertising that children are likely to experience massive amounts of exposure to it. This means in turn that they are presented with constant reminders of foods that are not necessarily the best choices in terms of healthy options.

The food industry uses multiple methods across numerous promotional platforms to establish its products and brands. Children's perceptions of

foods—including how they taste—can be influenced by brand labelling (Elliott, Carruthers De Hoed, & Conlon, 2013). It might, therefore, be anticipated that brand promotions that play a major role in establishing brand images might also exert other influences including over children's food choices. The use of specific characters in food advertisements that capture children's attention can also make foods associated with them 'taste better' even when exactly the same foods are presented in packs with and without those characters (Letona, Chcano, Roberto, & Barnoya, 2014). Hence it is important, as this and other evidence presented later in this book will show, that research is conducted to improve general understanding of how young consumers might be influenced by food advertising and branding and its different features.

A number of different studies of food advertising have found that on television, for instance, commercials for healthy foods are rare as compared to those high in the ingredients, such as salt, sugar and fat, that give health authorities concern (Cairns, Angus, & Hastings, 2009; Kunkel & Gantz, 1991). It has been estimated in the USA that children might see up to 40,000 advertisements a year on television as part of a fairly standard viewing diet and that half of these are likely to be for food products—with few of the latter being advertisements for healthy food (Reece, Rifon, & Rodriguez, 1999; Taras & Gage, 1995).

The ability of the food industry to spend huge amounts of money on their marketing campaigns means that they can develop highly entertaining campaigns and utilise a range of platforms to underpin complex multi-media marketing campaigns. Any attempts to persuade children to choose healthy over unhealthy options must, therefore, adopt promotional methods that can compete with the industry's expensive campaigns in terms of making healthy brands look attractive. When new digital methods are used by healthy food brands, they have been found to compete effectively alongside unhealthy but glossily advertised brands in terms of the choices children make (Pempek & Calvert, 2009; Wansink & Payne, 2009)

In any consideration of the potential influences of advertising on children, it is important to acknowledge that not all children are alike. One of the key differentiating factors of significance in this context is their level of cognitive development (John, 1999). Although adult consumers are not immune to the persuasive influences of advertising, they do at least usually have a level of understanding about the aims and purpose of advertisements that equips them with some defences against commercial message influences. With children, however, such defences do not always

exist. With pre-teenage children in particular, their comprehension of advertising processes and techniques has not yet reached an adult level and this could leave them more vulnerable to commercial influences (Kunkel, 2001; Macklin & Carlson, 1999).

The importance of cognitive development in this context stems from its role as a potential mediator of children's judgements about advertisements. If children lack sufficiently well-developed cognitive defences against the effects of advertising, this places them potentially at a disadvantage and renders them more vulnerable to the commercial promotions created by food marketers. We will return to this issue later in the book.

GLOBAL PRESSURE FOR FOOD MARKETING CONTROL

The WHO called on the food industry to take action in 2004. Authors of research reviews went further and lobbied for national governments to take more direct action rather than wait for the industry to self-regulate. In the USA, the Institute of Medicine of the National Academies of Science called upon the food and beverage industries to make more efforts to avoid targeting children with leading brands known to be high in fat, salt and sugar. It was further recommended that any failure on the part of these industries to take sufficient voluntary action should trigger intervention from government to introduce new legislation requiring them to desist from marketing these products at young consumers (McGinnis, Gootman, & Kraak, 2006). Similar arguments were played out in Europe following due consideration of the extant research evidence on how children's food preferences could be influenced by advertising (Mason & Parker, 2005).

The WHO (2010) produced a further set of recommendations about the marketing of foods to children. While recognising that the industry could adopt its own controls, the WHO felt that national governments must take a lead in the process of developing and implementing relevant public health policy that might in turn frame relevant regulations designed to restrict food advertising practices and to protect the interests of children.

In its response to this pressure, the food industry—under the auspices of the International Food and Beverage Alliance (IFBA)—developed 13 pledges between 2005 and 2009 concerning new restrictions on their advertising to children. Some pledges were restricted to specific countries while others operated internationally. Ten of these pledges required the companies to make a number of specific commitments, of which 82 in all

were published during this period. The commitments tended to stipulate the ways in which specific pledges would be made operational. Companies that were involved in these actions included Coca Cola, General Mills, Kellogg, Kraft, Mars, Nestle, Pepsi Cola and Unilever.

In making these pledges, the food industry offered its own definition of a child. All but one pledge were targeted at individuals aged under 12. One pledge made in Australia covered individuals aged under 14. There were some distinctions made between children aged under 6 and aged between 6 and 12. In offering to place restrictions on food advertising in media for which children formed a significant part of the audience, varying thresholds were deployed ranging from 25 % to 50 % of the usual audience being children.

Pledges could also be differentiated in terms of the specific advertising medium to which they referred. There were different pledges relating to advertising on television, radio, cinema, print media, online media, outdoor locations and at points of sale. Pledges also took account of different promotional techniques to include advertising, product placement, interactive games, mobile messaging and the use of licensed characters or popular celebrities.

In the case of well over half the commitments, the food industry reserved the right to exclude some food products provided they could present scientific evidence that such products met minimum nutritional values.

In a follow-up investigation of these pledges and commitments, it emerged that many companies in the sector chose not to participate. Although participants included some of the biggest names in the sector, many other companies opted out. Some food and drinks companies, especially ones operating internationally, chose to introduce different pledges of their own that made weaker commitments than those outlined by the IFBA. Other food and beverage companies signed up to IFBA pledges but only in respect of some of their national markets. Furthermore, participating companies signed up to commitments on restrictions on certain categories of their advertising only and not all of them (Hawkes & Harris, 2011).

We will revisit the subject of control and regulation of food advertising in Chap. 8 where the roles of other social agencies and consumer education will be examined alongside the responsibilities of governments, regulatory bodies and the food and drinks industries in this context.

CLOSING REMARKS

This opening chapter has shown that there is widespread concern about the dietary habits of children in different parts of the world. In particular, most concern has been reserved for continuing trends that have been underway for some years in food tastes whereby consumers exhibit growing appetites for foods with potentially unhealthy ingredients such as fat and salt, but most of all, sugar. These trends have motivated health organisations, political bodies and regulators nationally and internationally to recommend and enact new legislation and accompanying regulatory codes to restrict the marketing activities of food and drinks industries. Much attention has been paid in particular to the amount of processed sugar in many mainstream food products that are widely sold around the world. The burgeoning obesity epidemic and growth in occurrence of Type 2 diabetes, especially among children, has lent further urgency to interventions to discourage people from over-indulging their sweet teeth.

It is perfectly correct for governments to take a keen interest in the health and well-being of their citizens especially when declining health can affect national productivity and place additional and preventable strain on local health services. In tackling the obesity problem and other health issues associated with poor dietary habits, however, it is essential to recognise that they are caused by a multitude of factors in people's lives. There has, nonetheless, been considerable focus placed on the marketing activities of food and drinks manufacturers and retailers. In part, national governments and international health bodies have drawn everyone's attention to the ingredients of food and drinks products.

We should not be surprised by governments' responses to the 'obesity epidemic'. It is a serious social matter and potentially sensitive politically. In devising strategies to be seen to take affirmative action, however, governments that have been democratically elected for fixed terms need to find solutions that can be implemented and preferably deliver some results during their term in office. Food and drinks industries and their marketing activities make easy and attractive targets in this context.

One might argue that as the producers and distributors of products that lie at the core of this global health problem they should shoulder some of the responsibility for finding and implementing solutions. However, it would be wrong to single them out as the only social factor of importance here and to assume that more restrictions over their marketing activities will be sufficient to deliver positive health results.

For sure, products classed as high in energy and low in nutritional value are prevalent in retail outlets. In addition, such products receive prominent and extensive marketing promotions. These activities mean that such products are highly visible. As we will see, their brands can become familiar to consumers from an early age. Many governments believe that if these temptations can be rendered less visible this could represent a practical intervention that will help people to change their eating habits and switch to healthier options. This proposition cannot be taken purely on faith. It raises empirical questions about how children's food habits and dietary preferences emerge and become conditioned over time. It raises question about which agencies in their lives control their food choices. It raises further questions about the relative degree of influence food and drinks advertising and other marketing ploys have in cultivating food-related attitudes and beliefs, preferences and tastes, and ultimately food consumption behaviour.

THIS BOOK

This book has begun by setting out the key issues concerning public health and food advertising in the current chapter. In the remaining chapters it tracks a course through the empirical evidence concerning food advertising and children. It begins with an examination of major reviews of evidence for international advisory organisations, national and regional governments and their regulators. It then examines evidence concerning the visibility of food advertising and opportunities for young people to be exposed to it. Then it turns to the message content of food advertising and the potential persuasive influences and other effects it might have. Next, evidence concerning the effects of food advertising on children's food preferences and choices is reviewed. This is followed by a review of evidence concerning the role played by food promotions in shaping general dietary habits and their health consequences. The final part of the book examines regulatory issues and their effectiveness in the light of what research has indicated about the amount, nature and impact of food advertising.

In reviewing empirical evidence from around the world the book draws upon a number of sources. Previous major reviews of research in the field have been studied in detail and provided helpful starting points for collating and structuring the research (Cairns et al., 2009; Cairns, Angus, Hastings, & Caraher, 2014; Cheyne, Mejia, Nixon, & Dorfman, 2014;

Coon & Tucker, 2002; Hastings et al., 2003, 2005, 2006; Jolly, 2011; Livingstone, 2004, 2005, 2006a, 2006b; Livingstone & Helsper, 2004; McGinnis, 2008; McGinnis et al., 2006; Nadeau, 2011; Young, 2003; Young & Hetherington, 1996; Young, Webley, Hetherington, & Zeedyk, 1996).

Further searches were conducted through relevant databases such as BioMed Central, Pub Med Health, PsycINFO and Web of Science as well as through major open search engines (Bing, Google and Yahoo) using combinations of search terms featuring ‘adolescence/adolescents’, ‘advertising’, ‘children’, ‘diet’, ‘food’, ‘health’, ‘marketing’, ‘obesity’, ‘youth’.

In the next chapter, an overview of the status of the field is presented in the form of a review of reviews. The significance of many of the reviews selected here is that they were funded by international and national bodies concerned with recommending or making public health policy or the regulation of food marketing. Others were produced on behalf of the food industry sometimes as a response to the others. This meant that these analyses were ultimately concerned with defining what could be learned from empirical social science research to inform policy making or to defend the position of current regulations and codes of practice.

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What is the Balance of Evidence for the Effects of Food Advertising?

This chapter presents an overview of evidence concerning the effects of food advertising as derived from published reviews of research literature. The research about food marketing is extensive and varied. Although this book is ultimately concerned with the status of evidence concerning the possible effects of food brand promotions, primarily presented as advertising messages, on young consumers' (i.e., children's and teenagers') food preferences and eating habits and then in turn on their general state of health and well-being, much of the research literature derives from studies that did not test directly for such effects. Instead, some research has been restricted to studies of the location, nature and message content of advertising. The rationale for such investigations is simple. Before we can effectively say anything about the impact of food advertising, we need to know whether consumers, young and old, are exposed to it, where this happens, and when it does happen what kind of persuasive appeals are they confronted with?

Hence, the research literature about food advertising has included studies of the following themes:

- The location of food advertisements in different media and other platforms
- The amount of advertising of food that occurs in different promotional channels
- The types of foods that are advertised

- The nature of advertising appeals for different foods and (non-alcoholic) drinks, especially ones designed to attract the attention and interest of children
- The ways that children respond to different types of food advertising especially in terms of liking and understanding
- The effects of food advertising on food choices, preferences and habits
- The links, if any, between food promotions and health-related knowledge, attitudes and behaviour
- The relative influence of food advertising alongside other non-marketing factors that can shape children's dietary habits.

The above themes have characterised the topics covered by the major evidence reviews that will be examined in this chapter. As explained in Chap. 1, a similar broad structure has been adopted for the discussion of research about the nature, location and effects of food advertising in this book.

FOOD ADVERTISING: AN EVOLVING CHALLENGE

Food advertising has evolved during the digital communications era as traditional formats have changed and been joined by new platforms on which food promotions appear quite different from conventional promotions. These changes in the location and nature of food advertising represent a challenge to governments and health authorities seeking to bring it under tighter control as part of a wider health drive to combat and reverse overweight and obesity trends (British Heart Foundation, 2011; WHO, 2010, 2013). At the same time, food advertisers have continued to have a visible presence in traditional media and especially on television. Despite the emergence of the internet as a diverse advertising and marketing platform, television remains the key advertising medium for the food sector, particularly when it targets children. The more governments try to regulate food advertising, the more the industry finds new ways of circumventing new restrictions on the marketing practices by developing new forms of promotion that fall outside existing codes of practice (Clark & Powell, 2013).

The evolving forms of food advertising have also presented challenges to researchers who seek to understand the nature of its possible or actual influences on people's food choices and general eating habits. Nevertheless, to understand the influences that food advertising can possibly exert, it is necessary to identify the kinds of opportunities that exist

for these effects to occur. It is important also to examine the nature of food advertisements to discern what it is about their message appeals that might give rise to specific consumer effects. Thus, some researchers, as we will see in Chap. 3, have focused on mapping where food advertising occurs and how much of it exists. Only when armed with such data can we begin to develop a clearer picture of the opportunity probabilities of specific advertising influences.

Opportunities for its influence increase along with opportunities for actual exposure to food advertising. There is considerable evidence that food advertisements are prevalent across all mass media and in many physical locations patronised regularly by pre-teenage children and teenagers. The food and drinks sectors spend enormous sums of money purchasing advertising slots in prominent media locations. There is compelling evidence that these industries deliberately target media environments known to attract young consumers. There is further evidence that food and drinks advertisers use production techniques and narratives designed to appeal to young consumers.

In the twenty-first century, the emergence of the internet and digital communication technologies has opened up many new platforms and promotional techniques for advertisers to use to reach consumers. Food and drinks advertisers have not been slow to explore these new platforms and techniques (see Chap. 3). Web sites, social media sites, gaming environments and virtual worlds have provided food and drinks advertisers with opportunities to diversify their marketing campaign strategies. In adopting these new settings for their brand promotions they have been able to out-run regulators by adopting outlets frequented by children for advertising purposes that were initially (and in some cases remain) beyond the reach of regulatory codes.

Subtle new branding methods used online can also escape any protectionist learning by children based on emergent consumer literacy. Such learning can enable consumers to identify marketing messages, understand and challenge their persuasive intent, and hence become internally psychologically inoculated against their influences on their behaviour.

While it is relevant to describe these opportunities for food brand marketing effects as a first step in understanding how such effects might occur, it is also essential to measure more directly whether specific kinds of effects occur. Food advertising effects can take on different forms. Behavioural effects tend to take pole position in people's concerns about unwelcome influences of food and drinks advertising. Yet, behavioural choices are often preceded by internal psychological processes linked to cognitive responses and emotional responses to advertising or to brands.

In examining the effects research literature, therefore, it is critical to recognise that even if food advertising or other forms of marketing are found to create fresh beliefs or attitudes about food products or brands, these effects are not behavioural ones. Furthermore, it cannot be presumed that positive attitudes towards a brand automatically mean it will be purchased. Even if a food brand is well-liked and it represents a foodstuff regarded by health experts as poor in nutritional quality, this does not mean that consumers who like such a brand invariably consume unhealthy diets.

International bodies such as the WHO that have all called for tighter controls over food advertising and national governments that have not only joined these calls but also taken direct action through new legislation have also been major sponsors of research into food advertising. Since the mid-1990s, a number of major reviews of social-scientific evidence concerning the amount, nature, expenditure on and effects of food advertising and other forms of food marketing have been funded in this way. These reviews provide a useful overview of the research evidence. It is also possible through an examination of these reviews to map out the evidence base on which national governments have depended to inform new legislation and regulations of food advertising.

MAJOR RESEARCH LITERATURE REVIEWS: EUROPE

Several major reviews of research evidence appeared in the 1990s and 2000s that together influenced the agenda for tighter restrictions over the regulation of food advertising. These were conducted by review teams in different parts of the world. It is worth examining the evidence they accumulated and they interpreted it in respect of its policy implications. They provide useful overviews of the status of empirical evidence about the nature, extent and impact of food advertising. Collectively, these reviews failed to produce a single consensus view about the effects of food advertising on young consumers.

The UK MAFF Review

In 1994, the Ministry of Agriculture, Fisheries and Food sponsored Brian Young and his colleagues at the University of Exeter and University of Dundee to undertake a review of research literature about food advertising and children's food preferences and choices (Young & Hetherington, 1996; Young, Webley, Hetherington, & Zeedyk, 1996). In their original

brief from the sponsor, the reviewers were asked to focus on evidence about televised food advertising and in particular advertising that was targeted at children aged 8 to 12 years. The reviewers eventually expanded their analysis to cover other child age groups. The reviewers consulted bibliographic databases such as PsycLit and BIDS together with earlier literature reviews. They did not state how many studies specifically of food advertising they covered, but the bibliography of their main report contained 145 references (Young et al., 1996).

Young and his colleagues identified four main areas into which empirical research on this topic could be divided: analyses of the frequency and content of food advertisements principally on television; effects of televised food advertising on children's requests to parents to purchase specific foods; the role played by advertising in shaping children's food-related behaviours; and the influence of food advertising on food-related attitudes and values.

Most of the research derived from North America. This was particularly true of research into the frequency and content of food advertising, where there was no systematic British research to call upon at all. The US research indicated that food advertising was easy to find and was especially prevalent on television at times when children were known to be viewing in large numbers. Such evidence indicated that one type of restrictive code might, therefore, focus on the location and timings as well as the types of food advertising that should be allowed on television. If children were to be protected, then limiting or banning all food advertising during children's programmes or parts of the schedule when children were known to be viewing in large numbers would be an obvious first step.

Turning to parental pestering by children, these reviewers reported once again that much of the evidence came from the USA, although there was some UK research on this topic. There was little evidence from other parts of the world at this time. The research could be divided into two types—survey studies in which respondents reported on occurrences of this behaviour among their own children and retail observation studies with on-site interviews that monitored this behaviour as it occurred among parents and their children while out shopping. There was some evidence that this behaviour became more pronounced after intensive advertising campaigns for specific brands, but the evidence on this was far from consistent and because of the survey methodology used causality could not be proven.

On the question of whether children's food choices and habits were influenced by food advertising, much of the relevant evidence derived from controlled experiments in which children were shown food brand advertising and then later observed for signs that they would select promoted brands over others given the freedom to choose. Such studies indicated that children's food selections could be primed under these conditions. There was limited evidence for this type of effect in more natural settings and, therefore, still scope for much further work to be carried out to establish the nature of any such effects beyond the laboratory.

Young and his colleagues felt unable to conclude with any certainty from the relevant evidence available to them at the time whether food advertising shaped children's general attitudes towards food. Much of the research they reviewed had in any case focused on whether specific creative treatments in food advertisements resulted in more favourable consumer attitudes towards advertising messages.

This research provided no direct evidence that food advertising exerted specific influences over children's food choices or general eating habits. Indeed, the reviewers concluded that children bring a lot of other experiences linked to food with them to food advertising exposure events and that these experiences can shape their reactions to advertising. Thus, if we are to understand how food advertising works as part of the broader range of social and psychological factors that can shape a child's relationship to food, we must examine it in relation to and alongside those other factors. We need to know more about the actual frequencies of children's exposure to different kinds of food advertising, about the relative importance of food advertising alongside other sources of information about food in the family, and about the way food choices are negotiated between family members.

The Stirling/Strathclyde Group

One prominent group in the field is work by Professor Gerard Hastings and his colleagues at the Institute for Social Marketing which was based at the University of Strathclyde at the time of their first review of research evidence but then later moved to the University of Stirling in Scotland. They produced major reviews for the UK's Food Standards Agency (FSA) as well as for the WHO.

An initial review was produced for the FSA by Hastings et al. (2003, 2005). Follow-up reviews were developed for the WHO in 2006 and 2009 (Cairns, Angus, & Hastings, 2009; Hastings, McDermott, Angus,

Stead, & Thomson, 2006) These reviews covered research from around the world about the extent and nature of food and non-alcoholic drinks promotions and the effects of these promotions on children's food preferences, dietary habits and health. Each successive reviewed updated the previous one (Cairns, Angus, Hastings, & Caraher, 2014).

The initial review examined evidence from 120 published papers that reported on 101 studies. These publications reported research on the extent and nature of food promotion and its influences on children's food knowledge, preferences and behaviour. As the earlier review by Young and his colleagues had noted, it was found again here that food promotion was widespread and prevalent on television especially in and around programmes known to be popular with children. On examining evidence for the effects of food promotion, Hastings and his colleagues concluded that it can influence children's food choices through brand preferences and liking for specific types of food and that their food consumption is in turn shaped by these promotions. Thus, exposure to televised advertising was related to data on self-reported eating habits over time and could trigger specific food preferences immediately after exposure.

It is worth looking at this review more closely because, despite the industry-funded critiques that challenged its evidence, it did cover many of the important questions that continue to be debated about food marketing and reviewed a wide range of research evidence. Furthermore, it represented a foundation upon which later major evidence reviews by the same research group were built. Broadly, the initial Hastings review examined research concerned with the extent and nature of food promotion to children and research concerned with measuring any influences of food promotions on children's food knowledge, attitudes, choices and consumption, and any further spin-off health effects. Hastings and his colleagues also provided some preliminary commentary about marketing in general and about evidence concerning the effects of advertising on tobacco and alcohol consumption among young people to discover any theoretical or methodological lessons that might be learned of relevance to the analysis of food marketing and children research.

Hastings and his colleagues reviewed evidence to provide answers to a number of specific questions about the amount, location and contents of food promotions targeted at children. These included questions specifically about where food promotions could be found, how much money was spent on them, what types of foods were promoted, what kinds of creative strategies were used, and whether there were changes in these features

over time. Turning to the effects of food promotions on children, they explored evidence about how children respond to food promotions, and whether such exposure affects their food preferences, knowledge about food, food consumption behaviour, purchase-related activities, their overall diet and other outcomes linked to health.

Despite the initial references to food ‘promotions’, which inferred a review of a range of food marketing activities, much of the evidence that was eventually reviewed derived from studies of television advertising of food. This revealed that food advertising was prevalent on television, especially within and between programmes designed for children or that attracted large numbers of child viewers. There was some evidence that food promotions were also placed in comics and magazines aimed at children, in outdoor locations, on the internet, and distributed via direct mail. Food promotions were also found in retail locations at points of sale, in school settings, and associated with events and other merchandise.

Calculation of the amount and distribution of food promotions tended to adopt methods that produced quantitative measures of volumes of food advertising on television and in magazines, with comparisons often made between children’s programmes and other programmes on television. Thus, evidence was produced of the overall amounts of airtime devoted to food promotions and the frequencies with which they occurred. Such measures provided indicators of opportunities for exposure to commercial food messages for children, with comparisons also sometimes being made with adults.

As a further enhancement to this measurement of food promotions, some studies classified foods into types and assessed and weighted the promoted foods according to specific ingredients such as their fat, sugar and salt content. Thus it was possible to provide quantitative indicators of potential exposure to promotions for foods classed as ‘healthy’ or ‘unhealthy’.

These measures of food promotional content were also accompanied in some investigations by measures of expenditure on advertising. Indeed, some studies used only these macro-economic measures to assess the amounts of food promotions and their distribution across different media and other locations. Greater levels of expenditure were sometimes used as proxies for the amounts of food promotions that were presented in specific promotional locations.

There is a potential problem with this proxy measure because while greater expenditure on advertising could mean that more advertising space is being purchased, it could be a function of cost inflation for advertising space. Changes in food promotion expenditures can reveal that advertisers

sometimes alter their marketing strategies perhaps by switching to new promotional platforms and away from old ones or by running more multi-faceted campaigns across a range of different media. Another trend observed by Hasting and his colleagues was a shift towards the promotion of more branded products in the form of ready-meals and away from generic products (or natural ingredients) that could be used in home cooking.

The content studies confirmed the trends derived from marketing expenditure studies and also indicated a shift towards food products that were high in ingredients that represented an unhealthy diet. Food advertising to children, for example, was dominated by breakfast cereals, confectionery, savoury snacks and soft drinks. This pattern was observed over several decades from the 1970s especially in television advertising and in promotions in media targeted at children. From the 1990s, the promotion of fast foods also became highly prominent. Even when 'healthy' foods were promoted to children, these were not usually presented in their most natural and 'healthy' form. Thus, meats and fish were deep fried or treated in ways that introduced less healthy ingredients, fruit products were processed and had much added sugar, dairy products were sweetened, and low sugar cereals had other additives.

Food marketers adopted techniques that were designed to appeal to children. Thematically, a lot of food advertising used adventure and fantasy themes with animation and humour. Child actors were regularly used and regardless of the nature of the foods they were shown with, these children always appeared slim and healthy. Appeals to a healthy diet were included in some of these promotions that made reference to specific ingredients such as vitamins or to appeals that the product being advertised could represent part of a balanced or healthy diet. These kinds of promotional strategies were used consistently over time. Furthermore, the emergence of digital media introduced new platforms on which food marketers could engage with children using all these popular themes and techniques but in a more interactive environment.

On examining the effects of food promotions on children, Hastings and his colleagues reviewed research about the ways young people respond immediately to these messages as well as about the longer-term effects they might have. Food advertisements have been found to be both well-liked and well-remembered by children compared with advertising for many other product types. This phenomenon has been observed internationally. There is further evidence that food advertisements are acknowledged by parents and children themselves to trigger youngsters' food purchase

requests. It is not just advertising that attracts children's attention to food brands, but also the nature of their packaging and whether other incentives such as gifts are offered if purchases are made.

Evidence was then reviewed to see whether food promotion could influence children's food knowledge, food preferences, purchase-related behaviour, food consumption, dietary habits and related health issues, and produce any other effects. The studies reviewed here were critiqued in respect of whether they were equipped to demonstrate cause-effect relationships between children's exposure to food promotion and specific outcomes. The main types of research methodology covered by this literature comprised cross-sectional surveys, longitudinal surveys and controlled experiments. In some research inquiries, survey and experimental methodologies were combined. In relation to survey studies, another key differentiating factor was whether children's exposure to food promotions was measured directly or indirectly. Some studies, for instance, took measures of media exposure levels (combined with secondary or occasionally primary data on the prevalence of food promotions in specific media) as proxies for direct questioning about exposure.

Some evidence was found that exposure to food promotion could influence children's food knowledge and specifically knowledge about the nutritional qualities of different types of food. The evidence base as a whole, however, was not consistent in demonstrating this result. There were also question-marks over some studies concerning the efficacy and validity of their measurements of food promotion exposure and food knowledge. There was some evidence that exposure to food promotions could influence children's subsequent brand and product preferences. Preferences were measured variously in terms of stated liking or behavioural product choice.

As before, the evidence base did not provide universal or consistent support for this outcome which seemed in part to depend upon the nature of the preference choice being made. The strongest evidence derived from experiments in which children made choices between brands or product types immediately after exposure to food promotions. Evidence for more general relationships between food promotion exposure over time and food preferences was scant and limited by the challenges of measuring these behaviours as they occur naturally in children's everyday lives.

There is evidence that exposure to food promotions can trigger food-purchase-related behaviours. Among children these often take the form of requests to parents, although they have sometimes taken the form of

children's own purchases or purchase attempts. Surveys have been used to question parents about how often their children pester them to purchase specific foods or brands and whether they observed a tendency for their children to do this in response to their exposure to food promotions.

Another approach has been to observe and question parents and their children in real shopping environments. Are children observed to make food purchase requests at points of sale? Other researchers manipulated food promotion exposures in school settings or summer camps and then to observe whether this can influence children's food purchases in those environments. Sometimes controlled laboratory experiments were combined with field observations. In such instances, food exposure experiences were manipulated under controlled conditions and then children were observed in natural food-purchase environments. All these types of investigation were found by the Hastings group to yield evidence of food promotion effects on children's food-purchase-related behaviours.

What is less certain from this review is whether children's exposure to food promotion affects their overall diet. Some evidence was found that children's dietary choices could be shaped by exposure to food promotions, with different promotion exposure patterns giving rise to different food choices. Thus, if children are heavily exposed to foods deemed to contain ingredient that are classed as unhealthy, they will show a stronger tendency to elect to include those foods in their daily diets. Exposure to promotion of healthy foods can help to counter this pattern of consumption, but this does not always work successfully.

Leaving aside experimental manipulations designed to trigger specific dietary choices, some studies used surveys to obtain data from large samples of children and gain a sense of whether food promotion exposure could cultivate dietary preferences and habits over time that might also contribute to the onset of health risks such as becoming overweight and obese. The primary weaknesses of much of this evidence lay in its measurement of food promotion exposure and its controls for the influence of non-marketing factors on key dependent variables such as types of foods preferred, amounts of consumption and weight gain. Measures of general television viewing were often used as proxies for exposure to televised food advertising. Measures of amount of eating while viewing often needed to be examined not just in terms of the types and amounts of food consumed but also whether such behaviour represented part of a wider suite of orientations towards food conditioned, for instance, by family circumstances rather than by food advertising.

Moreover, spending large amounts of time watching television might itself represent one manifestation of a generally sedentary lifestyle in which energy expenditures failed to match energy intake via diet. Although the use of outcome measures such as cholesterol levels seemed to offer more compelling scientific evidence of food promotion effects, the need to have confidence in measures of food promotion exposure and other lifestyle factors are no less significant in determining whether the correct conclusions are reached about food promotion influences.

The initial Hastings review was sensitive to these challenges to the extant research literature on food promotion effects and re-examined a number of the key studies to determine the extent to which they had utilised built-in controls for extraneous variables that could provide alternative explanation for food promotion effects. In doing this, they found that some empirical investigations could be discounted because they had failed to build in adequate controls in their original designs or if they did so they failed then to use appropriate statistical analysis techniques to demonstrate the relative effects on outcome variables of food promotions alongside non-marketing factors.

For a few inquiries however multivariate statistical analyses were used to incorporate all of these potential causal variables. From these had emerged evidence to confirm the importance of non-marketing factors such as family and peer groups and of product pricing in determining food choices and consumption levels. Further evidence indicated that even in the presence of these influences, some residual and notable effects of exposure to food promotions prevailed. Perhaps the one issue that could be taken up with this conclusion in this review is that much of the food promotion residual effects data derived from studies that used self-reports of general media exposure as proxies for direct measurement of food promotion exposure.

Several further reviews of food promotions research followed the initial Hastings review. Some of these were funded by the food industry with the purpose of critiquing the evidence and conclusions laid out by Hastings. Another exercise, funded by the Office of Communications (Ofcom), the communications regulator, comprised a review of the other reviews. We will turn to these later in this chapter. Before that we will take a look at the later reviews produced by Hastings and his co-workers for the WHO.

The first review for the WHO published in 2006 reported on evidence from 133 studies. The second review for the WHO published in 2009 found 99 primary investigations and 16 review papers that satisfied the selection criteria for inclusion. As outlined by Cairns et al. (2014), a number of specific research questions were developed for investigation by these reviews and these are shown in Table 2.1:

Table 2.1 Research questions addressed by Hastings reviews

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- (a) Nature and Extent of Food Promotion to Children:
- (1) What promotional channels are used to market foods to children?
 - (2) What foods are promoted?
 - (3) What creative strategies are used?
 - (4) What marketing strategies are being used to promote foods in low- and middle-income countries?
 - (5) Effects of Food Promotion to Children
 - (6) How do children respond to food promotion?
 - (7) Is there a causal link between food promotion and children's related knowledge, preferences, purchase and consumption behaviours, and diet-related health status?
 - (8) What is the extent of any influence of food promotion relative to other factors?
 - (9) In any studies demonstrating an effect, does this affect total category sales, brand switching or both?
-

Source: Cairns et al. (2014, p. 210)

Turning to the Hastings review for the WHO, the authors drew upon earlier reviews that had been conducted within the UK for the Food Standards Agency and Department of Health (Hastings et al., 2003) and also for the WHO (McDermott et al., 2004). Again, this review collated evidence from studies of the volume, prevalence and types of food promotions and of the effects of food promotions on children's food preferences, knowledge and choice behaviour, eating habits and related health status. Research was also covered that had investigated the relative influences of food promotion and of other social, environmental and psychological factors (Hastings et al., 2006).

This search updated the earlier ones by finding relevant research published from 2003. The authors found 63 studies about the extent and nature of food promotion to children and 35 studies of children's reactions to food promotions. The review cast the net wide to find studies outside the usual territories such as the USA and Canada, Western Europe, Australia and New Zealand. A few additional studies were found that represented the Middle East, Asia, Africa and Central and South America.

Overall, the review confirmed earlier findings. Food marketing was prevalent in many parts of the world. Television was the dominant advertising medium throughout. Food marketers also used a variety of other marketing platforms and formats in other mass media, in outdoor and indoor physical locations (e.g., billboards, retail outlets, schools), and product placement, event sponsorship, merchandising spin-offs and partnership arrangements with non-food brands.

The food sector spent large amounts of money on advertising and much of this advertising was targeted at children. Advertisements adopted production techniques and sales appeals designed to attract the attention of young consumers and to engage them emotionally as much as cognitively. The most heavily advertised foods were those generally regarded as poor in nutritious value and yet high in fat, salt and sugar.

Children were found to display good awareness of food advertising even from an early age. They could recognise widely advertised food brands. Exposure to food promotions could influence children's short-term food choices. Over time, some evidence emerged to indicate that wider and repeated exposure to food promotions might contribute towards eating habits that are characterised by the consumption of unhealthy rather than healthy food types. It is important to acknowledge however that there are non-marketing factors in children's lives that can exert powerful influences over their food preferences and choices and general eating habits. Some, but by no means all, studies of food promotion effects have taken these other factors into account. Where controls for non-marketing factors have been included, evidence has still emerged that food promotions can shape children's brand and food category choices. Thus, the effects of food promotion extend beyond persuading young consumers to adopt or switch to new brands and can encourage them to prefer unhealthy foods over healthy ones in their wider diet.

By their final review, the Stirling group found that though still prevalent, televised food advertising was reducing while other platforms, notably the internet, direct marketing, retail and in-school promotions together with merchandising and incentives to purchase were more prominent (Cairns et al., 2014). There was still ample evidence that advertised foods and drinks were dominated by ones high in sugar and fat content. Research from different parts of the world revealed that a clear majority of promoted foods were for breakfast cereals, confectionery, fast foods, snack foods and sugared soft drinks. There was extensive use of production techniques and formats known to appeal to children such as animation, fantasy and humour. This trend was spreading with low-income countries taking their lead from high-income countries in the adoption of these promotional techniques.

There was evidence that these food promotions could influence children's food choices. Advertising and other forms of promotion of foods could affect children's immediate food preferences and steer them towards foods of poor nutritional value. Knowledge of nutrition was poor among children and food promotions did not help. Some evidence

had also emerged that food purchases and purchase requests among children were related to food marketing exposure patterns among children. Limited evidence had also emerged showing that general food consumption habits and diet-related health status were also associated with reported food promotions exposure patterns.

Having made these observations, however, it was also noted that not all the empirical evidence that had emerged up to 2008 supported these outcomes. Some studies failed to produce compelling evidence (or any evidence at all) that children's exposure to food marketing shaped their food preferences, eating habits or diet-related health status.

Furthermore, it was important to recognise the multitude of other factors that shaped children's food likes and dislikes and consumption patterns. Local social and environmental factors not least the influences of their families and peer groups, were significant. It was essential, therefore, to control for these factors when examining the potential influences of food promotions. Some studies had deployed controls for social and environmental factors but still yielded inconsistent evidence for surviving food promotion effects. Where such controls had been deployed, it was concluded that food promotions could exert independent influences over children's food orientations but these effects were modest (Cairns et al., 2014).

Advertising Industry Response to Stirling/Strathclyde Group

The advertising industry in the UK sponsored further reviews around this time. One of these was specifically targeted at providing a critique of the first Hastings review (Paliwoda & Crawford, 2003). Another by psychologist Brian Young reviewed some of the literature about advertising and children's food choices where he tried to place evidence for the effects of food advertising alongside the role played by other factors in cultivating children's food preferences and eating habits (Young, 2003).

Paliwoda and Crawford were hired by the Food Advertising Unit (FAU) to respond to the review by Hastings and his colleagues and to provide a critique of a number of specific studies referenced in the earlier Food Standards Agency (FSA)-sponsored review. For Paliwoda and Crawford (2003) the Hastings review had tackled a complex subject and recognised the complexity of the issues and the evidence. However, there was a disconnect between the research findings reviewed by this research group and the conclusions reached by policy-makers and the press. Many of the public statements that were subsequently made about the research

evidence following the publication of the Hastings review, on closer inspection, were not supported by the research studies cited as evidence. Furthermore, much of the research derived from American research and there was a need to question how relevant this evidence might be to the formulation of food advertising policy for television in the UK.

While the Hastings group had identified nearly 30,000 studies of potential relevance to their inquiry, in the end only 0.4 % of these were used in the review. Paliwoda and Crawford challenged the reviewed evidence for being outdated with less than one in five studies having been published during the five years prior to the review. They pointed out also that much of the reported empirical evidence was based on correlation coefficients rather than tests of causality. Moreover, when set alongside other influences on children's food orientations food promotions were found to have only a weak overall effect, accounting for as little of 2 % of the variance in food choices. As a more general observation, Paliwoda and Crawford noted that the Hastings review focused on televised food advertising when there were also many other types of food promotion that were not examined by Hastings and his co-workers.

Young identified social factors in a child's environment—especially parental and peer group factors—as playing important parts in shaping children's food preferences and dietary choices. He acknowledged the existence of a number of studies that had reported apparent relationships between children's exposure to food advertising and their food choices or eating habits, but questioned some of their conclusions about the effects of advertising in this context. The studies he reviewed comprised surveys in which children produced self-reports about their advertising exposure and food consumption or in which youngsters' abilities to remember food advertisements was related to their food habits. The problems with these studies were principally that their behavioural data relied upon the accuracy of respondent subjective judgements, advertising exposure and experience measures were crude, social factors were not adequately measured or controlled, and data were collected at one point in time enabling statistical correlations to be calculated between variables but no tests of causality (Young, 2003).

Reviews Sponsored by the Office of Communications, UK

In reviews undertaken for the UK's broadcast advertising regulator, Ofcom, Livingstone attempted to set in perspective the evidence about the effects of food advertising on childhood obesity (Livingstone, 2004, 2006a, b;

Livingstone & Helsper, 2004). This topic has been subject to close scrutiny and much debate over many years. Although obesity has many potential causes, much political attention has focused on the promotional activities of the food industry and in particular the way food manufacturers and distributors market their products to children. The blame attached to food advertising in cultivating children's interests in eating foods that contain ingredients that are bad for their health has led to calls for tighter advertising regulations.

A debate has also been triggered among researchers about whether the research evidence stands up and demonstrates unequivocally that food advertising can and does shape children's food preferences and choices. Livingstone refers to a number of major literature reviews that have produced apparently conflicting interpretations of the extant evidence about the influences of food advertising on children. Yet, closer scrutiny of this evidence reveals that often these different sides are often in closer agreement than they are portrayed as being in respect of certain conclusions about food advertising effects.

One reason for this anomaly is that the debate has tended to focus on a search for singular effects of advertising. In other words, food advertising is determined either to exert a direct influence on children's eating habits versus this effect being denied. An overly narrow focus of this kind can result in theorists and researchers failing to include more subtle relationships between food advertising and children's food consumption. Food advertising, for example, might exert indirect as well as direct effects on children's food choices. Searching only for direct effects may produce zero evidence for direct effects, but this does not mean that advertising is exerting no influence at all.

It is important to bear in mind that children can make their own decisions about the foods they like, but may not always have the means to make their own purchases. They must therefore persuade others to do so for them. If those food gatekeepers—usually parents—refuse to comply then despite exposure to certain kinds of food advertising, this experience will have no direct impact upon eventual food consumption behaviour. It might however have an influence on which foods are most liked or which foods children pester their parents about most often.

It is also widely recognised that there are many non-marketing causes of food consumption and over-consumption. Parents, siblings, friends and peer groups can also exert their own influences. The genetic make-up of the individual can also play an important part in his or her orientation towards food and propensity to become overweight. These extraneous

variables have often been invoked by critics of the strong advertising effects lobby and accusations made that many studies of the influences of food advertising failed to build in adequate controls for these factors.

There is also a more profound argument about the nature of the research grounded in the intrinsic measurement limitations of specific research methodologies. Surveys cannot directly test causal hypotheses and rely on self-report data. Experiments lack external or ecological validity which means it is only with extreme caution that we should generalise from their findings to everyday life. The big question raised by the joint critiques and raised by Livingstone is: where does this leave us in terms of using empirical research to guide policy decisions?

For Livingstone the research debate in this field has been 'mired in two misconceptions' (Livingstone, 2004, p. 4). The first of these is the notion that it is possible to construct the perfect experiment that can investigate causal relationships between specified variables at the same time as controlling for other possible external factors that might influence that causal connection. The second problem is that the debate has been searching for specific direct effects of food advertising which has led researchers to seek a conclusion either that such effects do exist or do not.

The tendency to critique each new study that is published in terms of its generic methodological limitations gets us nowhere. Seeking ideal experiments is unachievable in practice because of the complexities of human behaviour and of the social conditions under which that behaviour occurs. The more tightly controlled experiments become, the more they must inevitably distance themselves from everyday reality in order to filter out any factors other than a specific advertising experience that could potentially influence a child's food choices.

Surveys can obtain data from respondents about their real life experiences and habits, but they do this under conditions that cannot facilitate the measurement of cause-effect relationships between key variables. No matter how carefully we deploy random sampling of respondents or how much we pre-test and perfect the design of our questionnaire, we cannot change the intrinsic correlational nature of this methodology.

Livingstone acknowledged the contribution of Hastings and his colleagues and also noted the critiques of this work by industry sponsored reviewers such as Paliwoda and Crawford. There was further acknowledgment of the inherent weaknesses in much of the extant research for the reasons already noted above. Nevertheless, she concluded that challenging the veracity of the extant empirical evidence in the search for methodological purity seemed to be an unrealistic question. Dismissing all previous findings as,

therefore, having no value in supporting any meaningful understanding of the effects of food promotion was also not helpful.

Despite design limitations the literature had nevertheless provided a usable evidence base to calculate risk probabilities even if it could not offer cast-iron certainty over their appearance. It was correct to recognise that multiple factors were at play in the development of children's food preferences and dietary habits, but that food advertising and other forms of promotion was regularly present in children's lives and could exert some influences of note. These effects might be small, but nonetheless might still have sufficient social relevance to bring them reasonably within the orbit of consideration for policy makers (Livingstone, 2006a, b).

In trying to deconstruct the debate further in order to move it forward, Livingstone (2005) outlined six possible outcomes or conclusions in terms of food advertising and consumption. The first possibility is a 'don't know' outcome where it is concluded that such are the methodological problems with all relevant studies it is impossible to conclude one way or the other whether food advertising exerts any effects on young consumers.

Going beyond this conclusion, a position might be adopted whereby the limitations of methodologies are acknowledged but the evidence they produce is not wholly dismissed. Instead, a conclusion could be based on probable outcomes—even though there is no absolute certainty. In this vein there are two possible conclusions: advertising does affect food preferences, knowledge or behaviour ('pro-effects' position) or that there is no such effect ('no effect' position).

If a position is adopted that there could be effects of advertising, the next consideration should be about the strength of these effects and whether they are 'modest' or 'strong'. For Livingstone, the strength of the impact of advertising must be gauged in comparison with the strength of effects of other variables such as parents, peer groups and so on.

A final position outlined by Livingstone was 'no real effects'. In this instance, it might be the case that experimental studies reveal effects of food advertising under controlled conditions, but such effects occur only under these conditions and not under natural food consumption and advertising exposure conditions.

When examining more closely the apparently oppositional conclusions of Hastings et al. (2003) and Paliwoda and Crawford (2003), Livingstone (2004) was able to demonstrate that both presented evidence of acceptance of a 'modest effects' position. Hastings and his colleagues stated this position explicitly. Paliwoda and Crawford seemed to acknowledge the possibility that food promotion could have positive effects on

children's health even while doubting the veracity of the evidence for negative effects. They also accepted that most televised advertising of food was for products classified as lacking in nutritional value. Since these are among the main conclusions of Hastings et al., the two sets of authors were not as far apart in their conclusions concerning the nature and effects of televised food advertising as proponents of 'effects' versus 'no effects' might have claimed.

Livingstone recommended a fresh approach that adopts a model that accepts the possibility of multiple causal factors, which might act separately or independently to influence multiple outcomes rather than just a single outcome. This new model would allow for the possibility of indirect effects of food advertising on children's food-related orientations.

Advertising Regulator Review, UK

A subsequent literature review from the UK examined the phenomenon of online food and beverage advertising (Clarke & Svanaes, 2014). This report was produced for the Committee of Advertising Practice (CAP) which along with another body, the Broadcast Committee of Advertising Practice (BCAP) has responsibility for writing and maintaining Britain's advertising codes of practice. These codes are then implemented by two further regulatory bodies, the Advertising Standards Authority (ASA) and Ofcom.

The CAP review examined 106 papers drawn from the international research literature about online food advertising. Only 18 of these publications described research from the UK. The report points out that it is important to take into account cultural differences in media systems, advertising practices, dietary habits and food availability across countries when examining international research literature about online food and beverage advertising.

The CAP review began by briefly touching on global regulatory initiatives, references to other literature reviews, research limitations and the overall status of the evidence. Five previous reviews were mentioned but this review of reviews was far from comprehensive and did not describe or critique their outcomes. In a primer discussion of evidence of food advertising effects, CAP relied mostly on the outcome of a meta-analysis reported by Livingstone (2006) for Ofcom and another by the American Institute of Medicine in 2005. Further selective studies were cited to reveal that a great deal of attention has been devoted to advergames among studies on digital marketing.

The focus of the CAP review was online marketing. The internet has opened up a multitude of new marketing opportunities for food and beverage brands. As well as standard forms of stand-alone advertising, the internet contains immersive environments that consumers can enter as parallel worlds and experience brand promotions that often are subtly integrated with entertainment content. In these interactive settings, consumers engage dynamically with brands and are invited to comment on them to brand suppliers as well as to other consumers.

Many online sites that contain food promotions are targeted at children. Their advantage for professional marketers is that these subtle promotions sometimes lie outside conventional advertising regulations. Regulators have had to play catch-up in this fast-moving digital world. CAP reviewed research which showed that regulators need to address these shortfalls in their codes of practice and move swiftly to develop policies to protect children.

Another feature that illustrates the subtlety of online marketing is that it was observed to attract fewer complaints from parents than did conventional advertising. The main reason for this, however, was that many parents were simply unaware of digital advertising. Even when parents believed they had a primary responsibility to protect their children from food advertising, they were unaware of the food promotions to which their children could be exposed on the internet (Cornish, 2014; Newman & Oates, 2014). Parents, therefore, often underestimated the potential effects of online advertising on their children (Cornish, 2014).

When parents did become aware of new digital marketing forms such as advergames, their anxieties for their children became acute. Parents readily recognised the risks associated with embedded forms of food advertising that would not be identified as promotions by their children (Bottner & Ivens, 2014).

The CAP review examined research that showed that measuring advertising exposure in digital interactive settings could be challenging. Although there are standard audience research methods available to collect such data on advertising presented in mainstream media such as television, measuring exposure to more subtle forms of promotions in social media sites and gaming environments is more difficult (Dahl, Low, & Eagle, 2012; Valkenburg & Peter, 2013). There is a need to develop clearer indicators of exposure to online advertising to facilitate better effects research (Oprea, Buijzen, van Reijmersdal, & Valenberg, 2014; Valkenburg & Peter, 2013).

Turning to the effects of online advertising, the CAP review found evidence from questionnaire surveys yielding self-report data about respondents' behaviours and from interventionist experiments involving controlled exposures to specific forms of food brand promotions. Some researchers also used technical approaches such as eye-tracking equipment to monitor teenagers eye movements across an advertisement and then questioned them further about their opinions concerning the advertisements or intentions concerning the food product being promoted (Holmberg, Sandberg, & Holmqvist, 2014; Sandberg et al., 2011).

The CAP review revealed that more research is needed to investigate the effects of online social media and advergame-based promotions of food products. There was some limited evidence from small-scale experiments that exposure to food brands in an advergame could raise the likelihood that children would subsequently choose those brands over others that did not feature. Most of these studies examined advertising effects immediately after exposure. One investigation found evidence that food brands presented in advergames featured more prominently in children's parent pestering food purchase requests two weeks after initial exposure (Waiguny, Nelson, & Perlutter, 2013).

Further important findings revealed that children can often find the persuasive intent of food promotions in advergames more difficult to spot as compared with conventional food advertising, such as that found on television (Ali, Blades, Oates, & Blumberg, 2009; An, Jin, & Park, 2014; Oates, Li, & Blades, 2014; Wollslager, 2009).

Advergames could also have powerful influences when children encouraged their peers to play them. Similarly, with social networks, memberships can grow rapidly through word of mouth recommendations. These same viral phenomena can then be utilised by food marketers who engage children in online conversations about their brands and offer premiums if they will serve as brand champions and make brand recommendations to their friends through these sites (Harris et al., 2013).

The CAP review recognised that it was important to ensure that children understood online marketing activities. This meant being able to recognise when and where they occur and then to be able to critique them and any persuasive appeals flowing from them. The more closely integrated brand appearances and associated promotional messages were with surrounding online content, the more difficult they could be to spot (Owen, Lewis, Auty, & Buijzen, 2013).

EVIDENCE FROM NORTH AMERICA

Institute of Medicine Review

In a report released by the Institute of Medicine's Committee on Food Marketing and Diets of Children and Youth in the United States, McGinnis, Gootman, and Kraak (2006) undertook a wide ranging review of literature about the influences of food marketing on young people's dietary habits. It examined also the marketing practices of relevant industries and also the status and efficacy of policies and regulations linked to these practices.

In its review of the influences of food and beverage marketing, it identified 123 published studies conducted with young people up to the age of 18 years. These studies had been published in the 1970s, 1980s, 1990s and early 2000s. They yielded a total of 155 results concerning links between exposure to food and beverage marketing and outcomes such as food preferences, beliefs, purchase requests, short-term consumption patterns, usual dietary intake and being overweight. The volume of research into food advertising influences has increased steadily over time. Just six findings emerged from reviewed literature in the 1970s, increasing to 35 in the 1980s, 48 in the 1990s and 66 in the early 2000s. This trend reflects the growing importance of the subject to policy makers.

McGinnis and his colleagues divided the influences literature into three broad categories based on their primary thematic objective: studies of marketing and other precursors of diet, studies of marketing and diet, and studies of marketing and diet-related health. The last theme produced the greatest number of results ($n = 74$), followed by the first theme ($n = 45$) and finally the second theme ($n = 36$).

The biggest number of findings (108) derived from children aged between 6 and 11 years followed by findings from those aged 2 to 5 (55) and those aged 12 to 18 (49). The biggest number of findings (93) derived from cross-sectional surveys followed by experiments under controlled conditions (36). Findings from longitudinal surveys (21) and naturalistic experiments conducted in real-world environments (4) were rarer. The later studies tend to be more difficult to set up and costlier to run.

Virtually all the marketing effects research reviewed by McGinnis et al. focused on television advertising. Only 6 results out of 155 were concerned with non-television marketing activities. Although 18 of the results derived from studies that combined the study of televised advertising with other

forms of marketing. Thirty-three findings about televised advertising effects emerged from controlled experiments with just two deriving from naturalistic experiments. All remaining findings about the influences of food advertising on television came from survey studies.

It found clear evidence for effects of marketing on young people's food preferences and dietary choices. Given that the dominant advertised foods were those high in calorific content, the findings of this inquiry indicated that the commercial promotion of food (and certain drinks) must be regarded as having a significant part to play in influencing the health status of children. It is important, therefore, to consider whether these marketing activities are sufficiently regulated given wider public concerns about food-related health risks.

The report identified a growing prevalence of childhood obesity in the USA and the growth also in the occurrence of early onset diabetes type 2 and other related health risks that included heart disease, circulatory problems, some cancers and osteoporosis. These diseases were long known to be prevalent in adult populations, but their genesis was often linked to dietary habits that were in turn frequently established during childhood. Many factors were at play in this context, but food and drinks marketing activities were ever present in children's lives and could be experienced in many different forms in many different locations and settings (McGinnis et al., 2006).

The general conclusions reached from this review were that, on balance, there was evidence that exposure to food advertising among pre-teenage children was linked to dietary intake whereas for teenagers the evidence was altogether less clear. In particular, there was evidence that pre-teenagers' short-term food consumption choices could be influenced by advertising. Turning to their usual dietary intake, however, there was some modest evidence of an advertising effect for very young children aged up to five, with progressively weaker evidence of any such effects among older age groups.

The food and drinks industries spent huge amounts of money on these marketing activities and often set out to target children. There was an evidence base derived from a large number of empirical studies that had used a number of different methodologies that supported a view that children could be influenced by food promotion in relation to their brand awareness, food preferences and dietary habits. Even though when very young they lacked the means to make direct purchases of preferred foods, they nonetheless pestered their parents to do so on their behalf.

The Institute of Medicine's conclusions were that the evidence was strong for effects of food and drinks promotions on children's food preferences, requests for food purchases and immediate post-marketing exposure interest in consumption of promoted foods and drinks and that there was weak to moderate evidence for effects on dietary habits among pre-teenage children. There was a further issue and this was that the food types that dominated mainstream media campaigns were those judged as poor in their nutritional value. These were foods and soft drinks high in calories and other additives that carried health risks if consumed as a major part of a child's regular diet.

The report made a series of recommendations that applied to food manufacturers and distributors, marketing professionals, the media industries, educational authorities, health authorities and government. On checking up on progress on these recommendations three years later, McGinnis (2008) found there had been little or no progress on eight out of the ten recommendations.

It is also important to note that McGinnis and his colleagues did not simply review the nature of relevant evidence concerning food advertising and various diet-related outcomes. They also attempted to evaluate the research evidence more qualitatively. Studies were rated as high, medium or low on three criteria: (1) quality of measures, (2) causal inference validity, and (3) ecological validity. Put another way, to what extent could the extant research literature available to the authors at the time of their review be regarded as using good quality measures, as having tested causal inferences effectively, and as providing results that could be generalised to the real world? The outcomes make for interesting reading in their own right and underline the need to consider any published evidence on this subject with careful reflection before jumping to too many conclusions. They also call into question the way these three assessments were made and how they logically fit together.

In terms of quality of measures, just 15 results were judged to be high quality, with 73 rated as medium quality and 67 as low quality. When it came to effectiveness of causal inference making, just 23 results were judged as high, with 47 rated as medium and 85 as low. Finally, the ecological validity assessment outcome is intriguing given the patterns of results for the previous two dimensions. One hundred findings were judged as high in ecological validity, with 38 scoring medium and 17 as low. While two-thirds of the results were judged here as demonstrating

outcomes that could be generalised to real life, so few were also judged as being based on high quality measures. Furthermore, a relatively modest (and much smaller) number were judged as high on effectively demonstrating causal relations between key variables.

McGinnis et al. (2006) also acknowledged that there were more general limitations to the research literature that needed to be addressed by future investigations. Most of the research had focused on televised advertising. Yet there were many more platforms used by food advertisers that also needed to be understood better in terms of their unique effects and how they might interact with televised advertising. The emergence of the internet has resulted in widespread adoption of online marketing tools by the food and beverages industries and the marketing formats are often different in this environment from those associated with conventional mass-media advertising. There were also ‘quality of measurement’ issues concerning the accuracy with which dietary intake and exposure to food and beverage marketing are assessed. These behaviours can be difficult to pin down because of their regularity and complexity.

The Berkeley Review

The Berkeley Media Studies Group (2011), comprising Andrew Cheyne, Lori Dorfman, Priscilla Gonzalez and Pamela Mejia, produced a follow-up review of evidence concerning food advertising to the earlier Institute of Medicine review (McGinnis et al., 2006). The latter review had compiled research evidence from 1994 to 2004. This new review covered studies published from 2008 to 2011. The Berkeley review focused on the prevalence and location of food and non-alcoholic beverages advertising, the expenditure on advertising by these sectors, and the techniques used by advertisers to present and promote their brands. In sum, this evidence indicated the opportunities for children and teenagers to witness food advertising and the potentiality for influence within that advertising.

The Berkeley group confirmed that food advertising is widespread especially in those media that are extensively used by young people. Television advertising remained at the centre of food promotions campaigns. In the period covered, however, the internet and other associated digital media had achieved widespread penetration and had been enthusiastically adopted by young people. This meant more opportunities for child exposure to online food marketing.

Food-marketing campaigns had become multi-faceted. They used conventional forms of advertising and also subtler and often disguised promotional formats and techniques. Online marketing techniques were popular because they often side-tracked both regulatory codes of practices, that had mainly been written for traditional mass media, and parental monitoring. The food industry had made self-regulatory pledges as public commitments towards self-control and the protection of children, but these were most visible with mainstream media such as television. Food companies still used features known to have special child-appeal such as licensed animated characters both in televised campaigns and in their online advertising that had become ubiquitous.

Food brands had become more closely integrated with entertainment content through the growing use of product placement in TV shows and movies and by embedding them in video games. Some video games—known as *advergaming*—were produced by food manufacturers as extended advertising vehicles. The Berkeley group cited research that had shown two-thirds of *advergaming* had actively integrated brands into the game itself, whereas the remainder had brands present but set aside from the gaming experience (Lee, Choi, Quilliam, & Cole, 2009).

Food advertisers had seemingly targeted specific groups of young people such as Latino Americans and African Americans who were particularly enthusiastic users of online media. Moreover, these groups were targeted with food brands that generally had poorer nutritional quality than those targeted at white kids (Powell, Szczpka, & Chaloupka, 2010).

The Berkeley group called for more research on the effects of digital marketing strategies and the placement of food promotions in children's physical environments, such as at school or in locations they frequently pass through or visit in their daily lives. Better data were needed about exposure to advertising in these different locations—offline and online—and about children's understanding and ability to recognise food promotions that adopt different formats and techniques. In all this, special attention was also needed in the case of vulnerable populations that are often targeted with subtle marketing techniques by food and beverage advertisers. Ultimately, of course, we also need to know whether exposure to food advertising, wherever it occurs, can be identified clearly as a causal factor that encourages children to adopt unhealthy diets. This review showed that opportunities readily abound for this effect to occur, but its evidence based did not extend as far as showing that showing that it actually does.

Cheyne, Mejia, Nixon and Dorfman (2014) reviewed 120 publications linked to the study of food and beverage marketing to youth. Their review began by reminding readers that young people are specifically targeted by food and beverage marketers. Furthermore, this marketing in the USA targets young people from different ethnic and cultural backgrounds. Hence the young-person market is not regarded as homogeneous but instead as one with variances defined by demographics and culture and, therefore, often requiring a suite of different marketing approaches.

This review reinforced the fact that food and beverage marketers target youth through many different media and communications platforms. Television remains a significant medium in this context, but online marketing was ever more prevalent. Children are exposed to huge volumes of food advertising on television because food marketers tend to place many of their commercials in programmes that are highly popular with young viewers. These include programmes directly targeted at children as well as those aimed at family audiences and transmitted at times when there are still large numbers of children watching. The largest food and beverage manufacturers and distributors are among television's big spenders in terms of advertising.

Online advertising is often more subtle than traditional forms of media advertising. It can be closely integrated with web content to an extent where it may be hard to differentiate it from non-advertising content. Stand-alone advertisements do exist alongside web sites, but brands are often promoted in ways that are less obviously 'marketing' such as through appearances in online games, as sources of chat in social media sites, and as sponsors of sites. Digital marketing has raised issues about whether it can be recognised for what it is by immature young consumers and also about when it can be classed as 'advertising' or 'marketing' as distinct from another form or extension of entertainment or information content online from a regulatory standpoint (Wilking, Gottlieb, Bonacore, Cheyne et al., 2013).

Food brands are also promoted on their packaging, through advertising, sponsorship and premium offers in schools and on outdoor sites—both fixed and moving. All this means that children and adolescents can be regularly bombarded with brand names, logos and promotional messages in their everyday environments and not just when they turn on the TV or a computer. There are, of course, other mediated forms of food and beverage advertising that occur on radio, at the cinema and in print media consumed by young people. These promotional platforms were not discussed in this review.

The Cheyne et al. review of evidence focuses mostly on the presence and visibility of food and beverage marketing. The evidence on the effects of food and beverage marketing were not critiqued. One exception to this last observation was the section of their paper that discussed children's neural responses to food and beverage marketing. The authors state that a small number of studies had been completed that used magnetic functional resonance imaging technology to measure young consumer's neurological brain responses to marketing messages. Exposure to food brand logos had been found able to trigger significant brain activation in areas of the brain known to control reward responses and emotional reactions to the environment.

In the context of debates about food advertising and obesity, some research was reported by Cheyne et al. that obese and lean children had exhibited different patterns of brain activation to food logos. Obese children, for example, had shown weaker responses than lean children to food logos in parts of the brain linked to impulse control. The implication of this research was that overweight kids might display less self-control over their urges to consume food and that this in turn might result in a higher likelihood of over-consumption (see: Bruce et al., 2013; Gearhardt, Yokum, Stice, Harris, & Brownell, 2013). The studies reviewed in this case did not provide cast iron proof of how brain activation patterns eventually translated into food consumption behaviour—if at all.

Cheyne et al. concluded by examining policy and regulatory efforts concerning food and beverage marketing to young people. At a national level in the USA such initiatives had tended to comprise voluntary self-regulation on the part of the food and beverage industries with little federal government intervention. Public authorities had been a little more active on a more localised front. Very often, though, these official interventions were restricted to the sale and promotion of specific types of food and beverage in school settings and did not affect the prevalence of mainstream media advertising.

Schools-based interventions had met with some success in terms of average levels of consumption of sugary beverages on school premises, but they did not necessarily produce a general reduction in consumption. The authors called for more comprehensive policies to address the volume, nature and location of food and beverage marketing aimed at children and teenagers that would require the coordination of joint efforts by federal government, local authorities, the media industries and the food and beverage sectors.

A Canadian Review

In Canada, Nadeau (2011) presented a review of evidence from around the world that linked food advertising to obesity among children. This review of evidence focused on food marketing techniques that are used across a range of different media and settings and how exposure to advertising is related to children's orientations towards food. In addition, Nadeau considered the different types of promotional techniques and strategies used by food manufacturers to reach children and how the promotional campaigns used vary around the world. She also examined regulatory issues, particularly as they applied in Quebec, in Canada more generally and elsewhere in the world.

Nadeau noted the high visibility of food advertising in the mainstream media in Canada and the emergent use of online platforms by the food and beverage industries. These sectors comprised the biggest advertisers in the country in terms of overall expenditure on their marketing activities. Further analysis revealed evidence that much of the advertising was for foods and drinks that were high in sugar, salt and fat and that often occur prominently in media content that is extensively consumed by children and adolescents. This evidence indicated, therefore, that the food and beverages industries were targeting young people in recognition of the role they can play as consumers in their own right but more especially in terms of the influences they have over family purchases through parental pestering.

The targeting of children by the food and beverage industries with promotions for products that are likely to be high in sugar, salt and fat meant that the menu of foodstuffs being presented to young people—at least by advertisers—was not as healthy as it could be. Foods deemed to be essential for a healthy balanced diet, such as fresh fruit and vegetables, were not advertised to anything like the same extent. At the same time, separate evidence for Canada indicated that around half or more of children failed to consume the recommended amounts of fruit, vegetables, dairy and meat products. These two factors together—the prevalence of advertising for unhealthy foods plus the preferences displayed by children for unhealthy foods—raised questions about whether they were causally linked. If so, then it might be possible to support the cultivation of healthier eating by children through restrictions on current food advertising practices.

The growth in rates of childhood obesity around the world, in turn linked to the nature of children's diets, has led to a global campaign for improved eating habits. International bodies such as the WHO have

virtually accepted the hypothesis that children's exposure to advertising for unhealthy foods is so frequent in many countries that it must represent a powerful causal agent in this context. Even though evidence cited by Nadeau has indicated that children's comprehension of advertising varies with age and their psychological maturity, there is plenty of evidence that advertising messages can be sufficiently well registered by even very young children to give rise to enhanced brand identity. Thus, children develop brand preferences early in life. Further evidence shows that they also pester their parents to buy the brands they know and like.

Nadeau's review also recorded that the promotion of foods and beverages to children occur in many different ways. Advertising remains prevalent on the major media such as television, but food brands are also promoted through product placements in films, TV shows and computer/video games, through event sponsorship, on product packaging, and in schools and retail outlets. The internet was also observed to have emerged as an important advertising platform for food and beverage brands.

Television remains the mainstay of food and beverage advertising, however. The strategy of food and beverage brands has clearly been to target young people through television by positioning their commercial messages within programmes that are most watched by children and at times of day when large numbers of children are known to be watching. Furthermore, the advertisers have shrewdly used production techniques designed to appeal to children, such as humour and the frequent adoption of cartoon characters to promote brands.

Nadeau cited evidence that exposure to televised advertising has been linked to children's knowledge and beliefs about foods. Unhealthy food brands will make claims about healthy ingredients. Although these ingredients can be found in such products, the health claims made about products as a whole are often exaggerated. Given that food preferences can apparently be shaped by exposure to televised advertising, it is important that any product claims are accurate and true.

For Nadeau action was needed in relation to food and beverage marketing activities to protect the interests of children. Advertising for products high in calorie value, for instance, should be restricted or moved to physical locations where they were less visible to children. More advertising of healthier foods was needed. It is also important to ensure that children were literate about advertising and knew how to critique its messages rather than taking them at face value.

All these recommendations are perfectly reasonable. They have been voiced by other reviewers of food and beverage marketing literature. This report however was selective in the evidence it presented and seemed to choose examples relevant to illustration of points the author had already decided to make. Moreover, evidence was taken largely at face value and there was little critical reflection on whether the evidence still stacked up when challenged by research quality control questions.

A European Review

The food industry uses multiple techniques and platforms to promote its products and to reach young consumers. Diana Sonntag and two of her colleagues from the Mannheim Institute of Public Health, Social and Preventive Medicine at Heidelberg University in Germany joined forces with two other colleagues from the Department of Health Sciences, University of York in the UK to conduct a review of evidence designed to articulate and catalogue research into the extent to which the food industry tries to achieve exposure for its products to children (Sonntag, Schneider, Mdege, Ali, & Schmidt, 2015). They devised a conceptual model derived from the obesogenic environment framework of Swinburn Egger and Raza(1999???) as an organising framework for their review.

This review searched nine electronic databases including The Cochrane Library PubMed, PsycINFO, EconLit and Web of Science and identified 1900 published papers, which were then further reduced by applying several specific criteria. The reviewers focused on research conducted in Europe, USA, Canada, Australia and New Zealand, written in English, German or French, involving children aged 3 to 11 years, and containing some degree of analysis of food-marketing practices. Further quality assessments were made of each study's methodology, use of theory, data analysis and interpretation. A final sample of just 36 studies remained for review purposes.

Sonntag and her colleagues found that 20 of their small sample of studies investigated food promotions on television. Around one-third of these studies used content analysis to examine the nature of televised food advertising and the types of promotions it typically conveyed, as well as how much of it was shown and where. A further third of studies used similar quantitative measures to assess the impact of regulatory interventions designed to restrict the amount, placement and nature of this advertising. The remainder of this sample tried to measure the effects of televised food

advertising on children's food preferences and choices. The effects evidence was equivocal in terms of whether television advertising was found to exert consistent impact on children diets and related health status.

A further six studies examined the effects of food industry promotional campaigns that were conducted over a number of platforms. Most interest here focused on whether children developed brand awareness, understood what brands were, collected other associated merchandise (e.g., toys) and exhibited dietary habits that might have been shaped by these branding campaigns. Evidence emerged of enhanced brand awareness among children exposed to specific campaigns with weaker and rarer evidence that such awareness had further longer-term knock-on effects on children's eating habits.

Other studies examined food promotions on the internet, in retail settings, in the home via parents, and in school. In each of these areas it was clear that much more evidence was needed before firm conclusions could be reached about food promotions and their influences on children's eating habits and health status. What did emerge, however, was that advertising and other forms of promotion of foods high in salt, sugar and fat were far more prevalent across platforms and environments than the promotion of healthier food types. A further observation was that the food industry consistently used persuasive techniques that were known to be particularly attractive to children. From this evidence, therefore, it could be reasonably observed that the industry set out to target children and to do so in ways that would attract their attention and perhaps make them more likely to form positive impressions about the most widely advertised food brands.

CONCLUSIONS

Overviews of research evidence about food advertising have generally confirmed and agreed that it is prevalent across mainstream mass media and that it has surfaced as a prominent domain of marketing activity in new, online digital media. The opportunities for exposure to this advertising are plentiful particularly for children because food advertisements have historically been commonplace in media that are consumed a lot by them. This phenomenon has been especially true of televised advertising of food and non-alcoholic drinks products.

Turning from opportunities to see food advertisements to the possibility that these messages have persuasive influences on children's food choices and eating habits is a big jump. Reviews of relevant evidence have

not reached the same consensus about food advertising effects as they have about its prevalence and visibility to young consumers. The findings of reviews conducted in the UK have been more circumspect than those from North America in the conclusions they have reached about the effects of food advertising on children. There is a broad consensus across all these reviews that food advertisers seem to target children and that the mainstream media, especially television, provide plentiful opportunities for children to be exposed to food advertisements. These exposure opportunities have expanded into the new online platforms where they often take on subtler formats. What is less conclusive is whether children are significantly affected by food advertising in their own food-related behaviours.

North American research reviews, from both the USA and Canada, have indicated that there is some evidence that food advertising can exert influences over children's food awareness, preferences and choices. It is less clear how important are the influences of food advertising on long-term dietary habits. The UK reviews were not in complete agreement. Those conducted for international bodies such as the WHO or for national governments concluded that research evidence indicated that food advertisements could have modest effects on children's food-related knowledge, food preferences and some of their food-consumption patterns. Reviews for the advertising industry and for advertising regulators drew more cautious conclusions about possible effects or concluded that there was no clear empirical case for direct food-related behavioural effects.

Most of the research featured in these reviews comprised either surveys of medium-sized to large samples of children (i.e., young people aged 18 and under) or experiments of small, convenience samples. Surveys collect mostly self-reported data supplied as answers to questions administered via self-completion questionnaires. Experiments might also use questionnaires as one data collection method alongside other measures that record autonomic physical responses or psychological reactions, but differ from surveys in that data are collected from controlled settings in which children are exposed to advertising content selected by researchers.

Whereas surveys can only measure degrees of association or correlations between reports of exposure to food advertising and reports of food preferences and dietary habits, experiments try to measure causality in terms of specific effects of controlled advertisement exposures to subsequent reactions of children to foods.

Reviewers have differed in the degree of faith they have in the veracity and validity of research studies concerning children's exposure to food advertising and the food preferences and choices they subsequently report

or display. In some instances, research overviews have concluded that there is a balance of evidence showing that children can be influenced in their food choices by exposure to food advertising. In other cases, literature reviewers have concluded that the evidence overall is less clear cut on this point. It does seem that children's attention to specific food brands can be affected by exposure to advertising for those brands. Familiar brands might also be requested by children from their parents. How powerful are the effects of food advertising when set alongside many other potentially influential factors in children's lives is often less-well established.

Some reviewers observed that whether food advertisements have an influence of significance over children can depend upon their message content and production formats. Many food advertisers have been found to utilise cartoon characters in their commercial messages both as spokesperson for advertised brands and as demonstrators of the product. Some of these characters have been created exclusively for these brand promotions while others derive from other entertainment media formats. There is evidence that character branding can strengthen the impact of food advertising compared with non-character food advertising. The use of familiar media characters as brand champions or endorsers, however, seems also to be more effective in influencing children's choices of brands of unhealthy foods rather than choosing fruits, vegetables and other healthy food products (Kraak & Story, 2015).

This type of evidence, therefore, indicates that research evidence needs to be reviewed and critiqued with care. Simple exposure to food advertising may prove to be a fairly blunt indicator of subsequent food choices among children. Instead, it is important to examine the nature of that advertising and the types of food products being promoted. Some promotional techniques seem to enhance the impact of food advertising, but not equally for all types of foods. From the perspective of policy making and writing codes of practice, therefore, we need to know much more about these different kinds of variables and how they interact with each other as well as their individual effects to create frameworks of control that can effectively protect children where needed.

More generally, food advertising represents part of the plethora of food-related information children receive. Many of the techniques used by the industry are known to appeal to children and, therefore, suggest strongly that they have been deployed deliberately to attract children's attention (Sonntag et al., 2015). Yet, more needs to be understood about where advertising messages fit in with all the other food-related information children obtain from different sources. How is all this information

evaluated? Does it pull children in the same or different dietary directions? In the end, how are food choices arrived at? How powerful are children's requests for specific foods to their parents? How important are negotiations about food between family members in determining eventual food choices? Some of these questions cannot be answered through surveys and experiments. Instead, they require more qualitative approaches in which children and parents are interviewed and are given opportunities to explain in their own words where food fits in their lives, which factors determined their individual preferences and how decisions are reached about which foods to buy and use.

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What is the Potential for Exposure to Food Advertising?

This chapter will focus on evidence concerning the opportunities for children to be exposed to food advertising. Research here does not provide evidence for direct effects of this advertising on children. Instead it provides an important backdrop to questions about potential influences by examining the extent to which children could be exposed to food advertising in different locations that they are known to visit or frequent. The point of interest here centres on the amount of food advertising that appears in different media and other settings and the likelihood that children might witness it in those places. There is a basic assumption that ‘exposure’ is a necessary precursor to ‘influence’.

The structure adopted by this book has been to examine first the amount and location of advertising, then its intrinsic message qualities and information content, and then its effects on children’s food awareness, knowledge, attitudes and beliefs, food likes and dislikes, brand and food type preferences and eventually their dietary behaviour. In this chapter, this analysis gets underway with a review of research about the amount and distribution of food advertising in specific media and other locations and the opportunities for children to be exposed to it.

Food advertisers have always utilised the full range of promotional platforms. Since the beginning of the twenty-first century however they have taken advantage of a much increased range of advertising opportunities largely delivered by the emergence of digital communications technologies. The simple answer to the question posed by this chapter is ‘there is an awful lot’.

MULTIPLE MARKETING CHANNELS

Food marketing occurs across multiple media channels and physical locations. Television, cinema, radio, newspapers and magazines and the internet are favoured locations because they provide marketers with the potential to reach large numbers of children and specific sub-groups defined by age, gender, ethnicity, socio-economic class, and other social factors. There are multiple additional platforms from which food marketers can reach young consumers. These include sponsorship of events, retail promotions, spin-off merchandising, and direct mail shots. Advertising can occur in retail settings and includes branded stands, shelf notices, and product packaging displays. Food and drinks are also promoted in physical locations that children frequent pass through or visit such as schools and routes to school, town and city centres, retail outlets and shopping malls, and their own neighbourhoods (Currie, Della Vigna, Moretti, & Pathania, 2010; Zenk & Powell, 2008). Further evidence revealed that child populations most in need of healthier diets were the most likely to be targeted in schools by sellers of poor nutritional value food products (Delva, O'Malley, & Johnston, 2007).

Major concerns that have arisen from their vast promotional activities have not simply been triggered by the immense scale of food advertising but more especially from the types of food products that are promoted the hardest. One major review of research already discussed found 84 studies from around the world that analysed the amount and kinds of food advertising in different locations and settings (Cairns, Angus, & Hastings, 2009). Much of this research focused on televised advertising and found that food advertisements were dominated by products deemed by health authorities as having poorer nutritional value. These are products that tend to have a high sugar, salt and fat content. They are also products that are frequently targeted at children (American Academy of Pediatrics, 2006). These include foods such as breakfast cereals, confectionery, snack foods, fizzy drinks and fast-foods. These foods are high in calorific content (Reece, Rifon, & Rodriguez, 1999; Taras & Gage, 1995). One estimate calculated that virtually all advertisements seen by children are for food products that should form only a small part of their intake if they are to maintain a healthy diet (Powell, Szczypka, Chaloupka, & Braunschweig, 2007). Thus, children can hardly avoid exposure to the kinds of foods known to contribute to health risks associated with conditions such as diabetes and obesity.

This is not a specifically American problem. Similar patterns of food advertising and potential exposure to it on the part of children have been observed around the world (Carter, 2006; Consumers International, 2004; European Heart Foundation, 2005; Hastings et al., 2003). A review of relevant research literature from Central and South American countries reported evidence of widespread advertising of unhealthy foods on television and of the potential for children through their normal viewing patterns to receive extensive exposure to it (Bacardi-Gascon & Jimenez-Cruz, 2015).

The distribution of food marketing across different media platforms and physical locations has also diversified. Television has remained the most important advertising medium for food manufacturers and retailers (Morton, 1990; Karupiah et al., 2008; Harris, Bargh & Brownell, 2009a). A strong presence of food promotions has also been found in movies. Motion pictures have been popular choices for product placements especially by leading branded soft drinks such as *Coca Cola*, *Pepsi* and *Dr Pepper* (Cassady, Townsend, Bell, & Watnik, 2006).

Money has also been directed towards on-site promotions in retail outlets and in schools, more attention-grabbing packaging, sponsorship of events, spin-off merchandising, product placement and cross-promotions with non-food brands (Harris, Brownell, & Bargh, 2009). Increased proportions of marketing budgets, however, have been directed towards other forms of promotion in the twenty-first century as the digital era has opened up many new promotional platforms.

Food and non-alcoholic drinks manufacturers have adopted a variety of digital media as brand promotion platforms. As well as placing stand-alone advertisements and branding messages within or alongside static web sites, food and non-alcoholic drinks manufacturers have increasingly adopted more dynamic and interactive digital environments such as social media sites, gaming environments and virtual worlds as promotional platforms. These channels are popular with these advertisers *because* they have often by-passed parental monitoring and conventional marketing regulations (Culp, Bell, & Cassady, 2010; Henry & Story, 2009; Lingas, Dorfman, & Bukofzer, 2009).

Many of the new marketing developments that have occurred on the internet comprise various forms of disguised promotions in online games and social media sites (Chester & Montgomery, 2008). Once again, as with televised advertising, these other marketing platforms are dominated by high calorie/low nutrient value food products (Harris, Schwarz, & Brownell, 2009; Moore & Rideout, 2007).

TELEVISION FOOD ADVERTISING

Amount of Food Advertising

Children can be exposed to vast numbers of food advertisements on television (Roberts, Foehr, & Rideout, 2005). One trend analysis estimated that pre-teenage and teenage children in the USA, for example, could be exposed to as many as 60,000 television advertisements per year in the twenty-first century compared with 40,000 in the 1990s, 30,000 in the 1980s and 20,000 in the 1970s (Palmer & Carpenter, 2006). They could see as many as 20 food advertisements per hour on American television (Kotz & Story, 1994).

Furthermore, these advertisements tend to be mostly for food products classed as non-core in terms of a healthy, balanced diet (Dibb & Harris, 1996; Morton, 1984; Taras & Gage, 1995). These are products classed as low in essential nutrients and high in their fat, salt and sugar content (Gamble & Cotugna, 1999; Taras & Gage, 1995). Food references were found to occur five times in every 30 minutes on American television programmes that contained many embedded advertisements mostly for low nutrient foods (Story & Faulkner, 1990). It was calculated that American children could witness a food advertisement every five minutes while watching television and accumulate a total food promotion exposure of three hours per week (Kotz & Story, 1994). As we will see, one of the reasons why such intensive exposure to food advertising can occur is that food marketers purchase many slots in and around children's programmes (Taras & Gage, 1995).

Harris et al. (2011) found that the potential for pre-teenage and teenage children to be exposed to advertisements for high sugar soft drinks on television doubled between 2008 and 2010. Two-thirds of the brands that appeared in 2010 occurred during peak-time programmes. Even more significant to the health lobby was the close association between these products and sports performers and events. Nearly two-thirds of the brands advertised on national television in the USA sponsored an athlete, or a sports team, sports league, or sports event.

International Studies

Towards the tail-end of the twentieth century an international comparative study of the amount of food advertising on television found marked variances from country to country (Dibb & Harris, 1996). Thirteen countries were surveyed in all: Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Netherlands, Norway, Sweden, the UK

and the USA. Variances in food advertising prevalence were expected given that advertising regulations differed across these countries. Norway and Sweden, for example, prohibited all advertising on television that was directed at children aged under 12. Australia did not allow any advertising to appear in programmes designed for preschool children. Belgium also had restrictions on television advertisements aimed at children—in this case, advertisements targeted at children could not appear within five minutes of the beginning or end of programmes aimed at children.

The highest rates of advertising per hour were registered for Australia (34), followed by the USA (24) and the UK (17). The lowest rates per hour of advertising occurred for Norway TV 2 (zero), Sweden TV3 (one) and Sweden TV 4(2). A higher hourly rate was recorded for Norway TV3 (seven). It should be noted that programme sample sizes varied between countries and between TV channels within the same country. In most instances, between 18 and 25 hours of TV output was recorded per channel. Exceptions were Norway TV2 (three hours), Finland (5 hours 20 minutes) and Austria (13 hours 10 minutes).

Food products were prevalent in nearly all countries ranging from a high of 84 % of advertisements (Netherlands) to 12 % (Sweden TV3). Again, the highest rates of advertising in the case of food products were found in Australia (12 per hour), the USA (11 per hour) and the UK (10 per hour). Six other European countries (France, Greece, Finland, Germany, Denmark and Netherlands) had between eight and four per hour. Confectionery advertising dominated food advertising on television in most of these countries. Thus high sugar content foods were highly prevalent. The researchers concluded that food advertising occurs routinely on television in countries around the world and the types of products that are promoted most often are ones categorised as being of poor nutritional value.

Another international study examined television food advertising in Australia, Asia, Western Europe North America and South America in 2007 and 2008. The prevalence of food advertising varied across different parts of the world from 11 % to 29 % of all advertising in the televised samples. Advertising for non-core foods that were classed as poor in nutritional value was highly prevalent and accounted for at least half of all food advertising and over 80 % in some countries. Food advertisers used many techniques known to heighten the appeal of advertisements for children (Kelly et al., 2010).

Research in a number of individual countries has confirmed the food advertising has been prevalent on television over many years and represents a consistent feature of product advertising on this medium. Furthermore,

food advertising has been measured to display a more intense presence around children's programmes than elsewhere in the television schedules. This finding suggests that these advertisers are targeting children or the parents of young children.

USA

Health professionals have voiced concern about the role played by televised food advertising in shaping the food preferences and eating habits of children because of the overall volume of exposure to such promotions that can occur in childhood. Children can spend more time watching television than in school and such is the prevalence of food advertising, and as we will see especially for the wrong types of foods, that it was difficult to assume a condition of zero influence on young dietary habits (Byrd-Bredbenner & Grasso, 2000).

Food was observed to be one of the most widely advertised product categories on television over many years (Brown, 1977; Gamble & Cotugna, 1999; Gussow, 1972). Cotugna (1988) found 225 advertisements in 12 hours of children's Saturday morning television. More than seven in ten (71 %) of these commercials were for food products. This confirmed an earlier finding, which found a similar prevalence for food advertisements in Saturday morning children's programmes (Brown, 1977). Cotugna judged around eight in ten food products advertised in this sample to be poor in nutritional value.

The importance of television has been confirmed by the amount that is spent by food advertisers gaining access to promotional slots and appearance on this medium. One estimate indicated that around three-quarters of the food advertising budget of American food manufacturers was spent on television along with 95 % of fast-food chain advertising budgets (Gallo, 1999). By the end of the twentieth century, it was already distinctly feasible for children in the USA to watch anything between 20,000 and 40,000 advertisements a year on television (Strasburger, 2001). One in two advertisements in children's programmes were for food products (Kotz & Story, 1994; Taras & Gage, 1995).

Children's programmes attract large amounts of food advertising. By the mid-1990s, American children could view over 21 advertisements per hour on children's television and each of these had a duration of just under half a minute. Nearly half (48 %) of these advertisements were for food products. An overwhelming proportion of the food advertisements promoted brands that were high in fat, sugar and salt (Taras & Gage, 1995).

UK

A number of studies situated in the UK confirmed that food products are among the most heavily advertised on television and that food advertisers often choose to locate their brand promotions at times when children are likely to be viewing in large numbers (Adams et al., 2009a, 2009b; Boyland, Harrold, Kirkham, & Halford, 2011; Lewis & Hill, 1998).

One analysis found that half of advertisements sampled from television were for food products. Six in ten of these food adverts were for poor nutrient quality breakfast cereals and confectionery snacks. These food advertisers also tended to use more animation and fun and humour themes than did adverts for other product categories (Lewis & Hill, 1998). These observations were important because those techniques, as we shall in this chapter have been shown elsewhere to have particularly strong appeal to children.

Chestnutt and Ashraf (2002) conducted a study of the nature of televised advertising of food products classed as potentially detrimental to oral health. They focused on advertising aimed at children and constructed a sample of broadcast output from the most watched commercial TV channel in the UK focusing on peak-time and children's programmes. Of the adverts located within children's programmes, a clear majority (63 %) promoted food products. This was significantly greater than the relative volume of food product advertising during peak-time programming. Nearly three-quarters of food products advertised in children's programmes were classed as potentially damaging to children's oral health. In effect, this means that these were products for foodstuffs with a high sugar content.

Finally, in the UK, another analysis found that about one-sixth of all the advertising time monitored in a sample of children's programmes was devoted to food products and over 6 % of all advertising time was devoted specifically to food products known to have tooth-decay promoting qualities. The most prevalent product of this type within this sample comprised breakfast cereals, with sweetened dairy products and confectionery following behind. There was also some evidence that the prevalence of confectionery product advertising was greater during school holidays when more children were expected to be at home during the day (Morgan, Fairchild, Phillips, Stewart, & Hunter, 2009).

Australia and New Zealand

Research from Australia and New Zealand has shown consistently that food advertising is a prominent feature of product marketing on television. Food types advertised most often tend to be ones with high fat and

sugar content such as confectionery, fast-foods and snack foods. Not only that, but this type of product advertising tends also to be prevalent in and around children's programmes (Kelly, Hattersley, King, & Flood, 2008; Kelly, Smith, King, Flood, & Bauman, 2007; Neville, Thomas, & Bauman, 2005). Although there were signs that the amount of advertising of high fat/high sugar foods was falling, it was estimated in 2006 that pre-teenage children in Australia could witness more than 60 televised advertisements for these food products each week (King et al., 2007). Fast food advertising was found to be prevalent on Australian television, but not all of it was classed as unhealthy. Although many of the advertised fast food brands were regarded as lacking in essential nutrients, there were signs that their manufacturers were seeking to develop and promote healthy (or at least healthier versions) (Hebden, King, Grunseit, Kelly, & Chapman, 2011).

Evidence that food advertisers target children on television has derived from research showing that food advertisements were much more likely to appear in children's programmes than regular programmes (Neville et al., 2005). Furthermore, most food advertisements in children's programmes were for products classed as having a high fat, salt and sugar content (Wilson, Quigley, & Mansoor, 1999). From the late 1990s to mid-noughties, the profile of televised food advertising deteriorated in terms of nutritional quality. The overall volume of advertising increased over this period along with the prevalence of promotions of products deemed to be poor in nutritional quality (Neville et al., 2005; Wilson, Signal, Nicholls, & Thomson, 2006).

Nutritional Content of Advertised Food Products

One of the critical factors in determining the nutrient value of advertised foods is the development of a systematic and valid method for defining the nutritional quality of specific foods. Studies of food advertising have made often ill-defined references to foods that are 'high in fat, salt and sugar'. What is not made clear in this context is exactly what 'high' means. National health authorities provide recommendations for average or maximum amounts of intake per day of different ingredients in foods. It is then important to determine how much of specific ingredients a typical pack or purchased amount of a food product contains.

Consumers then need to know whether the entire pack is normally consumed or only part of it. If only part of the pack is consumed each time it is used, for example, as with breakfast cereal, what is the size of an

average portion and how much of specific ingredients (such as sugar) does each 'average portion' contain? A further calculation can then be made of the proportion of the recommended daily intake of a specified ingredient this portion represents. These are complex calculations for the average consumer to make and it is likely that most do not make them. In the context of doing research about the extent and nature of food advertising however, it would be of interest to know about these facts and possibly also to use them as weighting factors when describing the nutrient quality profile of food advertising in a specific medium.

North America

A number of studies emerged from the USA that followed this same theme. Not only did they catalogue the overall prevalence of food advertising on television, but they also examined the nutrient values of the foods being advertised. Comparisons were also made between televised food advertisements targeted at different ethnic groups within the USA.

Henderson and Kelly (2005) extracted a sample of over 600 advertisements from five US TV channels in 2003. The advertising units were obtained from the most watched television shows among the general audience and the most watched shows by African Americans. This enabled them to differentiate advertisements targeted at African American viewers. Advertised foods were coded by food type and nutrient ingredients information. They found more food advertising in programmes that were extensively viewed by African Americans. Advertising targeted at African Americans was more likely to be for confectionery, sugared soft drinks and meat. Packaged foods aimed at the general audience were mostly for cereals, pasta, fruits and vegetables and natural fruit juices. Both markets were equally likely to be targeted by advertisements for pizzas, salty snacks, poultry/fish mixtures and coffee or tea.

In a study of food advertising on US television further differences were found in the nature of the products that were promoted in commercials that featured black characters compared to those that featured no black characters. Throughout all the advertisements sampled in this investigation, the promoted brands comprised food types judged as poor in their nutrient value. There was a greater propensity to advertise fast food brands in advertisements that featured black characters and to advertise foods with a high sugar content in advertisements that did not feature any black characters. Regardless of the apparent ethnicity of the target consumer group, any consumer whose diet was largely built around these advertised

products would have fallen short in their intake of recommended daily amounts of essential minerals and vitamins (Harrison, 2006).

A study of food advertising on English-language and Spanish-language TV channels in the USA found food advertisements to be prevalent (representing about a fifth of the total sample). A clear majority of these advertisements (70 %) promoted foods high in fat or sugar. Around a quarter of the food advertisements promoted fast-food restaurants, with these advertisements being especially prevalent on Spanish TV networks. In comparison, advertisements for fruit and vegetables were very rare (less than 2 % of the total) (Bell, Cassady, Culp, & Alcalay, 2009).

Confirmation of the poor dietary quality of foods advertised on television to children has been confirmed by other US studies. In different samples of children's programmes taken from US network television, they discovered that advertisements for food were highly prevalent, if not dominant. Furthermore, most of the advertised foods were products high in fat, salt and sugar. These were foods such as breakfast cereals, confectionery, pizzas, other snack foods, and fast-food outlets. Promotions for fruits and vegetables were rare. While some sales pitches referred to products as being nutritious, new and good value for money, it was far more often the case that foods and drinks were marketed on the basis of their taste and ability to change your mood. Any child following the kinds of diet promoted in these promotions would fail to consume the right balance of nutrients for a healthy diet (Batada, Seitz, Woolan, & Story, 2008; Stitt & Kunkel, 2008; Wareen, Wicks, Wicks, Fosu, & Chung, 2008).

The US findings were confirmed in Canada where trends in food advertising monitored from the 1960s into the first decade of the twenty-first century revealed an increase in the advertising on television of foods that were high in fat, salt and sugar and low in fibre. Despite self-imposed industry codes to restrict its advertising to children, advertising of products poor in nutritional value remained commonplace (Adams et al., 2009a, 2009b).

UK

A content analysis study of food advertising on television in the UK in 2008 showed that advertisements for food and (non-alcoholic) drinks products were prevalent and were the third most heavily advertised product category. This advertising was found more often around soap operas in the mid-evening than around children's programmes. However, in children's programmes, it was dominated by promotions for non-core food products that were high in fat, salt and sugar. The findings confirmed a

continuing need for concern about the potential impact of televised advertising on children's food habits based on the profile of food advertising on the medium (Boyland et al., 2011).

Australia and New Zealand

Research undertaken in New Zealand found that food advertisements abounded during times when there were large numbers of children watching and the frequency of food advertising increased over time. Most food advertisements that occurred when lots of children were watching were for food types not classed as high in nutrition. Recommended healthy foods were rarely advertised (Wilson et al., 1999, 2006). Confectionery and fast food advertisements were especially prevalent on television in New Zealand (Hammond, Wyllie, & Casswell, 1999).

The wider debate in New Zealand echoed concerns about obesity levels that had been observed around the world and accepted the emerging empirical evidence concerning the prevalence of food marketing. A need was recognised for tighter regulation of food promotion especially because of how far it reached into children's lives through its presence on television and other media popular with children and through the activities of the food industries in and around school premises. It was felt that even though the food sector had indicated it shared some of these concerns there was a lack of trust in it to regulate itself effectively in the wider health interests of the community (Wilson, Watts, Signal, & Thomson, 2006).

FOOD MARKETING IN PRINT MEDIA

Television is not the only medium widely used by food and beverage brands to reach young consumers. There is also extensive food advertising in magazines. Magazines are often defined in terms of fairly narrow demographic categories. There are many of these print publications targeted at different child age-groups.

Research has confirmed that food advertising is widespread in children's magazines. An analysis of magazines for younger readers in Australia found that two-thirds of the food advertised in these publications was deemed to be 'unhealthy'. The most prevalent advertised foods were ice cream or iced confectionery, fast-food restaurants, high-sugar drinks and snack foods. The highest proportion of unhealthy foods was found in magazines aimed at males and children aged 7 to 12 years. The high readership rates for these magazines among children make them an attractive vehicle for food brand promotions in Australia (Kelly & Chapman, 2007).

Research from Australia found that 16 % of nearly 1700 food references in a sample of children's magazine were to branded food products (Jones, Gregory, & Kervin, 2012). Only in 83 out of 269 cases were these references identified explicitly as advertisements. Most of these 269 references (86 %) were for foods of low nutritional value, otherwise labelled 'non-core' foods. The findings revealed that even though the food industry has succumbed to tighter restrictions over its advertising on television, these restrictions have not affected the industry's use of magazines as promotional platforms.

EXPOSURE TO OUTDOOR AND IN-LOCATION FOOD MARKETING

Food brands are advertised extensively at outdoor locations on billboards and posters on the sides of public transportation vehicles and in some countries in schools. Food marketing within schools can comprise activities such as selling of branded products, direct advertising positioned in visible locations, indirect forms of marketing such as branded products and merchandise, and activities with students that are designed to raise a brand's profile and get them thinking about it. Most prevalent is advertising on vending machines in schools as well as around playing fields and in cafeterias (Probart, McDonnell, Bailey-Davis, & Weirich, 2006).

Commercial brands might also purchase and label educational and sports equipment. Brands may be displayed in sports score boards or sports teams' tracksuits. They sometimes sponsor events within the school (Story & French, 2004). Brand sponsorship and advertising are regarded as legitimate revenue raising activities by many schools that would otherwise be short of funding.

Given the wider concerns about the quality of children's diets and the knock-on effects on their health status, the entry into school environments of commercial food brands has been met with criticism from health lobbyists. These concerns are well meant but stacked against them are the financial imperatives of many under-funded educational institutions. Food sales can represent important and even essential sources of revenue for schools (US General Accounting Office, 2000).

In some US states, virtually all schools report the sale of branded food and drinks products via vending machines, school stores or snack bars (French, Story, & Fulkerson, 2002; Wechsler, Brener, Kuester, & Miller, 2001). For many schools, additional financial rewards are offered by food

and drinks brands that may be received in the form of profit shares, other bonus payments or the purchase of equipment (Story & French, 2004). The contracts signed between schools and commercial brands might also require schools to provide an agreed number of sites for the display of brand advertising (Wechsler et al., 2001).

Another phenomenon in American schools has been the growth in the presence of major fast-food brand names such as *Pizza Hut*, *Taco Bell* and *Subway*. Under these deals commercial food companies can request exclusive coverage deals whereby no other competing brands are permitted entry into the same school (Craypo et al., 2002).

Food advertisements can appear in schools' video support materials and programmes broadcast on the widely used schools' TV channel, Channel One (Brand & Greenberg, 1994; Probart et al., 2006). Thus, food brands can gain a presence during class time as well as during school breaks.

Reflecting the concerns that have been widely voiced about the nature of food advertising in the mainstream mass media, the food types that have gained the strongest presence in school environments are fast foods, soft drinks, potato chips (crisps), confectionery (candy) and other snack foods. In other words, these are all the types of food products classed as poor in nutritional value and high in fat, salt and sugar. As if this type of food marketing within schools is not enough, there are major fast-food outlets such as McDonald's that issue schools with coupons for distribution to students that offer price reductions in local outlets (Levine, 1999).

Although health lobbies have called for children to reduce their consumption of foods high in sugar, salt and fat, in the USA these types of foods are still heavily marketed to children and consumed by them in schools. Surveys of US schools have revealed that substantial proportions engage in the sale and promotion of branded food products and promote incentive programmes designed to increase the popularity of specific brands. This means that schools represent environments in which the nutritional quality of foods on offer to students run contrary to what health advisers would categorise as a nutrition-friendly setting (Probart et al., 2006). The revenues generated for schools by these marketing activities are critical to their operations and many report that they might have to drop some educational programmes without this income (Molnar, Garcia, Boninger, & Merrill, 2008).

Further evidence has emerged—and not just in the USA—that food manufacturers and distributors target schools with their outdoor advertising. This marketing approach has been manifest in the form of intensive

billboard advertising by food brands within the vicinities of schools and usually positioned at strategic locations on the major through routes to schools taken by most students (Kelly, Cretikos, Rogers, & King, 2008).

EXPOSURE TO FOOD MARKETING ONLINE

An increasing volume of exposure to food marketing now takes place on the internet. Online marketing has become widespread, especially in the food industry and because the internet has been enthusiastically adopted by children it is not surprising that marketers seeking to reach this market take their promotional activities online. Compared to television, the food industry allocates a relatively small proportion of its marketing expenditure on the internet. Yet, growing concern about the online marketing activities of food manufacturers and distributors stems from the appeal of this platform to teenage and pre-teenage children and the amount of time young people often spend interacting with web sites, social media sites and online games (Chester & Montgomery, 2007, 2008).

On the internet, food advertisers can reach young consumers via a range of digital marketing methods. Regular advertising, akin to that found in print or broadcast media, can be carried online, but advertisers have switched increasingly to more interactive forms of brand promotion in which brands are integrated into entertainment and social communication content (Lee, Choi, Qulliam, & Cole, 2009; Montgomery & Chester, 2009). The internet has been used by restaurants to deliver promotions to children as young as two (Harris et al., 2010). Evidence began to appear in the second half of the first decade of the twenty-first century to show that food and non-alcoholic drinks marketers were increasingly pushing a bigger presence for their brands online through their companies' web sites (see Cairns et al., 2009).

Relatively static web sites often provide links to much more dynamic and psychologically involving content such as brand embedded advergames, social media with viral marketing features that encourage children to contact their friends with emails about brands, and branded screen-savers and other features that can be saved to computer interfaces (Harris et al., 2009). The top food and beverage products have been found to use a range of online marketing methods in which their brands are integrated with surrounding content and engage with young consumers interactively (Weber, Story, & Harnack, 2006). Methods include placement of games, quizzes and competitions on company web sites as well as embedded within other sites (Moore, 2006, 2008; Moore & Rideout, 2007).

Food marketing sites have become popular with pre-teenage children who find a lot there to entertain them. These sites use a variety of devices to attract children and maintain their attention. The aim of these techniques is to get children to stick with these sites long enough to receive repeated exposures to brand names. Generally, the big brands in question comprised foods and drinks classed as poor in nutritional quality (Alvey & Calvert, 2008).

Further research into online marketing has emerged most years since these earlier studies. This is important given the extent and speed with which the digital environment has evolved. In later studies, analyses covered much larger samples of web sites. Kelly, Bochynska, Kornman, and Chapman (2008) examined food web sites in Australia. They found that food-product web sites were populated by a range of marketing techniques that included branded education packages, competitions, promotional characters, downloadable items, branded games and designated children's section.

Further evidence of the extensive use of gaming and other interactive methods to attract children was found in an American study of food and beverage web sites that were clearly designed to appeal to children, even though their target markets spread across the age-ranges. Few of these sites promoted food products categorised as high in nutritional value (Henry & Story, 2009)

The potential for children to be exposed to food marketing messages is enhanced when one medium makes links to another. In marketing parlance, this is referred to as running an 'integrated marketing campaign'. Evidence has emerged that food advertising in print media such as magazines also directs readers' attention towards web sites where more marketing messages can be found. Cowburn and Boxer (2007) examined food advertising in the top five magazines targeted at pre-teenage and teenage children. With food products promoted in magazines aimed at children aged 6 to 10 years, free gifts were widely used as a promotional technique. This approach was found to occur generally with confectionery products. There was also a propensity for magazine advertisements to direct children towards online food web sites where other child friendly appeals were frequently deployed. These marketing packages tended to be entirely for food products of poor nutritional quality.

Further evidence has accumulated to confirm the prevalence of food advertising online and the increasingly central role of digital media platforms for food and drinks industries' brand campaigns. On sites such as YouTube, for example, videos produced by major food and drinks brands

attract millions of consumers. Twenty-one top brands had YouTube channels and all had web sites and social media sites. MyCokeRewards.com attracted 170,000 unique pre-teenage and teenage visitors a month. By the middle of 2011, sugary drinks YouTube videos attracted 210 million viewers, with the *Red Bull* channel attracting 158 million on its own. *Coca Cola* had more than 30 million Facebook fans and *Red Bull* had over 20 million (Harris et al., 2011).

Researchers found more than three billion display adverts on children's web sites for food and drinks over a one-year period from July 2009. More than eight in ten of these adverts (83 %) appeared on just four web sites. The most widely advertised foods were breakfast cereals and fast-foods (64 %). Around three-quarters (74 %) of the adverts promoted foods approved by their companies as child appropriate. At the same time, more than eight in ten (84 %) were classified by the researchers as being high in fat, sugar or salt (Ustjanauskas, Harris, & Schwartz, 2013).

Numerous sites were found selling breakfast cereals that contained features clearly likely to appeal to children. These sites were also populated with various marketing devices such as videos, cross-promotions, games, quizzes and viral marketing invitations. The sites varied in the levels of immersion they offered. This was defined in terms of the degree of interactivity and level of involvement of visitors on the site. Some sites had few pages that invited visitors to engage with interactive elements, while others were heavily populated with immersive features. The more sophisticated sites that contained the greatest number of immersive techniques were also the sites most often visited by children. Thus, the evidence here showed that breakfast cereal brands have deliberately set out to target children through their web sites and to engage with them as consumers with a vast and diverse armoury of interactive techniques. The more complex, attention demanding and psychologically involving the interactivity to be found on specific sites, the more children seem to want to visit those sites over and over (Cheyney, Dorfman, Bukofzer, & Harris, 2013).

FOOD MARKETING IN THE DEVELOPING WORLD

Much of the research literature about food promotion and children has originated in developed countries and their markets. Turning the spotlight on developing nations however has revealed proactive targeting of young people by the food and drinks industries using a variety of marketing techniques. Rapid social and economic changes in these countries

have created more affluent and brand conscious consumer cultures. These changes have been regarded as signalling new opportunities for global food and drinks brands that have invested considerable resources in gaining a foothold in these emergent markets. As they have done in developed countries, food and drinks producers and suppliers have targeted children and utilised a number of promotional methods known to resonate well with young consumers in already established markets.

In some of the biggest developing markets such as China these social and economic shifts have created markets in which children have emerged as more influential players in commodity consumption decision making. Children have been observed to have considerable influence in relation to parents' food shopping choices (McNeal & Yeh, 1997). Fast food has also grown in popularity in China with the successful entry into this market of major brands such as Kentucky Fried Chicken, McDonalds and Pizza Hut (McNeal & Yeh, 1997).

Marketing professionals must be sensitive to local cultural mores and values. Even so, there are promotional techniques such as the use of animation, competitions and reduced-price offers that work just as well in the developing as in the developed world. Taking the lead from successful campaigns in the West, gaining a presence in schools through sponsorship and on-site sales has begun to occur. Multinational food companies have also sponsored major sports competitions, events, and performers and taken advantage of digital online media to engage with consumers in more dynamic, interactive ways (Cairns, Angus, Hastings, & Caraher, 2013).

Television has remained the dominant advertising medium for food and drinks brands. Studies in a number of other countries have repeated the televised food promotion patterns observed in major developed countries. Food advertising has been found to dominate advertising targeted at children in countries such as Bulgaria, Portugal, Turkey and Malaysia (Aktas Arnas, 2006; Galcheva, Iotova, & Stratev, 2008; Karupiah, Chinna, Mee, Mei, & Noor, 2007; Lemos, 2004). In Malaysia, evidence for the targeting of children was apparent by the upsurge in volume of televised food advertising during weekends compared with weekdays and during school holidays. Food advertising was dominated by snacks, dairy products, sweets, biscuits, breakfast cereal and fast food (Karupiah et al., 2007).

In Portugal, a sample of over 500 television advertisements targeted at children comprised mostly confectionery and other sweet snacks (35 %), sugared cereals and breads (26 %) and sugared soft drinks (12 %) (Lemos, 2004).

In Bulgaria, an analysis of advertising in programmes aimed at children found that around one-third of all advertising was for food products. However, virtually all the food advertising (97 %) was for foods high in salt and sugar such as snacks, sweets, cereals, and soft drinks. There were no advertisements for fruit and vegetables. Food promotions on Bulgarian television used techniques known to appeal to children including animation, adventure themes and popular music, and emphasised how good products tasted rather than how genuinely nutritious they were (Galcheva et al., 2008).

Despite national variations in diets, televised food advertising nevertheless exhibited a degree of universality in its nature. Research from Iran found the food products that were advertised most often were for snack foods high in salt and fat contents, sugary products such as biscuits and cakes, and soft drinks (Maryam et al., 2005). Further research from Iran showed that young people aged six to 18 years exhibited varied dietary habits, but many failed to eat sufficient fruit and vegetables each day and over-consumed snack foods high in fat, salt and sugar. This age was also found to be too sedentary and spent more time watching television and playing computer games than was conducive to a healthy lifestyle (Kelishadi et al., 2007).

The news is not so bad everywhere. Research in South Africa found that there was a better balance between foods classed as low (55 %) and high (42 %) in nutrient value that were advertised on television during programmes targeted at pre-school and early school age children. Furthermore, food advertisements represented a fairly small proportion (17 %) of all advertising in these programmes (Temple, Steyn, & Nadomane, 2008).

Research into the visibility of food advertising on television in China, Indonesia, Malaysia and South Korea found that even though these are relatively immature advertising markets, already they had begun to display patterns of food advertising previously shown to be commonplace in more mature markets. Bridget Kelly of the University of Wollongong and nine other colleagues from across Australia and the four participating Asian countries found that altogether across these markets food and non-alcoholic beverage advertising accounted for over a quarter (27 %) of all advertisements on television. These advertisements were mostly for products with high processed sugar contents, and were especially likely to be advertised alongside or in programmes targeted at children, with the highest rates occurring for South Korea and Indonesia (Kelly et al., 2014).

This study was useful in filling a gap in data about these developing countries, but there were a number of design limitations. The samples of

advertisements were taken from limited time periods and were not large enough or constructed so as to represent television output in general. Establishing the relative popularity of different parts of the television schedules in the markets investigated used robust television industry audience research in some cases but elsewhere depended upon ad hoc and non-representative samples of children who were asked about their viewing habits.

FROM POTENTIAL TO ACTUAL EXPOSURE TO FOOD ADVERTISING

Research has indicated that food advertising permeates television and is present in many other media as well. More worrying in the context of the impact of food advertising on children is the observation that substantial amounts of food advertising occurs in places that are popular among children.

What has also emerged from research into food advertising is that there are specific types of food products that are predominant. Taras and Gage (1995) found that there were opportunities to view around 10 food commercials an hour during children's programmes in an analysis of US television. An overwhelming majority of these food advertisements promoted foods that were high in fat, salt and sugar. Even after a change in advertising regulations, unhealthy food commercials remained prevalent (King, Hebden, Grunseit et al., 2010). These findings have been confirmed by later analyses of US television (Bell, Cassady, Culp, & Alcalay, 2009).

Advertisements do not just try to boost the appeal of specific brands they also often contain subtle messages about when and how to eat. Much of the eating behaviour portrayed in television advertising displayed snacking rather than proper sit-down meals. The products that dominated food advertising on television contained high levels of sugar and fat and if emulated would create dietary habits among children that would result in excessive consumption of these ingredients (Harrison & Marske, 2005).

For food advertisers the best strategy to adopt when trying to reach children is to buy advertising space on television channels that show only children's programmes. Such thematically specialised channels can guarantee a high proportion of child viewers in their audiences, even though their individual audience shares might be quite low. Offsetting the relatively small total audiences of specialist children's channels might also be a lower cost for advertisements, which means a better return on advertising revenues spent purchasing advertising slots.

One analysis of children's channels in the USA examined the extent and nature of food advertising on Disney, Nickelodeon and PBS (Connor, 2005). Nickelodeon carried more advertisements of any kind than the other two channels put together. Around one in five of its adverts were for food products. While the other channels carried much smaller numbers of advertisements, between half and three quarters of these commercial messages promoted food products. Among the samples of food advertisements on these channels, fast foods dominated the products being marketed.

Pre-teenage and teenage children can experience food and beverage exposures through a range of different media and other platforms and brands can appear in different formats. For many years, television has been the principal advertising medium, although in the twenty-first century, the internet has emerged as a prominent platform for brand promotion. The food and drinks industries have often entered into voluntary agreements with government regulators over self-regulation of brand promotions to children. These codes of practice have included self-imposed restrictions on locations of brand advertising and other forms of promotion. As we will see in the Chap. 8, the industry creates such codes to take control over regulatory processes and to ensure that codes of practice still permit a fair degree of latitude in terms of where brand promotions may occur.

Powell, Szczypka, and Chaloupka (2007) examined the distribution of food advertising on US television networks alongside the television ratings for top-rated shows among children and adolescents that were known to carry this advertising. They assessed approaching a quarter of a million advertising slots from 170 top-rated shows across a nine-month period starting in September 2003. Of total non-programme time, food advertising occupied a fifth of airtime. Food brands made up a quarter of all advertised products likely to be viewed by adolescents. Nearly one in four food advertisements promoted fast foods. These data, therefore, indicate that there were substantial opportunities for adolescents to be exposed to televised advertising messages for food products and in particular for food products categorised as poor in nutritional value.

The same researchers provided further data on the opportunities for children and adolescents in the USA to be exposed to food advertisements on television over a several year period. Exposure to advertisements for sweets fell across these age groups respectively by 41 %, 29 % and 12 %. Exposure to sweetened beverage advertisements also declined across the three age groups during this period by between 27 % of 30 %. Meanwhile opportunities for exposure to fast-food advertisements increased by 5 %,

12 % and 20 % respectively for the three age groups. The news, therefore, is mixed. There was evidence of a reduction in opportunities for exposure to some food advertising while opportunities increased for other types of food advertising. The positive change was welcomed cautiously with a call for continued vigilance (Powell, Szczypka, & Chaloupka, 2010).

Powell, Schermbeck, Szczypka, Chaloupka, and Braunschweig (2011) tracked food advertising on US network and cable television in 2003, 2005, 2007 and 2009. They were interested in children's potential exposure to nutritional information in televised food advertising. They pre-weighted advertised food products in terms of their typical amounts of saturated fat, sugar, salt and fibre. The potential exposure to this advertising of children aged 2 to 5 years and 6 to 11 years was estimated by combining the age-group ratings of programmes in which advertisements were embedded with the numbers of relevant advertisements found and the nutritional nature of the foods being promoted in them. The results showed that for both the younger and older age-groups, the potential for exposure to televised food advertisements fell between 2003 and 2009. There was also a likelihood of reduced exposure over this time period for all children to advertisements for foods high in saturated fat, sugar and salt. This outcome was counter-balanced by an increase in potential exposure to fast-food advertising.

In Australia, food advertisements were prevalent on children's television and on mainstream peak-time television. This meant that children had plentiful opportunities to be exposed to them. Of greater concern was an apparent propensity for the density of advertising for foods of poor nutritional value to grow around children's programmes (Kelly, Smith, King, Flood, & Bauman, 2007).

A follow-up study found that food advertising on Australian television was more prevalent during peak children's viewing times than at other times. Non-core food products—that is products deemed to have poorer nutritional quality—were much more likely to appear in programmes broadcast during peak children's viewing times than in programmes that were most popular with adults. Non-core food advertisements were also the most diverse and creative in their use of persuasive techniques likely to appeal to children (Kelly, Hattersley, King & Flood, 2008).

Speers, Harris, and Schwarz (2011) examined television and advertising industry data produced by leading market research agency, Nielsen in the USA to estimate the level of exposure of children to specific categories of food advertising. A national television viewing panel is main-

tained by Nielsen that measures, moment by moment, the audiences for television programmes and advertisements on a daily basis. Such panel data can then be extrapolated to the general audience. Data produced by Nielsen enabled the researchers to calculate the number of brand appearances (within programmes) and advertisements that were seen by children aged 2 to 11 years, adolescents aged 12 to 17 years, and adults aged 18 to 49 years.

The most prevalent brands were for soft drinks, traditional restaurants (i.e., not fast-food) and energy/sports drinks. Other food and beverage types catalogued included bottled water, candy, quickserve restaurants and savoury snacks. In 2008, the year for which data were examined, children viewed 281 of these brand appearances in prime-time, compared with 444 for adolescents and 666 for adults. Soft drinks represented the food/drink type with highest exposure levels. These brands accounted for just under one in five (18 %) of all brand appearances, but an overwhelming majority (71 %) of food/drink exposure of children and most (60 %) of adolescent and adult exposures.

Exposure to food products occurred more often through advertising rather than product placements. Breakfast cereals and prepared and processed foods achieved the highest exposure levels for pre-teenage and teenage children. Candy products and savoury snacks also received wide exposure for children. Potential exposure levels for advertisements for fruit and vegetable were much lower for all children. The latter were seldom seen as brand appearances in programmes (2/3 times). For virtually all of the very biggest brands most exposure occurred via advertisements. The one exception was Coca Cola largely due to its sponsorship arrangement with the popular US singing talent context, *American Idol*. Children aged two to 11 were calculated to have had an average of 198 Coca Cola brand appearance exposures in 2008 compared with just 20 via advertisements.

Speers and colleagues recorded nearly 35,000 food, beverage and restaurant brands appearing on prime-time American television in 2008. Sugary drinks products were among the most prevalent with children and adolescents experiencing daily exposures to such brands. Regular brand exposure in this way can serve as a constant reminder of specific brands which in turn could influence the probability of their selection over other brands (Auty & Lewis, 2004). For this reason, these food and beverage exposure data have important health implications for young people.

CONCLUSION

Food and non-alcoholic drinks companies have been found to run extensive advertising campaigns that have become increasingly multi-modal in character. Television remains a principal advertising medium for these industries and food advertising continues to be prevalent on television despite, as discussed later, repeated attempts by governments and marketing regulators around the world to control the amount and location of food and drink advertising on this medium. The food and drinks industries have long used other sites for campaigning, not least ones in physical settings populated by pre-teenage and teenage children. Yet, the biggest developments in the promotion of food and drinks brands have occurred on the internet. This has not simply provided a further medium for conventional advertising but it has catalysed the creation of many new forms of brand promotion.

The internet has proved to be attractive to food and drink advertisers because it is so popular with young people. It also offers a variety of interactive marketing opportunities that enable more dynamic engagement with consumers. Brands can be embedded within and integrated into online entertainment content and social networks. Their promotions then appear less like regular advertising. As such they have often escaped the restrictions placed on standard food advertising by national marketing regulators. They also attract less parental attention because parents are often unaware of these subtle marketing activities (Oates, Li, & Blades, 2014).

Many of the content analysis studies designed to measure in precise quantitative terms how much food advertising is presented in different media have collected soundings over limited time periods. Many of these investigations provide snapshots of food advertisement volumes in specific locations at particular time points. Yet, advertising campaigns come and go and, therefore, levels of food advertising are unlikely to remain the same over time. It is important to know whether large amounts of food advertising occur consistently and perhaps even more crucially whether there are signs that it is on the increase, as regulators and health lobbyists sometimes claim.

Trend data have been relatively scarce in the wider content analysis literature. Some evidence has emerged that advertising of fast-food outlets in the USA increased in terms of its overall share of all child-targeted advertising. Advertising from fast-food brands grew in volume and diversity from the 1970s to the 2000s (Holt, Ippolito, Desroches, & Kelley, 2007; Maher, Lord, Hughner, & Childs, 2006).

Despite public criticism of the behaviour of food advertisers in the USA in 2005, which led to promises by the industry to curtail its advertising of ‘unhealthy foods’, follow-up research found few changes in the opportunity likelihood for children’s to witness these advertisements on television (Warren, Le Blanc, Wicks, Fosu, & Cheung, 2007). Despite some evidence of healthy appeals becoming more visible, unhealthy foods continued to dominate televised food advertising in the USA (Warren, Wicks, Le-Blanc, Fosu, & Cheung, 2008).

Evidence from Canada obtained from retail outlets found that foods repackaged to appeal to children with on-pack nutritional data were nonetheless food types classed as poor in nutritional quality (Elliott, 2008a, 2008b). Thus, even when food advertisers appeared to be taking steps to inform better nutritional choices, the products being pushed the most continued to be those at the poorer nutritional end of the food spectrum.

Even taking into account caveats about design limitations in research methodologies, research has emerged for developing markets to indicate that the dominance of advertising on popular television of food (and non-alcoholic drinks) products has spread around the world. Even in relatively immature Asian markets this food and drinks advertising is in turn dominated by high sugar content products (Kelly et al., 2014). Given further evidence that consumption of these types of products has separately been linked directly to obesity in adolescents, this emergent evidence gives cause for reflection (Li, Dibley, Sibbirt, & Yan, 2010).

Concerns for children’s well-being centre on assumptions about the potential effects of food advertising to encourage youngsters to adopt diets dominated by those products that are most heavily promoted. Since those products have also tended to be ones deemed by health experts as relatively poor in their nutritional quality, it is logically concluded that food advertising in effect cultivates unhealthy dietary habits. It is not mere exposure that is critical here, however. We also need to know what kinds of enticements do food and drink marketers place in front of children that encourage them to consume the brands being promoted. Are food advertisers always honest in the claims they make? Do they use subtle techniques to make foods and drinks look more attractive to young consumers?

In the next chapter we turn our attention to the nature of advertising messages and review research that has tried to articulate systematically the nature of food and drink advertising. When we look closely at this advertising, are children being misled or given the facts about food and drink products? Are food and drinks’ advertisers using promotional techniques

that try to mislead young consumers or make their brands seem particularly appealing in ways that do not always reflect the nature of the product itself? Clearly, if there are issues of this kind for which evidence exists, then aspects of food and drinks advertising can be identified that might need closer regulatory attention.

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Food Advertising: Informative, Misleading or Deceptive?

There is ample evidence that food advertising has a dominating presence in mainstream media advertising (Morgan, Fairchild, Phillips, Stewart, & Hunter, 2009). Food brands have also been at the forefront of utilising new online platforms for promotional purposes. Furthermore, there is evidence that products characterised by high sugar, salt and fat content—deemed by health authorities to pose high health risks to people when consumed on a regular basis—are overrepresented among food advertisements. This last observation is especially true of the premier advertising medium—television, although the brands that are prominent on this medium can also turn up elsewhere in multi-faceted and multi-media marketing campaigns. An additional source of concern to their simple visibility lies in the nature of the promotional messages about food that are conveyed by food advertisements (Keller, Kuilema, Lee et al., 2012) .

Do food advertisements make misleading claims about product qualities and in particular about their nutritional value and health benefits? It is known that food advertisers often try to present their products in attention-grabbing ways that make consuming their products seem like a fun thing to do (Kotz & Story, 1994). Are there other features of food advertising campaigns however that convey misleading impressions about the benefits consumer can expect to gain from particular food items? Some research has suggested that this could be an issue.

Do food advertisers make claims directed at parents who are generally responsible for all food purchases in the case of children at the younger end of the age spectrum? In this context researchers have observed that food

advertisers may use appeals that emphasise the nutritional qualities of specific food brands or produce creative promotions that infer that consumption of these brands will somehow benefit children in other ways such as their performance in sports or in the classroom (Ho & Len, 2008; Lobstein, Macmullen, McGrath, & Witt, 2008).

Understanding the nature of promotional appeals used in food and non-alcoholic drinks advertisements is important whether these appeals are directed at children or their parents (Escobar, 1999). One reason for this is that children are known to influence household food purchases both directly when they have their own discretionary income and indirectly through parental pestering. In some emerging markets, qualitative research has found that children can guide their parents towards making purchases of widely advertised brands both in retail settings and from fast-food outlets. These effects can extend beyond parents to other adult relatives from whom children receive food-related treats (Watson, 2000).

The purpose of this chapter is to follow on from evidence discussed in the last chapter about the visibility of food advertising and the potential for children to be exposed to it and to examine the kinds of promotional messages about foods to which they might then be exposed. The structure adopted by this book has been:

- To state the key issues associated with food advertising.
- To provide an overview of the status of social scientific evidence derived from major published reviews.
- To examine more directly evidence sources concerning the amount and location of food advertising and the opportunities that abound for children to be exposed to it.
- To consider the kinds of messages about food that food promotions present.
- To review more directly the evidence for influences of food advertising on children's food awareness, preferences, choices and finally their general eating habits and health status..

The current chapter will focus on the fourth theme on this list and that is the nature of food-related messages that food advertising presents to young consumers. Such evidence opens up further questions about the potential

influences of food advertising on children that flow from the messages that it presents to them.

FOOD ADVERTISING, SUGAR VISIBILITY AND CHILDREN

One of the consistent patterns to have emerged from research around the world is the prevalence of poor nutritional quality foods being advertised on television that were targeted at children. Very often, these high profile foods were energy-dense products loaded with sugar. Lewis and Hill (1998) confirmed this in an investigation of food adverts in children's broadcasts on British television. They found over 800 adverts in 91 hours of children's programmes and a clear majority of these (60 %) advertised breakfast cereals and confectionery snacks. The food adverts were often characterised by production techniques designed to attract the interest of children such as the use of animation and humour that made the advertised brands look like a lot of fun to eat. In an accompanying survey, overweight children seemed to be more taken in by these messages than were other children. Although this study did not demonstrate causality in terms of food advertising influences, it was clear that children who perhaps ought to avoid these kinds of foods tended to enjoy watching advertising for them the most.

The focus on the advertising of foods high in sugar has been driven by repeated evidence showing that manufacturers of these products appear to target children through their choices of media locations for their advertising and because heavy consumption of such products is linked to being overweight and to dental health problems. An investigation of prime-time and children's TV programmes broadcast in the UK mirrored earlier findings. Nearly two-thirds of advertisements sampled from children's television comprised commercial messages for food products. Nearly three-quarters (73 %) of these promoted foods were classified as detrimental to oral health. During peak-time television aimed at the general television audience, fewer than one in five (19 %) of food products were classed as problematic for dental health (Chestnutt & Ashraf, 2002).

In Australia, researchers found that adverts for confectionery products were three times as likely to occur in children's programmes as elsewhere on television, while fast-food product adverts were twice as likely during children's shows (Neville, Thomas, & Bauman, 2005). Another Australian study found little difference in the prevalence of food advertising more gen-

erally between children's and adult-oriented programmes, although there was again a higher rate of high-sugar as well as high-fat foods advertised during children's programmes (Kelly, King, Bauman, Smith, & Flood, 2007).

Morgan, Fairchild, Phillips, Stewart and Hunter (2009) again confirmed the prevalence of advertising for high sugar foods during children's peak television viewing times and found also that even higher peaks of this type of advertising tended to occur during school holiday periods when children were even more available to watch television. Sugared breakfast cereals, sweetened dairy products and confectionery products were the commodities most frequently advertised to children. Such advertising created a sense of these foods being normative.

US research covering daytime programmes again found food and non-alcoholic drinks products were extensively advertised, but these tended to be products low in fat, salt and sugar and also low in fibre. Advertising was often dominated by dietary products that were being promoted at a time of day when the audience was mostly women (Lank, Vickery, Cotugna, & Shade, 1992). These products were frequently endorsed with very positive nutritional and health claims even though in many cases their nutrient value was still poor.

PROBLEMATIC THEMES

There is ample evidence that food advertising is widely shown in the mainstream mass media with television being at the forefront of most major food advertising campaigns. Many food advertisers seem deliberately to target child consumers on television (Chapman, Nicholas, & Supramaniam, 2006; Gorn & Goldberg, 1982; Kelly et al., 2007; Kunkel et al., 2004; Roberts & Pettigrew, 2007; Robertson & Rossiter, 1974). In the digital media era that has emerged in the twenty-first century, the targeting of children has also increasingly migrated to the internet (Cauberghe & de Pelsmacker, 2010; Culp, Bell, & Cassady, 2010; Pempek & Calvert, 2009; Wise, Bolls, Kim, Venkataraman, & Meyer, 2008). In knowing that there is a great deal of potential for children to be exposed to advertising for foods of poor nutritional value is one thing. Establishing the potential of that advertising to influence children's attitudes and beliefs about foods and ultimately their intentions to consume or actual consumption of specific types of foods is something else.

A starting point is to try to understand and elucidate the use of different promotional themes within food advertising that have the express aim

of attracting the attention and interest of children. Major reviews of food promotions have indicated that the food and drinks industries use a range of creative techniques to appeal to children. The use of these techniques has been most visible in televised advertising (Cairns, Angus, Hastings, & Caraher, 2013; Hastings, McDermott, Angus, Stead, & Thomson, 2006). The most frequently used techniques include animated characters, humour, special offers and competitions, specific claims about what a product can and cannot do, and the use of specific themes known to resonate with young consumers such as references to the taste, mood-enhancing qualities, novelty, price, and other physical features of the product. Making a food product look fun is a popular technique and this often means using fantasy or adventure themes and images of people using the product and having a good time (see Atkin & Heald, 1977; Buijzen & Valkenburg, 2002; Muehling & Kolbe, 1998).

In addition, impressions may be given that some foods are perfectly healthy when this may not be entirely true (Abbatangelo-Gray, Byrd-Bredbenner, & Austin, 2008; Choi & Kim, 2011; Lank et al., 1992; Sixsmith & Furnham, 2010). Despite the use of disclaimers by some food advertisers that their brand should be used as part of a nutritionally balanced diet, or that it should be consumed in moderation only, other creative treatments in advertising campaigns still work to present it in a positive light and to encourage regular consumption (Gantz, Schwartz, Angelini, & Rideout, 2007).

An empirical evidence stream has emerged to indicate that the tone set by an advertisement can shape the way consumers respond to it. Marketers have distinguished between the use of advertising messages with positive and negative emotional tones (Brocato, Gentile, Laczniak, Maier, & Ji-Song, 2010; Jones, Cunningham, & Gallgher, 2010; Mai & Schoeller, 2009). Negative tone can be created by the use of violent themes in advertising (Brocato et al., 2010). Although the use of these themes has been documented in general forms of advertising, less attention has been devoted to the deployment of mood-state manipulations in advertisements directed towards children, and particularly those that promote food (Page & Brewster, 2009).

One attempt to fill this gap was made by a study conducted by Pettigrew, Roberts, Chapman, Quester, and Miller (2012) who analysed a sample of over 93,000 advertisements broadcast over 61 days on four national commercial TV channels in Australia. Each advertisement was coded for its emotional tone or theme and also according to the nutritional quality of the

food it advertised. A further classification was deployed to differentiate from TV advertising in general those advertisements shown during viewing times known to be popular with children.

It emerged that over 14,600 of the sampled advertisements (16 %) depicted food with negative emotions such as loneliness and boredom, anti-social behaviours (aggression, mocking and nagging) or food being used for specific emotional purposes such as altering the consumer's mood state, satisfying a food craving or seeking the approval of others (Pettigrew et al., 2012, p. 499).

The use of 'negative' themes was particularly prevalent in the case of advertisements for what were classified as 'non-core' foods which were typically high in sugar, salt and fat. In contrast, 'core' foods were ones deemed to be essential for a healthy and balanced diet and include fruits and vegetables, lean meats, cereals, eggs and nuts. The latter were advertised far less often than non-core foods (11,392 ads versus 58,712 ads in this study's sample).

What also emerged from this study was a regular association between snack foods and foods that are classed as having poorer nutritional value (despite their popularity) and specific emotional themes such as consuming to enhance the eater's mood or to satisfy a strong craving. Nearly one in two food adverts with negatively toned emotional narratives (49 %) appeared in programmes aimed at or very popular among children. These programmes accounted for far less than half of all programmes (39 %) (Pettigrew et al., 2012).

The relevance of these kinds of emotional appeals is reinforced by findings from other consumer research that has shown that they can trigger closer attention to advertisements (Olney, Holbrook, & Batra, 1991). The emotional tone of an advertisement can also enhance the degree to which its information is processed and the effectiveness with which it is subsequently remembered (Mehta & Purvis, 2006).

Sarah Folta and her colleagues carried out an analysis of US TV advertisements in programmes targeted at children and found that the depiction of physically active young people was more prevalent within advertisements for food than for other children's products. Food was especially likely to be linked to having fun and themes such as being cool and happy occurred more frequently in food promotions than elsewhere. The authors expressed concerns that such themes might promote over-consumption of advertised foods. This could be problematic given that the majority of these adver-

tised products comprised calorie-high/nutrient-poor food types (Folta, Goldberg, Economos, Bell, & Meltzer, 2006).

Other research has emerged from the USA that claimed that televised food advertising often depicts the advertised brands as having 'drug-like properties'. This can be manifest when advertisements depict scenarios in which actors display exaggerated pleasure sensations when tasting a food product or a sense of dependency on it. Advertisements for food products and fast-food outlet brands used themes such as dependency or pleasure as depicted by actors in advertising film scenes. Drug-like qualities were depicted in relation to advertising of breakfast cereals though less so in advertisements for fast-food restaurants (Page & Brewster, 2009).

These researchers concluded that the themes that showed food brands as possessing special qualities that could deliver extreme pleasure or altered mood states were a cause for concern. They presented to young consumers misleading impressions of the experiences they could expect to gain from using specific brands that might encourage them to consume more of these products than might be good for them. Other commonly used scenarios that depicted two characters competing for the brand and using devious or offhand tactics to do so were also regarded as teaching inappropriate behavioural lessons around food (Page & Brewster, 2009).

Another problematic aspect of food advertising is that promotions for some food and soft drinks products will infer that they have healthy qualities through references to fruit as one of their ingredients. Yet often these products contain miniscule amounts of actual fruit or no fruit at all. Instead these products include only fruit flavours that have been added by manufacturers rather than directly extracted from real fruits. Such subtle claims that are designed to present effectively unhealthy foods with a healthy gloss have been defined as deceptive by some writers (Batada, Seitz, Woolan, & Story, 2008; Ross, Campbell, Huston-Stein, & Wright, 1981). Despite the attempts of regulators to address this issue, the presence of these types of products in televised advertising has not changed all that much (Better Business Bureau, 2000; Gunter, Oates & Blades, 2005; Karupiah et al., 2008). In one analysis of this category of product advertising in children's programmes in the USA, there was little change in the proportions of advertised foods that contained little or no fruit content over a period spanning 1992 to 2008 (Keller, Quick, & Byrd-Bredbenner, 2011).

PROBLEMATIC FOOD INDUSTRY MOTIVES

There has been debate about the nature of food advertising influences. Health lobbyists and the industry have, for a long time, disagreed about the nature of the effects of food advertising on children. While health lobbyists argue for tighter restrictions on food-marketing activities, the food industry has countered that it must have freedom to engage in legal trade. The industry has also argued that its marketing practices are already regulated both by government legislation and associated regulations and also by voluntary industry codes of marketing practice (Jones & Fabrianesi, 2006). The industry's position is weakened in this context by extensive research evidence showing that its advertising and other promotional activities frequently turn up in media locations that are frequented by children (Barcus, 1971; Barcus & Wolkin, 1977; Moore and Rideout, 2007; Boyland, Harrold, Kirkham & Halford, 2011). Thus, food marketing activities often appear on television in and around programmes popular with children, in magazines aimed at children, in physical locations near and in schools where children are often found, and on web sites that attract the patronage of children (Hunter, 2009; Nadeau, 2011).

The food industry has been sensitive to suggestions that it deliberately targets children to influence their eating behaviours in unhealthy ways. Its common defence has been that its marketing activities are designed to encourage brand loyalty and switching rather than to cause increased overall food consumption. This may be true in the case of mature markets with established products, but with new products and brands advertising must build consumption from scratch to establish their market position. Where it runs into trouble with its critics is when evidence emerges that it uses techniques such as animation regularly in full knowledge that such techniques hold special appeal to children (Atkin & Heald, 1977). There is plentiful research to show that other child-popular themes such as adventure, fantasy, fun and humour have long characterised food advertising (Cairns, Angus, & Hastings, 2009). Food advertisers have frequently created animated characters that not only prove to be very popular with children but can have a direct influence over how good specific foods taste. Experiments with children in different parts of the world have shown that when the same food is presented in a pack with a well-known brand label and/or its licensed animated character/product endorser, children say it tastes better compared with being in a plain pack (Elliott, Carruthers, Den Hoed, & Conlon, 2013; Lentona, Chaco, Roberto, & Barnoya, 2014; Robinson, Borzekowski, Matheson, & Kraemer, 2007).

The industry has also been challenged on the grounds that its marketing activities regularly use promotional techniques known to attract the attention of children and in some instances effectively increase the overall impact of advertising on young consumers (Robertson & Rossiter, 1976; Montgomery & Chester, 2009; Boyland, Harrold, Kirkham & Halford, 2011). Such techniques include the use of real-life spokespersons known to be popular with youngsters. Sometimes, these spokespersons are well-known celebrities and on other occasions they comprise animated characters that already have a popular child following from their appearances on children's TV programmes (e.g., *Spongebob Squarepants* who has promoted breakfast cereals and snack foods). Some food brands develop their own animated characters specifically as brand champions and these can often become widely established as well-known 'personalities' in their own right. The best examples include *Tony the Tiger* and Kellogg's *Sugar Frosties* and *Ronald McDonald* and the McDonald fast-food chain (Hunter, 2009).

Research from Australia indicated that food advertisers not only target children by buying a lot of advertising space in and around children's TV programmes, but they also use a battery of techniques designed to attract the attention of young consumers and to persuade them to buy or get others to buy on their behalf. Food advertisements in children's programmes were often likely to deploy well-known celebrities and cartoon characters as brand endorsers, to invite children to take part in branded competitions and to use special offers as direct incentives to purchase (Kelly, Hattersley, King, & Flood, 2008).

One major analysis of food advertising on television provided further confirmation about the techniques used by the industry. Boyland, Harrold, Kirkham, & Halford (2012) compiled a large sample of over 18,000 televised advertisements from popular commercial television channels in the UK over a one year period. It emerged that food advertisers regularly used branded characters with child appeal, celebrities and special offers to promote their brands. In fact, food advertisements used these techniques more than did any other product categories. These methods were prevalent especially in advertisements for non-core foods that had questionable nutritional value and especially for advertising that was shown on television channels dedicated to children's programmes. The critical question here is whether these techniques do not just influence children's brand preferences, but also shape their dietary habits in ways that encourage unhealthy eating.

Even in relatively new and immature consumer markets, research evidence has emerged to show that food and non-alcoholic drinks products

dominate advertising on television. Not only is advertising for these products especially prevalent during programmes targeted at children or which attract the biggest child audiences, but also the advertisers again used techniques known to appeal to children. Thus, in peak child-viewing times in China, Indonesia, Malaysia and South Korea, a third of all food advertisements contained promotional characters designed to appeal to younger audiences. One in ten of these advertisements also contained special offers providing direct material incentives to purchase the product (Kelly et al., 2014).

SUBTLE AND NOT SO SUBTLE PERSUASION

As we have seen, a range of different kinds of persuasive devices have been catalogued for television food advertisements particularly when they seem to be targeted mostly at children. Food advertisers use emotional appeals and humour, subtle health and exercise messages and brand champions or spokespersons in the form of animated characters and fantasy settings to appeal to young consumers (Batada et al., 2008; Sixsmith & Furnham, 2010; Boyland et al., 2012). Why might we expect the use of these techniques to prove problematic in terms of how they might shape children's food-related attitudes, beliefs and behaviours?

To begin with, answering a question about the impact of food marketing on children's food-related behaviour patterns requires some analysis of how specific marketing activities such as televised advertising influence children at all. After that, we then need to consider empirical evidence concerning food marketing effects. We will return to that evidence in later chapters. For the moment, what do we know about how advertising and other forms of marketing can influence children?

A substantial proportion of the relevant research literature has focused on TV advertising. The reasons for this are simple. Despite the diversification of the media landscape in the digital era, television remains the most important advertising medium for most product sectors, especially in the fast-moving goods markets. This is certainly where the food industry spends most of its advertising budget (Harris, Brownell, & Bargh, 2009).

INFORMATION PROCESSING MODELS OF ADVERTISING INFLUENCE

A number of theoretical assumptions have been made about how children's exposure to food advertising might shape their food preferences. Information processing theory has provided one potentially useful explanatory model. This theory grew out of earlier social psychological research and theorising about attitude formation and change and how this in turn was related to behaviour change. While early behavioural theories focused on explanations of human behaviour that emphasized the importance of external and observable stimuli, the emergence of cognitive psychology and its recognition of the role played by internal thought processes in determining overt actions led to new explanatory models for the effects of marketing. McGuire (1976) published a seminal paper on this subject that had far-reaching influence on scholarly work into persuasive communication.

Consumers were conceived as embarking on a sequence of information processing activities when confronted with advertising messages. Behaviour change occurred only following a succession of earlier stages of processing of information from a commercial message that including attention to it, comprehension of its key information, belief in what it said, liking for it said, and then entry into memory of the initial information and further evaluations of it by the consumer so that it could be readily retrieved at a later time for use in relation to product decision making.

This model influenced much future research into children's reactions to advertising and other forms of brand marketing. Research studies were designed to measure one or more of the stages of information processing following children's exposure to advertisements. Hence, researchers tested whether children paid attention to advertisements and could differentiate them from surrounding media content (Ward, Wackman, & Wartella, 1977; Wartella, Wackman, Ward, Shamir, & Alexander, 1979).

Memory tests were regularly used to determine whether information was understood and stored away (Borzekowski & Robinson, 2001; Goldberg, Gorn, & Gibson, 1978). Measures were taken of children's attitudes towards advertisements and brands following exposure and then how these related to behavioural dispositions (Roedder, Sternthal, & Calder, 1983). Finally did favourable attitudes created by advertising create brand preferences and lead to purchase attempts by children, often manifest in the form of requests to their parents (Buijzen & Valkenburg, 2003; Gorn & Goldberg, 1978; Isler, Popper, & Ward, 1987; Robertson & Rossiter, 1976)?

DEPTH OF PROCESSING MODEL

A core assumption of the information processing model is that the informational content of advertisements is actively interpreted and evaluated by consumers as it passes through several internal processing stages on its passage to long-term memory. Other models of persuasion proffered a different perspective, which allowed for the possibility that advertising could influence consumers even when they did not pay close attention to its core information. The elaboration likelihood model conceived of two potential routes to persuasion: one of these entailed processing the central message of an advertisement and the other, a peripheral route, involved paying attention to other features not directly integral to the core message such as production techniques, use of celebrities and so on (Petty & Cacioppo, 1986; Petty, Cacioppo, & Schumann, 1983).

The heuristic-systematic model proposed a similar dual processing configuration whereby consumers might process and interpret a message on the basis of its arguments and factual contents or they might choose to accept or reject a message on the basis of the nature of the source (e.g., someone perceived to be expert or believable). The systematic route involves cognitive effort, while the heuristic route (based on accepted short cuts known to serve as reliable signifiers of message veracity) minimises cognitive effort (Chaiken & Trope, 1999; Eagly & Chaiken, 1993).

Much of the research with the dual-process models of persuasion has been conducted with adult consumers rather than children. The broad principles still apply however even with younger consumers who are known to be attracted to peripheral features of advertising even when the core message eludes them. It is well established that young children enjoy the use of animated characters and humour as well as by the presence of child actors in advertisements (Atkin & Gibson, 1978; Loughlin & Desmond, 1981). Older children are influenced by endorsements from celebrities (Ross et al., 1984). If celebrities have positive qualities, these can transfer across to the commercial brand they support (Belch & Belch, 1998). The attractiveness of a celebrity can serve as a useful heuristic device that is sufficient to facilitate belief and attitude shifts contingent upon advertising exposure (Debevec & Kernan, 1984; Kahle & Homer, 1985).

With food brands that utilise popular children's TV characters or create their own brand champions, particularly when these spokespersons are cartoon characters, can attract children's attention. The result then might

be that the promotional messages is more likely to be noticed, interpreted, possibly accepted, and ultimately stored away in memory for future use.

REPEAT EXPOSURE MODEL

An alternative view of advertising influences posits that it works through subtle behavioural conditioning. Its effects are really quite weak and as a result repeat exposure is important (Ehrenberg, 1974, 1988). This viewpoint at first appears to undermine the idea that food promotions that adopt techniques known to appeal to children will be effective. This outcome does not necessarily follow, however. The Ehrenburg position argues that a single exposure or even just a handful of experiences with an advertisement might fail to deliver significant consumer impact results. If a campaign runs long enough however its impact could build over time.

The constant presence of advertising can create an environment in which consumers receive regular reminders of a specific brand and this not only brings that brand to mind but also the wider product range. Indeed, exposure to advertising for one brand can benefit consumption levels for a rival brand because the idea of consuming that product type is rendered more salient (Ehrenberg, 1988). At the same time, the consumption of the product type is made to seem more normal (Hoek & Gendall, 2006). The normalising of certain foods can in turn make them appear more attractive and appealing because despite criticisms of their health implications, consumers find ways of denying the relevance of a food type in their own diet if they believe everyone else is eating it.

Food advertisers, whether knowingly or not, have been observed to take advantage of this normalising process in the kinds of techniques they use to promote their products. One such technique is to introduce negative mood states into food advertisements and to convey the message that the brand can lift your mood (Mehta & Purvis, 2006; Reece, Rifon, & Rodriguez, 1999). This approach has been used to promote the potential psychological and social value of specific brands for consumers (Pettigrew, Chapman, Quester, & Miller, 2011).

The Ehrenberg repeat exposure position was followed up by later psychological models that attempted to explain the persuasive influences of advertising. Social cognitive theories posited that food advertising can gradually build up substantive influences on children's attitudes and beliefs about products through repeat exposure over extended periods of time.

Such influences can occur without the child necessarily being consciously aware of them (Bargh & Ferguson, 2000; Dijksterhuis, Chartrand, & Aarts, 2007).

IMPORTANCE OF COGNITIVE DEVELOPMENT LEVEL

When we consider the ways in which children could be influenced by food marketing, we must also acknowledge that children cannot be considered as a single demographic consumer type nor can they be regarded as the same type in terms of their psychological make-up. Five year-olds do not see the world in the way as 10-year-olds who, in turn, do not have the same understanding of the world around them as 15-year-olds.

Children' cognitive development status is a critical factor linked to their abilities to understand marketing activities. Although children become aware of advertising and of brands even before they start school the meanings they attach to these marketing features are often fairly crude. The persuasive and sales purpose of advertising cannot be readily articulated by many children under the age of eight. Later on, however, all this changes as children approach their teens. They then begin to understand the purpose of advertising and gain the abilities to challenge the promotional messages that advertisements contain (John, 1999; Kunkel et al., 2004; Gunter et al., 2005).

Thus, in the context of whether advertising has strong or weak persuasive effects, we need to differentiate between children of different ages and stages of psychological development. Children aged under the age of eight can recognise brands and can refer to brands when making product purchase requests to their parents (Gunter et al., 2005). Their brand knowledge, however, has yet to reach the level described by some scholars for mature consumers whereby a 'brand' is regarded as a product variant name that is associated with a network of other ideas about its defining physical attributes, distinctive qualities, performance and thoughts about kinds of lifestyle that it might invoke (Escalas & Bettman, 2003; Keller, 1993).

Modern marketing practices not only play on these over-time effects by embarking on extended promotional campaigns, they also adopt multi-faceted designs that embrace promotions that take on different forms in different settings. Thus, TV advertising campaigns might be supported by the use of web sites known to be popular with children, interactive social media activities such as viral marketing in which children are incentivised to communicate with other children about a specific brand, and the integration of brands within online games played by young people (Harris et al., 2009).

PROMOTING HEALTHY DIETS

One of the main concerns about food advertising and children is that the food products that receive the greater promotional coverage are ones deemed to have poorer nutritional quality. If they are embedded in settings such as television programmes that also contain depictions of people eating and drinking there may be resonance between these two sets of messages when both promote unhealthy diets (Kaufman, 1980; Smith, Trivax, Zuehlke, Lowinger, & Nghiem, 1972; Way, 1983).

Public health advocates have long expressed concern about the nutritional quality of foods that are most prominently advertised in the mainstream mass media, and especially on television (Gussow, 1972). This concern was particularly acute in the case of television because of beliefs about the power of this medium generally to influence children's social attitudes and behaviours (Watkins, 1985). Indeed, key nutritional messages derive not just from the products that are advertised but also from the ones that are not. The absence of advertising for fruit and vegetables, for example, might indicate to children the kinds of foods that are not important for a balanced diet (even though in these cases, they are) (Gussow, 1972).

Story and Faulkner (1990) examined food messages and the representation of eating in popular US television programmes and in advertisements embedded within them. Food references in programmes occurred frequently, often as many as five each half hour. Most of the food eaten in prime-time programmes was consumed between meals. This meant that much eating took the form of snacking. These snacks were not usually healthy options. Over one-third of the advertisements embedded in and around these programmes were food products. The most frequently occurring advertisements were for fast-food and breakfast cereals. There were few advertisements for fresh fruit or vegetables. Overall, then, the prime-time television diet was dominated by snack foods and drinks, with many of the foods being shown or promoted having high fat and sugar content. There were relatively few examples of highly nutritious foods in this televised world.

In another early study, Wallack and Dorfman (1992) found health messages were present in around three in ten commercial spots, most of which were featured in food advertisements. Health messages were also situated in around four in ten public service announcements, but these messages occupied only about 6 % of total advertising break running time. Even more relevant here was the finding that none of the PSA health messages was linked to advice about diet.

Around the same time, Lank et al. (1992) examined food advertisements in television soap operas. Over a five-day period they found more than 500 food advertisements in top-rated daytime serials. Most of the foods advertised were actually low in fat, sugar and salt content and frequently contained health information and nutrition appeals. However, while many of the advertised products embedded within breaks in these programmes seemed to follow common dietary recommendations, they were not always nutritious. Thus, while they may not have contributed greatly to daily sugar and salt intake, for example, they were not necessarily packed full of other nutrients.

Concerns have been voiced about spurious health claims made in advertisements for food products of questionable nutritional value. Research in South Korea found three in ten (30 %) televised advertisements contained one type of 'health claim' or another. Sometimes an advertisement would provide information about the nutrient contents of the product and on other occasions there would be very generalised remarks made about how 'healthy' the product was. There were concerns raised about the veracity of such claims and the effectiveness of advertising regulations to ensure that they could be proven (Choi & Kim, 2011).

The healthfulness of advertised foods has been questioned not only on television but in other media too. Pratt and Pratt (1985) examined the nature of food and drinks advertising in a number of popular US women's magazines. The authors compared magazines targeted at African-American readerships (*Ebony* and *Essence*) and another aimed at a broader demographic and ethnic readership (*Ladies Home Journal*). They sampled publications from two three-year periods set ten years apart: 1980–1982 and 1990–1992. In general, food advertising in *Ladies Home Journal* had a healthier profile than in the two magazines aimed at African-American women.

A little later, Barr (1989) examined food and beverage advertising in four women's magazines between 1928 and 1986 and classified the food groups being promoted and the kinds of nutritional claims being made about them. Barr found that advertising for food ingredients fell away over this period while advertising for foods high in fat and sugar increased. Nutrition-related messages changed in their prevalence and nature as well. Over much of this period, messages about general health and nutrition declined, but in the later stages of this historical analysis messages began to appear about avoidance of certain dietary components (e.g., fats and sugars).

It is worth recalling remarks made earlier about the need for analyses of food advertising to pay close attention to the nutritional qualities of food

products and to provide precise weightings of ingredients rather than simply labelling foods as 'healthy' or 'unhealthy' or high in fat, salt and sugar without defining specifically what these terms mean. Some studies of food advertising have emerged in which researchers have tried to incorporate these more detailed measures. A few of these analyses have attempted to track changes in the provision of nutritional information in food advertisements over time.

One US analysis that covered a period from 1977 to 1997 examined the proportion of food advertisements in the most widely read women's magazines (*Better Homes and Gardens*, *Good Housekeeping*, *Ladies Home Journal*, *McCall's*, *Women's Day*) and general magazines (*Reader's Digest*, *Time* and *Newsweek*) (Ippolito & Pappalardo, 2002). A total sample of 11,647 food advertisements was compiled from these publications. Each advertisement was coded for any general ('nutritious', 'healthy') or specific nutrient content ('fat, saturated fat, calcium, calorie) claims it made, as well as health claims (good for heart disease, cancer, cholesterol, etc.) and any recommendations or endorsements by health experts or authorities. This analysis showed an increase in the proportion of food advertisements that contained at least one specific nutrient ingredient during the first half of the period, after which the position stabilised. The characteristic profile for food advertisements in popular magazines was that they tended to contain various specific claims about the advertised brand relating both to its individual ingredients and nutritional or health-related qualities.

Ippolito and Pappalardo (2002) observed some sensitivity of food advertising to specific regulations covering promotions of this product category. The Nutrition Labelling and Education Act of 1990 (NLEA) introduced tighter rules concerning health claims made by food products in their advertising and on their packaging. A series of specific requirements were progressively introduced between 1991 and 1995. In particular, food advertisers were required to be more specific about particular health claims and for each nutrition claim they were required to spell out to consumers the downside of over-consumption. This served in effect to discourage food advertisers from making multiple claims of this sort because of the requirement for each to be individually justified and accompanied by relevant caveats. Perhaps as a consequence, a number of specific nutrient claims were found to decrease in number during and after this period, even though the percentage of food advertisements making any such claims at all increased. Likewise, it was noted that while health claims that referenced, for example, heart disease increased in prevalence during the 1980s, they dropped dramatically during the 1990s.

Byrd-Bredbenner (2002) examined the contents of food advertisements on Saturday morning children's television in the USA in 1993 and 1999 and drew comparisons with similar data for 1971 and 1975 that had been reported in earlier studies (Barcus, 1971; Barcus & Wolkin, 1977). The most advertised food categories were fats and sweets, especially high sugar foods and candy, along with breads and cereals, most especially pre-sweetened breakfast cereals. Advertisements for fruits were not registered in the 1970s or 1990s and those for vegetables were found only in 1971 but not thereafter. There was a marked decline on advertisements for breakfast cereals and for cookies and cakes, but marked increases for advertising for candy and fast-food restaurants.

Byrd-Bredbenner (2002) also found that food advertisements often present misleading messages about food and nutrition even though relevant codes of practice required that advertisements should not attempt to mislead children about any products (Better Business Bureau, 2000). One of the most frequent examples of this breach was found in promotions for fruit-flavoured candy and beverages which used images of fresh fruits. These images gave false impressions about the fruit content (and also nutritional value) of such products. Regardless of the ingredients of food products (and the calorie value) child actors shown in advertisements with these products were always thin and healthy looking. Despite warnings from health lobbies about the health risks associated with over-eating of highly sugared and salty-snack foods, the images of these products associated them with healthful and healthy lifestyles.

The potential effects of televised advertising on children's eating habits might extend from preferring specific product types that receive the greatest number of promotions to the way food consumption is depicted. For instance, are on-screen characters shown eating at recognisable mealtimes? Are they depicted eating at home at the table or elsewhere? Research with advertisements on US network television found extensive representation of products such as confectionery, soft drinks and convenience foods. Further, fruits and vegetables, dairy products, meat poultry and fish were much less likely to be advertised to television audiences dominated by children (Harrison & Marske, 2005).

Eating behaviours were typically depicted as taking place as ad hoc snacks rather than during conventional mealtimes. What also emerged was that the ingredients of food products advertised in children's programmes and general audience programmes tended to exhibit different profiles. Food products that were more prevalent in general audience programmes tended to

be relatively high in salt and fat, whereas those advertised during children's programmes were relatively high in sugar. These classifications derived from close analysis of food ingredients for the advertised brands (Harrison & Marske, 2005).

Overall, Harrison and Marske concluded that the nutritional quality of the advertised foods they examined were satisfactory in some regards and unsatisfactory in others. The most poignant finding was the high sugar content of foods targeted at children. According to these authors, the range of advertised products meant that it was possible for children to consume high sugar products across all mealtimes from among those promoted on television and this would lead to a daily calorie intake exceeding their needs in terms of maintaining a stable weight.

This body of empirical evidence reviewed above has confirmed that children are confronted in mainstream mass media by representations of dietary choices and encouragement to adopt them that are characteristic by poor nutritional standards. Whether we accept strong or weak marketing effects positions, there is compelling evidence that children have a greater probability of exposure to unhealthy than healthy food products. Looking beyond mere exposure opportunities, is there evidence that the contents of promotional messages about food could act to further reinforce the adoption of diets that fail to meet many government and internationally recommended standards of everyday nutrition?

MEETING GOOD NUTRITIONAL STANDARDS

Some research studies have investigated not only the quality of the food being advertised in terms of its intrinsic nutritional value, but have also examined whether food advertising presents a world in which the depicted dietary standards meet official nutritional guidelines. Much of this evidence so far has found that the public are presented with a marketers' world in which dietary standards fall short of healthy practice.

Hickman, Gates, and Dowdy (1993) examined nutrition claims in food advertisements placed in women's magazines in 1975, 1982 and 1990. They found that these claims increased in prevalence over time especially in relation to the reduction or removal of specific ingredients such as fat. References were also increasingly made to recommended daily dietary intakes of specific ingredients.

Lohman and Kant (1998) used the Food Pyramid Guide to classify foods into different food groups. They then analysed food advertisements in two

culinary magazines and two health-oriented magazines in 1991 and 1994 on either side of the introduction of the Guide. They found no significant changes in the prevalence of specific food groups over time in these magazines and concluded that there had been no apparent responsiveness to the Food Pyramid Guide in the nature and types of foods being advertised or claims made about them.

Kotz and Story (1994) collated a sample of nearly 1000 advertisements from Saturday morning children's television in the USA. More than half (57 %) of the advertisements found were for food and over four in ten (44 %) of advertised foods were for products high in fat and sugar. Breakfast cereals with high sugar content were the most prevalent food type advertised to children. The authors concluded that the kind of diet being promoted to children in Saturday morning children's programmes were the opposite of what health professionals recommended as healthy options.

Similar findings have emerged from other countries. In one study carried out in Bulgaria, food advertisements accounted for around one-third of all advertisements carried by children programmes. This was a smaller proportion than found in countries such as the UK and USA, but among those food advertisements that were examined, nearly all (97 %) promoted unhealthy foods high in fat, salt and sugar. Advertisers used child-popular techniques such as animated characters, adventure story themes, music and incentives in the form of gifts. Products were promoted in terms of their taste and appearance rather than in relation to how nutritious they were. Despite the unhealthy nature of the most frequently advertised food brands, actors featured in these commercials generally looked fit and healthy and certainly not overweight. Implicitly then some food brands were promoted with the idea that high fat and sugar products can be eaten and enjoyed without any concerns about health consequences (Galcheva, Iotoova, & Stratev, 2008).

Byrd-Bredbenner and Grasso (2000) examined the quality of nutrition-related information (NRI) presented in a small sample of prime-time network television advertisements in the USA that had appeared in programmes known to attract large numbers of child viewers aged between 2 and 11 years. Despite the limited sampling frame which amounted to 17.5 hours of programming recorded of a period of just two weeks, they amassed a sample of 700 television commercials. Two-thirds of the advertisements ($n = 467$) were for products or services and the remainder were trailers for programmes. Of the advertisements for products and services, 197 (42 %) contained NRI. Not all NRI-containing advertisements were for food

products. In fact, just 108 out of 197 NRI-contained ads promoted food or beverage brands.

The sample was content analysed and derived nutrition-related measures from earlier studies (Barr, 1989; Hickman et al., 1993; Kaufman, 1980; Pratt & Pratt, 1985; Way, 1983). Turning to the question of nutrition-related content in advertisements for foods and drinks, the most common promotional claim used in these messages referred to the flavour of the product (90 % of cases), while references to general health and nutrition were much less likely to occur (24 %). The latter references tended mostly to take the form of general statements about how good the product could be for health. A few references were made to medical or health professional endorsements, prevention of illness, giving energy or contributing to a balanced diet (no more than 5 % of ads in each instance). References to specific ingredients such as vitamins (6 %), vegetables (5 %), minerals (3 %), fruit, grain and fibre (no more than 2 % each) were also rare. Other infrequent claims were that a product was low in calories (6 %), fat (5 %) or sugar (2 %).

Byrd-Bredbenner and Grasso noted that actors in food advertisements were rarely shown eating the foods being promoted; instead they tended to talk about them. When actors were shown eating, they tended more often than not to eat foods that were classed as poor in nutritional quality and yet these same actors in most cases appeared to be slim and glowing with health. The researchers drew conclusions about the importance of understanding and monitoring the nutrition claims—both overt and implicit—in food advertising not just for consumers but more especially for nutrition educators. These professionals are trained and employed to give advice to people about dietary habits and need to know what kinds of messages about diet and nutrition are being promulgated by the food industry through its advertising so that they know what they might be up against if the messages being given out are contrary to good dietary practice.

A few years later, Abbatangelo-Gray et al. (2008) compared the quality of nutritional information provided in English-language and Spanish-language television advertisements in the USA. The authors referred to guidelines supplied by the US Food and Drug Administration concerning recommended daily dietary intake. Food advertisements were more prevalent on English-language channels than on Spanish-language channels (11 % versus 17 %). In contrast, food advertisements on Spanish channels were far more likely to contain health claims compared with those on English language channels (25 % versus 7 %). Spanish food advertisements also made

more frequent claims about foods being ‘good for one’s health’ or claims based on specific nutritional information unembellished by other claims. Although there was considerable room for improvement in terms of providing relevant health information in food advertisements across all channels, Spanish-language channels were far more likely to provide this information than their English-language counterparts.

In a subsequent study, Mink, Evans, Moore, and Calderon (2010) compared the nutritional choices presented by television advertisements in the USA with nutritional guidelines recommended by professional nutritionists. They examined food advertisements for the types of foods presented and portion sizes depicted and compared the observed foods with the recommended daily intake derived from the Food Guide Pyramid issued by the US Center for Nutrition, Policy and Promotion, Food and Drug Administration (www.mypyramid.gov).

By assessing the nutrient profiles of the advertised foods from product ingredient data, Mink and his colleagues found that some key nutrients were over-supplied and others were under-supplied in the food being advertised. Hence, if consumers ate only the food advertised in this sample of televised output, they would have eaten more protein, salt, cholesterol and saturated fat than was recommended by official dietary guidelines. At the same time, they would have eaten a diet poorer than recommended in terms of a number of important vitamins and minerals, as well as carbohydrates and fibre. The food sample advertised here presented a diet that was too poor in fruit and vegetables and too rich in products high in fats, cholesterol, salt and added sugars.

In another US investigation, Castonguay, Kunkel, Wright, and Duff (2013) analysed 575 food advertisements found in children’s television programming on the most popular American broadcast and cable channels over a three-month period in 2011. The researchers used a number of food categories including sugared beverages, sugared snacks, salted snacks, fast foods, dairy, fruit and vegetables. Foods were further classified in terms of their nutritional quality using labels such as ‘Go Foods’ (rich in nutrients and low in fat, salt and sugar), ‘Slow Foods’ (higher in fat, salt and sugar), and ‘Whoa Foods’ (highest in calories and lowest in nutrients). All food advertisements were classified in terms of whether they made a health claim for the brand being promoted, whether there was any depiction of individuals taking physical exercise, and whether the product being advertised was linked to fruit, by depicting fruit or making claims about fruit-related attributes.

Nearly two-thirds of the food advertisements were for fast-foods and restaurants (40 %) or sugared cereals (24 %). Over seven in ten (72 %) were classed as 'Whoa' foods. As more than half the food advertisements here contained at least one health message this meant that health claims were made even for the least nutritious foods. A clear majority of food advertisements also used licensed characters to promote their brands and this was especially true of poorer quality foods. Familiar characters likely to be popular with children were often used in combination with health messages. In fact, the presence of familiar characters, especially with poorer nutritional quality foods meant an increased likelihood of links to fruit (and implicitly with health) as well as more explicit health claims. Castonguay and her colleagues voiced disquiet over the use of these techniques that were designed to give consumers misleading ideas about many food products in terms of their nutritional quality.

In Sweden, Prell, Palmblad, Lissner, and Berg (2011) found misleading health messages in televised food advertisements targeted at children. Rather than simply looking at specific production features of food advertisements, this study deployed discourse analysis to identify and differentiate between health discourses. Three types were distinguished: a medical discourse which promoted food as important for health and protection against ill-health; a hedonic discourse that focused on how foods can make consumers feel good; and finally a social discourse that regarded food as an expression of one's relationships with others.

Hence food can protect us against illness and even form part of the treatment if we fall ill. Specific nutrients are identified as playing active parts in this medical process. Thus, we should consume foods high in unsaturated fats rather than those high in saturated fats. We should avoid foods high in salt and sugar. We should, however, consume high fibre products. Some foods can be proactive in according us protection—such as probiotic yoghurts that help the stomach digest food and promote the presence of good bacteria in the gut. Other foods can be reactive and help to alleviate potential health-risks such as high cholesterol.

Hedonic discourses drew consumers' attention to the sensory qualities of foods such as how they taste, how they smell and whether they make the consumer feel good. Foods were conceived to bring pleasure to our lives through how they make us feel inside quite independently of whether they were also good for our health. Thus, chocolate can lift our mood if we are feeling gloomy.

The social dimension of food played on the idea of food and its consumption bringing us together with family and friends. The care and attention devoted to preparation of food could signal how much you care about or respect others for whom you have cooked.

This analytical approach revealed that sometimes brands stay true to their core ingredients and on other occasions this does not happen. When fast-food brands promote food products through reference to a medical discourse this often creates a tension with what might normally be known or believed about such foods. The association of eating hamburgers with being fit and healthy does not resonate with the medical profession's views about this product—at least in its customary form. This research found that the medical discourse was widely used across food types and was often used even in association with products known to have low nutritional value. The choice of language to describe a product, the cultural and social symbolism associated with food and the ways that stories about food are told can together concoct potentially powerful (and misleading) messages about the inherent qualities of specific food products.

MISLEADING THROUGH THE WEB

Another aspect of promoting foods to children has been to link televised campaigns to online campaigns. This approach takes advantage of the popularity of web searching, social media and online games among children long before they reach their teens. Growing numbers of food advertisements on television are positioned so as to maximize their reach to children to encourage them to visit web sites where they can engage with a range of interactive online activities designed to promote further the advertised brand (Moore & Rideout, 2009).

The use of the internet for promoting foods has grown in prevalence in the twenty-first century. The internet is especially popular among adolescents for a wide range of purposes including getting information about brands (Cheyne, Dorfman, Bukofzer, & Harris, 2013). Marketers have become increasingly well informed about teenagers' online habits and have developed their sales techniques to take advantage of the potential power of this medium with young consumers (Montgomery & Chester, 2009).

Research with web sites known to be popular among teenagers has found that when advertising in these locations, many food and health-related brands gave close attention to the physical appearance attributes of

people who appeared in their commercials (Slater, Tiggeman, Hawkins, & Werchon, 2012). It was particularly true that advertisements for fashion and weight loss gave much more attention to physical appearance. There was some emphasis given to the idea of the ideal body shape being thin in cosmetics and fashion advertisements with weight loss advertisements understandably giving a lot of attention to being thin. When actors were visibly depicted in advertisements, they were generally thin, attractive and young. It was concluded that the television advertising for products targeted at young people emphasised the importance of being thin.

Online food advertising has not only extended the reach of televised food advertising in relation to children, but food advertisers have utilised message appeals designed to provide direct encouragement to young consumers to select or pester others to purchase on their behalf food brands that contain high levels of sugar and fat. On web sites, there is more scope to invite children to become engaged with brands through competitions and games and to receive material incentives to choose brands through premium offers, gifts and prizes (Dijksterhuis & Bargh, 2001; Dijksterhuis, Chartrand & Aarts, 2007; Moore, 2006, 2008; Moore & Rideout, 2006).

A more worrying feature of food advertising on the internet is that brand promotions can become so tightly intertwined with other (entertainment) content that it is difficult to separate the 'marketing' messages from the non-marketing content. Such promotional strategies can undermine the potency of any cognitive defences children have learned in relation to traditional forms of advertising (Chester & Montgomery, 2007, 2008).

In one investigation, Lee, Choi, Quilliam and Cole (2009) found that food marketers used advergames to promote their brands and to provide information about their nutritional content. Food products that were high in sugar and popular with children were especially prevalent in this kind of setting. An advergame environment allows brand marketers to engage children interactively through games that they could play that involved the brand. Thus, food brands were integrated into games as active components.

A further study conducted by Lingas, Dorfman, and Bukofzer (2009) examined the nutritional quality of food and non-alcoholic beverage brands advertised on 28 web sites known to be popular with children. They found 77 advertised products on these sites where information was available enabling classification in terms of nutritional quality. When these food brands were benchmarked against the US Institute of Medicine criteria a majority (49 out of 77) were classed as foods to avoid while five were classed as foods to encourage. The remainder were neutral in this respect.

Research into web sites used by breakfast cereals indicated that not only was this platform dominated by brands that comprised products with high levels of sugar content but that they also took full advantage of a range of online digital marketing techniques to engage children's attentions. These techniques included the use of cross-promotions involving licensed characters known from other settings, promotional videos in which spokes-characters known to be popular with children spoke on behalf of the brands, and the use of competitions, quizzes and games to encourage young consumers to become more interactively involved with the site and the brand being promoted there (Cheyne et al., 2013).

One of the key issues raised about these forms of food promotions is that many do not look like marketing activities. Children take part in competitions to win prizes. They play online games as entertainment. Commercial brands are integrated with competition, quiz and game contents and as a result children may not recognise them as marketing (Brady, Farrell, Wong, & Mendelson, 2008). If the boundaries between brand marketing and non-marketing content become blurred, the cognitive defences children may have learned against being automatically persuaded by promotional messages may not be invoked. The end result could be that children are then rendered more susceptible to the marketing influences being used in these contexts (Montgomery & Chester, 2009).

Even children who are able to identify normal forms of advertising, for example, on television may often fail to acknowledge the potential brand marketing effects of an advergame in which a commercial brand is embedded (Mallinckrodt & Mizerski, 2007). Such empirical evidence raises a fresh set of debates about food advertising regulation.

Codes of practice that have been developed, approved and adopted in relation to standard formats of advertising in mainstream mass media such as television and magazines generally fail to address the quite separate issues raised by digital online marketing methods. One example of this is that in the context of television, many national broadcast advertising codes require that there is a clear separation between advertisements and programmes. This often takes the form of a very brief spell of black between the programme and any adjacent advertising content. In other words, there is a 'break'—which has frequently been referred to as a 'natural break'—whenever advertising occurs. This break was designed to help viewers, especially young viewers, to differentiate between advertising and programme content (Greer, Potts, Wright, & Huston, 1982; Ward et al., 1977; Wartella & Ettema, 1974; Zuckerman, Ziegler, & Stevenson, 1978).

Such breaks were not always found to promote all children's identification of advertising however. Some evidence emerged that these devices helped older children (eight years and above) but not younger children (Stutts, Vance, & Hudleson, 1981). If advertising is not distinctive in terms of its physical location or position, there may also be format features, such as use of music, product presentation and special characters as endorsers that can be learned over time and then recognised as typical of commercial messages (Belk, Mayer, & Driscoll, 1984; Greer et al., 1982; Scott, 1990).

The important factor in this context is that the child recognises that he or she is being confronted with content in which someone is trying to persuade them to do something. Over time, children as consumers learn to identify and understand the purpose of the persuasion tactics used by advertisers (Wright, Friestad, & Boush, 2005). This comprehension of advertising is significant because if the child recognises that an advertisement is not simply a piece of entertainment or information, but is actually a message with an ulterior motive, which it is perhaps trying to play down or conceal, they might adopt a more critical evaluative stance towards it (Friestad & Wright, 1994). Whether an ulterior motive is spotted by the child however depends upon whether a commercial brand can be clearly separated from surrounding media content or not (Campbell & Kirmani, 2000).

Within a setting such as an online game, or 'advergame', in which food brands were integrated within the game itself, even signalling to players both visually and with a voice-over that the game has a commercial purpose did not significantly enhance the abilities of eight to 11-year-olds to identify the persuasive and selling intent of this marketing device. Visual and audio signals of the nature of the advergame did reduce accurate recall of and desire for the food brand embedded within the game (An & Stern, 2011). This research indicated that children can benefit from the use of information techniques designed to signal the true purpose of an online game, but that the effects that are triggered are related more to brand recall and interest than recognition of message intent. Further investigation is yet needed to discover ways of ensuring that young consumers understand fully the nature and intent of advergames. We will revisit these issues in Chap. 8.

CONCLUSION

Food and non-alcoholic drinks' advertisements are highly visible in mass media, and especially in media locations frequented by children. Children, therefore, experience regular exposure to these messages. Compounded

with this concern is another. The commercial messages for food and drinks use techniques that are often designed intentionally to appeal to young consumers. They adopt production techniques, most notably the use of cartoon animation, that pull in the attention of children and create an entertaining environment in which to promote popular food and drinks brands. Furthermore, these promotions have been found to contain misleading messages about the nutritional quality and value of these products.

The WHO has recognised the growing prevalence of children being overweight and obese as an international problem. It has also called for tighter controls over the advertising of food and non-alcoholic drinks products that contain high levels of fat and processed sugar in this context. The reason for this is that such messages are believed to play a part in encouraging greater consumption among children of energy-dense food and beverage products that can contribute to excessive weight gain (WHO, 2010, 2011, 2015).

Most of the empirical social science research on this subject derives from mature markets such as the Australia, Canada, the UK and Western Europe, and the USA. Yet, research evidence from emerging markets such as those in Africa, East Europe, the Middle East and East Asia has indicated similar advertising trends with food advertisements being highly prevalent on television and often attaining the highest visibility during peak seasonal viewing times for children such as school holidays (Aktas Arnas, 2006; Galcheva et al., 2008; Karupah, 2008; Temple, Steyn, & Nadomane, 2008). Further, food advertisements often contain child-appealing message incentives to use food types that represent poorer quality in terms of their nutritional value (Kelly et al., 2014).

The prevalence of subtle sales techniques designed to persuade young consumers to think about, like, request and consume food products has become a growing source of worry for those with child-health interests at heart. This is because children are enticed to prefer foods and non-alcoholic drinks that might not offer such good nutritional value as their manufacturers claim. Indeed, these advertisements can be so skilfully crafted that even adult consumers might be taken in by their appeals.

While increasingly subtle production techniques have been deployed in conventional advertising, an even greater source of concern has been the emergence of the internet as a promotional platform (Cai, 2008; Moore, 2008; Moore & Rideout, 2007). Here standard forms of advertising are used alongside other forms of brand promotion that do not appear like traditional 'advertisements' and in effect represent disguised marketing. When brands are integrated into computer games or provide sources

of online conversation on social media sites, it might not automatically appear to young consumers that they are being confronted with ‘advertising’. Nonetheless, these techniques are designed to raise a brand’s profile and also where possible to promote public opinion about it.

When young consumers are constantly bombarded with messages about food and drinks brands that highlight what makes them so good, some of that persuasion might eventually stick. When these messages appear to derive not just from the brands’ makers and distributors—who might be seen to have vested interests—but also from ordinary consumers online, they could be regarded as more credible because they seem to derive from trusted sources. The diversification of food and drinks marketing methods targeted at children, therefore, presents greater challenges for those seeking to understand how children might be influenced by these multi-faceted campaigns as well as for those charged with protecting consumers’ interests through regulation of these marketing practices (Chester & Montgomery, 2007, 2008). These advertising trends and their implications for the influence of children are not restricted to mature markets. There is every reason to believe they are just as likely to occur in developing markets (Cairns et al., 2009)

This chapter has discussed research that has tried to identify and define the types of messages food advertisements convey directly and indirectly (often via their parents or carers) to young consumers about why they should consume certain food varieties and brands. Identifying the existence of specific promotional appeals through formal systems of advertisement content analysis is only one step in a chain of analytical stages needed to demonstrate that food advertisements can influence children’s food choices and dietary habits. Leaving to one side caveats about methodological limitations that characterise specific content analysis studies, even if perfectly formed these studies are not equipped to measure actual consumer effects. If we want to know more about these effects, then research must be carried out more directly with consumers themselves. Such research is also important in the context of determining the efficacy of specific advertising codes of practice as laid down by national legislators and their regulators or adopted voluntarily by the food and drinks industries.

Introducing regulatory frameworks and accompanying codes of practice that tackle problematic food and drinks marketing must be informed by evidence about the effects of that marketing. Ultimately, if regulators wish to restrict the marketing and food and drink, they must produce justifiable reasons for doing so. These reasons cannot rest purely on matters of law, but also must be backed up by empirical evidence which confirms

how young consumers are influenced by food and drinks advertising. It is to this evidence that our attention will now turn over the next few chapters.

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Does Food Advertising Influence People's Food Preferences?

There is widespread concern about the food choices and eating habits of children around the world because of the rising prevalence of obesity among the young and its contingent health risks. This worrying trend has been blamed largely on the nature of children's diets and the over-consumption of foods that are high in fat, salt and sugar. There are multiple causes of food-related choices and habits, but the availability of foods classed as energy dense and poor in their nutritional value is seen as a major factor. In a crowded marketplace, in which many food brands compete for ascendancy, consumers are bombarded with promotional messages designed to encourage them to choose specific brands over others. Hence, food advertising also has emerged as a factor identified by health authorities as playing a vital role in the cultivation of unhealthy eating habits from an early age.

Research into the prevalence and location of food advertising has indicated that there is ample opportunity for young consumers to be exposed to it. Through this evidence it appears that food advertisers have targeted children both to gain exposure and influence (Chan, 2000; Chan & McNeal, 2003). One reason for this is that food and beverage manufacturers recognise the importance of children in their markets and also the fact that many children play an important part in determining the food consumption habits of their households (CFBAI, 2012). Children can have influence from very early on by asking or pestering their parents or carers to make specific food purchases for them. Then as they

grow older and develop an understanding of money they acquire their own disposable income which means they can make their own purchases (Gunter & Furnham, 1998; Calvert, Jordan & Cocking, 2002).

Food advertisers spend vast amounts on advertising. This advertising permeates all the major mass media. While television remains the most important advertising medium to the sector, the food industry uses many other platforms for its marketing activities, including product placements in movies, advertisements and branded merchandising in schools, and has led the way in the use of the internet as a promotional platform (Dibb & Harris, 1996; Story & French, 2004). There are many opportunities for children to receive exposure to food advertising and other branding activities (Institute of Medicine, 2006; Scully, Wakefield, Niven, et al., 2011). Exposure to advertising on its own cannot tell us anything directly about its impact on consumers. The analysis of the content of food advertising has indicated *potential* influences. These influences then need to be proven and this means conducting research among consumers.

Certainly, before children or older consumers can be persuaded to buy advertised food products they must have experienced, encoded and understood advertising messages and those messages must provide relevant incentives to purchase. Once these precursors are established, a further step is needed in terms of research to find out whether advertisements can shape children's food preferences and choices. This is the subject addressed by this chapter.

GENERAL POINTS ABOUT ADVERTISING INFLUENCE

The influence process itself comprises a number of distinct stages beyond exposure to potentially persuasive messages. The advertising-influence process embraces a number of distinct outcomes that can be regarded as interlinked stages during which consumers are made aware of products and product variants (that is, brands), acquire knowledge about foods and brands, develop attitudes or feelings about them, and then ultimately establish a preference for a specific product variant that they then seek out for their own consumption.

The first step is for food advertising to get a child's attention. If advertisements are effective then children will have their attention drawn to them and the brands being promoted will then attain a higher profile. This effect will bring brands effectively to the 'front of mind' with consumers such that when they are motivated to find particular food types by hunger, in a crowded market the best known brands will be the ones they think about first. Those brands might also stand out more from others in retail

settings. Consumers with high brand awareness tend to search through fewer brands before making a choice (Hoyer & Brown, 1990). Regardless of whether a specific food brand represents a food type regarded as high in nutritional value, young consumers' liking of it can be conditioned by the techniques advertisers have used to promote it. Highly advertised brands can also become highly desirable (Morton, 1990).

Next, the advertising conveys information to young consumers about the products being promoted. Some of this information might be generic to the product type but much of it will aim to distinguish the promoted brand from competing brands. Such distinctiveness when it strikes the right notes with consumers can promote liking for the brand. This favourable attitude towards the brand will increase its likelihood of selection over others (Chernin, 2008; Halford, Boyland et al., 2007, 2012; Norton, Falciglia, & Ricketts, 2000). When a brand attains a certain critical prominence it can attain the ability to influence the taste of enjoyment of food (Boyland, Harrold, Kirkham & Halford, 2009).

In measuring advertising effects, therefore, it is important to define what is meant by 'effects'. The ultimate interest in the context of safeguarding the interests of children is to find out whether young consumers' food and dietary habits are shaped by food advertisements. This influence process might begin with awareness raising, then manipulation of attitudes and beliefs, then driving motives to use and eventually triggering specific choices. Over time, there might then emerge an influence of food advertising on more generalised orientations towards food and the cultivation of dietary patterns that might be deemed with healthy or unhealthy.

DIFFERENTIATING TYPES OF FOOD ADVERTISING EFFECTS RESEARCH

The discussion of food advertising effects will be divided into two parts: the current chapter will examine evidence for effects of advertising on specific food preferences and choices and the following chapter will examine evidence for more general effects of food advertising in relation to food-related health and well-being. In the first part, focus is placed on outcomes of exposure to advertising that are mostly intended by advertisers. In the second part, broader consequences are examined that have multiple causes to find out whether food advertising has a specific part to play and how significant its influences might be.

To expand a little further, the first type of food advertising influences research is often concerned with the types of foods people say they like the

most and which they dislike. This reaction can be given to questions about product types, that is, do you like fizzy drinks, take-away burgers, potato chips and so on? It can also be given to branded varieties of a specific type of product. That is, do you like Coca Cola, McDonald's burgers or Walker's crisps? Here, interest centres on the role played by brand advertising in shaping people's food likes and dislikes.

The second type of research shifts our attention to how much people consume of foods in general or specific types of food and how much they suffer from health problems that can be linked back to their diet. Here we are not simply concerned with the kinds of food or with which varieties (or brands) of a particular food type people say they like, but rather with how much they consume and whether they consume in quantities that present health risks. In this context, researchers have done more than simply examine relationships between food advertising exposure and reported amount of food consumption or reported health problems or directly measured health-related attributes such as body weight. They have also examined food-related beliefs and intentions that might in turn be related to behavioural consumption. Behavioural effects can also include—for child consumers—the extent to which they pester their parents to buy them specific foods.

DIFFERENTIATING BETWEEN METHODOLOGICAL PERSPECTIVES

In finding out about the effects of food advertising on young consumers, researchers have a number of different tools and techniques available to them. Most of the social scientific research on this topic has used quantitative techniques in which specific behavioural, psychological and sociological variables are defined and measured in a structural numerical fashion. Some researchers have also used qualitative methods that rely more on impressions about behaviours and their precursors as provided by consumers themselves in their own words or as derived from open-ended observations of consumers' real-time behaviour in natural settings.

The key research designs include:

1. Surveys using self-report questionnaires that generate data on advertising exposure and food preferences or consumption levels. Some of these studies attempt to measure food advertising exposure

directly and others use general media consumption measures as proxies.

2. Experiments that use controlled exposure to advertising with food preferences or consumption or health status tests deployed before and after exposure.
3. Qualitative research in this subject area tends to comprises interviews conducted one-to-one, or in small groups in which participants are invited to talk about their food consumption habits and food advertising experiences and attribute causal agents for their food-related preferences and behaviour. In addition, some researchers have used ethnographic techniques involving observations of naturally occurring behaviour in real social settings.

SURVEY RESEARCH: SELF-IDENTIFIED INFLUENCES OF FOOD PROMOTION

Researchers have asked children to say whether they felt their food preferences and choices were affected by the food advertising they had seen. They have also asked parents to provide similar information on behalf of their children. Such self-attributed effects do not represent direct evidence of an influence of food promotion; instead, it comprises sets of beliefs or feelings held by consumers about their own or others' responses to food promotions. Nevertheless, open-ended reports about food consumption can provide rich impressions of family circumstances in which food consumption takes place, and also the negotiations that often take place between children and their parents about the foods they should eat. Such social processes form a backdrop to the effects of food advertising. Ideas about food can arise from advertising but also from discussions about food, brands and promotions within the home. Whether food-related ideas that flow from advertisements are acted upon depend upon internal family negotiations. Hence parents ultimately can take full control (Marshall, O'Donohoe, & Kline, 2007).

SURVEY RESEARCH WITH ADVERTISING PROXY MEASURES

There is a considerable body of research evidence that has accumulated from small-scale and large-scale surveys of pre-teenage and teenage children that purports to demonstrate systematic relationships between media

consumption habits and food preferences. Typically, in this research, samples of young respondents provide self-reported evidence about their use of television and other media and indicate which types of foods or which brands they like best or consume the most. Sometimes with very young children, their parents provide this information on behalf of their children. Where a statistically significant relationship emerges between these variables two conclusions have often been reached. The first is that it indicates that media habits and food preferences are meaningfully linked and more often than not, it is presumed that media experiences underpin food preferences. The second conclusion is that exposure to media also means exposure to any food advertising that is being carried by those media. This view has been adopted especially in relation to reported television viewing.

Regardless of the sample size and representativeness and attempts to survey children not just at one point in time but also over time, there remain serious issues with any measures purporting to represent exposure to food advertising when no direct measures of this behaviour are being used. In particular, it can be problematic to treat self-reported television viewing as a valid proxy for amount of exposure to television food advertising. This type of measure takes no account of variances in the viewing diets of different children. For example, what types of programmes did each child tend to watch? How many food advertisements did these programmes contain? If we do not know the answers to these questions, then food advertising exposure measurement is based largely on speculation about the possible levels of exposure that derive from independent content analysis studies of the amount and distribution of food advertising on television. Can we assume because one child reports more viewing than another that the former also experienced greater exposure to food advertising? The simple answer is that we cannot draw this assumption.

Despite these caveats, research literature has accumulated based on surveys of reported television viewing and its statistical relationship with children's self-stated food preferences and also with their nutrition knowledge (Gracey, Stanley, Burke, Corti, & Beilin, 1996). One survey study of five- and six-year-old children in Australia reported that those young respondents who reported higher levels of television viewing also exhibited more positive attitudes towards fizzy drinks, chocolate and fast food, and tended to consume more junk food which they also believed to be healthier than other foods (Dixon, Scully, Wakefield, White, & Crawford, 2007). Another study from the southern hemisphere—this time New Zealand—

examined the TV viewing habits and food preferences of 5- to 14-year-olds. Across this age range, children who reported greater amounts of TV viewing were also likely to report consuming larger quantities of sugary soft drinks and hamburgers (Utter, Scragg, & Schaaf, 2006).

Demissie, Lowry, Eaton, Park, and Kann (2013) obtained data from a national schools survey in the USA with a sample of 14–17-year-olds. Most of these had access to multiple television sets in their family home and most also had their own set in their bedroom. Many watched television while eating. Nearly one in four also spent many hours a day using a computer or playing video games. Combining these teenagers' media habits with food consumption patterns, findings revealed that those youngsters who reported the greatest media exposure also consumed more high sugar soft drinks and were less likely to drink water each day. The authors concluded that if we want to get young people to consume less high sugar drinks, then limiting their media exposure could be one solution. That may be true, but to be sure we would need to have other control variables built into the research that might affect either food preferences or media habits.

Perhaps the biggest study of this kind comprised a cross-national survey of children aged 11, 13 and 15 sponsored by the WHO. Data were collected from more than 162,000 children. There were variances between countries in average TV viewing levels and in food preferences and dietary habits. In many countries, however, there was a significant statistical relationship between the amount of TV watched on average each day and preferences for sweets and sugary soft drinks. Greater amounts of TV viewing were also often associated with being less likely to consume fresh fruit and green vegetables (Vereecken, Todd, Roberts, Mulvihill, & Maes, 2006).

SURVEY RESEARCH WITH STRUCTURED SELF-REPORT MEASURES OF ADVERTISING EXPOSURE

We turn our attention now to research that has examined degrees of association rather than causal links between food marketing exposure and food consumption choices using more direct measures of young consumers' exposure to food brand promotions. Self-report measures are commonly used in social science research and have been widely deployed in studies about the effects of food advertising. These measures can provide numer-

ically coded data about food-related attitudes and behaviour as well as about exposure to food advertising and to other experiences that might be theoretically relevant to the understanding of dietary habits. These reports are dependent upon the memories of respondents concerning mostly historical events and experiences in their own lives. These memories can vary in their detail and accuracy. Very often researchers have no way of validating these reports. Clearly, this is an important issue when an entire study is dependent on the data produced by this type of measurement. Nonetheless, self-report data can provide general indications about attitudes and behaviour that enable researchers to begin to explore whether systematic relationships exist between specific pairs or sets of variables. Steps can be taken to keep reports as current as possible to avoid the inaccuracies that can plague memories of temporally more distant life events.

Marie Scully and her colleagues found some links between food marketing exposure and the food choices of young people aged between 12 and 17 years (Scully et al., 2011). They used three measures of food marketing exposure: (1) an estimate of the amount of time spent watching commercial television during the week or at the weekend; (2) reported exposure to promotions for food products in magazines, on public transport or in school; (3) any experiences of promotional contacts from food brands via email or text messaging. Eating behaviours were assessed through a small battery of questions that asked for frequency estimates of consumption of various types of foods (fast-foods, snack foods, soft drinks, etc.). The foods that were reported on were further classified in terms of their fat, salt and sugar content.

The greater their reported exposure to commercial television, the more likely these young consumers were to say they asked their parents to buy or that they used specific advertised foods. Similarly, greater reported levels of exposure to other forms of offline and online food marketing were related similarly to food choices. More particularly, greater reported exposure to commercial television was associated with higher levels of consumption of fast foods, sugary drinks and sweet and salty snacks. There were some relationships also between reported exposure to digital marketing online and consumption of these food types, while reported exposure to other forms of offline food promotions were not strongly or consistently related to food choices. The exception in the latter case was reported consumption of sweet snacks, which was greater among respondents who reported some exposure to relevant offline brand promotions.

The researchers acknowledged a number of weaknesses in their research. Its cross-sectional nature and use of correlation analysis meant that it was unable to demonstrate causal relations between key variables or show whether food marketing exposure produced gradual changes in food habits over time. It was also limited in the range of potential food marketing exposures it questioned its respondents about. This meant that there were other types of marketing that could influence food choices that remained unexplored here. Further, all data relied on respondents' self-reports about their behavioural experiences and there could have been significant measurement error in relation to accuracy of estimates of food consumption frequencies. One could also add to this list the questionable validity of a broad measure of reported exposure to commercial television as a proxy measure of exposure to food advertising. Two respondents with the same reported frequencies of exposure could have had quite different programme viewing diets and these in turn could have resulted in distinct food advertising exposure histories.

Children can be exposed to food marketing messages in their everyday environments and not just on television. Outdoor location advertising and marketing activities that take place in school settings represent parts of the wider mix of techniques used by food marketers. We have already seen that food brands have become increasingly active within schools and in their surrounding environments. Food companies will select locations near to schools on routes that are followed by students when going to school and have infiltrated schools with their brands by putting them on sale and by sponsoring equipment, facilities, sports teams and events and related merchandise (French, Story, & Fulkerson, 2002).

Grier and Davis (2013) reported that the proximity of fast food outlets to schools was related to body weight outcomes among local youngsters. This relationship, however, was more pronounced among some demographic and cultural groups than others. In particular, positive relationships between body weight (that is, indications of weight gain) and proximity of fast food outlets were stronger among Black and Hispanic youth in low-income and urban school areas.

EXPERIMENTAL RESEARCH

Surveys can provide indicative evidence about relationships between children's exposure to food advertising and food preferences, but such findings are not conclusive. They rely on respondents' memories of their

behaviour patterns and can only measure degrees of association and not causal relations between key variables. Causation measurement requires more control of food advertising exposure and subsequent food choices and this needs a more interventionist methodology. As noted earlier, the greater control that experiments give researchers has a downside. This control comes at the cost of taking the research outside the usual environments in which the behaviour to be investigated would normally occur. This raises questions about whether findings from experiment validly represent the nature of behaviour in participants' everyday realities.

In experiments, researchers have used a number of different measures of the *effects* of food advertising on children. One important indicator has been whether food promotions make specific food types or food brands more memorable. Another important indicator is whether exposure to a food promotion helps to cultivate more positive attitudes and beliefs about the featured brand. Ultimately, of course, the key indicator of food promotion success is whether exposure to food marketing increases the probability that the brand being promoted will be chosen ahead of others. Foods and drinks that are liked by children also tend to be better remembered by them (Olivares, Yanez, & Diaz, 2003). Use of specific production treatments and on-screen characters that share characteristics such as ethnicity with consumers can also enhance the impact of advertisements (Barry & Hansen, 1973).

Food Advertising and Immediate Food Choices

Under controlled exposure conditions, a number of early studies found that children's food preferences and the reasons they gave for liking one food product more than another could be shaped, in the short-term at least, by television food advertising. When two versions were produced of an advertisement for a snack bar, and their product claims emphasized either the sweet chocolate taste of the product or how healthy and nutritious it was, children aged five to nine years subsequently referred more often to the specific attributes mentioned in the message they saw. The nutritional message impressed upon the children the nutrient value of the snack and this encouraged them to want to purchase it. Children in the other condition did not regard the product as nutritious to the same extent (Barry & Gunst, 1982).

Hitchings and Moynihan (1998) reported significant correlations between the numbers of food advertisements recalled and foods that were eaten. Although these findings were interpreted as evidence for an advertising influence over children's food choices, this study did not control for

family influences over children's responses to food advertisements or their food choices (Young, 2003). Furthermore, evidence for children shows that the more they eat in front of the television, the poorer their diet gets in terms of nutritional quality (Marquis, Filion, & Dagenis, 2005). There could be many reasons for this including links between family type, parental discipline practices and parents' own food habits and preferences.

Researchers have found that exposure to a television advertisement for the target product rendered it more appealing to children aged five to 11 years than its competitors to a greater extent than when there had been no prior exposure to television advertising for that brand. This finding occurred across all age groups of children and equally for both boys and girls. The results confirmed that television advertising can trigger favourable opinions about a food brand and this effect can occur even among very young children (Chernin, 2008).

There is evidence that exposure to food advertisements can prime children to nominate advertised brands as their favourite choices later on. This effect has been demonstrated by research with children aged 6 to 13 years in which they viewed a cartoon that was embedded either with food advertisements or toy advertisements. Subsequently children were more likely to select specific branded food products if they had previously witnessed them in television advertisements as compared to not having previously been shown them. Children who were especially heavy viewers of television were even more susceptible to this advertisement priming effect (Boyland et al., 2011).

The Role of Branding in Shaping Food Preferences

Experiments have been used to show that consumers can display sensitivity to branding and that the brand name can acquire such strongly conditioned meanings over time that it can influence the individual consumer's own experience of the product. The nature of the persuasive message in food advertising can affect how children define it in terms of its nutritional qualities. When a snack bar product was described either as 'chocolatey, rich and sweet' (non-nutritional) versus 'healthful, vitaminic and nutritious' (high in nutritional quality), it was described by young children in accordance with these qualities (Barry & Gunst, 1982).

With food products, the brand name can affect the quality of the taste experience for the consumer. In one controlled experimental study of this phenomenon, Woolfolk, Castellan, and Brooks (1983) found that consumers would choose between two well-known products on the basis of their brand label rather than the way they actually tasted. Thus, while in

a blind trial with no brand name shown, one of two famous soft drinks brands was chosen more often than the other on the basis of taste alone, when brand names were reinstated, preferences were linked to pre-existing brand allegiances. This outcome resulted even when each type of drink was presented in a cup with the other brand's name written on it.

The power of a well-known brand name to influence the apparent tastefulness of food was further demonstrated in a much later study. On this occasion, children aged between three and five tasted five pairs of identical foods and drinks and had to indicate which of the pair they felt tasted the best. One item in each pair was presented in unbranded packaging while the other item was presented in an identically shaped pack with the McDonald's brand on display. In every case, the item in the branded packaging was rated as the tastier of the two (Robinson, Borzekowski, Matheson, & Kraemer, 2007).

In another study, Elliott, Carruthers, Den Hoed, and Conlon (2013) examined the effect of pack design on the food preferences of three to five year-olds. While food in plain packs was least liked, this effect could be offset by placing non-branded products in more colourful packages.

Further research found that licensed media spokespersons of food packaging could influence children's liking of the taste of food products. In an experimental study, children aged five to six years were shown one of four breakfast cereal boxes that had been specially created for the research. They were then given the opportunity to taste the new cereal and evaluate how much they liked it. The average taste liking scores for the cereal were higher when it had been seen in a pack with a popular media character endorsing it as compared with a box from which that character was missing. The name of the cereal and its nutritional inference also made a difference. Thus, the cereal was rated as tasting better when called 'Healthy Bits' than 'Sugar Bits' (Lapierre, Vaala, & Linebarger, 2011).

On balance, a lot of early evidence from the 1970s in which researchers had used experiments to investigate the effects of televised advertisements and health promotion messages found that children's understanding of which products posed health risks or could form part of a healthy diet could be shaped by controlled exposure to messages that promoted these beliefs. When children were exposed to advertisements for sugary foods, they often displayed short-term preferences for them. When they were provided with messages that described the benefits of healthful foods, their immediate interest in consuming food products which represented less healthy options declined (Scammon & Christopher, 1981).

Even a single exposure to an advertisement can sometimes be enough to trigger a brand preference. More often, consumers need to experience a number of brand promotion exposures before they exhibit a preference (Galst & White, 1976; Goldberg, Gorn, & Gibson, 1978a; Gorn & Goldberg, 1982).

Priming Food Preferences with Food Promotions

One often repeated experimental paradigm that emerged in the late 1970s was to show different groups of children television programmes with or without food advertisements. After viewing, the children would be taken into a situation in which they could make food choices. The aim of this methodology was to show whether exposure to advertisements for specific food brands would subsequently trigger preferences for those foods over others for which advertisements were not shown. One variation in the basic design could occur in relation to the measurement of the food consumption outcome. This was often measured as a one-off choice episode that was run immediately after the initial intervention (i.e., food promotion exposure) condition. Occasionally, researchers investigated whether there were more lasting effects on experimentally manipulated food promotion experiences.

If five and six-year-olds they had seen an advert for a nutritious snack food under controlled laboratory exposure conditions, they were more likely later on to choose this type of product over less nutritious alternatives (Goldberg et al., 1978a). Furthermore, if five to six-year-olds were shown pro-nutritional messages on television that tried to promote the consumption of more nutritious foods, their preferences for those foods could also be enhanced (Goldberg, Gorn, & Gibson, 1978b). Even a single presentation of a food advertisement can sometimes be sufficient to influence children's food type choices (Resnick & Stern, 1977)

Although this type of experiment indicates the power of advertising to shape children's food choices, it is important to recognise that this type of study is conducted under highly controlled and, therefore, quite unusual conditions. The setting of the experiment here is unlike the normal conditions under which children are exposed to food advertising, make their food choices and then consume food. Given these observations, therefore, we should be cautious before jumping to conclusions about the impact of food advertising on children's food choices.

In a later study, children aged 8 to 10 years either watched videotaped television programmes embedded with advertising including a target food advert presented just once or presented several times. The product in question was a brand of ice cream. Confirming earlier evidence, exposure to a brand advertisement enhanced the likelihood that children would choose that brand in preference to others. This tendency was strengthened if they had seen that brand advertisement more than once (Gorn & Goldberg, 1982).

To remove some of the artificiality from their experiments, Gorn and Goldberg (1982) took their methodology outside the laboratory and into a more naturalistic environment over which they could nonetheless control children's food and television viewing diets. In this case, they carried out research with children aged five and six years and seven and eight years in a summer camp. The children lived in cabins that had TV sets installed in recreation rooms through which the viewing diets of the children could be independently controlled. Every afternoon for two weeks, the children watched a half-hour videotaped television programme with advertisements embedded within it. The programmes were cartoon shows taken from mainstream television networks. In addition to a control condition of a programme with no commercial messages, three experimental conditions were created in which the programmes were embedded with low nutrition food advertisements (for sweets and other highly sugared foods), high nutrition foods (fruits, fruit juices and yoghurt), or pro-nutritional public service announcements (PSA) encouraging people to moderate their intake of sugary foods and to eat a balanced diet. Each day in the sweet foods or fruits advertisements conditions a food for a particular advertised product was presented among the post-viewing food choices.

The results indicated some effects of the advertisements to which the children had been exposed on subsequent food choices. Unhealthy food choices were made more often following exposure to the cartoon embedded with advertisements for such products. The selection of fruit juices was more likely following the condition in which advertisements for such products appeared than in any of the other conditions. The selection of fresh fruits was significantly less likely to occur among children in the low nutrition food advertisements condition, while there were no differences between the other conditions on this measure. These effects should be set against an overall preference among the children for sweet snack foods over fresh fruits.

The same general experimental design in which different types of food product advertisements are viewed by children before they make a food choice has been used to indicate the power of peer influences on food selections. In this case, the additional element was that while the child was getting ready to make his or her own food choice, another child was introduced and indicated their own food preferences by choosing which out of a number of foods projected onto a screen they liked the most. It emerged that this peer influence aggregated with the influence of advertising exposure to shape experimental participants' food choices. So if salty snack foods had been advertised, their chance of being selected over other foods increased, and this effect was further magnified if another child had also said they liked this type of food (Stoneman & Brody, 1982).

We might argue that the ability to judge the quality of food products is an important aspect of being a literate consumer. Children can be taken in by product health claims, although they become progressively more questioning about them with increased age. Putting children through an exercise in which they are invited to focus on specific food advertisements and their product claims can trigger some scepticism about false ingredients claims in young consumers. For this to work however children must be explicitly instructed to ask searching questions about food advertising claims. Normal exposure to the advertising while watching television does not produce this outcome (Peterson, Jeffrey, Bridgwater, & Dawson, 1984; Ross, Campbell, Huston-Stein, & Wright, 1981).

Experiments: Encouraging and Discouraging Healthy Options

Experimental research has produced inconsistent evidence that children will respond equally to promotions for both low and pro-nutrition foods when presented with advertisements for both types of foods. Research with four to five year-olds reported no significant advertising influences (Jeffrey, McLellarn, & Fox, 1982). Similar research with children aged nine and 10 years did find a significant change in propensity to choose high calorie and low nutritional value foods and drinks after seeing a low nutrition promoting advert, but only among boys (Jeffrey et al., 1982).

Another study found that a pro-nutritional message can weaken the propensity of children to eat sweet desserts, but only when the pro-nutritional message was funny rather than serious. An advertisement for a sweet dessert seemed to encourage consumption of sweet desserts (Cantor, 1981). Weaknesses with this study included its loss of participants across its dura-

tion and the limited way it represented food consumption. Moreover, the research design was not balanced in that the addition of an advertisement for a sugar food product occurred alongside the non-humorous PSA but not the humorous one (See Hastings et al., 2003).

Further research conducted around the same time again tested whether children reacted differently to advertisements for low and high nutrition foods. Again, low nutrition food advertisements encouraged children aged four and five to choose those kinds of foods over others subsequently, although they were not motivated to eat more overall (Fox, Balfour, Dahlkoetter, McLellan, & Hickie, 1980). The same research group found that seeing an advertisement for a low nutrition food encouraged children to ignore instructions given by the researcher not to eat such foods when presented with them afterwards. This behaviour was less likely when they had been shown an advertisement for a high nutrition food. Other reviewers felt that the strength and consistency of these findings were questionable and needed to be treated with caution (Dawson, Jeffrey, Balfour, & Walsh, 1988).

Many experiments in this category of research into the immediate impact of food promotions have been limited to a single exposure manipulation followed by a single food choice task outcome. In a departure from this design, in one early experiment, advertising exposure and viewing conditions were controlled in artificial settings, but the viewing followed by food choice exercise was repeated over and over for up to four weeks (Galst, 1980). Here, children aged between three and seven years watched cartoons variously embedded with food advertisements and pro-nutritional messages. There were viewing and food choice sessions conducted every day for four weeks. Compared to control children, those who watched a cartoon with adverts for sugared products exhibited a greater preference for this type of product subsequently. The research found that the best way to reduce the effectiveness of these adverts was to present other adverts for non-sugared foods and pro-nutritional messages that were further reinforced by relevant comments from an adult co-viewer.

Kaufman and Sandman (1984) constructed another interventionist experiment with children aged 5 to 10 years to find out whether the effects of television advertisements for highly sugared products could be offset by presented nutritional messages within the same ad-breaks or by sugar product advertisements with short voice-over nutritional messages appended. The children viewed a *Roadrunner* cartoon which had a single ad-break in the middle. There were four advertisements in the break that

comprised pairs of sugared food promotions (without health disclaimers) accompanied by filler advertisements for non-food products; or nutrition-promoting messages with the filler advertisements; or sugared product advertisements coupled with nutritional messages; or sugared product advertisements with voice-over nutritional disclaimers. The nutritional messages depicted children either with a parent in a shop or after playing a sport shown vocally endorsing or physically choosing healthy food options over highly sugared food options. After viewing the cartoon with the ad-break, all the children took part in a task in which they had to make selections for pairings of high sugar and low sugar food item.

Kaufman and Sandman found that children who saw only the sugar food advertisements were much less likely to choose the healthy food options. Those children who saw the nutritional counter messages that encouraged them to avoid sugar were much more likely to make healthy food choices. The latter outcome was equally likely whether the nutritional messages were seen alongside sugared food advertisements or not. Children who saw the sugared food advertisements with voice-over health disclaimers were also more likely to make healthy food choices than did those who saw those sugar product advertisements without the disclaimers, but not to the same extent as did children who also saw the specially produced nutritional messages.

The research reviewed so far in this section derived from studies carried out in the 1970s and 1980s when the media environment was radically different from that existing in the twenty-first century. This type of experimental research has continued in the modern media era and some of the early results have been confirmed and extended. Borzekowski and Robinson (2001) found that children exposed to food product advertisements in a cartoon television show would subsequently choose the advertised product over others that they had not seen advertised.

Ferguson, Munoz, and Medrano (2012) allocated children aged between three and eight years to different conditions in which they watched a programme embedded with adverts for different types of food items distinguished in terms of their relative nutrition value. In each condition, the food products were branded as being items you could buy from McDonald's. There was a healthy option (Apple Dippers) and a less healthy option (French fries). After the programme and advertising exposure session, each child was given the choice of selecting a coupon for one of these two food products which they could then exchange for the product at a McDonald's outlet. In a further condition, parents of each child

were asked at the point when the child made the coupon choice either to offer advice to select the healthy option or to invite the child to make their own mind up.

The findings showed that children were most likely to choose the advertised food item regardless of the advice given by their parents. The authors advised caution with their results because their sample of children was small and ethnically skewed and the conditions they created for food choices probably did not represent real world conditions under which the children would have made similar choices or had their choices influenced by parents.

Dixon et al. (2007) combined survey with experimental with 10–11 year-old Australian children. The survey provided benchmark data about the children in terms of their evaluation of various healthy and junk foods, their usual consumption of these foods, their perceptions of their diet, and their television viewing. Each child had his or her weight measurement taken along with their height.

In the experiment, four conditions were established. These were differentiated in terms of the mixture of types of food advertising embedded within a half-hour episode of *The Simpsons*. There were four advertising breaks in the programme with five advertisements within each break. The four conditions were differentiated as follows: (1) eight junk food advertisements (no healthy food advertisements); (2) eight junk food and eight healthy food advertisements; (3) eight healthy food advertisements and no junk food advertisements; and (4) no food advertisements at all.

The experiment produced mixed results. There was no support for the prediction that exposure to junk food advertisements would enhance positive attitudes towards these foods or intentions to consumer them. Exposure to advertisements for healthy foods did promote favourable attitudes towards these food types and also increased intention to eat them. Exposure to healthy food advertisements was also linked to children holding more positive views about the nutritional quality of their own diet. Attitudes towards dairy foods were enhanced by exposure to advertisements for healthy foods. This effect did not also transfer to attitudes towards fruit and vegetables.

Attitudes towards junk foods and intentions to eat them were no different after watching junk food advertisements alongside health food advertisements or junk food advertisements on their own. The researchers concluded here that placing advertisements for healthy foods alongside ones for junk foods does not seem to reduce the effects of junk food

advertisements. Likewise, the expected effects of healthy food advertisements were no stronger when these advertisements were the only food advertisements shown as compared to when they were shown alongside advertisements for junk foods.

The failure of the experiment to yield some expected outcomes was explained in terms of a dose effect. A single dose of exposure to a particular category of food advertising should not be expected to have a significant impact on children when their usual television viewing is likely to see the exposed to regular and large doses of advertising for foods, and especially for foods believed to have poor nutritional value. For Dixon and her colleagues, the survey finding that exposure to junk food advertising was related to pro-junk food attitudes was more socially significant. However, we must pause at this point and question this statement. This study did not provide a direct measure of children's exposure to food advertising. This exposure was assumed from secondary data for Australia showing the prevalence of such advertising on television. The distribution of food advertising is not even across all parts of the television schedules and so we would need to know more about the particular programmes the children watched (and not just how many hours a day they watched) to ascertain more accurately their actual level of exposure to televised food advertising.

Treatment Differences: Spokes-Character Effects

Many advertisements, particularly in audio-visual media such as cinema and television, use spokes-characters who verbally endorse products or services and might also be visible shown using them. These brand endorsers can comprise familiar and unfamiliar characters, but ultimately their effectiveness in relation to consumers' brand attitudes and choices rests on trust. Whether or not consumers trust these-characters can affect their attitude towards the brand being promoted. Greater trust can encourage more liking for the brand. This effect seems to work best with consumers who have little brand experience, however. For those who are very familiar with a brand, the influence of spokes-characters diminishes (Garretson & Niedrich, 2004).

With children, the use of animated spokes-characters has been the source of criticism because cartoons are popular forms of entertainment with children and the use of cartoon-like characters in advertisements can increase their potential influence on young minds. The research findings concerning such effects are far from consistent. Animation can draw in the

child's attention to an advertisement and even render the advertised brand more memorable and better liked, but it does not necessarily enhance the chances of eventual purchase and use (Neeley & Schumann, 2004).

De Droog, Valkenburg, and Bijzen (2010) conducted an experiment with four- and six-year-old Dutch children who were presented with a healthy snack (chopped bananas) and an unhealthy snack (banana flavoured candy). Under different conditions to which children were assigned at random, they received the snacks in packs on which the brands were endorsed by a familiar character (E.g., Dora from *Dora the Explorer* or Spongebob from *Sponge Bob Square Pants*), by an unfamiliar cartoon character or by no character. The candy product was generally preferred to the fruit product. The use of animated characters however enhanced liking for the healthier product almost up to the level of the unhealthy product and also increased intentions to ask parents to purchase it.

The same research group showed that even an unfamiliar character could enhance liking for a product as much as a familiar character when young consumers felt that the endorser was a logical choice (e.g., using a rabbit to endorse eating carrots) (De Droog, Buijzen, & Valkenburg, 2012).

In a pairwise food choice scenario, researchers found that children would choose one product over another when it was endorsed by a familiar character whom they liked. This effect was not very powerful when a choice was made between an unhealthy salty or sweet snack and a healthier, but less appetising food option. If choices were restricted to pairs of foods from the same category (e.g., same type of healthy or unhealthy food product), then endorsement by a liked character consistently resulted in that food item being selected (Kotler, Schiffman, & Hanson, 2012).

Experiments: Food Preferences and Pre-Existing Weight

There has been much discussion of the possible role played by food promotions in the context of the cultivation of good nutrition and good health and in particular in relation to the growth in prevalence of obesity in childhood. As we will see in Chap. 6, there is evidence that changes to food habits caused by food promotions can also lead to excessive weight gain. Within the context of the current discussion of factors linked to food preferences, however, there is further evidence that children's attitudes towards food and their favouring of specific variants of food types are linked to their pre-existing body weight. These findings are impor-

tant because they raise questions about the potential direction of causality. Although preferences for foods that are high in fat and sugar content, for instance, might result in a nutritionally poor diet that could contribute to weight gain, there is in addition the possibility that individuals who are already overweight perhaps for a variety of reasons, also prefer fatty and sweet foods and seek them out.

Halford, Gillespie, Brown, Pontin, and Dovey (2004) found that obese and overweight children recognised food adverts significantly better than did the children classified as lean. There were no significant differences between these three types of children in their abilities to recognise non-food adverts. The obese and overweight children ate significantly more than did the lean children in the study whether they saw food adverts or non-food adverts. The overweight children ate more high and low fat sweet foods and high fat savoury food than did the health-weight children after watching non-food adverts.

Further research confirmed that overweight and obese children exhibited stronger preferences than did normal weight children for branded foods. Hence, for obese children there was clearly a stronger liking for foods that were known to contain relatively high levels of fat and sugar. Nevertheless, normal children who were found to be characterised by much higher than average exposure to branded food promotions also indicated stronger preferences for those items and exhibited food orientations that were similar to those shown by obese and overweight children (Halford, Boyland, Cooper, et al., 2008). Such findings led these researchers to argue for tighter controls over food advertising especially on television because of the latter medium's popularity with children and the potential it offered for their exposure to a lot of branded food advertising for products with high fat and sugar levels and generally poor nutritional quality (Boyland & Halford, 2013).

Experiments: Food Advertisement Effects After a Delay

The experiments reviewed do not reflect everyday reality where a child can be exposed to food advertising on television at one point and does not have the opportunity to make a food selection until after some time has elapsed. This could be a few hours or even a few days. There are a few experimental studies that have taken this time lag factor into account, including one of the very first experiments to be conducted on this subject.

Six-year-old children were presented with televised advertisements for sugared breakfast cereals after which the children were invited to play a game in which they had to wait before being allowed to eat anything. The children actually waited longer before eating the cereal placed before them when they watched an advertisement for the product than when they watched nothing. The explanation given was the viewing the advertisements represented an attention distraction away from the food (Dawson, Jeffrey, Peterson, Sommers, & Wilson, 1985). This experiment did not model the usual scenario of product purchase after advertising exposure however. As such it probably teaches us little about food advertising influences and longer-term product or brand preferences and choices such as those that characterise normal shopping settings.

Limitations to Experiments

Experiments can provide investigative models equipped methodologically to examine causal relationships between key variables. To do so convincingly, however, they must impose considerable degrees of control over food advertising exposure and food tastes and consumption. This control comes at a cost. And that is a loss of ecological validity.

Most laboratory experiments measure 'effects' variables immediately. Although some passage of time can be allowed between exposure to advertising stimuli and subsequent responses can be integrated within the study, there are limits to this feature because experimental participants cannot be detained indefinitely. Indeed in research with children delays between start and finish are likely to be tolerated by participants even less. By releasing participants into the outside world before post experimental manipulation tests are run, they become susceptible to varying influences on their performance that are outside the control of the researcher and that can vary from one participant to the next.

These design controls do not totally invalidate experiments in terms of being able to help us understand how food advertising can influence young consumers in their food preferences and choices. Nonetheless, it is crucial that we should recognise these limitations and take into account their implications when interpreting the results of experiments.

QUALITATIVE RESEARCH INTO FOOD ADVERTISING AND CHILDREN

In-depth interviews and observations of food-shopping excursions have been used to shed a different kind of light on the way children make food choices. This research evidence does not prove causality between exposure to food advertisements and brand or food type choices. It can, however, reveal insights into human behaviour that quantitative methods cannot identify (Krueger & Casey, 2009). In the current context, qualitative research can indicate ways in which children think about food, brands and advertisements, as well as identifying which triggers they believe are important to their food choices.

The open-ended nature of data collection and the form in which data are collected in qualitative research means that it is better equipped than surveys or experiments to explore interpersonal dynamics in family households that come into play when children and parents are making decisions about what to eat. Research can be conducted with children and parents to ascertain how in tune they are with each other in terms of food preferences and choices, their respective awareness and understanding of foods and what makes a healthy diet, and their awareness of and reactions to different types of food marketing.

Qualitative approaches are built on descriptions provided by participants about social settings and their behaviours in those settings. In the context of food advertising, discussions can reveal insights into the range of factors that come into play to influence food choices and where food advertising is situated among these causal agents. 'Causes' are not proven through these data, but 'attributed causes' as identified by children and/or their parents are revealed and can be used to create hypotheses for further systematic investigation using quantitative research techniques.

The advantage of qualitative approaches is that the discussion dynamic can yield ideas and observations about factors perceived to influence personal food choices that would not general be revealed by quantitative research, which presents participants with an established questioning structure that provides little or no latitude for the generation of new ideas other than those already identified within the research design. Given that food choices in family homes can involve diverse sets of social dynamics and vary according to family structures and styles of communication, less structured research designs have a useful role to play in defining social

and cultural agents that are not always amenable to quantitative analysis (Stratton & Bromley, 1999).

This type of research orientation has value in studies of children's identification with and reasons for preferring specific product brands. When questioned in group interview settings about sports brands, for example, pre-teenage British children were able to differentiate between high and low status brands and give a rationale for preferring some brands over others that was grounded in their own reflected social status. This socially determined brand 'status' was also often linked to price, with more expensive brands being the most liked and regarded as worth the extra cost because of the much valued social kudos they could bring to those who bought those brands (Elliott & Leonard, 2004).

In-depth interviews with children aged between 5 and 15 years found that pre-prepared and convenience foods were widely used and had increasingly come to dominate children's diets at home (Ofcom, 2004). Negotiated settlements can characterise the food choice outcomes for children. Parents have reported the difficulties they experience in getting their children to eat certain foods (that is, foods that are deemed to be 'good for them'). In the end, failure to bring the children round to healthy options can result in parents feeding them less healthy foods just to get any food down them (Ofcom, 2004).

Further, many children did not live in households in which the entire family regularly sat down to eat together. Instead, there were reports by many children of food being eaten off their laps while watching television. There was an emergent grazing culture with children and older family members often snacking on whatever they could lay their hands on in the kitchen. The use of processed foods meant that families did not have direct control over the levels of fat and sugar ingredients. The foods chosen here were big brands that were regularly and prominently advertised (Ofcom, 2004).

Open-ended interviews with teenagers (ages 13–15) in England discovered high awareness of food brands both for products high in salt, sugar and fats and for other 'healthier' foods. Specific brands proved to be most effective in engaging with young consumers. The 'dullness' and 'pretentiousness' of healthy foods lower their appeal to this age group. Well-known brands such as *Coca Cola* were liked because they were also trusted. Less familiar own-label cola brands put out by retailers were less appealing. Some references were made to food advertising as a source of information and potential choice influence. What also became clear among

teenagers was that their friends and wider peer groups were major sources of influence over food types and brands that were regarded as fashionable. To some extent brand image was not simply based on advertising messages but emerged as a socially negotiated concept among peers (Stead, MacKintosh, McDermott, Anker, & Adamson, 2009).

Qualitative research can also prove valuable in analysing cultural idiosyncrasies and commonalities in the way families make food choices and respond to food advertising (Soni & Singh, 2012). Interviews with Pakistani children showed that they understood the persuasive techniques of television food advertising and its attempts to influence them to consume foods that were not always good for their health (Kashif et al., 2012). Even with such understanding, problems with childhood obesity were still prominent in better educated households that were also more affluent and tended to enjoy the luxurious lifestyle that is often associated with over-eating (Mushtaq et al., 2011).

Focus group interviews with children aged eight to 10 years in Brazil revealed that despite attending schools that discouraged eating energy-dense and nutrient poor foods these children still reported liking these foods and consuming them outside school. Food outlets close to school premises served as stimuli for and suppliers of these foods. In addition there was evidence that they engaged in negotiations with their parents over which foods to purchase. References were also made to television as a source of influence over which foods to eat, both through food advertising and the behaviour of actors in programmes (Mazzonetto & Fiates, 2014).

Interviews with parents in mature markets have revealed that they do have concerns about the quality of their children's diets and about the role played by food advertising in encouraging consumption of energy-dense and nutrition poor foods. Yet, many parents seemed not to be aware of the range of techniques used by food marketers to reach children, particularly those operating online. When shown examples of these different kinds of food marketing many parents voiced much stronger concern than earlier about the promotional activities of the food industry and were more inclined to support stronger regulatory controls of food marketing activities (Ustjanauskas et al., 2010).

Different cultures have revealed how they will often attribute blame to television advertising for promulgating unhealthy eating attitudes and habits. In patriarchal societies as well, these advertisements will often depict children enthusiastically consuming energy dense foods following the portrayed example set by their fictional parents. This can represent a poten-

tially powerful message in societies where children are expected to display complete obedience to their parents, and especially their fathers (Kashif, Ayyaz, & Basharat, 2014). Although even in this context, the gender balance in decision making about food in family settings has shifted with the increased entry of women into the workplace (Wut & Chou, 2009).

ADVERTISING IN CULTURAL AND SOCIAL CONTEXT

Another 'qualitative' aspect of making specific food choices derives from the value attached to certain food types and brands in specific cultures. Food can be a critical defining feature of a culture, with some cultures known in terms of specific food types that are intimately associated with them. The availability and choices made regarding food types can vary from one country and culture to the next. Within their original markets, food and drinks manufacturers and suppliers operate within systems of regulation that control their production processes and the way they sell their products and services. These products must be sensitive also to the social and economic circumstances of consumers and ensure that they offer what their customers need and want and at a price they can afford and that represents good value.

The major food and drinks brands have extended their reach beyond the developed Western markets in which they originated to developed Eastern markets and developing countries around the world. This has posed further important challenges for these brands in terms of adapting to cultural variances in people's orientations towards food and drink, eating out, and the role played by children in family decision making. All of these factors are relevant to food and drinks marketers when they develop their promotional campaigns and also in guiding the way they package and present their advertising, their products and their services.

The concerns voiced about the influences of food advertising on the eating habits and general health status of young people have been triggered by the wider evidence that has emerged from a number of countries that young people often display poor dietary habits which leads in turn to obesity (Dibb & Castell, 1995; Munoz, Krebs-Smith, Ballard-Barbash, & Cleveland, 1997; Summerfield, 1990). Food advertising permeates mainstream mass media, especially television, around the world and products of poor nutritional quality tend to dominate. Even when restrictive regulations are introduced, international evidence shows that these often make little difference to the amount of advertising of this kind to which

children might be exposed (Grossbart & Crosby, 1984; Reece, Rifon, & Rodriguez, 1999). The question is whether exposure to this advertising shapes children's dietary preferences (Atkin, Reeves, & Gibson, 1979). Certainly children's favourite foods have been shown to correlate with their favourite food advertisements (Olivares et al., 1999). This does not prove an advertising effect on food choices however.

The emergence of global food brands in developing countries has already been noted. Big food outlet brands such as Kentucky Fried Chicken and McDonald's have made in-roads in markets around the world, though the same brand can be preferred for different reasons in different cultures. While American consumers use these outlets because they are convenient and cheap, Asian consumers are attracted to them for other reasons that resonate more with local cultural mores that relate to the social significance of eating meals with family and friends (Watson, 2000; Witkowski, Ma, & Zheng, 2003).

In a further process of cultural adaptation suppliers of global food brands have had to familiarise themselves with local eating customs that might include bans of certain types of foods because of religious codes or restrictions on eating practices during certain periods of the year associated with specific religious observances. If the banned food ingredient has traditionally represented a core aspect of a specific food brand, an alternative version must be produced made from substitutable ingredients that both work in terms of flavour and texture and satisfy local customs (Vignail, 2001). Thus, Hindus may abstain from eating beef and Muslims from eating pork. Yet in other cultures, these ingredients may be socially and spiritually acceptable but are rendered marketable only when combined with more traditional local cultural ingredients that are represented in a revised brand name (e.g., Teriyaki Burgers for the Japanese market).

Despite the dominance of television advertising in this product field in Asian markets, the big global food and drinks brands have raised their profiles with consumers in numerous other ways. One strategy has been to sponsor major sports events such as the Olympic Games and the FIFA World Cup. In addition, some major brands have linked their names to national events associated with sports that are particularly popular in specific countries. Fast food brands have also stocked their outlets with spin-off merchandise that can be handed out to young consumers to take away (Hawkes, 2002). Food and drinks companies have also developed web sites for Asian markets in which brand information is presented alongside

other features designed to attract children such as cartoons, games and prize-winning competitions (Robinson, 2008).

Food and drinks companies have also developed campaigns and marketing techniques that are directed at parents. The aim of this approach has been to get parents on side with promotions and products aimed at children (Ho & Len, 2008; Lobstein, MacMullan, McGrath, & Witt, 2008). This approach is especially important in societies where children have traditionally been relatively passive in determining a family's purchase decisions. The enthusiastic adoption of global fast-food brands by the younger generation, however, has placed children in the vanguard of cultivating their parents' adoption of these outlets in countries such as China (Watson, 2000).

DIGITAL MARKETING

The emergence of the internet has brought fresh opportunities for marketing professionals to reach out to consumers. These developments increasingly combine the use of quantitative and qualitative data about branding and consumer behaviour. The fashionable 'big data' analysis has become prominent during the internet era because of the vast quantities of data generated every day on this platform. There is recognition not just of the fact that the online world has become important as a marketing platform, but also that digitised quantitative and qualitative data are created within that setting as a default setting. Furthermore, computer programs exist that can 'read' qualitative verbally expressed comments and convert them into quantitative measures that can be integrated with standard quantitative data. This enables social scientists and commercial researchers to compute complex models of human behaviour on a large scale. These data tend to be current and hence their veracity is enhanced (Gunter, Koteyko, & Atanasova, 2014).

All major food manufacturers have a web presence but many also utilise other dynamic and interactive dimensions of the internet to engage with their customers. In particular, there has been a rapid expansion of use of social media sites and online gaming environments in marketing and advertising contexts that are especially popular with young people (Beer, 2008; Boyd, 2007; Brake, 2008; Calvert & Jordan, 2002; Clarke & Svanaes, 2012; Jackson, 2008; Valentine & Holloway, 2002).

The popularity of the internet among pre-teenage and teenage children has not escaped the attention of marketing professionals and major adver-

tisers—particularly in the foods and beverages sectors—have moved vigorously into this domain to promote their brands (Institute of Medicine, 2005). The concerns of health campaigners and medical professionals, while well-intentioned, need to be reinforced by relevant empirical evidence if a compelling case is to be made to change legislation, public policy or professional-practice codes that relate to this issue.

It should come as no surprise, given the ubiquity of the internet and its widespread use by consumers of all ages that businesses will also seek to establish a presence there to promote their products and services. Although traditional forms of advertising in older media such as television, radio, newspapers, magazines, cinemas, outdoor locations and retail environments remain important carriers of advertising campaigns, advertisers in partnership with their advertising agencies have increasingly moved into the online world. Moreover, the capacity to track in real time the movements of consumers around these online environments furnishes advertisers with rapidly available feedback about exposure to advertising campaigns that can be related in turn to changes in sales volumes and market share (Montgomery & Chester, 2009).

There are generic concerns about these new approaches to marketing especially when the consumer targets are children. Often, the presence of brands in these digital environments is not automatically recognised as 'marketing' or 'advertising'. Instead, the visitor to a site is invited to talk to others about brands, to enter competitions in which brands are featured or to play games in which brand names and logos appear. In some instances, brands may achieve considerable exposure when consumers engage in online activities for an extended period and interaction with the brand represents a core part of those activities. Potential exposure to brands is not just more extensive online but can occur in settings where consumers engage in dynamic interactions with brands on screen or are called upon to discuss them with others. Such activities can encourage a deeper level of cognitive processing of brand-related ideas.

Jones, Wiese, and Fabianesi (2008) found that this was true of five popular children's web sites operated by children's magazines. Many of the promotions used in these settings avoided obvious forms of advertising and instead utilised more subtle techniques such as games and competitions. Further research also indicated that food promotions on children's web sites and on sites operated specifically by food brands provided children with opportunities to engage with branded games and competitions, brand-related promotional characters and downloadable items. It was also

clear that most of the brands that were active in these environments represented unhealthy food types (Kelly, Bochynsha, Kornman, & Chapman, 2008).

The debate about the effects of food advertising has become particularly acute when due consideration is given to the adoption of these digital marketing techniques by the food industry (Calvert, 2008; Chester & Montgomery, 2011). One view is that digital marketing could shape poor nutritional habits by encouraging children to select food brands that are high in fat, salt and sugar. This conclusion was encouraged by observations that young people spend a great deal of time online and that many major food brands utilise this environment for marketing purposes (Pempek & Calvert, 2009; Roberts, Foehr, & Rideout, 2005).

One of the key problems here is that digital marketing techniques have been adopted with particular enthusiasm by food, beverage and fast-food outlet brands that are high in fat, salt and sugar (Lingas, Dorfman, & Bukofzer, 2009). Marketing in social media, in online games and virtual worlds, and video episodes that can be transmitted direct to mobile devices (sometimes called 'mobisodes') have become widely used, particularly when advertisers are trying to reach young consumers (Center for Digital Democracy and US PIRG, 2009).

The use of these techniques is understandable given the amount of time young people now engage with digital communications systems and technologies and actively seek to use them in relation to all key aspects of their lives. Personal identity, social cohesion, solutions to personal problems and simply having a place to hang out are all needs catered for by this parallel reality. Adolescents have long been known to develop their own patterns of use of conventional media that represent efforts to discover their own identity or at the very least to find an image that distances them from their parents and other authorities, which they tend to reject at this stage in their lives (Brown, 1994; Steele & Brown, 1995).

As they grow, children will seek greater privacy and this can be manifest in the territoriality that develops around their bedroom to which they will frequently withdraw to be on their own (Larsen, 1995). Within this domain they acquire their own possessions and these often include media technologies such as their own music system, radio and television. Activities such as watching TV that were conducted in public viewing spaces in the home when they were younger are rejected in favour of watching on their own or with friends the programmes that are most fashionable with their peers (Larsen, 1995).

With the emergence of digital communications networks, adolescents are now equipped with a whole new toolkit of devices to exercise and develop their personal identities and private lives. Much time may be spent uploading messages and images, sending them to their social network and beyond (Palfrey & Gasser, 2008). In engaging with this online world and in making many different disclosures about themselves, young people often provide marketers with rich sources of personal profiling data that can be used to inform advertising campaign strategies (Hallerman, 2008). Within this world young people will share opinions and experiences about products and services and give away information of value to advertisers about promotional techniques that resonate with what this market seeks from particular commodities (Swartz, 2008).

Marketers can also role play alongside young consumers within specific online environments. They can engage young consumers in online conversations about brands and even co-opt them, with incentives, to serve as brand champions. Marketers have known for a long time that one of the most powerful devices for enhancing a brand's reputation is to ensure that consumers who have used it subsequently say favourable things about it to other consumers (Rosen, 2000). This word-of-mouth effect can often be more powerful than even the most skilfully crafted advertising campaign because consumers tend to trust other consumers more than advertisers. If this word-of-mouth effect can be scaled up—as it can in the online world—then it offers marketers a potentially powerful device for spreading positive opinions about brands from trusted sources among massive numbers of consumers within quite short time periods (Bulik, 2006).

Thus a variety of technical and associated psychological devices have been adopted by marketing professionals following their entry into the online world. By reaching out to consumers through social media sites and virtual gaming worlds they can integrate promotional brand messages with other engaging, interactive and immersive experiences that are designed to trigger deeper psychological processing of brand labels, images and related promotions. In enjoining brand promotions with online social media sites marketers can cultivate brand-related conversations among consumers and encourage positive opinions towards trusted sources. This process can be carried to a further extreme by inviting consumers to become involved in the creation of new promotional campaigns for brands. One such example was when Pizza Hut in the USA invited consumers to decorate their rooms with Pizza Hut memorabilia and to make their own video about

the brand, which could be uploaded onto the YouTube site with prizes offered to the best entrants (Pizza Hut, 2007).

Further evidence has emerged that children who play advergames that feature food brands subsequently develop a preference for the specific featured brand when given a choice afterwards. This effect has been observed among children aged five to eight years. It was also apparent that the children taking part were less likely to perceive the advergame as ‘advertising’ compared with a televised advertisement for the same brand (Mallinckrodt & Mizerski, 2007).

CONCLUSIONS

Food and drinks advertisements have high visibility across many mainstream media. Food and drinks advertisers have also been quick to adopt new media platforms as marketing vehicles. Over time, advertising in traditional media has become more sophisticated in its persuasion techniques and more diverse in form as it has migrated to online platforms. When we ask whether food and non-alcoholic drinks’ advertisements can influence young consumers, a starting point is to determine whether brand awareness and brand preferences are shaped by commercial messages.

Research has indicated that children’s brand awareness and familiarity is linked statistically to advertising exposure patterns. The most widely advertised brands tend to be the best known. Children can become familiar with popular brands from early in life. This familiarity cannot automatically be attributed to their exposure to food and drinks advertisements however. Their initial exposure to specific brands occurs in the home under the control of their parents or guardians. Yet, when children begin to pay attention to television and other media in which food and drinks advertisements appear, there may be some resonance of promotional messages with real-life experiences to magnify the visibility of specific brands.

Researchers have found that short-term food choices can be influenced by controlled exposure to product advertising. Such experiments confirm broader impressions obtained from larger-scale surveys of children about their eating habits and brand preferences that advertisements can have some impact. Raising consumer awareness of brands is not the same as persuading consumers to purchase and use these brands. Nonetheless, raising brand awareness might create a psychological condition within a consumer’s mind that could enhance the probability of one brand being chosen over another. This outcome might take the form of one ‘unhealthy’

brand being chosen over another 'unhealthy' brand. Or, more seriously from a child health perspective, it might result in an 'unhealthy brand' being chosen over a 'healthy' one.

Qualitative research has revealed that there may be various subtle yet powerful social dynamics that take place among children and their parents that determine the foods and brands children will eventually consume. Well-known brands might have their own special social capital but when it comes to food choices, children can be fussy eaters and may develop a liking for unhealthy rather than healthy food types. Confronted with a determined and uncompromising child, a parent will often give in and let them eat the less healthy options knowing that this is better than the child going on hunger strike and not eating at all (Ofcom, 2004). It is clear here that qualitative evidence can add considerable value to quantitative data. Although these data cannot be used to model cause-effect relationships, they can reveal the complex family negotiations that take place around food, which can only be revealed through in-depth verbal probing.

Further evidence has indicated that so-called 'healthy' food brands/products lack the media visibility of 'unhealthy' brands/products. Hence the 'healthy' bands/products are placed at a disadvantage in that these are commodities children might be less inclined to think about when making their food and drinks choices. By engaging children in more dynamic interactions with brands on the internet in settings in which brand recommendations appear to derive from other consumers, not only the visibility of 'unhealthy' brands/products is strengthened but so too is their reputation. Newer forms of brand promotion in computer games and social media settings can enhance brand awareness and liking without invoking internalised objections to persuasion claims that might occur with regular advertising. As such it is these newer forms of food and drinks advertising that deserve closest attention on the part of concerned governments and their regulators. The influence of children's food brand and product awareness represents only one form of influence. Ultimately, social concern rests on the effects of food and drinks promotions on dietary behaviour. This is the topic to which we turn in the next chapter.

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Does Food Advertising Affect People's Health and Well-Being?

There has been worldwide concern about health problems that derive from poor dietary habits. Although there are numerous developing countries in which food production and supply are insufficient to meet local dietary needs, there are many more parts of the world where the main problem is over-consumption of food or consumption of foods poor in nutritional value. Although such populations are not starving in the sense that they consume insufficient amounts of food to generate the required daily calorie intake they choose to eat foods that fail to deliver the right balance of essential ingredients for maintenance of good health. In many of these populations, poor dietary habits have led to an epidemic of weight gain and obesity (Mansey & Ungood-Thomas, 2014).

The WHO has made a number of pronouncements on this subject recognising many factors at play in the shaping of poor dietary habits. It has also singled out food marketing and advertising for special attention. In doing so, the WHO has placed responsibility on governments and considerable responsibility also on food manufacturing companies for this problem and for producing a solution to it. The WHO (2004) published an inquiry in which it identified food marketing as a causative factor underpinning the obesity problems experienced by many countries. The evidence base for this pronouncement however was flimsy. It depended on a small number of empirical studies that provided analyses of food advertising content trends or only small-scale tests of relevant causal hypotheses. It is important for such influential organisations to ensure that its

evidence base is secure before making assertive statements about allegedly wide-ranging influences of food advertising.

One review found research into the impact of the media and marketing messages on children's general food consumption and propensity to become overweight had been published for over 40 years (Coon & Tucker, 2002). Some of this research focused on the way food and its consumption are represented in the media and the rest has attempted to demonstrate systematic or causal links between children's media exposure and food consumption. Evidence had emerged that children were exposed to food advertising more often than that for any other product. Much of this advertising was for sugary products and other foods deemed unhealthy. Research among child audiences then showed that higher levels of exposure to this advertising on television were statically associated with a greater propensity to include sugary foods in children's diets and to make requests to parents to purchase such foods (Coon & Tucker, 2002).

The current chapter departs from the previous chapter in directing its attention towards overall consumption of food rather than food preferences. Is there a straightforward relationship between exposure to food advertising and food likes/dislikes and consumption choices? If there is, how early in life does this influence surface? Food choices can be influenced by commercial promotions and by other non-commercial media content, but this book is concerned with food advertising.

Most of the research on this topic has used survey methods and relied on respondents' self-reports of their media conception and food consumption behaviours and related attitudes and beliefs. These personal media and food histories are then inter-correlated to find out if they are statistically related. Some researchers have tried to pinpoint more directly the exposure of respondents to food advertising rather than relying on reported media histories alone as a proxy measure for this exposure. In such cases, researchers sometimes also distinguish between advertising for 'healthy' and 'unhealthy' foods.

In one analysis of this kind conducted with data from 13 countries mostly in Europe plus Australia and the USA, findings showed a significant correlation between the volume of advertising in children's television programmes and the prevalence of overweight children in specific countries. The presence of advertisements for sweet and fatty foods exhibited a particularly strong correlation with overweight prevalence (Lobstein & Dobb, 2005).

This relationship was accepted as a firm indication of a possible causal link between these variables with the authors also acknowledging that any

such link was also probably mediated by a range of other factors they did not measure, such as other media and retail food promotions to parents and children, food pricing, food availability and cultural food preferences. The limitation of this evidence is that it did not measure children's exposure to food advertising or their food preferences or dietary habits. We cannot presume that the prevalence of food advertising on television represents a valid proxy for relative levels of food advertising exposure in different countries.

In the remainder of this chapter we will examine further empirical evidence for the potential influences of food advertising based on studies in which researchers have adopted a variety of measures designed to indicate actual or potential advertising exposure.

TELEVISION VIEWING AS AN INDICATOR OF POTENTIAL ADVERTISING EFFECTS

There is a considerable body of international research evidence to show that the amount of television watching engaged in by children is related to their weight and overall fitness. Children who watch a lot of television have been found to exhibit poorer fitness levels and higher levels of body fat (see, e.g., Armstrong et al., 1998).

We should not be all that surprised by reports of such a correlation between reported television watching habits and dietary preferences and patterns given separate evidence showing that children in many different countries around the world have plentiful opportunities for exposure to food advertising on television (Effertz & Wilcke, 2012; Han, Powell, & Kim, 2013; Hebden, King, Grunseit, Kelly, & Chapman, 2011; Kim, Han, & Jang, 2014).

This type of research evidence has been discussed in the context of the influences of food advertising on young people. One presumption here is that by measuring the amount of viewing undertaken by specific samples of respondents, it is also possible to obtain a general indication of their volume of exposure to food advertisements. Confidence in this argument has been bolstered through reference to content analysis evidence—much of which has already been reviewed in earlier chapters—showing that mainstream and many minor and specialised television channels carry large amounts of food advertising and also that much of that advertising is for food products high in fat and sugar contents (Bell, Cassady, Culp, & Alcalay, 2009). Over consumption of such products is identified in turn as a contributor to weight gain and in more extreme cases to obesity.

In some studies, the children being investigated are so young that they do not provide their own self-report evidence. Instead, their parents are interviewed and provide data on the child's behalf. With this kind of investigation, parents are questioned about their children's food preferences and eating habits and their television viewing habits. Parents report both on their own and their children's behaviours. Researchers can collect data on the consumption of specific foods and these can then be further weighted or classified according to their food type. Using this approach Ritchey and Olson (1983) reported that the extent to which a sample of pre-school children reportedly ate sweet foods was statistically related to their amount of parentally reported television viewing and also linked significantly to parents' own reported consumption of and liking for these foods. The results indicated that parental factors appeared to be most influential although the child's amount of television viewing was also a closely linked factor.

The problem with this kind of study however is that not only does it fail to provide any indication—direct or indirect—of a child's relevant history of advertising exposure, the explanatory power of the television viewing variable is diminished by the crude way in which it was measured. It is also important to question whether all the parents in this study were able to provide accurate measures of their children's viewing activities. Even if they were, can we conclude that television viewing was a potential causal variable that underpinned the amount of consumption of sweet foods? Or was it simply a coincidental variable. That is, did a child's sweet food consumption follow their parents' with this behaviour often taking place in front of the television set? We must observe caution before accepting measurements of media exposure that fail to measure in a direct fashion any exposure to advertising. It is problematic to presume that meaningful food advertising exposure has occurred simply because a person reports watching so many hours of television each day.

As we will also find out, there are factors other than viewing that could account for variances in the dependent variables we wish to explain. Watching a lot of television is also associated with reduced rates of physical activity. There are independent relationships between people's activity levels and weight gain. Physical activity burns calories. This in turn can keep weight down. Some of the studies of television viewing and body weight have reported that the more people say they watch television the less time they devote to being physically active (Anderson, Crespo, Bartlett, Cheskin, & Pratt, 1998; DuRant, Baranowski, Johnson, & Thompson, 1994; Marcus, Nyberg, Nordenfelt, Karpmyr, Kowalski & Ekelund, 2009).

Knowing whether people are physically active is, therefore, an important control variable that needs to be examined in the context of any inquiry into the possible effects of heavy television watching. If spending a lot of time watching television is simply one aspect of a generally sedentary lifestyle, the influences that affect weight gain or being overweight could be more complex than the possible and unsubstantiated exposure level to televised food advertising.

Those investigations that look at relationships between reported television viewing and body weight at one point in time could give us an artificial impression of the role played by sitting around watching television on a child's physical activity levels and physical development over time. Longitudinal research has attempted to track relationships over time between amount of watching TV and weight gain. These studies have generally indicated that children and adults who watch large amounts of TV exhibit a tendency to become overweight over time. This research has comprised secondary analyses of pre-existing datasets about children (e.g., Hu, Li, Colidtz, Willett, & Manson, 2003; Tremblay & Willms, 2003) and analyses of primary data collected from custom-built surveys (e.g., Crespo et al., 2001; Proctor et al., 2003).

One of the most sophisticated studies that related reported television viewing with food consumption was also one of the earliest. Although data were collected from children aged two to 11 years only at one point in time, Bolton (1983) went beyond the usual simplistic self-report questionnaire measures of behaviour and deployed diaries in which participants kept a daily record of their viewing behaviours for 16 days and of their eating behaviours for seven days. Viewing was measured for each programme watched. Hence, this provided a more comprehensive and direct measure of viewing than the usual frequency scales deployed in questionnaires. Each food item catalogued was further weighted in terms of its calorific and nutrient values. It was also possible to weight programmes reportedly viewed by the presence of food advertisements embedded in and around them.

In this study, parents also assisted with data collection and maintained a viewing diary for their children in which they recorded the times and programmes when their children were watching. Bolton then used television station broadcasting logs to identify which food advertisements had been transmitted in those programmes. By combining these two measures, she was able to produce a more precise measure of each child's exposure to food advertising.

A complex, multivariate statistical package was used for data analysis that took into account a range of demographic and local behavioural factors (e.g., parental eating patterns) while examining links between food advertising exposure and food consumption. The key findings indicated that greater levels of exposure to televised food advertising were linked to more snacking behaviour, but accounted only for 2 % of variance in this behaviour. Moreover, parental snacking also emerged as a key driver of children's snacking. Greater exposure to televised food advertising was also associated with high calorie intake and predominantly for low nutrient quality foods, hence signalling a decrease in nutrient efficiency of daily diet. Once again, however, food advertising exposure accounted for only 2 % of variances in calorie intake. Hence if it could be accepted as a causal factor—which the data from this study could not demonstrate—it was a very weak one.

Longitudinal Studies

Research conducted in the USA measured energy consumed and expended and found that the amount of time children engaged in bouts of 'vigorous' physical activity each week diminished the more they watched television. Longitudinal studies confirmed that children who watched more television displayed greater weight gain over time (Francis, Lee, & Birch, 2003; Hancox, Milne, & Poulton, 2004; Kaur, Choi, Mayo, & Harris, 2003; Proctor et al., 2003; Tremblay & Willms, 2003). This negative relationship between these variables was shown by one study to develop over time in pre-teenage and teenage children who were observed over a six-year period. The heaviest young viewers were also the fattest. This in turn was undoubtedly linked to a less active lifestyle (Anderson et al., 1998; Crespo et al., 2001). This research failed to confirm the direction of any causation between viewing and sedentariness. Whatever the explanation might be for the relationships observed between these variables, however, it lacks the certainty to indicate any possible effects of food advertising.

Proctor et al. (2003) followed through a cohort of 106 children from the age of four until the age of 11 years. They asked parents to provide data about the children's TV viewing and video habits each year. The children also made annual visits to a health clinic where weight, body fat, BMI and other physiological measures were recorded. By age 11, those children who had watched an average of three hours or more TV per day exhibited greater fat content than those who had watched well under

two hours per day. The amount of television viewing also combined with dietary and exercise level variables further to contribute to children's levels of body fat.

Further evidence has emerged that has caused additional questions to be asked about the role that television viewing might play as a contributor to a child's weight gain. Children who were less physically active exhibited higher body fat levels. At the same time, children who were more frequent viewers of television had greater adiposity. Physical activity, however, did not mediate in the relationship between viewing and body fat gain. It was clear that the children who were less active, whether because they watched more television or for other reasons gained weight in the form of body fat. There was also evidence that body fat gain occurred as children's television viewing increased and for some this was not offset by exercise (Jackson, Diafarian, Stewart, & Speakman, 2009).

In the end, total energy expenditure is a critical variable in relation to unhealthy weight gain. (The distinction between 'unhealthy' and 'healthy' weight gain is made because body weight and body mass index can increase with muscle gain through certain forms of vigorous exercise.) Higher activity levels can increase total daily energy expenditure—whether one watches television or not—but the extent to which this occurs can depend on the nature of the activity and rate at which it burns calories per unit of time. The latter measure tends not to be used in these studies. It is possible, for example, that Child A who watches four hours of TV a day but engages in 30 minutes of exercise per day that burns 400 calories an hour gains less weight than Child B who watches two hours a day and engages in one hour of activity that burns on 150 calories an hour.

There is one broader concern not exclusively linked to advertising. Insofar as television watching becomes packaged with other sedentary pastimes from early childhood and might cultivate laziness at a time when children should be learning to embrace physical play, then it represents a problem that needs to be addressed, not least by parents (Janz et al., 2002).

Dennison, Erb, and Jenkins (2002) found that those children, aged one to five years, who watched the most television and who also had a TV set in their bedroom were most likely to be overweight. No links were made to possible effects of televised advertising. Instead, the concern seemed to be that children who are allowed to watch television largely unsupervised may be less physically active and burn up less energy. Research from New Zealand confirmed that when children were allowed to watch lots of

television during their pre-teenage years, they tended to be a lot heavier as teenagers, especially girls (Hancox & Poulton, 2006).

Even when carried out over time, these survey investigations are still founded on self-reported data about key variables and measures of correlation between television viewing, activity levels and body weight. More compelling evidence has derived from intervention research deploying a research design that enables tests of causal hypotheses. Robinson (1999) divided a sample of children into two groups, one of which had their television viewing restricted for six months, while the other served as controls and continued viewing as usual. Increases in body mass index and fat deposits gain were lower in the experimental group than among the controls whose viewing was not changed.

EATING WHILE VIEWING

One factor that has been observed and identified as a contributory factor to the diminishing nutritional quality of young people's diets and propensity to gain weight is snacking when watching television. Upward trends in children's snack food consumption have been observed over time (Jahns, Siega-Riz, & Popkin, 2001). Snacking often occurs in front of the television (Dovey, Taylor, Stow, Boyland, & Halford, 2011). The next obvious question, therefore, is whether this eating behaviour can be triggered by on-screen portrayals.

The propensity to eat in front of the television has been linked to weight gain and obesity among children. This problem can be exacerbated in families where parents are also overweight. Observations of telly snackers have also revealed that they tend to eat energy rich/nutrition poor foods and in particular exhibit greater intakes of fat (Francis et al., 2003). Is food advertising a trigger point here? One experimental intervention found that it could be. Here, watching television advertisements could prompt young people to consume dietary or non-dietary drinks under the right conditions (Strauss, Doyle, & Kriepe, 1994).

Boynton-Jarrett et al. (2003) conducted a longitudinal study over 19 months of more than 500 Massachusetts children aged 11–12 years at the start of the investigation. Eating habits and television viewing patterns were tracked across this period. Food intake was measured by getting the children to complete 24-hour diaries on three different occasions. The dietary intakes were compared for children who reported eating in front of the television at least twice and those who never did this or only did in once. The authors found that as the amount of television viewing

increased over time so too did the level of consumption of snacks foods, pizzas and sugary soft drinks increase while consumption of fruit and vegetables decreased, even after controls for other relevant variables.

Research in households with 9- to 11-year-old children found that those who watched a lot of television also consumed more meats and snack foods such as pizzas, salty snacks and sugary soft drinks. Heavier viewing households also consumed less fresh fruit and vegetables than lighter viewing households. It became clear that eating in front of the TV set was normal behaviour for some families. In these households, diets tended to be less healthy in general with few fruits and vegetables and more pizzas, snack foods and high sugar drinks being consumed. The propensity to view and eat at the same time and to consume more foods at the less healthy end of the nutrient quality spectrum was also predicted by low family income, single parenting, and poorer maternal education. Parents who allowed viewing and eating to take place together were also found to have poorer knowledge about the nutrient qualities of foods (Coon, Goldberg, Rogers, & Tucker, 2001).

It is not simply that watching a lot of TV might represent part of a generally sedentary lifestyle that underpins its relationship to body weight, but also the observation that children often snack a lot while viewing. Thus, the more time they spend in front of the TV screen, the more they also indulge in snacking behaviour (Coon et al., 2001; Francis et al., 2003). It does not invariably follow that snack diets must be unhealthy. In Australia, teens with who displayed dietary health consciousness may have snacked in front of the telly, but they snacked on healthy foods. Although there was some indication that reported amount of television was statistically related to respondents' fat scores, the relationship was only weak. Fat scores however were more powerfully related to teenagers' beliefs they ate a healthier diet and to their ability actually to do so (Gracey, Stanley, Burke, Corti, & Beilin, 1996).

CLAIMED ATTENTION TO ADVERTISING WHILE WATCHING TELEVISION

The missing ingredient from these studies of relationships between television viewing and eating behaviour is a measure of exposure to food advertising. There is a presumption that such exposure must have occurred on the grounds that numerous studies have measured the prevalence of food advertising on television and especially in programmes that are popular

with children. Nonetheless, in the absence of direct measures of exposure to advertising, proxy measures such as television viewing amount to little more than calculated guesswork.

Some researchers have preferred to ask young people directly how much attention they pay to television advertisements. Some studies have been more focused than others in the nature of this type of questioning. One option has been to obtain a generic measure of 'attention to advertising' on television. Another approach has been to ask respondents to think about the attention they give to advertising for specific categories of product.

The generic reported attention to advertising measure was inserted into a survey of pre-teenage and teenage children (aged 6 to 17 years) in China. As well as asking about frequency of watching television, respondents were asked to say whether they 'never', 'sometimes' or 'often' paid attention to advertisement on television. Findings showed that respondents who reported greater attention to television advertisements were also statistically significantly more likely than those who reported low-level or no attention to them to more requests for snack foods and to buy snack foods seen on television and to eat snacks while viewing television (Parvanta et al., 2010).

Despite the statistical significance of these results it is advisable to treat them with some caution. For instance, what do terms such as 'sometimes' and 'often' mean as frequency of exposure indicators? How was the concept of 'paying attention' to an advertisement defined by each respondent? Finally, the measure made reference to any televised advertising and not specifically to advertising for food products. Hence, we have no way of knowing whether respondents were thinking of food advertisements when answering this question.

While still subject to some of the above design weaknesses, other studies in this category have asked respondents to estimate how much attention they give to specific types of advertising. Atkin (1975b) asked children to estimate how often they paid attention to television advertisements for breakfast cereals and for candy. These measures were then multiplied by a self-reported measure of amount of Saturday morning television viewing to create two indices of advertising exposure that combined an exposure measure with an advertising attention measure.

Findings showed that even when controlling for these personal attributes, children who had higher index scores for attention/exposure to cereal and confectionery advertising tended to consume more of these

products overall and made more frequent requests to their parents to purchase them. There was further evidence that the relationship of attention/exposure to advertising and consumption was strongest for the most heavily advertised brands within each product category. Children from families that had more relaxed rules about children snacking exhibited even stronger relationships between the two product advertising attention/exposure measures and overall consumption of cereals.

TELEVISION VIEWING AND FOOD CHOICES

Another indication, adopted by some researchers, that television viewing can serve as a valid proxy for direct measures of exposure to food advertising is the types of foods children choose to eat. Children who watch a lot of television have an increased probability of choosing foods known to have poor nutritional quality and also associated with weight gain. The reason for this is that these are the product types that receive the most advertising exposure on television. This proposition has received support from a number of survey studies with children (Hammond, Wyllie, & Casswell, 1999; Utter, Scragg, & Schaaf, 2005, 2006; Wilson, Quigley, & Mansoor, 1999). It is worth looking in more detail at one of these studies.

Wieche et al. (2006) conducted a longitudinal study with children aged 11–12 years. Over 500 children took part in this investigation from five schools in Boston, Massachusetts. An initial wave of data collection occurred in autumn 1995 and a follow-up wave occurred in spring 1997. The researchers took measurements of diet, television viewing and physical activity levels. They were especially interested in any changes in dietary behaviours that involved heavily advertised foods high in fat, salt and sugar. They found that as reported television viewing increased so did the amount of consumption of a number of specific food categories that were regularly advertised (e.g., salty and sweet snacks, confectionery, fast food, sugary beverages). Thus, the more these children watched television the more calories they consumed. Further, this calorie intake increase was linked mainly to increased consumption of foods popularly advertised on television.

The observed paucity of the diets of children who were also heavy users of television has been observed in relation to the types of food they eat while watching. The propensity to snack in from of the television is generally related to the consumption of poor quality food types. Eating a lot while viewing television was also associated with having a greater

preoccupation with the way food appeared rather than with its nutritional quality. This phenomenon was prevalent especially among boys rather than among girls. It was also related in turn with a propensity to make more requests to parents to buy foods that were regularly advertised on television (Marquis, Fillion, & Dagenais, 2005).

Miller, Taveras, Rifas-Shimon, and Gillman (2008) also found that television viewing was related to poor dietary choices on the part of three year olds. The children's mothers reported on the numbers of hours per day each weekday and at weekends that their children watched television and also collected data about their food intake, body-mass index (BMI), sleep duration, breast-feeding duration, mothers weight and socio-economic class. The findings showed that as the amount of time spent watching television increased so too did the volume of child consumption of sugar-sweetened drinks, fast food, red and processed meat and overall calorie intake. Inversely related to television viewing was consumption of fruit and vegetables, calcium and dietary fibre.

Longitudinal research enables investigators to examine how links between media exposure and dietary habits evolve over time. Barr-Anderson, Larson, Nelson, Neumark-Sztainer, and Story (2009) found that American teenagers who watched larger amounts of television earlier in life had poorer dietary habits both then and several years later. When healthy diets were already established earlier in life, however, they tended to persist even five years later.

The above findings were confirmed among Australian teenagers with heavier users of TV tending also to consume more energy-dense, calorie-laden foods while watching television. Heavier viewers were less likely to eat fresh fruit. This habit persisted over time (Pearson, Ball, & Crawford, 2011).

In another longitudinal study, Zimmerman and Bell (2010) computed analyses on datasets about children in the USA that were derived from nationwide surveys that had tracked children from birth. Data were available from these surveys about viewing behaviour, height, weight and BMI. Television viewing data differentiated viewing of educational and entertainment material on broadcast television and via DVDs. The video material classified as 'educational' rarely contained food advertising, whereas this advertising was commonplace in entertainment materials. For analysis purposes, the authors split their sample into children aged younger than seven years and those aged seven and older.

It was observed that younger children watched less television on average than did older children, but that over time all viewing of commercial

entertainment programming increased while viewing of non-commercial educational programming decreased. Among the older children there were no significant statistical relationships between obesity and any aspect of television viewing. For the youngest children however over a five-year period as viewing of commercial television increased, so too did BMI even after statistical controls for potential effects of mother's BMI, and each child's propensity to eat while watching television and physical activity level were implemented. Changes to the amount of viewing of non-commercial (educational) material were unrelated to weight changes.

Because 'commercial' television in this context differed from 'non-commercial' television by virtue of having food advertisements embedded within it, Zimmerman and Bell took this as a sign that exposure to food advertising could have acted as an important source of influence in relation to obesity onset among these children. This interpretation is not inconsistent with their data, but omits the possibility that other factors that were not measured could be at play. For one thing, food-relevant triggers within the contents of programmes that were viewed could have varied in their prevalence across different children's individual viewing diets. Moreover, the commercial versus non-commercial distinction used here provided a very blunt measure of children's potential exposure levels to food advertising.

PARENTAL PESTERING

We have already seen that children frequently pester their parents while out shopping with them to buy food products. In studies of this kind, it is typical that a majority of parents report this experience and most also admit that they usually give in to such requests (Marshall, O'Donohoe & Kline, 2007). Most serious for the healthy food lobby is the further finding that generally emerges that the foods most often purchased in these contexts are confectionery products high in sugar (Campbell et al., 2011). Can exposure to advertising trigger children to display an increased propensity to pester their parents to buy them products they have seen advertised when out shopping together. As we will see, there is long-standing evidence that this effect can occur and that it cuts across product types (Galst & White, 1976).

It has not escaped the attention of professional marketers that children carry weight in family decision making about brand purchases (Swain, 2002). This does not mean that children always get things their own way and family disagreement about product purchases can be triggered

by conflicting preferences (Isler, Popper, & Ward, 1987). Undoubtedly parents are vital gatekeepers to product purchases for children during the early years of life (Greenberg, Fazal, & Wober, 1986; Isler et al., 1987). Advertised brands do tend to be top-of-mind for child consumers and these are the brands they usually admit pressuring their parents to buy the most (Gunter, McAleer, & Clifford, 1992). The most advertised food brands can be the ones most often requested (Taras, Sallis, Patterson, Nader, & Nelson, 1989).

The research evidence for parental pestering derives mostly from two types of research. The first of these is self-reported evidence in questionnaire surveys with parents. The second is field research in which the behaviour of children and parents is observed while they are shopping. The latter research is generally supported with post-observation interviews with those being monitored.

Advertised brands feature prominently as the ones children want the most from their parents. Parents also might without realising it play a part in this process. One early finding revealed that mothers who watched television with their children a lot tended also to receive the most requests to purchase advertised food brands (Ward & Wackman, 1973). Children's purchase requests to their parents can be highly specific and focus on particular brands. This behaviour has been observed in the context of food shopping. It can also be highly successful for the child with parents exhibiting a willingness to give in to brand-specific requests (Atkin, 1975b; Galst & White, 1976).

Even though earlier research had indicated that the effects of televised food advertising on children's beliefs and understanding concerning nutrition could be mediated by parental factors, elsewhere researchers reported—again from the USA—that heavy exposure to televised advertising was directly linked to children's food preferences and purchase requests to their parents (Atkin, 1975a, 1975b). These preferences reflected the food products that were most advertised. These were food high in sugar content such as breakfast cereals, snack foods and fizzy drinks (Signorielli & Lears, 1992).

In a survey conducted with parents of children aged between 7 and 11 years in the UK, reports of child pestering to make specific food purchases were widespread. Most of these requests were for foods that children could eat on their own such as breakfast cereals, snacks and soft drinks. Nearly 4 in 10 food purchase requests were made for brands that had been heavily advertised over the previous six months. Nearly half the requested foods were products characterised by added sugar and around half of these

had been regularly advertised (Donkin, Neale, & Tilston, 1993; Donkin, Tilston, Neale, & Gregson, 1992).

Certainly there was some suggestion here that children's food interests were shaped by their exposure to food advertising on television, but some caution is needed in the way these findings are interpreted. We must not forget though that these data were reported by mothers and there was also a degree of maternal attribution of television advertising effects on their children's food preferences. Nonetheless, what these findings may show is that mothers are inclined to respond to their children's food requests when they can and also that these requests may be triggered on some occasions by the experience of seeing particular food products advertised. Furthermore, the statistical analyses failed to utilise multivariate models that could identify the distinct relationship of television use with food consumption when taking into account other family and household characteristics also known to affect dietary behaviours.

Research among children and teenagers in China aged from 6 to 17 years examined statistical relationships between their reported television viewing habits and attention to televised advertisements, and snacking behaviours. The results indicated that the reported frequency of watching television was not significantly related to requesting or buying snack foods or to eating of snacks that were advertised on television while watching. In contrast, claimed closer attention to television advertisements was significantly related to all three of these dependent measures. In other words, the greater the frequency with which these respondents said they paid attention to televised advertisements, the more they claimed to consume snack foods in general and while viewing television. The latter relationship survived controls for demographic variables and overall claimed watching of television in multivariate statistical analyses (Parvanta et al., 2010).

This research was indicative of a link between exposure to televised advertisements for specific kinds of food products and their subsequent consumption, but the findings cannot be taken at face value. All the television viewing and advertisement exposure data were derived from self-reports and the measurement scales used a fairly crude frequency scale ('never', 'sometimes' or 'often') to assess media and eating behaviours. There is plenty of scope for this scale to be interpreted in different ways by different respondents and to provide only a blunt instrument for measuring these activities. There was no attempt either in this study to build in controls for parental eating habits, weight and other relevant familial factors. In view of observations elsewhere that eating patterns in China

have been evolving (Li, Dibley, Sibbritt, & Yan, 2008; Wang, Zhai, Du, & Popkin, 2008), along with the nature and volume of accompanying food advertising, more complex research designs are needed to develop comprehensive analytical models to determine the stand-alone impact of food marketing activities on young people eating behaviours.

FOOD ADVERTISING AND OBESITY

Survey Evidence with Measures of Advertising Exposure

There is considerable evidence concerning relationships between general media consumption and food consumption. Most of this research has examined television viewing as a potential causal agent. This measure has often been used as a proxy indicator of exposure to food advertising. The justification for doing this has derived from content analysis research showing the prevalence of food advertising on mainstream television channels and especially in programmes that are known to be viewed extensively by children. There are many problematic presumptions in these kinds of studies concerning the validity of a general measure of television viewing as an indicator of exposure to televised food advertising. It is, therefore, far better to adopt an approach in which food advertising exposure is measured more directly—even if it still remains dependent upon respondents' self-reports.

In a study of effects of televised food advertising on children's requests to parents to purchase specific types of foods while out shopping with them, Galst and White (1976) tried to enhance the measurement of advertising exposure by going beyond reports of overall viewing and asked participants about their viewing of commercial channels at home (as opposed to non-commercial carrying channels). They found that overall reported television viewing was not statistically related to numbers of food purchase requests, but that reported viewing of commercial (i.e., advertising carrying) channels was positively related to this outcome. However, even a measure of viewing commercial channels must be regarded as a fairly blunt instrument in this context. The setting was the USA where most TV channels carry advertisements. Measurement of overall viewing of commercial channels fails to indicate how much food advertising exposure each child who watched these channels may have experienced.

As we have seen there is a wealth of evidence that regular and excessive consumption of media such as television and computer games have been statistically linked to dietary problems, weight gain and obesity. Because these media carry a lot of advertising and other kinds of brand promotions, it has been deduced that if children consume these media a lot they will also be exposed to large amounts of food-related advertising. Since much of this advertising is for food products deemed generally to be poor in nutritional value and laden with ingredients such as fat and sugar that can lead to weight gain, then exposure to media such as television has been taken by some scholars as a proxy measure for advertising exposure. There are risks in accepting this principle at face value. It is distinctly possible that people who consume large amounts of television will be exposed to large amounts of food advertising. It is equally feasible that some heavy users of television watch or pay attention to very little advertising of this kind.

The importance of examining the potential influences on dietary behaviours of food-related depictions on television is reinforced by findings that the more time children spend watching television (and playing video games), the more likely they were to have higher cholesterol levels. Family history variables are also known to be important in this context. This means that if a child's parents have a medical record of high cholesterol, high blood pressure and of being overweight, they are also at greater risk of developing these conditions. Television viewing has been identified however as another factor that can identify at-risk children over and above these family history factors. This risk becomes most pronounced for children who regularly watch four hours or more television a day (Wong et al., 1992). What we also need to find out is whether the television viewing variable is relevant in understanding the onset of these health risks because it signals a generally sedentary lifestyle and/or because it provides encouragement to children to eat unhealthy foods.

We must not confuse the 'opportunity to witness food advertising' evidenced by the frequency with which food advertisements appear in television programmes with 'actual exposure' to advertising. Some viewers may turn away from the screen when advertising breaks appear. Others may watch mostly at times when food advertising is rare. Others may watch TV channels where food advertising seldom appears. Yet others may pre-record most of their programming or download it from temporary archives or subscription repositories operated by major broadcasters or other operators and hence evade advertising completely.

We, therefore, need to know more about relationships that exist specifically between advertising exposure patterns, eating patterns and weight gain or general health status. In the case of children, if unhealthy food preferences are established early on in life, they may sow the seeds of serious health problems once they have become adults. Food advertising may play a part in this process but it does not operate in a social vacuum. Children can often only satisfy their food cravings with the consent and indulgence of their parents (Carter, 2006).

As we have already seen, analyses of the content of food advertisements have revealed that the nutritional diversity and quality of advertised food products tends not to match recommended daily intakes of specific food types or ingredients. Foods advertised on television on channels or at times of day or in programmes when large numbers of children are watching have been found to be over-represented by products high in fat, sugar and salt. Hence, young people from the age of two through until 17 have plentiful opportunities to experience repeat exposures to promotions for these food types (Powell, Szczypka, Chaloupka, & Braunschweig, 2007).

Taking this food advertising prevalence finding, we can extrapolate from various theories of media influences on audiences how it presents a profile of presence of food promotions on television that could shape young people's eating habits in a way that would take them in a different direction from that recommended by various government health authorities. Since food advertising represents a significant proportion of all advertising on major TV channels watched by children, there are manifold opportunities for exposure to occur to messages promoting poor quality diets (Powell, Szczypka, & Chaloupka, 2007).

The core proposition arising out of this observation is that individuals—children or adults—who watch a lot of television are also potentially exposed to a lot of food advertising. Even if children do receive a lot of potential exposure to food advertising on television, do they really notice it? Jeffrey, McLellarn, and Fox (1982) reported findings from a large programme of research that encompassed surveys and controlled experiments. This work placed advertising at the centre of its investigation. Children were surveyed not simply about their television viewing habits, but in addition data were collected about the nature of food advertising that they may have been exposed to. Evidence emerged that advertisements for products of poor nutritional quality attracted children's atten-

tion more than did those for high nutritional quality products and were messages most likely to be linked to high calorie diets among children.

Experiments and Food Advertising Effects on Eating Behaviour and Obesity

Knowing whether children pay attention to food advertising is best measured under controlled conditions using experimental methodologies. One early investigation of this sort examined children's parental pestering as the main outcome. In this instance, pre-school children were allocated to watch a television show designed for their age group in two versions, one with and the other without embedded food advertisements. After the viewing session, the children went on a simulated shopping trip with their mothers. Their behaviour in this setting was observed by the researchers. The findings indicated that children who had watched the programme with embedded food advertisements subsequently made more food-related purchase requests to their mothers than did the other children (Stoneman & Brody, 1982).

Kathleen Keller and her colleagues reported a series of experimental studies conducted with children aged from four to nine years (Keller et al., 2012). In an initial study, 43 children aged four to six were recruited to pay a number of visits to the researchers who gave them either 'branded' or 'unbranded' meals to eat (two of each). Unbranded meals were presented in plain, white plastic containers. Branded meals were served in the original brand packaging. The meals were ones pre-testing with parents had indicated the children were familiar with. The children were also pre-classified in terms of whether they were overweight or not. There were no overall differences in the amount of food consumed between the branded and unbranded conditions. Among overweight children only, however, more food was consumed (even for the same meal types) when the meal was presented in branded packaging. According to Keller and her co-workers this initial study: 'demonstrated that food brands are an important visual cue and some children may overeat in their presence' (p. 380).

In a second study 41 children aged seven to nine years were invited to the research laboratory on two occasions on which they were given a choice of foods to eat. In a modified version of the Stroop Test Keller and her colleagues devised what they called a 'Food Brand Stroop Task'. The children in their study were presented with a series of pictures of foods with a verbal label written over the image which either represented

an accurate description of the food item shown (e.g., the word 'broccoli' shown over a picture of broccoli) in *congruent* conditions or represented the name of a different food type or brand (e.g., the word 'cake' shown over a picture of soft drinks) in *incongruent* conditions.

Some food items and names comprised branded foods or food names (e.g., McDonald's) and others were unbranded, generic foods or food labels (e.g., 'brownies'). Children were found to take longer to complete the task of food naming in incongruent than in congruent conditions. In this respect the Food Brand Stroop task delivered a similar pattern of responding to the more traditional colour Stroop task. Overweight children averaged significantly longer task times on the incongruent food task compared with the congruent food task than did non-overweight children.

Keller and her colleagues interpreted this finding as indicative of a stronger processing bias towards branded food images and labels among the overweight children. On the meal test all children ate more of the branded meal than of the unbranded meal and their weight status made little difference to this outcome. Interestingly, this branding effect occurred regardless of whether the food was classed as healthy and nutritious (such as fresh vegetables) or less healthy (fast-food sandwiches or sweet snacks).

In the third study, 19 children aged four and five who were classed as being at risk of obesity were recruited to take part in a seven-week study. Sixteen eventually took part of whom seven were assigned to an intervention condition and the remainder formed a control group. The families of these children participated in weekly small group sessions and the participants received nutrition education lessons. All the families also received a number of containers filled with various kinds of fruits and vegetables. These items were cut into bite-sized pieces and served raw. Parents were invited to offer these food items to their children three times a day at normal meal times and once more as a snack. In the control condition, the families received their fruit and vegetable packs in plain (unbranded) containers. In the intervention group, unbranded containers were used for the first two weeks and a final follow-up week but for the remaining weeks the containers were illustrated with their favourite cartoon characters and premium stickers that could be collected and cashed in for prizes.

The intervention group of children were found to consume more fruits and vegetables from their packs than the control children throughout the study, both at baseline as well as during treatment periods. What was also observed among the intervention group only was that the amount of fruit

and vegetables consumed gradually increased over time. This group difference persisted during a one-week follow up which took place after the treatment period and when both intervention and control condition children received fruits and vegetables in plain packages.

A willingness to try new foods can mediate children's reactions to good advertisements. After watching a cartoon embedded with these advertisements, five- to seven-year-old children were given the opportunity to eat a snack that comprised a number of different food items: chocolate, jelly sweets, potato crisps, Snack-a-Jacks, green seedless grapes and carrot sticks. Those children who were exposed to *any* food advertising subsequently ate more than did children who watched only non-food advertising. Children who had a greater willingness to try new foods and eat a varied diet ate more only after exposure to advertising for unhealthy foods. If these types of children watched advertising for healthy food products, they did not eat more food overall than controls (including the fruit and vegetables), though they did eat less chocolate (Dovey et al., 2011).

Epidemiological and Econometric Approaches

Another approach to analysing the potential effects of television food advertising on children has been to collect societal level data on the numbers and proportions of children in different national populations classed as overweight and the numbers of relevant advertisements that appear each hour on children's television. One such analysis was carried out on data from Australia, the USA and eight European countries. It revealed that rather than the overall amount of food advertising that appeared in children's television, it was the amount of advertising for nutritionally poor or rich foods that was the more critical factor. There was a significant correlation between child overweight levels and numbers of televised advertisements for poor quality foods in children's programmes. As this type of advertising increased in prevalence, so the numbers of overweight children increased. In contrast, a higher prevalence of advertisements that encourage healthier eating habits was associated with fewer overweight children in the population (Lobstein & Dobb, 2005).

This type of epidemiological exercise is interesting for the patterns it can uncover between variables in large datasets. What it fails to achieve is an explanation of why these variables are inter-linked and whether we can legitimately draw causal conclusions from these statistical relationships. A measure of the prevalence of certain types of food advertising on television

can provide a useful indicator of the potential of children to be exposed to it. It does not provide a direct measure of actual exposure to food advertising. We also need a third strand of data concerning children's television viewing habits at the programme level to be able to measure more precisely potential levels of exposure to food advertising.

In a large-scale econometric analysis, Tatiana Andreyeva and her colleagues at Yale University collated data from a nationwide longitudinal study of children concerning their food-consumption habits and from the television industry's audience measurement service about child viewing levels for food commercials in different US regional markets (Andreyeva, Kelley, & Harris, 2011). Food-consumption and child-weight data were obtained from the Early Childhood Longitudinal Survey—Kindergarten Cohort (ECLS-K). The ECLS-K data were compiled from numerous sources on a cohort of children who were followed from kindergarten age and the data used here ran through from 1998 to 2007. At the outset, the original sample comprised 19,684 participants. This study used data at the fifth-grade stage in 2004 and yielded 11,820 participants. These children were aged 3–4 at the start and 8–9 years at the point that data were extracted for this analysis. The Nielsen data were produced for children aged 2 to 11. The data used in this project were restricted to the 6 to 11 age range.

The food advertising data metric was the gross rating point (GRP). This was the percentage of a specific target audience group exposed to the advertising within a particular market area for a specified time period. For this study, Nielsen data were obtained for children between 2002 and 2004. The GRP could be calculated for a specific brand campaign by multiplying the average rating for each commercial by the number of times it appeared. Such data could be calculated for all viewers and for specific demographic groups. The US broadcasting market is divided into a number of regional markets and GRPs were obtained for each regional market. These market areas were also applied to the ECLS-K data so that food consumption data could also be configured according to the same geographical framework. These regional units of food advertising exposure and food consumption data were then used for analysis purposes. Food consumption data for relevant food categories were based on self-report frequency metrics and confined to reported consumption over the previous seven days.

The results showed that as GRPs for relevant advertising rose across the 2002–2004 period in specific markets so too did rates of reported

consumption of soft drinks and fast foods. This effect was statistically significant for both product categories. No relationship was found between advertising exposure levels and body-mass index (BMI). However, when focusing on those children with the highest BMI scores as a sub-category, children in those markets that exhibited the highest levels of target food advertising exposure also exhibited greatest BMI increases. Children's exposure levels to fast-food advertising in specific markets were marginally linked to lower physical activity levels among children in those areas. There were no relationships between exposure to soft drinks or fast food advertising exposure levels and propensities for children in those markets to eat (or avoid eating) fruit and vegetables.

These findings appear to show significant relationships between food consumption patterns and exposure to food advertising on television, but do they? First, the data on children's advertising exposure and their food consumption derived from two different survey sources and two distinct samples of children. Thus, we do not know anything about the food advertising exposure histories of children who supplied the food consumption data. Second, the 'advertising exposure' do not actually measure how much advertising any children witnessed.

The advertising data here indicated how much food advertising was transmitted on television channels measured by this audience measurement system within specific markets for specified time periods and then how many children watched each individual advertisement. It did not indicate for each child in the survey sample how many food advertisements they saw. Hence, at the level of the individual child, we have no record of their personal history of advertising exposure over the designated time period. This is crucial information for any analysis purporting to demonstrate a statistical link between a specified dose of advertising exposure and concomitant food consumption habits. Third, food consumption measures were derived from self-reports and these were confined to a one-week time frame. We must question whether these reports are accurate or whether they are likely to represent more general consumption habits over a longer period.

The researchers themselves concluded that: 'our results provide evidence that children's exposure to soft drink and fast food advertising on television is associated with increased consumption of the advertised product categories' (Andreyeva et al., 2011, pp. 230–231). Given the issues raised above, this conclusion could be premature.

An econometric approach has been used to calculate the costs to a society of increased restrictions on food advertising, assuming that this

will have a specific impact on consumption of unhealthy foods and their contingent effect on weight gain and health problems linked to obesity. Magnus, Haby, Carter, and Swinburn (2009) assumed that if advertising on television, for example, can be shown to contribute to weight gain and obesity levels to a specific degree (as compared to other relevant variables), then if this advertising is removed completely that specific contribution should then be rendered void. This should in turn result in a reduction in overweight levels assuming other relevant and contributory factors remain unchanged.

If the health consequences of being overweight have certain treatment or loss of productivity costs associated with them and these factors are also diluted as the prevalence of being overweight reduces, it should be possible to calculate the reduced costs of health care to a society. Any such model might also have to build in the costs of implementation of such an advertising ban because new regulations and codes of practice would need to be policed and there might also be knock-on costs to the profitability of businesses that benefit from the brands affected.

Magnus and colleagues referred to a specific experimental study as their source of information about the specific contribution television advertising could make to children's food choices (Gorn & Goldberg, 1982). They made reference also to survey studies that showed the strength of statistical relationships between consumption of specific foods and weight gain (e.g., Bell, Kremer, Magarey & Swinburn, 2005; Haby et al., 2006). Evidence was then cited from another study to establish the strength of expected relationships between specific patterns of food intake and energy (calorie) consumption levels (Swinburn, Caterson, Seidell & James, 2004; Swinburn, Egger & Raza, 1999; Swinburn, Jolley, Kremer, Salbe, & Ravussin, 2006). They calculated the benefits in terms of life-span enhancement of BMI (weight) control in Australian dollars, set against increased costs of advertising regulation (based on information about current costs).

Their calculations indicated that by reducing intake of energy dense and nutritionally poor foods, the knock-on weight gain and health benefits would increase life expectancy (allowing for other risks) and this would in turn produce specific health care cost reductions. These reductions would still be beneficial to society even if lost sales of foods for which televised advertising was banned amounted to AUD\$2 billion per year. These figures seem impressive and certainly they would be if realised.

The problem with this kind of analysis is that it involves mathematical modelling on coefficients produced by other studies that in turn obtained data from widely varying samples of young people. In some cases, these samples were very large and in other cases very small. In few cases were they fully representative of the population of children in Australia where this econometric analysis was conducted. In the first instance, the study by Gorn and Goldberg comprised a relatively small-scale experimental study with a US sample based on a limited test of the effects of televised food advertising on children's food choices.

It is problematic to scale up from this single analysis to a much bigger population even within the same country and even more so when that generalisation is made to children in a different country. A better and more robust approach might be to derive coefficients from a meta-analysis of relevant clusters of studies so that each type of indicator has a score derived from large populations and more varied advertising test samples.

CONCLUSIONS

This chapter has examined evidence concerning possible influences of exposure to food advertising on the body weight of consumers. The body of research literature comprises a diverse collection of studies that have adopted a variety of methodological approaches in investigating this problem. Much of the literature is dominated by survey studies that examined degrees of statistical association between measures of exposure to food advertising and body weight. The evidence in this research was generally reliant on self-reports by survey respondents about their exposure to food advertising. In some categories of study, no direct attempts were made to measure food advertising exposure. Instead, researchers relied upon proxy measures such as the prevalence of food advertising on television or self-reported overall amounts of TV viewing and presumed that food advertising exposure must have occurred on the basis of these measures. These proxy measures are likely to be unsound as alternative indicators of food advertising exposure levels.

Survey investigations varied in the ways they took into account other potential factors of influence over people's body weight. Some investigations included statistical controls for potentially relevant variables such as parental food habits, parental body weight and a range of other social and environmental variables. Other studies controlled for few or none of these

types of variables. Thus, there are inconsistencies of research design that also resulted in inconsistencies in the data produced.

Direct tests of whether exposures to food advertisements can influence dietary choices were run by some researchers using experimental research designs. These methodologies are equipped to test causal hypotheses and ensure that exposure to food advertising is tightly controlled across different research participants. Such controls come at a cost. This is usually the loss of ecological validity. In other words, the advertising exposure experiences and dietary choice opportunities differ from ones that would be present in participants' everyday lives. A different set of norms could, therefore, have surfaced within the setting of the experiment that shaped the ways participants behaved and thus render these studies problematic indicators of real life dietary decision-making and eating behaviour. Nonetheless, evidence did emerge from experimental studies that some of the ways children think about particular foods can be shaped through exposure to controlled food promotion experiences, at least in the short term.

Larger scale attempts to find out whether environmental interventions such as food promotions might make a difference to dietary patterns or the prevalence of overweight and obesity in specific societies have taken the form of macro analyses of societal-level data about entire populations. These inventions have usually had to take advantage of reverse engineering actions—compared to the positive interventions of laboratory experiments—in which the influences of removal of food advertising are examined.

By comparing population-level statistics on overweight and obesity prevalence and societal-level volumes and locations of food advertising, researchers have tried to discover whether certain hypothesized body weight outcomes vary in prevalence in accordance with the permitted prevalence of food advertising. So far, the evidence for such societal-level effects is unclear and far from confirmed. There are reported links between volumes of advertising for specified food and soft drinks products and the extent to which they are consumed, but so far no confirmation that this relationship eventually produces changes in the prevalence of being overweight or obese among populations within those markets.

What can be said is that over time food promotions have grown in scale and prevalence creating increased opportunities for children to be exposed to these messages. At the same time, the frequencies of people being overweight and obese in many developed and developing countries have also

grown. National body weight problems have been found to occur with greater prevalence among children and these in turn have also resulted in increased presence of some diet-related chronic health conditions. The use of media such as television and the internet has resulted in a grow in sedentary behaviour which in turn has implications for the amount of energy-expending exercise young people take (Caroli, Argentieri, Cardone, & Masi, 2004). None of these patterns is encouraging in terms of the status of world health.

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How Important are Other Factors in Understanding Consumers' Responses to Food Promotion?

Finding empirical relationships between exposure to food advertising and food choices and consumption represents an important part of the puzzle of understanding whether food promotions can shape dietary habits. Mere exposure, whether measured in experimental conditions or not, actually tells us little about what really goes on in consumer's minds at the point of advertising exposure or subsequently when they take decisions about which foods they like and want to buy or consume. There are numerous other variables that come into play in this context. These include social and environmental factors other than food marketing activities that control consumers' dietary choices. There are also economic factors such as the pricing of commodities. Then there are developmental factors that relate to young consumers and their understanding of marketing processes and outputs.

METHODOLOGICAL ISSUES

As we have seen, the literature concerning research into the effects of food promotions on food choices and dietary behaviours can be differentiated according to methodological design features that relate to the way children's exposure to food promotions have been measured. In experimental studies, that are equipped to test causal hypotheses, children are shown food promotions of specific kinds often embedded within other media content such as television programmes. Their food choices and

consumption levels are then measured after different types of food promotion experience and compared with matched children who did not see any food promotions. In some experiments, the dependent variables linked to food selections are measured twice, both before and after food promotions exposure and in other cases only once after exposure. In survey studies, there is a reliance on respondents' reports of behaviour relating to food consumption and food promotions exposure. With very young respondents, parents are called upon to provide data about their children.

Surveys are not equipped to test causal hypotheses. They do however attempt to collect evidence about relevant behaviour patterns that have purportedly occurred in their everyday lives. This contrasts with experiments, which usually collect data under controlled and usually artificial food promotions exposure and food consumption settings. Many surveys also collect data from much larger samples of people than experiments and these samples will often tend to represent the populations from which they are drawn better than the participants recruited for experiments. It is important, therefore, to recognise the relative strengths and weaknesses of these different methodologies.

A further point can be made about surveys and this is that food promotions exposure is sometimes measured in a direct fashion and on other occasions is indicated via proxy measures. The latter measures do not actually measure food promotions exposure, but infer that it has occurred from other data. Frequently, a measure such as amount of television viewing is used as a proxy for exposure to television advertising for food products. This measure may be used on its own or is occasionally enhanced through triangulation with other data of relevance.

A typical triangulation might occur between data reported by survey respondents on their overall amount of television viewing or their diary records of having watched specific programmes and data about the advertisements that were broadcast at specific times of during specific programmes. Further data about food advertising might also be obtained from content analysis of samples of transmitted food advertisements that provide more detailed accounts of the types of foods being advertised in particular locations in the television schedules and the typical ingredients of those advertised food brands.

Ultimately, however, we must refer back to the veracity of the original exposure measures on which data were actually collected, and no amount of triangulation with other types of data can change the quality of the primary data set. Thus, even if we know that a specific television programme

contained four food advertisements for specific food types and survey respondents recorded viewing that programme in a television viewing diary, we still do not know for sure that he or she actually saw any of those advertisements from the programme viewing datum alone.

It is also well established that children's food preferences and eating habits are conditioned by a number of factors in their social environment and shaped also by a range of other variables. Parents are the biggest source of control of diet for most children. They serve as gatekeepers who control the flow of food into the home and as role models for eating habits through their own food-related behaviours. Children can pester their parents about making specific food purchases, but parents ultimately have the final say.

Other dietary influences sources include siblings and additional family. As children approach and enter their teenage years, peer groups become important sources of reference in relation to many different aspects of children's lives, food choices included. There are then individualistic attributes of children such as their personality characteristics that can shape their degree of interest in trying different foods, being concerned about their personal health and well-being, and willingness to take exercise. This collective of factors can influence how much children eat and the types of foods they eat.

Knowing all this, it is important to recognise that even if it is presumed that food marketing and promotion activities can play a part in shaping children's food behaviours, they do not operate in a total psychological and social vacuum. It is critical, therefore, that the effects of food advertising are not just measured effectively but also alongside other potentially influential factors. This is especially important of these extraneous factors that can independently influence both food behaviour and media behaviour.

MARKETING AND PROMOTION TECHNIQUES AND VARIANCES IN EFFECTS

Advertisers use a variety of techniques that are designed to make their brands appear more attractive to consumers. This approach is used when targeting child consumers as well as adult consumers. The techniques themselves however might differ. Advertisers will carry out research to discover what kinds of representations of brands are likely to work best with specific target consumer groups. They might make specific claims about brands in terms of benefits they will bring to consumers. In the context

of food brands, such claims might refer to the taste or nutritional value of the product or simply make consuming it appear a lot of fun. Some claims may be valid while others are exaggerations.

Adult consumers may not be easily fooled by these techniques because they have sufficient past experience with products and with advertising to know when a claim appears to be exaggerated. Children are a different matter. Their understanding of advertising in terms of the claims that it makes about brands can be ill-formed. This is true especially of pre-teenage children (Bandyopadhyay, Kindra, & Sharp, 2001; Gunter, Oates, & Blades, 1995; Young, 1990, 2000).

Advertisers might also adopt specific types of appeal to attract consumers to their brands. These claims tend to focus on the specific beneficial experiences accrued to consumers as a result of using a particular brand. Appeals can also make a product appear fun to use, or make reference to its taste or smell, refer to its performance or other features (Kunkel & Gantz, 1992). With food products, fun and sensory appeals were found to dominate while references to performance in terms of their health giving qualities were used much less often (Kunkel & Gantz, 1992; Lewis & Hill, 1998).

The settings in which brands are depicted represent a further technique that is especially important when marketing to children. Children are entertained by animated and fantasy settings and characters. These settings have been widely used by food advertisers. Some advertisers have developed series of fantasy advertisements that feature animated characters experiencing different adventures during their search for the advertised brand. The appeal of both the central animated characters and fantasy story surrounding the brand rendered the advertising and the brand itself more memorable (Ellyatt, 1999). There is not necessarily any harm to children engendered by engaging them in this way, provided they are able to recognise the fantasy as something distinct from reality. There are more legitimate concerns raised in relation to children who are unable to make this distinction (Rajecki et al., 1994).

Another technique that is widely used in many different areas of advertising is endorsement by celebrities who hold special appeal to children (Martin & Bush, 2000). Advertisers usually hope a celebrity's attractive qualities will transfer across to their own brands (Tom et al., 1992). This does not always happen. The match-up between brand and celebrity must be seen as credible by consumers. There must be a sense of relevance of the celebrity to the brand in question and also a feeling that the celebrity

might actually use the brand (Silvera & Austad, 2003; Speck, Schumann, & Thompson, 1988).

Children do not always accept specific brand-celebrity matches. Furthermore, if a celebrity is not well-liked, this can have a negative impact on a commercial brand's own image among young consumers (Chan, 2000). Choosing the right celebrity endorsers, however, can make a big difference to a brand's salience and popularity (Atkin, 1980; Bandyopadhyay et al., 2001).

PRICE SENSITIVITY

Food pricing can affect consumption. Children are sensitive to food prices just as much as adults. This point has been illustrated by studies of pricing effects on children's propensities to purchase healthy foods in locations, such as schools, where they would normally have only unhealthy options available to them. Children's food choices are sensitive to pricing strategies for products sold in school. While expanding local promotions of certain foods sold via vending machines did not greatly influence sales (Fiske & Cullen, 2004), price reductions were found to be very effective (French, 2003; French et al., 2001). Indeed, price reductions could successfully be deployed to encourage children to buy healthier foods in school (Hanna, French, Story, & Fulkerson, 2002).

Given the significance of pricing strategies, this could serve as a useful control variable in studies seeking to understand the part played by food promotion in relation to dietary habits. Even in the presence of some promotions, food consumption can be reduced by implementing price increases that render products less appealing. This outcome can occur among adult and child consumers and indicates the tendency of consumers of all ages to seek value for money from food items. It might also indicate that a higher price might make consumers think twice about spontaneous food purchases especially when they are not really hungry.

NON-MARKETING EXPLANATORY VARIABLES

There are numerous cultural, social and environmental that can play their parts in shaping children's food preferences and choices. These variables act independently of food promotion and also alongside it. Children's diets are initially controlled by their parents. As they grow older and get the opportunity to sample different foods, they develop their own tastes

and preferences. Children's preferences may fall in line with those of their parents but they can also depart from parental food likes and dislikes (Glantz, Basil, Maibach, Goldberg & Snyder, 1998). When this happens, a process of negotiation must ensue, sometimes resolved amicably and sometimes resulting in intra-family tensions and conflict (Isler, Popper, & Ward, 1987).

Children remain dependent on their parents to purchase food for them until they acquire some degree of financial independence and a sufficient understanding of how money works to make their own purchases. In consequence, children must try to persuade their parents to buy specific foods or specific brands for them or sometimes simply demand that they do so. As we have seen already, parental pestering behaviour on the part of children has been identified as a principal effect of children's exposure to food promotions. Parents and children have both testified that this behaviour takes place.

Whether or not food marketing can legitimately be blamed for cultivating specific types of food preferences among children—usually unhealthy ones—it is more difficult to argue that food promotions alone then cultivate unhealthy eating habits leading to childhood obesity and related health problems (Hawkins, Cole & Law, 2008). The rationale behind this counter-argument is that the extent of influence of food promotion extends to the child making requests of his or her parents to make specific food purchases (Glantz et al., 1998; Story, Neumark-Sztainer & French, 2002). The question here is whether parents give in to all their children's requests regarding food or whether they do so only selectively? If they do not always concede to their children's purchase requests, what are the reasons they have or they give to their child (and are they the same reasons in both instances)?

There is some evidence that the frequency of parental pestering is statistically correlated with potential exposure to televised advertising (Galst & White, 1976). We also know that when children's favourite foods are heavily advertised on television children's purchase requests for those foods are further encouraged (Morton, 1990). None of these observations changes the fact that parents must ultimately take an independent decision about whether to comply with their children's food purchase requests. Mixed empirical evidence has shown that sometimes parents concede to their children's food purchase requests, and sometimes food purchases are negotiated by parents and children (Del Toro & Greenberg, 1989; Yavas & Abdul-Gader, 1993).

THE GROWTH OF UNDERSTANDING

Children evolve as consumers through a socialisation process during their early years when they learn how to critique and interpret advertisements, understand brands and branding and establish sets of values around consumerism (Gunter & Furnham, 1998; Gunter et al., 2005; John, 1999).

Reference has already been made to levels of processing advertisements. Sometimes consumers engage in deep processing of information from the core advertising message and sometimes they are more influenced by peripheral elements such as production techniques, use of celebrity endorsers and so on. Advertisements do not just inform consumers about brands. They can also present social scripts from which we can learn. In the food and diet context, food advertisements might teach us about eating norms and standards. In this respect they can represent potentially powerful sources of social influence with children (Harris, Bargh, & Brownell, 2009).

With children it is important to know when and how different processing strategies might be used. Given also that children vary in their abilities to understand advertisement and the concept of branding, a developmental model needs to be integrated with a model of persuasion as applied to mature consumers to discover whether central or peripheral and systematic or heuristic approaches emerge at different times. This is a subject we return to later in this chapter. At this point it might be worth pausing to consider further the nature of child development and its relevance to the way children react to marketing messages.

One of the key limitations in research about children's evolving understanding of commercial advertising has been a lack of clarity in terms of both theoretical underpinning and measurement terms of reference (Martin, 1997; Martin & Bush, 2000; Young, 1990). When researchers ask whether children aged three, five, seven or nine years can understand advertising and what it is designed to achieve or what purposes it serves the operational definitions of comprehension rarely consider the full range of aspects of this concept. For instance, a brand advertisement may have varying objectives such as providing consumers with information about the brand, trying to make consumers like the brand, or attempting to persuade them to purchase and use the brand.

Understanding advertising, therefore, means having some informed ideas about these different objectives. Before the purpose of advertising can be defined, advertisements have to be identified and differentiated

from any surrounding mediated (or non-mediated) environment or setting in which they appear. On television, for example, when and how do children begin to tell the difference between programmes and commercial messages?

When focusing on the 'intent' of advertising, questions need to be asked about whose perspective is taken here. When questions are asked of children about whether the intention of an advertisement is to persuade them to buy the product being promoted, this is the intention from the advertiser's perspective. What is the purpose of advertising from the consumer's perspective? Is it the same or different from that of the advertiser?

Qualitative research with eight- and nine-year-old children in Ireland revealed that apart from the information and persuasion purposes of advertisements, they were also regarded as source of entertainment, as convenient break points (in the case of TV advertising) when young viewers could take a break from watching a programme and do other things, or as an intrusion on viewing or as a source of aspiration for some children if the commercials contained child actors (Lawlor & Prothero, 2003).

Further focus-group research with Greek children confirmed the above findings. For the youngest children aged six to seven years, advertisements on television were understood as opportunities to take a break from watching programmes and for the people in the programmes also to take a break. The ability of children of this age to differentiate advertisements as distinct entities from programmes or to explain either the information role or persuasive purpose of advertisements was extremely limited, while older children aged eight to nine and ten to eleven years began to demonstrate these types of understanding (Andronikidis & Lambrianidou, 2010).

This type of evidence, therefore, indicates the need for researchers to be clear about the terms of reference they are using when measuring how children engage with advertising. Failures on the part of children to score effectively on specific tests might indicate poor comprehension but it could also indicate poor measurement and representation of comprehension.

Next, the child must be able to make judgements of a more specific nature about the message content of an advertisement. Is it telling the truth about the product being advertised? Is it exaggerating what that product looks like, the way it tastes and what benefits it will bring to consumers? There must be a clear recognition that advertisements are not just providing information about products but also that they are attempting to sell them to consumers. This means that specific techniques are used to persuade the consumer that the advertised brand is worth buying and also that it is better than its competitors (Young, 1990).

Measuring these different kinds of understanding among children can pose a real challenge to researchers. Children are not all the same. At different ages they have reached different stages of cognitive development. This means that a five-year-old may not have the same level of understanding of the world as a ten-year-old. In part this difference can be accounted for by the richer and more varied life experiences of the older child, but it can also be explained by the more advanced level of cognitive information processing ability attained by the age of ten compared with the age of five. It was once believed that a given level of cognitive development would not emerge until a child had reached a certain age. Later, a modified view posited that the pace of cognitive development was fluid rather than fixed and some children could reach a higher level of development earlier than others. Very often a child's idiosyncratic environmental experiences played an important part in determining this pace of development (John, 1999).

Researchers must consider whether their research techniques will work effectively with children at a specific stage of psychological development. Children's relative levels of linguistic development are critical in this context. Verbal tests that can be used to assess the advertising comprehension of 10-year-olds might not be effective with 5-year-olds because they would not be able to understand the questions. This does not necessarily mean that children lack any ability to differentiate advertising at a very early age. Their inability to respond to verbal tests also does not mean that very young children have no understanding of the purpose of advertisements.

One solution to the verbal understanding problem is to use non-verbal methods to assess the understanding that children under the age of seven have about advertising. These methods make use of pictures of objects and scenes in place of verbal descriptions and ask young children to respond to the image which seems to them to make the best fit for the problem or question they have been given. This type of study design has been followed through over a number of years by different researchers to provide indications that even children whose language abilities are limited can still demonstrate abilities to explain the purposes of advertisements.

The study that kicked off this line of inquiry presented children with a breakfast cereal advertisement that featured a character called 'Toucan Sam'. The children who took part in this investigation were aged between two and six. First of all, they viewed the advertisement. Then, they were shown two pictures that respectively depicted a child with an adult woman selecting a cereal product in a shop or a child watching television (with no cereal pack featured). They had to choose which one of these images

showed what the advertisement wanted them to do. The picture of the woman and child was chosen by majorities of children aged two to three (75 %), four-year-olds (70 %), five-year-olds (76 %) and six-year-olds (96 %) (Donohue, Henke, & Donohue, 1980).

This finding was subsequently challenged on the grounds that this was a narrow choice range and the picture showing the child shopping was the only one that featured the advertised product (Macklin, 1987). This raised a question about what this study really measured. Did it demonstrate the ability of even very young children to understand the purpose of advertisements or did it simply measure the child's identification of the advertised product? In an extension of the original study design, Macklin repeated the experiment but showed the children 10 pictures rather than two pictures, with just one picture depicting a child shopping for cereal. Under these conditions, the proportions of children who correctly identified what the advertisement wanted them to do were much smaller. No children under the age of four selected the correct picture while only a few (8 %) of the four-year-olds and a minority (20 %) of five-year-olds did so.

For Macklin (1987) the result for the five-year-olds was nevertheless indicative of a certain level of understanding of the purpose of advertising. A closer inspection of her study however has called this conclusion into question. On the basis of chance alone, each of the 10 pictures had a 10 % probability of selection. Clearly the 20 % of five-year-olds selecting the shopping picture was better than this.

Taking Macklin's criticism of the original study which was based on the non-relevance of the television viewing picture to the task at hand, we must ask a similar question about her study. In this case, she used just three images that featured the advertised product of which just one depicted a child trying to purchase the product. If the other seven images in which the product was not featured are dismissed as non-relevant and, therefore, as possessing an unequal chance of selection, this leaves us with three images that are logical choices in this task scenario. The key question, therefore, is whether children will select the image featuring the advertised product that also depicts an attempt to purchase the produce and not either of the other two images in which the same product is present but not in a purchase scenario? Here the probability of making a correct choice purely by chance is 33 % which is greater than the 20 % observed among Macklin's five-year-olds (Gunter et al., 1995).

A further replication study was devised by Harvey and Blades (2002) to add further controls for the relevance of the choices of scenes. Children

aged four, five and six were shown a television advertisement for a breakfast cereal and then were shown six images. All images featured the advertised product but only in one case was there a scene in which a child was shown trying to purchase the product. Hence, none of the distracter images was disadvantaged by the fact that it simply did not show the advertised product. The children's attention was, therefore, directed to a behavioural outcome rather than being a simple product recognition task. The main finding of this study was that none of the children age four or five years was able to make the right choice of image above chance level. Six-year-olds performed above chance, but only one-third of these children made the correct choice.

Further evidence has emerged on young children's comprehension of advertising that leaves the debate about whether children under seven can really interpret the purpose of commercial messages. Bijmolt, Claessen, and Brus (1998) showed children aged between five and eight years an advertisement for a chocolate drink. After this, each child was presented with three pictures that depicted different scenes and were asked to say which one came closest to showing what the advertisement wanted you to do. The three pictures showed the following scenes: a mother and child buying the chocolate drink, the chocolate drink depicted on a shelf in a shop, and finally children watching the chocolate drink advertisements on television. While we might logically regard the first picture here as coming closest to the correct answer the researchers in the case treated selection of the second picture as correct as well. They found that nearly seven out of ten children (69 %) selected one or the other of these two pictures. Since a result of 66–67 % might have been expected purely by chance this result cannot be taken as significant (Gunter et al., 2005).

In a later investigation, Owen, Auty, Lewis, and Berridge (2007) found that children could demonstrate high rates of understanding of advertisements when invited to respond with picture tests as compared to verbal tests. Although this finding provides evidence that non-verbal tests may have greater sensitivity in regard to effective measurement of this type of concept, the children used here were older than those in previous studies of this kind and we would expect them to display a higher level of understanding of the purpose of advertising. Nevertheless, it is clear that we should be cautious over dismissing too readily the abilities of very young children in this context when our measurement techniques fail to allow them to respond in ways they prefer.

Further indications that non-verbal measures could be more sensitive to young children's understanding of advertising derive from a meta-analysis of research on the subject. Martin (1997) found 23 studies that matched pertinent criteria for selection and secondary analysis and found that while collectively these studies indicated that children's understanding of advertisements was significantly correlated with age, there was a considerable degree of variance in individual results such that the overall coefficient disguised inconsistency in the results. Variations in the findings were discovered to have relationships with specific study design factors and other characteristics such as where and when they were published. In the current context, however, variances were found in outcomes as a function of whether verbal or non-verbal measurements of understanding were used. In general, verbal measures yielded high correlations between the age of the child and their level of understanding than did non-verbal (picture-based) measures. Martin interpreted this discrepancy as a sign that the non-verbal measures enhanced the performance of the youngest children in these studies and reduced the range of difference between them and older children. This was reflected in turn in smaller correlation coefficients between age and level of understanding of advertisements.

FOOD MARKETING DEFENCE MODEL

Much of the early research about children and food advertising, published in the 1970s and 1980s, was concerned first with measuring the prevalence of such advertising in mainstream mass media and second with the immediate or short-term impact of such exposure on children's food preferences and choices. The research was informed by current theories about persuasion and child cognitive development that have been overtaken by new thinking and the effects on advertising itself of technological developments in more recent times. The persuasion of consumers by product marketing to select specific brands in preference to others was assumed to be the outcome of a chain of psychological processes that began with the consumer paying attention to a marketing message, interpreting what it meant, deciding whether they believed it and then liked it and then finally whether they it motivated them to use the brand and ultimately to purchase it (see McGuire, 1976).

This model was applied to all kinds of consumers including children. With the youngest consumers, however, there was a further question

about their abilities to understand marketing messages and interpret what they meant. This was believed to be limited among pre-teenage children and virtually non-existent among infants aged under five years (Ward, Wackman, & Wartella, 1977). Such abilities were thought to emerge gradually as children passed through successive stages of cognitive development. This model of children's understanding of advertising was underpinned by Piagetian theory, which posited that a child moved from one stage of cognitive sophistication to the next higher one in a pre-defined sequence and each higher stage was reached usually at a specific age (John, 1999). This model shaped most of the research into children and advertising during the 1970s–1980s and determined the interpretation of many of the early findings in the field.

From the 1990s, new psychological models about persuasion and child development emerged that eventually penetrated research into children and marketing. These models allow for persuasion to occur even without conscious awareness of specific marketing messages and for the possibility that children under five can become brand aware and capable of simple discriminatory judgements about advertising that Piagetian theory would not countenance. Persuasion to the point of revised beliefs about products and shifts in behavioural intentions can result from exposure even when consumers make little effort to process the information in marketing messages (Bargh & Ferguson, 2000; Dijksterhuis, Chartrand, & Aarts, 2007).

Emergence of understanding about the concept of persuasion and knowing how to apply it to advertising was presumed under Piagetian thinking to represent an ability that would inevitably surface with age and would, therefore, become available once the child was old enough. Newer thinking about child cognitive development and learning about persuasion has now posited that the emergence of a specific level of understanding about persuasion is dependent upon whether a child has had relevant experiences through which this concept is learned. This learning can take place at different ages and is not age delimited (Friestad & Wright, 1994; John, 1999).

Drawing upon this new thinking that derived from social cognition theory, Harris, Brownell, and Bargh (2009) presented their Food Marketing Defense Model, which provided a framework for research into children's comprehension of marketing. This model was devised as a framework for a new research agenda that would generate policy-relevant findings regarding how best to protect children from the influences of food marketing. In the words of the authors:

The food marketing defense model proposes four necessary conditions for individuals to effectively resist food marketing stimuli: (1) *Awareness*, including conscious attention to individual marketing stimuli and comprehension of their persuasive intent; (2) *Understanding* of the effects resulting from exposure to stimuli and how to effectively defend against those effects; (3) *Ability*, including cognitive capacity and available resources to effectively resist; and (4) *Motivation*, or the desire to resist. (Harris et al., 2009, p. 217)

The analysis provided by Harris and her colleagues has value not just for the model it has proposed but perhaps more so because of its foundations on a critique of what they termed as ‘common misperceptions’ about food marketing influences. These misperceptions or they might be termed *misconceptions* have made assumptions about:

- how seriously consumers must confront marketing messages to be persuaded by them—that they must pay conscious attention to and understand the core message;
- about how growing maturity in children renders them more sceptical recipients of marketing messages and, therefore, less susceptible to their influences; and
- finally, that better nutrition knowledge can also lead consumers to challenge marketing claims about food products reducing their persuasive potency.

There is empirical evidence to show that none of these assumptions about marketing effects should be automatically accepted. Although it is generally accepted that children’s cognitive development progresses through several stages and becomes more sophisticated over time, the rigid age-based model of progression proposed by Piaget has been replaced by a more flexible perspective that envisages a more fluid developmental process that can occur at varying speeds for different children. Moreover, insofar as early school-age children can demonstrate brand awareness and responsiveness to advertisements, their processing of marketing messages tends to occur more through the peripheral route than the central route (Derbaix & Bree, 1997; Moore & Lutz, 2000). Even when children aged from four through to 15 years were offered an incentive in the form of a prize for paying close attention to an advertisement, their level of involvement made little difference to the overall effectiveness of the advertisement (Te’eni-Harari, Lampert, & Lehman-Wilzig, 2007).

Further evidence has shown that even when disguised marketing techniques such as product placement are used that do not draw in the consumer's attention, effects on brand awareness, knowledge and attitudes can still be influenced (Law & Braun-La Tour, 2004). Exposure to product placements can result in children as young as six or seven choosing the featured brand over a rival in a subsequent choice test (Auty & Lewis, 2004).

Even when children are aware of advertising and know enough about it to critique its claims about the brand being promoted, this may not be enough to prevent persuasive influence or at least precursor effects of information storage and attitude formation about the brand. It is precisely for this reason that children have been found to show an interest in advertising for products for which they are not yet in the market, such as alcohol, and why they have some brand familiarity in these cases even though this does not mean they consume these commodities (Aitken, Eadie, Leather, McNeill, & Scott, 1988; Aitken, Leather, & Scott, 1988; Nash, Pine, & Messer, 2009). With food advertising, even older sceptical children who understood something about persuasive communication still exhibited some susceptibility to these messages in their subsequent food choices that was not dissimilar to those measured among more 'naïve' younger children (Chernin, 2008).

There is no doubt that by the time they reach their teens, young consumers are capable of adult-like judgements about advertisements and other forms of marketing. It is also possible that in the context of food they have acquired knowledge about nutrition and health, although this will vary from one person to the next (Kunkel et al., 2004). Regardless of their prior knowledge and understanding, adolescents can be susceptible to the influences of advertising. It seems there may be a combination of reasons for this. Adolescents' cognitive information processing skills have still not reached full maturity, even though they are capable of advanced reasoning (Pechmann, Levine, Loughlin, & Leslie, 2005).

Furthermore, at this stage of their development they often experience emotional turmoil that can interfere with their cognitive faculties (Sowell, Thompson, Tessner, & Toga, 2001; Spear, 2000). The growing importance of peer groups can also mean that social conformity factors come into play that might encourage the uptake of marketing messages already endorsed by peers (Brown, 1990). Finally, this is a period of social and psychological experimentation and impulsivity that can also interfere with rational decision making when confronted with persuasive messages (Cauffman & Steinberg, 2000).

As a consequence of rapid and pronounced hormonal and social changes that characterise adolescents, teenagers often experience stress symptoms and can be hypersensitive to stressful situations (Walker, Sabuwalla, & Hunt, 2004). Under stressful conditions, young people have been observed to indulge in mood enhancing activities which in regard to eating can mean a preference for fattening snacks (Tice, Bratslasky, & Baumeister, 2001). When given an option to choose between a food product that invokes positive emotions but negative thoughts because it tastes good but may be bad for you (e.g., chocolate) and one that may be less emotionally arousing but invokes positive beliefs about its nutrient value (e.g., fresh fruit) under conditions when they were distracted and put under pressure, young people chose the product that triggered positive emotions rather than thoughts (Shiv & Fedorikhin, 1999, 2002).

As an intervention, one proposition is that young consumers could benefit from media or advertising literacy education to develop relevant critical skills to interpret marketing messages and to induce a healthy dose of scepticism about advertising among young people (Livingstone, 2006). There is evidence that carefully designed programmes can be effective in enhancing these skills among young consumers (Kunkel et al., 2004). Likewise, it has been argued that consumers in general need to become more aware of the nutritional value of different foods and about the importance of a balanced and healthy diet (Hawkes, 2006). Even this knowledge is no guarantee, however, that children will eschew unhealthy foods. Children have been found to display the ability to distinguish between healthy and unhealthy foods and yet still choose to consume the latter (Glanz, Basil, Maibach Goldberg, & Snyder, 1988; Harris & Bargh, 2009).

In view of these doubts about the common beliefs concerning children's susceptibility to marketing messages, and about the explanatory efficacy of the popular theories about persuasion and child development used in marketing contexts, it is important to consider whether a different theoretical approach is needed or at least whether the dominant theories of the late twentieth century need to be modified.

SOCIAL COGNITION PROCESSES

The triggering of eating by advertising could be explained in terms of the notion of 'priming'. According to this social cognitive theory people form mental representations of behaviour that provide scripts for future action. These behavioural scripts can be activated by relevant external

cues in the individual's environment. Such activation can occur without conscious awareness (Bargh & Chartrand, 2000; Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001; Dijksterhuis et al., 2007). Hence, we can be confronted with other people in our environment who behave in a particular manner that then raises in our minds ideas about specific behaviours that we have previously learned and makes us more likely to perform those behaviours ourselves (Dijksterhuis & Bargh, 2001).

Constructs comprise information nodes stored in memory that represent examples of episodes or events we have experienced (Hastie & Park, 1986). Reminders of these constructs in the form of external experiences can activate them and render them more available to guide our decisions about how to react in different situations (Kahneman & Tversky, 1982; Tversky & Kahneman, 1973).

These priming effects have been found to occur through mediated experiences. Watching television programmes that portray specific behaviours or events can impart new behavioural scripts to us or represent cues that result in pre-existing scripts already stored in our behavioural repertoires becoming activated (Busselle, 2001; Shrum, 1996; Shrum, Wyer, & O'Guinn, 1998). Priming operates through a process also termed 'construct accessibility'.

There is evidence that food advertising can prime recipients to eat more perhaps by reminding of them of food and its consumption. The mechanism through which influence operates is that exposure to patterns of eating that are depicted in food advertisements can transfer to consumers various ideas about food and eating that can be internalised. Under the right circumstances, these ideas about food and behavioural scripts that accompany them can trigger similar patterns of eating among consumers. Children might be especially susceptible to these influences because of their openness to new ideas concerning how to behave in different settings (Story, Neumark-Sztainer & French, 2002).

Both children and adults have been found to be susceptible to these influences. In one study conducted with children, the researchers found that children's preferences for sweet foods and drinks and fast foods were associated with their history of exposure to televised food advertising. Children who watched a lot of television were most likely to exhibit the strongest preferences for junk foods that had been extensively advertised on this medium (Dixon, Scully, Wakefield, White, & Crawford, 2007).

Harris et al. (2009) conducted experiments with children aged 7 to 11 years and with young adults (university students) aged 18–24 years.

In the study with children, participants were assigned to watch a cartoon and in one condition it was embedded with four food advertisements in two separate advertising breaks, while in another condition, the advertising breaks contained no food advertisements. The food advertisements promoted breakfast and snack foods, while the other advertisements promoted other child-oriented products. All the children were provided with a large bowl of cheese crackers to eat while watching, along with a glass of water. Additional information about the children was collected from their parents as well as from the children themselves, including about the last time they had eaten anything.

The key dependent measure in this study was the amount of cheese crackers they ate. The results were straightforward. The children who watched the cartoon embedded with food advertisements ate more cheese crackers than did the other children. No other measured variables predicted this outcome. Hence, even the amount of time that had passed since the child last ate something made no difference to the experimental outcome.

In a study with young adults, the same basic design was used except that the cartoon was replaced by an improvisational comedy television show. There were also three conditions rather than two. Throughout all conditions, the programme was presented embedded with 11 advertisements spread across two advertising breaks. Seven of the advertisements for the same non-food products were presented in every condition. Of the four remaining advertisements, in the first condition these were advertisements for snack foods and drinks (two fast-food products, a confectionery bar and a cola soft drink), in the second condition there were four advertisements for foods presented with a nutritional message (granola bar, orange juice, oatmeal and an instant breakfast beverage), and in the third condition four further non-food advertisements were presented.

All participants had eaten on average around three hours earlier and were pre-tested in terms of their prior hunger or thirst. After viewing the programme, participants were moved to another room and sat at a table with five pre-measured snack foods that comprised foods classed as high and low in their nutrient value. Participants were asked to try each food item and then to rate it on a number of evaluative scales. They were also told they could eat as much of each food item as they wished.

Participants clearly differentiated between the most healthy and most unhealthy foods in their ratings, but in terms of flavour, all food items were fairly highly rated. Overall, the vegetable snack was eaten the most

followed by cookies, trail mix, snack mix and multi-grain chips. There were effects of the advertising to which the participants had been exposed. Those who watched the programme with snack food advertisements ate more snack foods than did participants in other conditions and those who watched the programme embedded with healthy food advertisements ate more vegetables subsequently compared with participants in other conditions.

Another interesting finding was that participants who had previously categorised themselves as restrained eaters were the most affected by exposure to snack food advertisements. This effect occurred despite restrained eaters claiming to feel less hungry after watching snack food advertisements. Similar effects occurred among male participants, but not among females. The researchers concluded that their study had demonstrated the power of food advertising to influence not just choices of foods to eat but also the overall amount that is consumed. Priming could be offered as an interpretative framework with food advertisements triggering behavioural scripts that can lead consumers to eat. This effect can be directional however and could be deployed to promote healthy eating as well as unhealthy eating.

The potential of televised advertisements for certain types of foods to trigger children's food preferences in line with the brands being advertised has been demonstrated on a small scale by British researchers (Lewis & Hill, 1998). They showed different groups of children aged nine and ten years cartoons that contained either food adverts or only non-food adverts. The participants were given questionnaires to complete that obtained data about their current health and well-being, self-esteem, body weight and height and dietary habits. They found differences between the groups whereby those who watched the cartoon with food adverts subsequently displayed stronger appetites for confectionery and sweet foods.

Concern about these cognitive-level influences of food advertising is magnified when taking into account further evidence about the types of foods that dominate food advertising, especially on television. Analyses of the most popular television programmes among children in the USA have shown that the kinds of foods to which children are potentially most likely to be exposed are those judged to be poor in nutritional quality. In fact, these foods that have a high fat, salt and sugar content, have been linked to a variety of health risks (Powell, Szczypka, Chaloupka, & Braunschweig, 2007). The regularity with which these products appear in prominent promotional slots where they can be witnessed by massive numbers of

children on a daily basis facilitates repeat exposure of messages about the normativity of such foods.

KNOWLEDGE ABOUT FOOD

How much do consumers know about food? To what extent does their knowledge and understanding derive from food marketing messages? How important is food advertising in the wider process of children's food and diet socialisation? Where do children learn about food? How important is the food industry's own information about food in educating the wider population, and especially children, about food? These are important questions and the answers to them will provide important insights into consumers' involvement with food and in turn how this might feed back into their reactions to food advertising. If consumers obtain knowledge and understanding about food from different sources, then where this information does not derive from advertising, can it and does it modify their reactions to the information received about food through advertisements?

In part the answer to the question about how people respond to advertisements derives from an understanding of consumers' conceptions of advertising as an activity. We know from research with children that over time they come to develop an increasingly diversified and complex understanding of the nature and purpose of advertising. This 'socialisation' of children as consumers and with it a broader and deeper 'literacy' about advertising can mediate their opinions about specific advertisements. Personal experience with advertised products and services can also feed into this process especially where the lessons learned from such experiences contradict the claims made in advertisements. This advertising literacy does not render consumers immune to the persuasive appeals of advertisements with other factors, such as peer pressure among adolescents, driving purchase decisions despite personal reservations about the veracity of some advertising messages.

In the food context, however, consumers' personal experiences with products can play a critical part in determining personal likes and dislikes that are bound up in the both cultural symbolism and physical pleasure or displeasure. The latter reactions can be especially powerful in driving personal product tastes and such preferences can become so deeply ingrained that they will be insensitive to the attempts by food marketers to change them. Although as with other product categories that become signs of

fashion sense, foods might be consumed by young people even when they do not like their taste purely because of the social cache that accompanies being seen to eat them.

Nonetheless, nutritional value is a factor that can shape food preferences. Even very young children were found to have some awareness of the nutritional value and health effects of food products. Hence five- to eight-year-olds could say which out of a range of foods and drinks might be 'good for you'. They knew for instance that eating confectionery could be bad for their teeth (Esserman, 1981). Further research has indicated though that exposure to programmes that carried lots of advertising for sugared foods was associated with children having poorer nutritional knowledge (Wiman & Newman, 1987).

If specific foods or brands are seen frequently enough by young consumers, it may be conceived as a normal choice of food to make. Hence, advertising can cultivate ideas about the general popularity of specific foods or brands especially when they see them being used by people such as themselves in advertisements. According to cultivation theory, the media (and this can include marketing messages in the media) can exert a social conditioning effect on people in their audiences such that their perceptions of everyday reality can become distorted.

These theories make a number of assumptions about the reception of marketing and promotional messages on the part of children. One of the core assumptions is that young consumers accept marketing messages in a relatively passive way. Thus, if they perceive a particular product as being the 'norm' they will incorporate it along with specific beliefs about it into their own lives. One concern of health authorities is that the dominance of advertising for food products of poor nutritional quality can make such products seem acceptable and potentially as healthier than they really are.

Yet, such assumptions fly in the face of research evidence that has shown that even quite young children learn about what is healthy and unhealthy to eat from sources other than food marketing. They can identify which foods are good for them and even explain reasons why. Even so, they may find it difficult to reject unhealthy foods in spite of knowing that they may not be good for them. It is not clear, however, whether failure to 'reject' unhealthy foods is underpinned by a specific set of beliefs about personal risks or whether unhealthy foods are thought to taste better or indeed whether this result has derived from an artefact of answering biases in self-completion questionnaires whereby young respondents feel more comfortable saying 'yes' than 'no' to certain types of questions

(Tatlow-Golden, Hennessy, Dean, & Hollywood, 2013). Evidence from children aged three to five years in Ireland showed they could distinguish healthy from unhealthy food types, but again this knowledge was poorer among heavier television viewers (Tatlow-Golden, Hennessy, Dean, & Hollywood, 2014).

KNOWLEDGE OF MARKETING PRACTICES

Much of the debate about food promotion has centred not just on whether the industry uses devious or deceptive marketing practices, but more specifically about the role played by these practices in creating a climate of food consumption that leads to health-damaging outcomes for society. The recognition by many Western and even some Eastern societies that they have a public health problem with obesity has led to calls for the food industry to take on more personal responsibility for fixing the problem. Governments and their health and marketing regulators have put pressure on the food industry to change the ingredients of their products, provide consumers with better information about these ingredients, and to take other steps to cultivate a healthier approach to eating. Governments have further enjoined these efforts by sponsoring public health campaigns that are designed in the first instance to educate people about food and nutrition, then to change their attitudes and beliefs concerning foods, and then eventually to change their dietary habits.

It might be worth pausing at this point to reflect on what is known about people's nutritional knowledge and their food-related beliefs before then considering how these cognitive factors might then underpin, if at all, how people behave towards food. Can food related knowledge and beliefs be changed by proactive interventions on the part of governments? Are there other forms of health campaigning that can play a valuable role in cultivating a healthier orientation towards food? Will changes in food related behaviour then follow on if the right mind-set towards food is established?

There have been attempts to develop campaigns designed to counter the alleged effects of food advertising (Harris, Brownell & Bargh, 2009). The objective of these exercises is to enhance public knowledge of dietary and nutrition-related issues and change their attitudes and beliefs about food. The digital media have also been utilised in such contexts.

King (2012) conducted an analysis of secondary data sources and concluded that advergames can have powerful effects on children's food

choices. They are psychologically engaging, utilise branded on-screen characters and other visual features that facilitate repeated and visible exposures to brand names and logos. The engaging nature of advergames however can also be put to positive uses in the service of promoting healthy eating messages.

KNOWLEDGE ABOUT BRANDS

Children develop an awareness of brands from an early age. There is evidence of some brand consciousness emerging as early as age two (Valkenburg & Buijzen, 2005). Initially, this awareness is fairly crude, but as children grow older it becomes more sophisticated (Haedrich, Adam, Kreilkamp, & Kuss, 1984). Brand knowledge can derive from direct personal experience with products and is also influenced by exposure to advertising (Dammler & Middelmann-Motz, 2002).

Children's ideas about brands can be informed by the scenarios of brand use depicted by advertisements. Thus, when children watched a television advertisement for a breakfast cereal in which a character endorsed the brand and implied that eating it made him stronger, they subsequently believed that the cereal would also make them strong. Seeing a food brand consumed by well-known characters from the world of entertainment can also encourage children to believe that they will enjoy it too (Atkin & Gibson, 1978).

Children have been found to identify with same-age actors in advertisements. Thus, using children in food advertisements can draw in child consumers' and render the promotional message more believable to them. This in turn can enhance the likability of the advertisement although this sentiment does not necessarily transfer to the advertised brand (Loughlin & Desmond, 1981).

REVERSING NUTRITIONAL TRENDS

If promotional messages for food can encourage children to eat food of poor nutritional quality, then perhaps they can also be used to encourage consumption of better quality and healthier foods. There is evidence that with the right kinds of environment cues concerning food, children can exhibit a preference for fruit over confectionery and high processed sugar foods. Merely presenting children with bowls of different foods and then asking them to make visual assessments of the food and to undertake

saliva tests following food exposure can trigger a later preference for the foods witnessed (Coelho, van den Akker, Nederkoorn, & Jansen, 2012). It ought to be possible, therefore, to trigger similar responses with mediated depictions of foods.

One interesting demonstration of this effect found that a one-minute video depicting a child eating and enjoying an apple following a message that endorses the health-giving qualities of apples was sufficient to turn children on to apples. Even a video that verbally promoted apples and then showed two children trying and rejecting the fruit still encouraged child viewers to prefer an apple over a snack food subsequently (Bannon & Schwartz, 2006).

A US study with pre-school children developed two video commercials with pro-nutritional aims (Nicklas et al., 2011). The idea was to produce messages designed to encourage children to eat more fruits and vegetables using advertising techniques. Extensive formative research was conducted over about a year and the end result was a commercial called 'Judy Fruity' that promoted apples and bananas and a second video called 'Reggie Veggie' that promoted broccoli and carrots. The commercials were placed within a 15-minute television programme for presentation. Both commercials contained animated characters (Judy Fruity and Reggie Veggie) that were depicted with their respective food products and shown eating them. A sample of children was allocated to watch one or other of these two video commercials or they were placed in a control group where they watched neither.

The experimental groups received four exposures to their allotted commercial over a one-week test period. In the test, they saw a number of fruit and vegetables appear on a screen one at a time and rated each one as 'yummy', 'yucky' or just 'okay'. Children's preferences for broccoli and carrots were significantly higher among those who saw the veggie commercial compared with the control group. The same effect was not significant in the case of fruit, but this result was explained as a 'ceiling effect' whereby most of the children already ate apples and bananas.

CONCLUSIONS

Food advertising does not operate or exist in a vacuum. Food promotions are embedded within a wide range of other media content or positioned in physical environments in which they compete with other stimuli for

consumers' attention. Furthermore, advertisements tend to represent one aspect of broader marketing campaigns that package together a number of different techniques designed to attract consumers and persuade them to buy. Consumers also vary in their background experiences and their personalities. When it comes to children as consumers, one important variable that controls how they respond to advertisements is their level of psychological maturity. Very young children have only a crude understanding of advertising. This gradually evolves through their pre-teenage years until they reach an adult-level of comprehension in their teens.

Any research that attempts to understand how children respond to advertising for food and non-alcoholic drinks products, therefore, must take into account the level of psychological development reached (Adler et al., 1980; John, 1999; Gunter et al., 1995). This factor must enter the thinking of researchers when they design their studies as well as when they interpret their findings. Research methodologies must use techniques that are within the range of comprehension of any children being studied. Interpretations of the effects of advertising must also be sensitive to the nature of children's responses at different ages and stages of development (Hawkes, 2007, 2007b; Hawkes & Harris, 2011).

Advertisers might have specific intentions for their commercial messages. They may select production techniques accordingly in the belief that specific approaches to the promotion of brands will generate certain effects among children. It is essential, however, that advertisers are sufficiently informed by psychological evidence about children's cognitive development to know whether a specific form of story-telling or visual representation or celebrity endorsement of a brand will strike a chord with a child or whether it will pass right over their heads.

If an advertisement uses the right kind of story-telling representation of a brand that has a level of complexity that lies within the range of comprehension of a child, its chances of having a desired effect will be enhanced. Otherwise, the message may be expected to have little or no impact. As children's ability to deconstruct advertisements evolves with age enabling them to question the veracity of what is being said or shown about brands, they begin to exercise increasingly critical faculties, which can serve as protection against persuasion. There is sufficient interesting research on this point when it comes to food advertising to suggest that expected advertising influences cannot be taken for granted. More research is needed, therefore, that incorporates a better recognition of the mediating effects of psychological development on children's reactions to food and drinks

advertisements. Such research could provide a richer vein of understanding on which regulators might build effective codes of marketing practice and consumer advice.

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What Regulatory Challenges Does Food Advertising Present?

This book has reviewed and critiqued research into children's responses to food advertising. At the beginning we saw that this is a widely debated topic. It is a source of public concern to know whether advertising of food products can influence children's food preferences and choices, how much they eat and ultimately the status of their general health and well-being. Health profiling of national populations has revealed that in many countries a child health problem has been identified that has been linked specifically to children's diets (WHO, 2005). The health issues associated with diet are manifold, but they have been crystallized for convenience of public debate into one specific problem, the growing prevalence of overweight and obese children. No one would dispute that diet and weight gain are connected. These two factors do not operate on their own however.

Whether a child becomes overweight, however, depends on more than what they eat. Much depends here on their energy equation balance. Food contains and delivers energy to fuel the human body. There must, however, be a balance between energy (in the form of calories) intake and energy expended. If more energy is consumed that is used up through physical activity, weight gain can follow. If energy expenditure exceed intake, weight loss can occur. There may also be different benchmarks concerning when a person has achieved their optimal weight. Shifts in these benchmarks can alter statistics concerning how many people in a population are classified as being overweight or obese. Maintaining a stable optimal

weight—whatever that it—ultimately comes down to ensuring that energy consumed does not exceed energy expended.

Much of the obesity debate has centred on concerns about excessive energy intake. This in turn has led to attention being directed towards the types of foods that people eat. A conclusion has been reached that obesity in different societies is caused by following an unhealthy diet laden with high-energy foods that are poor in nutritional value in terms of their specific ingredients. In particular, a lot of energy in these foods derives from sugar and to a lesser extent saturated fat. Quite apart from fuelling weight gain when consumed in amounts greater than the individual's energy needs, they can also produce other (ill-) health side-effects, such as diabetes and clogged up blood vessels. Reliance on processed foods rather than natural ingredients also introduces excessive salt (causing high blood pressure) and other substances into human systems that can increase risks of a wide range of other health problems.

Concern about energy intake in the form of specific types of foods has also drawn attention to factors believed to drive this process forward. The adoption of an unhealthy diet of energy-dense/poor nutrition foods has been explained in terms of the availability and cost of such products and also in turn the volume of encouragement through advertising that people receive to become consumers of them. Voluminous published research evidence has amassed that shows that food advertisers are extremely active and visible in the mainstream mass media that everybody, including children, consumes (Cairns, Angus, & Hastings, 2009; Hastings et al., 2003; Livingstone & Helsper, 2006; Yale Rudd Center for Food Policy and Obesity, 2010; Young, 2003).

Yet, one review of reviews of research into public health risks conducted for the Public Health Research Consortium indicated that there are multiple factors linked to the physical and psychological nature of individuals, their geographical location and living environments, their social and economic circumstances, and the behaviour of others around them that all play a part separately and collectively to affect food choices and health status. In fact, one feature of this field is that risk behaviours themselves can cluster together such that a propensity to engage in one risk (e.g., drinking excess alcohol) might be linked to eating unhealthy foods. The reviewers concluded that while quantitative studies can facilitate statistical modelling and cause-effect hypothesis testing about relationships between different variables, more qualitative research would be helpful in discovering more

about barriers to change that might impede the effectiveness of interventions designed to reduce public risks (King et al., 2015).

A general agreement was reached internationally, under the auspices of the WHO that food and non-alcoholic beverage marketing practices must be brought under tighter control because of the role they played in encouraging children to consume unhealthy diets (see Hastings et al., 2003, 2007). In 2004, the World Health Assembly created a global strategy on diet, health and exercise to tackle this problem (WHO, 2004). Subsequently, member states of the WHO were invited to activate this strategy within their national boundaries by reviewing codes and regulations for the marketing of foods and beverages (WHO, 2006).

It was observed later that 22 countries had produced policies on food and beverage marketing to children (Hawkes & Lobstein, 2011). Major food and beverage companies also responded to the concerns being raised about their marketing practices and issued corporate pledges to curtail some of these activities and also to promote healthier diets among children (Kolish, 2009). Some of the biggest food and beverage companies in Europe pledged to change the way they advertised their products to children (EU Pledge, 2012). In other parts of the world, such as Australia, trade organisations representing the industry took on the responsibility of adopting codes to restrict advertising to children up to the age of 12 (Australian Food and Grocery Council, 2011).

The World Cancer Research Fund International (2015) identified 14 countries that had mandatory regulations covering food advertising, while the European Commission (covering all 28 member states of the European Union (EU)), Switzerland, Thailand and the USA had voluntary, self-regulatory codes, developed by the food and soft drinks industries, in place. In different countries, mandated regulations covered broadcast food advertising to children (six countries), food advertising on non-broadcast media (two countries), food advertising through any medium (one country), specific techniques in food advertising (two countries), food marketing in schools (five countries) and a requirements that food advertisements should carry health warnings (one country).

These restrictions took varying forms. There were no blanket food advertising bans. Some codes of practice targeted specific foods and soft drinks for prohibition or placed time and location restraints on them (i.e., not at times or in schedule locations when lots of children of specified age ranges were in the audience). Food advertising restrictions were sometimes guided by a standard model of nutritional value of foods, with

restraints being targeted at those products deemed to be least healthy. In some markets, the types of promotional strategies were restricted. These codes tended to target features such as use of animation, interactive apps, links of the primary food product with other merchandise such as toys that were known to be attractive or appealing to children.

One review of 21 independent studies on this topic published between 2008 and 2012 and of 28 reports published by governments and other public and trade bodies provided the basis of this analysis (Galbraith-Emami & Lobstein, 2013). The independent peer-reviewed research reports indicated that regulation and voluntary codes could reduce children's exposure to advertisements for unhealthy foods and beverages, but often did not. Industry pledges were also found to have made little difference in terms of reducing opportunities for children to be exposed to this advertising.

THE ROLE OF THE FOOD INDUSTRY

The food industry is one of the biggest purchasers of advertising space in virtually all advertising media and environments. Furthermore, it has high presence in media settings that attract large numbers of children on a regular basis. This means that children are exposed to food promotions from an early age. They are confronted with a diverse range of food brands aggressively competing for market share in a crowded marketplace. The foods that are mostly advertised in these child-appealing settings are those deemed to be energy dense/nutrition poor. Various estimates have calculated that children can be exposed to tens of thousands of advertisements each year on television alone (Comstock & Scharrer, 1999; Robins, 2002) many of which are for food and non-alcoholic drinks (Reece, Rifon, & Rodriguez, 1999; Taras & Gage, 1995).

Further research has shown that children's food tastes and eating habits can be shaped by the commercial activities of the food industry. Close inspection of this evidence, however, has led some to question the case for the powerful effects of food advertising (Livingstone & Helsper, 2006; Young, 2003). Even so much evidence has indicated that food marketing activities can shape the food choices that young consumers make (Cairns et al., 2009; Hoek & Gendall, 2006; Livingstone, 2005, 2006a, 2006b).

Another big factor at play here is that many people, including children, are leading sedentary lives and consume more energy through food than they burn off. This state of affairs is often the outcome of environment changes, sometimes driven by government policies and sometimes through

the actions of parents. In this vein, opportunities to exercise in school have declined in countries such as the UK because schools have less play and sports areas following land deals encouraged by government. Outside of the school and home environment, parents are unwilling to allow their children to play in public areas or even to walk to school or to sites of other organised activities for fear that they will be attacked. So children are chauffeured everywhere in the family car. Dealing with these kinds of social issues are less palatable to governments and politicians because they can require policies that not all voters will like and because of the long time frames over which they must be implemented to be successful. It is important, therefore, to be mindful of both sides of the food and weight gain equation.

Despite these social and environmental factors, it is difficult to ignore the marketing activities of the food and drinks industries. These have become ever more varied and sophisticated and in some ways more difficult to control through regulation. The growth of online marketing has posed specific regulatory challenges.

In the EU member states, food promotions took many forms: sales promotions, free gifts, character merchandising and competitions. Mainstream media promotions included television advertising, sponsorship of children's programmes, product placement, advertisements in children's comics and magazines, in-school merchandising and promotion, and early use of the internet. In schools, food companies placed brand advertisements, sponsored educational materials and equipment and installed branded products in canteens (Bureau European des Unions de Consommateurs & Consuemeentenbond, 1996).

These and other methods were observed in other parts of the world and in addition more subtle techniques such as associations between food brands and other collectible items, interactive games and children's clubs (Dalmeny, Hanna, & Lobstein, 2003).

Transnational trade agreements have also acted as catalysts to food promotions that encourage poor dietary choices around the world (Hawkes, 2006). The dominance of the big food corporations that have specific supply needs has also influenced the agricultural sector in terms of the kinds of foods they are rewarded for producing. Their economic power means that they can determine production choices at source while also creating processed products with additives designed to preserve ingredients for transportation over long distances. One of the effects of these industry activities includes the increasingly widespread adoption of a snack food culture (Hawkes, 2006).

The regulation of food marketing practices has taken on different forms that can be distinguished in terms of the types of marketing activities that are restricted and also whether specific codes of practice derive from government or industry and are underpinned or not by legislation (EU Pledge, 2012). National governments have introduced both statutory and non-statutory food marketing guidelines and the food industry has formulated its own voluntary codes of practice (Hawkes, 2004).

It has already been noted that regulatory frameworks designed to protect children have varied in the definition of a 'child'. Sometimes, this definition is age-defined and on other occasions it is not. When age defined, the age threshold below which specific food marketing restrictions come into play can vary from as young as 12 years to as old 21 years. In addition there is a further definitional problem of determining which food products can be classed as 'healthy' or 'unhealthy'. Surveys of international regulatory codes for food advertising and children have revealed that there is no consistency in the operational definitions of key terms of reference (Dalmeny et al., 2003; Hawkes, 2004; Matthews, Cowburn, Rayner, Longfield, & Powell, 2005).

GOVERNMENT REGULATION

There are various actions governments can take in relation to the marketing and distribution of food products in the interests of public health. Restrictions on marketing activities are founded upon assumptions about the influences of these actions as drivers of consumption. Similar steps have been taken by governments in relation to other product domains that have public health implications, most notably alcoholic beverages and tobacco. Whether or not outright advertising and other promotional activity bans or location restrictions, or codes that limit the kinds of claims brands can make have the desired impact on sales and consumption volumes remains an issue open to debate amidst conflicted empirical evidence on their efficacy.

Governments can also take other actions such as levying taxes on specified products which has the effect of putting up the price to the consumer. Such price increases can discourage some consumers from making purchases or encourage fewer purchases to be made. This in turn reduces consumption and where this is the desired objective such action can be more comprehensive than selective marketing restrictions.

There are marketing strategies that can be adopted by companies to circumvent the impact of tax rises. One method is that of 'bundling' together

a number of brands into a package which is then retailed for a single price. Thus, even though a tax increase might reduce consumption of soft drinks (and in caloric intake from these products) when sold singly, this effect is diluted when a soft drinks brand is sold as part of a bundle with other products (Sharpe & Staelin, 2010).

The usual core elements of any regulatory system for advertising derive from government legislation. Most developed and developing countries deploy centralised regulation of advertising, although the weight of regulations can vary greatly from one country to the next. In the context of food advertising, regulations apply both to product ingredients and to the way they are marketed. There are usually marketing restrictions that are designed to protect all consumers but also additional regulations that address the ways food advertisers promote their brands to children.

The nature and extent of food marketing to children regulation vary between countries. Such variances can be attributed to the different definitions used by particular national governments and their regulators or by the food industry itself to define core concepts such as ‘children’ and ‘unhealthy’ foods, and whether regulations are centrally imposed by government or voluntarily drawn up and implemented by industry. Restrictions on food marketing activities also vary in terms of the media to which they apply as well as degree of restrictions that are imposed upon marketing in specific media (Matthews, 2007).

One analysis of food marketing regulation across Europe found that a ‘child’ was deemed to be anyone up to the age of 18 in the Czech Republic, Denmark, Ireland and Portugal, anyone aged up to 16 in the UK (in relation to non-broadcast advertising) or 15 (for broadcast advertising), up to 14 in Greece and Slovenia, and up to 12 in The Netherlands, Norway and Sweden. In Estonia, food marketing restrictions applied to anyone up to the age of 21. In other European countries such as Austria, Belgium, Finland, France, Germany, Iceland, Italy and Spain food marketing regulations made references to young consumer categories such as ‘minors’, ‘small children’, ‘teenagers, or ‘young people’ but did not stipulate an age cut-off point (Matthews, 2007).

Across 20 European countries analysed, statutory codes were in place for broadcast food advertising in all of them, for non-broadcast food advertising in 13 cases, for internet advertising in 10 cases, and for company web sites in just five cases. Over the sampled nations, voluntary (industry) codes for food marketing were in place for broadcast advertising in 14 cases, for non-broadcast advertising in 13 cases, for internet

advertising in 10 cases, and for company web sites in six cases (Matthews, 2007).

The severity of statutory food marketing restrictions is often underpinned by a specific attitude to the food industry's promotional activities and politicians' and government officials' beliefs about the relative influences of these activities on children's food preferences, brand knowledge, eating habits and related health consequences. Not surprisingly, where there is a prevailing 'expert' or 'official' view that food marketing can impose powerful influences over children's orientations towards foods and their propensities to prefer food classed as 'unhealthy' there is an accompanying belief that by banning or severely restricting food marketing, young people's dietary habits and preferences can be changed.

Health and nutrition lobbies often backed by selected medical evidence have argued vociferously for the food industry to be more tightly regulated both in terms of the ingredients of its products and the way it promotes them. Public concerns about the growing prevalence of childhood obesity and early onset of diseases such as diabetes has led to calls for positive action to be taken to reduce children's intake of sugar. This outcome can be achieved both by educating children to consume less high-sugar content foods and by putting pressure on food manufacturers to reduce the amount of sugar they add to their products (Mansey & Ungood-Thomas, 2014).

National governments have varied in their response to this political pressure. In parts of Europe and North America, there has been a preference for the food industry to self-regulate. In other regions, most notably Scandinavia, central government has imposed restrictions on food marketing to children that have included for example outright bans on food advertising to children on television. Tighter restrictions on food advertising in some media have simply encouraged the industry to become more creative in its marketing strategies and to seek new pathways to reach consumers and persuade them to purchase its products (Dalmeny et al., 2003).

As noted earlier, food marketing regulation varies in its coverage from country to country. On a global scale, an association has been observed between rich and poor nations. The latter tended to deploy few regulations over food marketing while the developed world placed varying restrictions on the food industry and focused mostly on advertising on television and in school premises (Hawkes, 2002).

Even when regulations were introduced they were not always effective in producing the expected outcomes. In Germany, for instance, research

found that despite signing up to the EU pledge on televised food advertising to children, this produced only a small drop in food advertising on this medium which was more than offset by the significant growth in proportion of advertisements for non-core (i.e., unhealthy) food products (Bureau Europeen des Unions de Consommateurs & Consumentenbond, 1996; Effertz & Wilcke, 2012; EU Pledge, 2012).

PARENTAL REGULATION

Parents, as direct controllers and role models, have an important role to play in determining the quality of children's eating habits and also in mediating the influences of food advertising on young consumers (Buijzen & Valkenburg, 2003; Campbell & Crawford, 2001; Young, de Bruin, & Eagle, 2003). As children grow up and become increasingly independent of their immediate families, their friends and wider peer groups can also become more important in relation to the types of foods they choose to consume (Benton, 2004). All this means that any proposed influences on food advertising must be examined in the broader context of these other social factors.

There is ample evidence from different parts of the world that parents have long voiced concerns about advertising and its potential influences on their children (Burr & Burr, 1976; Mittal, 1994; Chan & McNeal, 2003; Laczniaik, Muehling, & Carlson, 1995; Pollay, Tse, & Wang, 1990; Spungin, 2004). Parents have reported particular concerns about the placement of advertisements around programmes that are targeted at children (Mittal, 1994; Spungin, 2004). Furthermore, they reserve special concern about food advertising largely because the foods that are advertised most of all on TV tend not to promote a healthy diet (Chan & McNeal, 2003; Kelly, Chapman, Hardy, King, & Farrell, 2009; Morley et al., 2008). Parents have been found to demonstrate widespread support for banning televised advertising for certain foods or at least tightening up regulations concerning them (Kelly et al., 2009; Morley et al., 2008).

Despite the roles played by these parental and other social variables in shaping children's food orientations, a body of empirical evidence has accumulated that has concluded that food advertising can have a distinct impact on children's attitudes to food, food preferences and dietary behaviours. Both the overall amount and location of this advertising, the nutritional quality of foods being promoted and the persuasive techniques being used have caused concern (Livingstone, 2005). Calls have

been made for tighter restrictions over all these aspects of food advertising (Boynnton-Jarrett et al., 2003; Kaiser Family Foundation, 2007).

In their defence, food advertisers have argued that consumers must take a share of responsibility for their eventual dietary habits and not simply accuse the food industry of uncontrolled manipulation of their food choices. Nonetheless, parents have been found to blame the industry for making their lives more difficult when it comes to controlling what their children eat. Main parental concerns have pinpointed the amount of advertising for poor quality foods in media locations extensively populated by children (Yu, 2012). There is also concern among parents about their kids' pestering them for unhealthy food (Spungin, 2004)

When it comes to parental control of children's diets, the choices made when eating outside the home are important. Fast-food outlets have grown to dominate eating-out markets around the world with some dominant brands now having a presence far beyond the (usually US) market in which they started out. Children often prefer outlets that serve foods high in sugar, salt and fat (Grier, Mensinger, Huang, Kumanyika, & Stettler, 2007).

Given their lack of understanding and concern about the nutritional quality of their diets, children are not always best qualified to determine family dietary choices, but nevertheless they do. Although some processed food manufacturers and fast-food suppliers have joined voluntary schemes to control their marketing activities, especially in media and physical settings in which children may be present, these codes of practice tend to be limited and, for some commentators, more needs to be done to educate parents in how to make the right choices and then to encourage them to do so (Seiders & Petty, 2007). One approach to tackling this problem might be to adopt a holistic understanding of the importance and role of food in overall health and well-being. Thus, introducing tighter controls over food-marketing practices represents only one component of a much more diverse approach to conditioning healthy food choices by enhancing food and health literacy among parents and children and in turn developing a form of food socialisation that cultivates a healthier orientation in dietary habits (Block et al., 2011).

What we ultimately need to know is whether food promotions can shape children's food preferences and influence their food choices regardless of the family context. Just how powerful are food promotions when set alongside the influences of a child's parents? Parents' own dietary behaviours can provide a lead to their children concerning the kinds of

food they believe they ought to eat. Furthermore, as children approach and enter their teens, their friends and wider peer groups become more influential as role models.

INDUSTRY SELF-REGULATION

It is understandable that national governments should seek actively to understand the genesis of this widespread social problem and the debate about obesity and its causes has a global stage. The responsibilities for poor dietary standards and sedentary lifestyles can be attributed to individuals, their families, their living environments and to the opportunities provided to them by their societies. There is research evidence that all these factors can act individually or in combination to shape the choices people make in regard to their own health and well-being. Growing attention has also been directed towards food manufacturers and distributors. Both national governments and international health authorities have accused the food industry of failing to provide products of high nutritional value and of encouraging people to consume foods that contain ingredients that can contribute to health problems.

According to its critics—and there are many—the food industry places the wrong kinds of temptation in front of consumers. Far too many foods contain excessively high levels of fat, salt and sugar. These ingredients can contribute to a number of specific health problems and many of these problems have become increasingly prevalent among children. These include hypertension, heart disease, dental caries and being overweight or obese. The constant bombardment of all consumers with promotions for these food products provides constant reminders of them and can cultivate a climate of belief in which such foods are rendered normal and unproblematic. If these foods are also endorsed by attractive role models or associated with fun settings and situations, their appeal to children in particular can be further strengthened.

Growing pressures have, therefore, been applied to the food manufacturing and processing industry and to the food retail sector to change their marketing practices and the contents of their products to assist governments in steering consumers towards healthier diets and lifestyles. In practical terms, this initiative embraces such actions as encouraging people to consume more fresh fruits and vegetables, more fibre and a sufficient intake of foods rich in essential vitamins and minerals (such as calcium). It also included discouraging people from eating a lot of processed

foods high in additives and also enhanced with extra fat, salt or sugar. While consumers can take some responsibility in this context in the care and attention they devote to studying the ingredients of food and drinks products to cut down on their daily intake of products that have ingredients that pose specific health risks, it is believed that the food industry can assist by cutting down on the use of problematic ingredients. In addition, the food industry has been charged with changing its marketing practices, and especially those which are targeted at children.

The literature reviews examined in Chap. 1 provided ammunition for governments in this context. Some reviewers concluded that the body of scientific evidence supported a compelling case for tighter controls over food marketing practices (Hastings et al., 2003; Lobstein, 2008). Other reviewers, while not denying that some evidence indicated that food advertising could influence children, offered much more tempered opinions about the veracity of the food-advertising effects evidence. Concerns were raised that some conclusions reached about the extent and ways that children could be affected by food advertising had been over-stated and were built on fairly loose interpretations of research evidence (Livingstone, 2004, 2005; Young, 2003).

On the international stage, the WHO has entered this debate and accepted on the basis of its own interpretation of research evidence that the food industry is culpable and must take steps to contribute to the battle against obesity. In making an initial pronouncement on this subject, it relied heavily on one review of research evidence that was produced by researchers in the UK (Hastings et al., 2003; WHO, 2004). This review had concluded that children's food knowledge and preferences and their eating behaviour could be influenced by food advertising on television. A further major review of evidence carried out in the USA echoed key points made in the UK review and called for the food industry to tighten up its own codes on marketing particularly in regard to the promotion to children of foods high in fat, salt and sugar (McGinnis, Gootman, & Kraak, 2006). Further pressure on the industry then surfaced in Europe with the EU's Health and Consumer Commissioner calling upon the food industry in 2005 to take voluntary steps to cut back on its advertising to children (Mason & Parker, 2005).

Further political pronouncements about the need for tighter restrictions on food industry marketing practices emerged. These statements usually called for the industry to take its own steps but behind this offer was a threat of government legislative action if voluntary codes failed to emerge or proved to be inadequate. In the UK, for example, the then

Labour Party leader, Ed Milliband, made a pre-election pledge to get the nation fitter and listed new restrictions on the marketing practices of the food industry as one set of actions designed to help him achieve this objective (Grew, 2014; Walters & Owen, 2014).

In response, the food and non-alcoholic drinks industries have produced their own voluntary codes of practice in relation to food marketing and children. In addition to specific industry networks linked to particular food groups, major food and drinks corporations and national trade organizations, international industry bodies have been active in this context.

The International Chamber of Commerce (ICC) has established voluntary codes of practice that cover marketing activities across a wide range of product and service types. These generic codes for advertising in different media and for other forms of marketing and promotion have often mirrored national government codes. This has been especially true of codes drafted to protect children. Such child-focused codes have been devised for mainstream media advertising (ICC, 1997), sponsorship (ICC, 2003) and for marketing activities on the internet (ICC, 1998). ICC codes have been periodically revised and try to strike a balance between freedom of speech for advertisers of legal products and the need to adopt responsible promotional practices when dealing with children (ICC, 2004).

The ICC codes have provided a template for self-regulatory frameworks adopted by other industry trade bodies. The Confederation of the Food and Drink Industries of the EU (2004) adopted many elements of the ICC framework for its voluntary code and regarded children as a special category of consumer with varying abilities to make informed judgments about promotional messages.

In the USA, the Council of Better Bureaus and 10 leading food and beverage companies launched a self-regulatory system called the Children's Food and Beverage Advertising Initiative (CFBAI). The purpose of this initiative was to encourage a better balance between the promotion of healthy and unhealthy food brands. It was also concerned with enhancing the quality of nutritional information given to consumers about specific food and drinks products (CFBAI, 2012).

In Canada, a similar initiative emerged from the food industry in the shape of the Canadian Children's Food and Beverage Advertising Initiative (CAI). Seventeen food companies participated in this initiative and another 35 chose not to do so (Potvin, Dubois, & Wanless, 2011). To what extent do voluntary codes have any notable impact on the exposure of children to different types of food advertising?

Such initiatives are well-intentioned, although might sometimes be regarded as industry attempts to pre-empt more restrictive regulations being imposed upon them by governments. To be effective and comprehensive it is important that their codes are grounded in relevant and up-to-date empirical research about children's media behaviours and their understanding of advertising. Codes must tackle not just the visibility of food marketing, but also its increasingly subtle promotional methods, especially online. The industry should also play its full part in the promotion of healthy eating (Harris, Speers, Schwartz, & Brownell, 2012; Peeler, Kolish & Enright, 2009; Peeler, Kolish, Enright, & Burke, 2010; Potvin, Dubois & Wanless, 2011).

Research has found that self-regulatory restrictions can sometimes produce reductions in the amount of food advertising on television at times when lots of children are present Huang and Yang (2013), but that such restrictions do not always reduce the overall volume of advertising for unhealthy food (Brinsden & Lobstein, 2013; Kent, Dubois, & Wanless, 2011, 2012).

Corinna Hawkes of the Centre for Food Policy at City University in London initiated an inquiry into food industry pledges to change the way it marketed foods to children. She and her colleagues collected data from their own survey of the industry as well as from secondary sources provided by industry trade bodies such as the International Food and Beverage Alliance (IFBA) and the World Federation of Advertisers (WEA) (Hawkes, 2005, 2007a, 2007b, 2010; Hawkes & Lobstein, 2010).

A further analysis revealed that globally the industry, between 2005 and 2009, had made 13 pledges on marketing food to children and that 52 companies had been involved in drafting these. Pledges were in turn associated with specific commitments. A 'pledge' was defined here as 'a voluntary statement made jointly by a group of food companies that sets out basic principles to change food marketing to children, including restrictions on foods that can be advertised' (Hawkes & Harris, 2011, p. 2). A 'commitment' was 'a statement or letter, written by a company participating in the pledge that states that the company supports the pledge, and sets out the criteria that the company will follow' (Hawkes & Harris, 2011, p. 2).

Ten out of the 13 pledges identified in this analysis were backed up by specific company commitments to honour them. Three pledges were not reinforced in this way and all these derived from the soft drinks industry. Fifty-two companies worldwide were involved in these pledges and 19

companies had signed up to more than one pledge. Pledges also varied in terms of how many companies had signed to them, with the smallest number of corporate backers for a single pledge being two and the greatest number was 24. The most active companies in terms of numbers of pledges they endorsed were Coca Cola and Pepsi Cola (11 pledges each). Other major companies such as Kellogg's, Mars, Nestle and Unilever signed up to nine each. At the other end of the pledge spectrum, YUM! The fast-food restaurant chain signed to two pledges (Hawkes & Harris, 2011).

Pledges addressed such issues as the definition of a child, the definition of child-targeted media, the nature of advertising messages and the media or physical locations where their marketing activities should be restricted in particular ways. Hence, some pledges were restricted to young people within specified age ranges. Pledges also differed in relation to the media that were classed as most sensitive because of their numbers of child consumers. Pledges tended to make specific concession to restrict food marketing of certain types in relation to certain types of media.

Pledges tended to steer clear of offering blanket restrictions whereby all techniques would be banned or whereby specific techniques would be banned across all media. In addition, major global food corporations would often sign up to specific marketing restrictions only in regard to certain of their national markets. Another tactic adopted by the food companies was that they would sign up to restricted marketing practices in relation to marketing activities that were defined as targeted specifically at children. This meant that they could continue with those same practices in regard to marketing defined as directed towards adults even though it might also appear in locations where it could be readily witnessed by children (Hawkes & Harris, 2011).

Controls over food marketing that cover product labelling, retail presentation and different kinds of advertising exist in many developed countries. In addition, in many of these countries, a very public debate has been articulated about food advertising accompanied by a lot of critical media coverage for the industry. In response to a range government and public pressures, the industry has responded by offering up voluntary codes of practice. These codes have generally been offered on the industry's own terms, however, and as such they may not always been as comprehensive as some health lobbies would like.

On the international stage, the WHO has put forward recommendations in the form of a framework of guidance for national governments

and their regulators (WHO, 2010). Its main aims have been to reduce the fat, salt and sugar content of popular food products. This is an objective that cannot be achieved simply through the actions of better informed consumers and more vigilant and diligent parenting. It also represents a point of action for food companies in relation to the constituents of their food products. The latter measures, however, probably need firm government guidance and monitoring to ensure they are fully implemented and to set the standards by which they are introduced.

Confidence in self-regulation of food advertising by the industry has been undermined by evidence showing that even when new and supposedly more restrictive codes of practice are introduced, they do not invariably result in substantial changes to the profile and content of food advertising. In Australia, the Quick-Service Restaurant Industry (QSRI) launched a self-regulatory initiative relating to fast-food advertising on television around children's programmes. Far from reducing the amount of fast-food advertising, however, an analysis of the three major commercial TV channels in the market at the time revealed that the average rate of fast-food advertisements increased from 1.1 to 1.5 per hour.

Although so-called non-core foods (i.e., foods high in fat, salt and sugar) exhibited a decline in terms of their share of food advertising on television after the introduction of the new code, in terms of average frequency of appearance, there was no change (Hebden, King, Grunseit, Kelly, & Chapman, 2011). On this evidence, therefore, self-regulation appeared to make little difference to the amount of advertising of problematic foods on television in locations where lots of children could be expected to be viewing.

FOOD LITERACY

Another approach to the protection of children in relation to their dietary habits is to ensure they understand the need for a balanced diet and what that means. Getting this message across to young consumers is not easy. Their food choices are driven by taste preferences and also, as we have seen, can be shaped by brand promotions. A comprehensive message designed to promote good health must not just focus on trying to condition specific energy consumption habits but must also pay attention to energy expenditure. Getting the balance right between these two parts of the equation is the secret to maintaining a stable and healthy weight.

Attempts to condition children's eating habits using educational video materials have met with mixed success. In one instance when six-year-

olds watched a series of 20-minute videos over 10 days that contained excerpts from popular children's television programmes and public service announcements that stressed healthy eating themes, the children learned some of the factual information and advice about food and diet, but did not subsequently apply it in relation to their own food choices (Peterson, Jeffrey, Bridgwater, & Dawson, 1984).

A more general message that has assumed some currency is that the cultivation of healthy eating in childhood must be tackled over an extended period of time and that government, regulators, food manufacturers and distributors and parents all have a part to play in this process. Children need to understand what is classed as 'healthy' and 'unhealthy' food. Since many adults are likely to be confused on this issue we should not be surprised if children are. All consumers need help and this can be provided in different ways. There has been a call for clearer disclosure of nutrition-related information that also makes explicit links between energy intake and obesity. Any steps of this kind need also to be informed by relevant research that helps us understand more about children's abilities to interpret and use such information (Seiders & Petty, 2007).

One factor is the way in which foods are labelled. Consumers need to know whether a specific food type or product is a high energy item and whether it can be classed as nutritious or not. A meaningful system of classification and labelling is needed in this context that is then applied in a consistent fashion across all food products and product variants (i.e., brands). Although food labelling does exist, it has not always been either comprehensible in a way that is relevant to consumer decision making nor applied with consistency (Kunkel & McKinley, 2007).

Health and nutrition experts and governments and regulators have debated what might represent the most effective type of classification and labelling system for foods. Although there has been discussion of a single, across-the-board system, there has more support for a system that distinguishes between food categories. It has been generally seen as advantageous in terms of giving the most comprehensive advice to consumers to ensure that any nutrient classification scheme should define the specific value of particular ingredients as well as their proportion of the recommended daily intake levels (Tetens, Oberdorfer, Madsen, & de Vries, 2007).

Given that food ingredients can vary along a ratio scale from zero to a specified amount, we are dealing with a spectrum rather than an 'either/or' dichotomy. Furthermore, a product that is deemed to contain higher than recommended amounts of one ingredient may be well within recommended thresholds of 'health' in relation to others. Hence, separate

nutritional ingredients that might include fat, salt and sugar, energy density and recommended portion sizes, could and perhaps should be identified and health targets defined for consumer information purposes. This possibility is accommodated by the colour-coded traffic-light system used to label foods in the UK and required of food manufacturers in their advertising and other marketing, not least in those promotions targeted at children (Lobstein & Davies, 2009).

REGULATION OF DIGITAL MARKETING

The widespread use of digital communications systems by consumers has inevitably led marketing professionals working on behalf of many major brands to migrate their promotional activities to the online world. In doing so, they have discovered and developed a wide array of new marketing and advertising techniques that have given rise to a range of new public-policy debates about marketing regulation. One important factor at play in this context is that in the online world brand promotions do not always appear as ‘advertisements’. This point is particularly relevant to any considerations concerning how to protect young consumers.

Children learn about consumerism and advertising gradually as they grow up. As they develop psychologically their abilities to understand the nature and purpose of advertising emerge and to some extent offer them a degree of internalised protection against its persuasive influences. This consumer-literacy-based protection tends to work best when youngsters can readily recognise when they are confronted with commercial messages. In the online world, subtle promotional techniques are not always perceived as advertising. The integration of brands with social media conversations or online games might be regarded only as yet another form of online interpersonal communication or entertainment. It is important, therefore, to develop an evidence-based approach to digital marketing that produces codes of practice that reflect the subtle ways in which it differs from traditional forms of media advertising.

There is also a need for policy makers and regulators to keep abreast of theoretical and empirical shifts in research about children and advertising. Research and theory have advanced over time and child-development models have evolved that have modified earlier psychological-stage models. Children have been found to demonstrate complex cognitive processing earlier than previously thought. At the same time, teens presumed to have attained an adult-level of cognitive sophistication can still be taken in and

persuaded by advertisements if their promotional messages resonate with important peer-group fashion norms (Montgomery & Chester, 2009).

Turning to digital marketing, we need to learn more about the awareness and beliefs held by children about brand appearances in apparently non-marketing settings such as online games and social-media sites (Livingstone & Helsper, 2006; Moore & Rideout, 2007). There are a number of reasons for this. Government regulations that place restrictions on the amount of food advertising on media such as television do not apply to food-company web sites or other online marketing activities on social-media sites and in online games (Moore & Rideout, 2007). Food companies that have signed up to self-regulatory systems have given broad undertakings to avoid placing any of their food promotions on web sites known to be frequented by children. The specifics concerning the extent to which such codes are implemented however are often lacking (Peeler, Kolish, & Enright, 2009).

There are further concerns about digital marketing online because of evidence that it can influence children in their food choices. Digital media settings are more dynamic and psychologically engaging than conventional advertising media because consumers can interact with them (Kunkel et al., 2004). In particular, the rapid spread of advergames has enable food branding that is integrated into the fabric of games, much as product placements are in movies and television programmes. As such the distinction between advertising and surrounding media content becomes more blurred.

This can mean that many children, whose advertising literacy has not yet advanced to adult levels, fail to recognise an advergame as ‘advertising’ and any internalised defences against persuasion they have learned are not triggered into action (Mallinckrodt & Mizerski, 2007). Indeed, players can become so immersed in playing these games that they fail consciously to register the presence of commercial brands (Lee & Faber, 2008) but might still be influenced by it (Harris et al., 2012; Winkler & Buckner, 2006).

DOES GOVERNMENT REGULATION HAVE AN IMPACT?

The regulation of food marketing and promotion by national governments has been found to vary in its restrictions. Variances have been measured in terms of the extensiveness of regulations across media and other advertising platforms, in the types of products that are regulated and in

the age range that is used to define childhood. Whether regulation has any impact however is open to question. There are two principal methods of determining whether regulatory restrictions on food advertising have an impact. The first of these is to measure whether the amount and type of food advertising in mainstream media to which such restrictions are applied subsequently reduces. A further method would be to determine whether food promotion restrictions are related in a systematic way to levels of consumption of specific foods and to the prevalence in different countries of diet-related health problems such as obesity, diabetes and other diseases, especially among children.

Not all research findings tell us the same things. The most usual finding with televised food advertising has been that the overall amount of such advertising tended to change very little with new regulations, although sometimes small declines were measured. Even if the overall volume of food advertising shifted only by a small margin continued placement of unhealthy foods in programmes known to be popular and widely viewed by children tended to persist (Effertz & Wilcke, 2012; Han, Powell, & Kim, 2013; Kim, Han, & Jang, 2014).

In contrast research from South Korea reported that restrictive televised food advertising regulations did produce changes in the expected direction. First of all, food advertisers spent less on televised promotions of energy-dense and nutrient poor foods (i.e., ones deemed as less healthy) but spent more on advertisements for foods deemed to be healthy followed the enactment of new regulations for televised food advertising (Kim et al., 2013). This shift on the part of food companies also produced correlated shifts in the amount of advertising on air (decrease in unhealthy foods and increase in healthy foods and changes in the same directions in children's exposure to these types of advertising (Kim et al., 2013; Lee et al., 2013).

In a UK study, researchers took one-week samples of advertising from commercial television before and after new government-backed regulatory codes were implemented. The amount of airtime occupied by advertisements was combined with audience size data for those slots to produce a metric called 'person-minute-views (PMV)'. PMVs were calculated for all advertisements and data were separated out for food advertisements and for advertisements for HFSS (High in fat, salt and sugar) foods. The relative exposure of viewers to HFSS commercials *increased* after restrictive food advertising codes were introduced and among children there was little evidence of any real change in their exposure levels to these commer-

cial messages that would be deemed beneficial in terms of potential impact on their dietary habits (Adams, Tyrrell, Adamson, & White, 2012). This research provided no evidence of dietary impact but it did reveal that ‘regulation impact’ measured in terms of reduced exposure to advertising for HFSS foods was not achieved.

The follow-on question, of course, is whether these changes in on-air presence of food advertising have any effects on children’s dietary habits. This is a subject we return to towards the end of this chapter after examining the impact of self-regulation on the part of food advertisers.

DOES SELF-REGULATION HAVE AN IMPACT?

The analysis of the impact of industry self-regulation has tended to take a different form from the assessment of statutory regulation imposed by national governments. Rather than consider whether food consumption or diet-related health problems are associated with this type of regulation, researchers have focused instead on whether the introduction of self-imposed restrictions have made any tangible differences to the amount, location and nature of food promotions. Since many self-imposed industry regulations represent promises to avoid advertising food and non-alcoholic drinks products in locations where children are regularly present in large numbers or to avoid the use of specific promotional treatments known to have special appeal to children, these undertakings represent measurable indicators.

In the USA, the Council of Better Business Bureaus launched its Children’s Food and Beverage Advertising Initiative (CFBAI), which placed voluntary restrictions on product placements in television programmes targeted at children aged under 12 years. This move ensured that such restrictions were contained to specific categories of programmes leaving it allowed still to promote brands in a wide range of other programme types—such as ones aimed at older children and adults—to which young children might still also be exposed (Wilde, 2009). Moreover, there were no additional restrictions on specific sub-types of products, such as food or beverage products of poor nutritional quality, which remained widely advertised and promoted on television (Kunkel, McKinley, & Wright, 2009). These products still received widespread exposure to audiences, and not least to children, in programmes directed at the general audience (Holt, Ippolito, Desrochers, & Keley, 2007).

Research from Australia found that self-regulation could produce positive results in terms of the prevalence of food advertising on television, but that this outcome was restricted to those companies that had signed up to these codes of practice. The reduction in televised advertising was significant in the case of the food companies that had signed up to this code overall, especially during peak viewing times and at times when lots of children were known to be viewing. The same reduction was not registered for non-signatory companies. The authors concluded that industry self-regulations can have a desired impact but this may not remove continued advertising for products of poor nutritional value where such codes have limited uptake by the food industry (King, Hebden, Grunseit, Kelly, Chapman & Venugopal, 2010).

Further research was carried out by the same research group in the advertising of fast food on Australian television after a self-regulatory initiative was launched by the quick-serve restaurant industry. From before until after the new code was introduced, the frequency of fast-food advertisements on television increased, but the share of that advertising occupied by unhealthy foods decreased. There was no change in the frequency of fast-food advertising during times when the children's audience was at its highest. Overall then despite the industry's undertakings, its self-regulatory code brought no change to the opportunities for children to see fast-food advertisements on television (Hebden et al., 2011).

A review of relevant literature that covered 25 published papers and reports of relevance extracted from a much bigger archive of over 300 items failed to provide conclusive evidence from around the world that self-regulatory codes on food advertising really made much difference to how much advertising for these products occurred in media to which children were likely to be exposed. In the case of television, some evidence emerged of reductions of food advertising during designated 'children's' programmes, but not necessarily in other programmes that children might also be likely to watch on a regular basis and in large numbers. While some evidence also emerged that advertising of unhealthy foods might reduce after the implementation of industry self-regulation, this was counter-balanced by increases of fast-food outlet advertising (Smithers, Lynch, & Merlin, 2014).

An overview of research from Central and South American countries (as well as of television targeted as Hispanic populations in the USA) found that food advertising dominated television advertising, that much of the food advertising was for products classed as unhealthy, and that self-

regulation made little difference to the overall prevalence of this advertising. Moreover, given the normal viewing patterns of children and their mothers, there was a high probability of exposure to such advertising among vulnerable populations (Bacardi-Gascon & Jimenez-Cruz, 2015).

RESEARCH EVIDENCE AND THE EMPIRICAL POSITION FOR POLICY

There is little doubt about the growing problem of overweight and obesity in the populations of many developed and some developing countries around the world. Concerns about obesity are compounded with other worries about related health problems such as the early onset of Type 2 diabetes, dental caries, cancer, hypertension and heart disease and the contingent strains they place on health services and the productiveness of societies. Attaining the optimal balance of energy intake through food consumption with energy expenditure through activity is critical in this context. This balance is a delicate one and is susceptible to changes in individuals' dietary habits and activity levels. If energy expenditure levels remain stable or fall and food energy intake levels (i.e., calories consumed) increase, weight gain can follow. Food energy intake levels can increase without causing health concerns if activity levels increase to compensate by incurring larger amounts of energy expenditure.

We have seen that the debate about food advertising regulation is based on a premise that if children's exposure to it can be reduced, then so too might the temptations for them to consume food products that fall below recommended nutritional standards. What would happen if food advertising was banned completely? One statistical modelling exercise calculated that a ban on fast-food advertising on television in the US could reduce by nearly one-fifth (18 %) the number of overweight children aged between 3 and 11 years (Chou, Rashad, & Grossman, 2008). Another similar study reported that by reducing children's exposure to televised food advertising by around 80 minutes per week, their total food energy consumption would also reduce by 4.5 %. This would then equate to a loss in body weight of around 2 % over a one-year period. This would also produce a 2–3 % reduction in the prevalence of obesity among boys and girls (Veerman, Van Beeck, Barendregt, & Mackenbach, 2009). The limitation of the latter research, however, lies in the fact that it derived its model from a single dataset that had been collated around a quarter of century

earlier when the media and marketing environments were dramatically different from the twenty-first century (Bolton, 1983).

Further econometric research carried out in Australia also found statistically modelled evidence for a reduction in children's body weight contingent upon reductions in the amount of televised advertising for foods and soft drinks high in fat and sugar, but these body-weight effects were smaller than those reported by Veerman and his colleagues. The researchers aggregated evidence from 13 intervention studies designed to investigate health benefits for children and teenagers. The same research revealed that other important predictors of weight control were clinical intervention involving gastric banding and the implementation of school-based exercise programmes (Haby et al., 2006). In a subsequent statistical modelling study that used secondary epidemiological data sources, the same research group found that reducing children's exposure to televised advertising for foods and drink that were high in fat and sugar could also produce worthwhile health-care cost reductions (Magnus, Haby, Carter, & Swinburn, 2009).

A great deal of attention has been devoted to the energy intake side of this equation. The key concern here has been that people eat too much in general or eat the 'wrong kinds' of foods, that is, ones that are relatively high in specific ingredients that can pose health risks if consumed above recommended or ideal daily doses. This perspective on energy intake has led to close consideration of factors that drive this process. Why do people eat as much as they do? Why do they make specific food choices that are not the healthiest ones? Posing these questions has understandably directed attention towards factors that affect the appeal of eating or of specific food products. This has then invoked debate about the way foods are presented and promoted to food consumers.

Further observations have then underpinned arguments that food marketing can cultivate food preferences and drive eating habits that can contribute to health problems. The food (and drinks) industries are among the heaviest promoters of their products of any sector and utilise a multitude of platforms to present their commodities to consumers. These industries spend huge amounts on marketing activities and their commercial messages are prevalent across the major mass media.

The opportunities for exposure to food marketing are manifold and almost ever present for most people in developed countries who have comprehensive media connectedness. It is not surprising, therefore, that there are common beliefs among health lobbies that the eating habits and

preferences of consumers must be influenced in some ways by food marketing. The opportunities for exposure to food advertisements and other forms of food promotion are especially prevalent among children whose food tastes are still developing. The promotions and branding activities of food marketers are, therefore, regarded as having a particularly salient role in cultivating the food orientations of societies' youngest consumers.

A considerable body of empirical research evidence has accumulated over several decades about the influences of food advertising and other forms of marketing on food consumption. Much of this evidence has focused on a demonstration of the role that food advertising might play in shaping food consumption habits that lead to weight gain and obesity. There is not yet universal agreement across reviewers of this body of evidence about whether food-advertising effects have been conclusively demonstrated, although one emergent position has been that the food industry can influence people's food preferences and eating habits to some degree through its marketing activities. The debate that has continued has been one of establishing the nuances of food-promotional effects and establishing whether they can be considered as weak or strong (Cairns, Angus, Hastings, & Caraher, 2013; Cairns et al., 2009; Hastings et al., 2003; Hastings, McDermott, Angus, Stead, & Thomson, 2006; Livingstone, 2005, 2006a, 2006b; Sonntag, Schneider, Mdege, Ali, & Schmidt, 2015; Young, 2003).

One of the challenges for proponents of the position that food advertising can and does influence consumers' food choices is to account also for a variety of other factors known independently to affect food consumption such as parental and other family influences and peer-group influences. The important roles played by these other factors is not disputed, but the relative potency of food marketing factors when placed alongside these social factors remains clouded because of mixed and conflicted empirical evidence. There are many ways in which the food industry reaches young consumers. They use mainstream mass media in combination with other promotional activities that can take place in the home, in schools and in retail environments. Thus, there are many different environments in which children can receive persuasive messages about food and it is clearly important that future research develops models of analysis that embrace all these different promotional media alongside non-marketing factors to uncover which mix of interventions and factors in a young person's life proves effective at steering them towards particular types of foods (Sonntag et al., 2015).

Defenders of food marketing, most notably the industry itself, have often claimed that although their marketing activities can influence consumers, they are not designed to make people overeat and become obese. As we have seen in this book, research studies have been published that have concluded that it is not only people's food preferences and brand likes and dislikes that food advertisements can influence but also how much they eat especially for food types that may pose health risks.

Critics of this kind of research have often pointed to methodological limitations to studies that have failed either to measure causality at all or upon attempting to do so failed to represent everyday reality with sufficient veracity. As some commentators have observed however such a critique may set the benchmark of acceptable proof too high. For policy makers this last point is important because although no research study offers a perfect solution, collectively the body of relevant research indicates that on the balance of probabilities food marketing might be to shape food-related consumption behaviours as well as attitudes towards specific foods. The idea of the 'perfect' test is unrealistic, but the 'use of the precautionary principle' could encourage regulators to seek certain restrictions on food marketing (Livingstone, 2006a; 2006b).

What we do need is a thorough analysis of the links between specific types of food-marketing exposure and specific types of food-related outcome with relevant 'third variables' taken into account. A comprehensive research programme should ideally combine controlled experimentation with longitudinal survey research that examine links between specific types and detailed histories of food marketing exposure and food-related attitudes, brand-related perceptions, patterns of consumption of named food products for which independently verifiable ingredients charts are available, and weight-related data. Family and social variables, the relevance and potency of which are also independently verified, should be included in research designs alongside food-marketing experiences, and data on individuals' energy expenditures assessed on the basis of diaries of daily activities. Such research would need to be conducted with large and representative samples of people, covering all age groups.

Such research would be a highly ambitious undertaking. It would also run the risk of over-burdening participants in such a way that they can no longer be regarded as regular or normal food consumers. Nevertheless, it is only when conducted on this scale and with this level of detail that a complex issue of this type can be thoroughly investigated. Finally, turning to the ultimate health benefits that are being sought from achieving and

maintaining a better balance between ‘energy-in’ and energy-out’, attention must also be given to the ‘energy-out’ side of the equation. Even all-out bans on marketing of certain categories of food will not achieve the desired health benefits (and associated economic outcomes) by themselves. It is also important to ensure that children receive the encouragement and opportunities to expend energy in their daily lives through actions taken both by parents and schools.

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