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Television Advertising to Children

A review of contemporary research on the influence of
television advertising directed to children

Prepared for ACMA by Dr Jeffrey E. Brand

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Preface

This report was prepared by the Bond University Centre for New Media Research and Education between August and November 2006. The research team was Dr Jeffrey E. Brand (Director), Dr Mark Bahr (Psychology), Ms Jill Borchard and Ms Tanya Neves, (PhD students at the Centre).

This research was conducted by independent researchers and the conclusions do not necessarily reflect the views of ACMA.

Executive summary

This report reviews the literature relevant to the provisions of the Children's Television Standards (CTS) which govern television advertising to children. The report is drawn from more than 200 sources on children and television advertising, including 100 refereed primary sources and was prepared as input to a review of the CTS by the Australian Communications and Media Authority (ACMA).

The objectives of the CTS are to provide for children to be specifically catered for in programming, including Australian programming, and to provide for the protection of children from the possible harmful effects of television. The advertising provisions are a subset of the CTS and regulate the amount, content and presentation of commercial advertising material directed to children. These provisions were designed to address concerns about advertising directed to children. The underlying premise for these restrictions is to ensure that advertising material directed to children is presented clearly and in a way that children understand.

The current CTS have remained fundamentally unchanged since their introduction in 1990, despite substantial changes to the media environment in Australia since that time. ACMA is reviewing the CTS in light of the changing media environment.

Television was introduced in Australia 51 years ago, somewhat behind other jurisdictions such as the United States and the United Kingdom. As it became the dominant household medium of the 1970s, that decade became the period of most active original research on children and television advertising. It was a time when the media landscape was arguably less complex and less fluid than the media landscape children experience today. Parents, teachers, politicians and researchers were interested in the many ways that television might affect the development and health of children. This interest encompassed television advertising, and a number of seminal studies were conducted in the 1970s and 1980s on the impact of children's cognitive development and various aspects of television advertising.

Many hundreds of studies later, the initial concerns have given way to cautious pragmatism about television, while new media like computer games and the internet have captured the interests of today's parents, teachers, politicians and researchers.

Research topics tend to track public policy debates. Since the 1970s and 1980s, much of the research has been dominated by American imperatives of alcohol and tobacco research—of limited relevance to the contemporary Australian context. More recently, public health concerns about childhood obesity in developed countries have shifted the focus of research activity.

Research findings

COGNITIVE DEVELOPMENT

Research evidence demonstrates that cognitive development mediates children's understanding of television advertising and their response to advertising. Other factors, such as parental intervention, media literacy, consumer experience and program/advertisement separators each play a role in helping children understand television advertising directed to them.

There are two critical stages that mark children's capacity to understand important qualities of television commercials: at five or six years of age, when the majority of children begin to be able to distinguish advertising from program content, and around age seven, when children begin to recognise the persuasive intent of advertising. As a result, children aged two to six tend to view commercials as a form of ongoing entertainment in line with programs they are watching.

Children slowly, but progressively, develop an understanding of the intent of advertising that can be conveyed both in linguistic and formal elements of advertisements. Studies indicate that between the ages of six to 11 years children begin to develop the ability to think sceptically about advertising, but may not respond critically without being prompted to think about intent and appeals.

In summary, cognitive development is the demonstrated leading mediator of children's response to advertising. However, few empirical studies report a statistical relationship between children's age and increasing advertising literacy, and the influence of advertising on children.

ADVERTISING REPETITION

Research on effects of repetition on children's understanding of advertising directed to them is equivocal and has not been substantively updated since the 1970s, with most of it conducted over 25 years ago in the United States.

Early research demonstrated that children apply relatively low levels of attention to television advertisements, suggesting that the necessary antecedent to an effect of advertising—watching the commercial—is not always present. Further, memory of products advertised tends to be poor among children, indicating that repeated exposures are necessary to communicate advertising messages to children. Recent research has shown that recall of information can be high for children with just one exposure and that additional exposure to advertisements increases comprehension. Repetition appears to be necessary to communicate an advertising message to children and may be necessary for children to obtain all the information they need to recall and understand the content in an advertisement.

As to the effect of repetition on preferences and behaviour, early researchers argued that repetition improves recall accuracy and may affect attitudes and preferences but does not affect planned behaviour.

CHARACTERS

Studies show that both real-life and animated characters are effective in attracting children's attention to television programming and advertising. Characters attract positive responses when children identify features about the characters they like (younger children in particular); or identify emotionally with characters (older children in particular); and are positively associated with memory of and attitudes toward products advertised.

Owing to their cognitive underdevelopment, younger children fail to differentiate between animated and real-life characters. Further, cognitive development research demonstrates that children slowly but progressively develop the ability to distinguish advertising from programming content; therefore the use of characters in advertisements may confuse children about the distinction between advertising and programming content.

PREMIUM OFFERS

Empirical evidence indicates that premium offers work to attract children and create interest in the product. The implications of research about children's cognitive development tells us that younger children can only process one dimension of product information at a time, therefore a premium offer may be the only thing children are able to process in advertisements that employ premiums. Older children demonstrate the ability to evaluate advertised products on a range of criteria and dimensions.

Although premiums may affect children's interest in and preferences for products, behavioural outcomes, such as requests and purchases, do not necessarily follow as a result. The research that relates to television advertising specifically suggests there is likely no link to behaviour, but cautions that further research is necessary. Broader advertising research demonstrates the potency of premiums generally.

PESTER POWER

Children who are exposed to television advertising are exposed to new ideas about products that interest them. Findings about pester power are often made in the context of the broader marketing mix, thus conclusions about the effect of television advertising specifically on pester power are not necessarily able to be drawn. Nevertheless, a fairly clear associative, but not causal, link between television advertising and pester power is indicated. Pester power appears to be enhanced when advertising is part of a larger marketing mix, including in-store displays and labelling, and has the potential to interact with the use of characters and premium appeals.

Simple correlation research in the US indicates that children in the pre-operational stage (typically aged two to six) who view more television advertising, request products more. As children age, they develop the cognitive capacity to contextualise and act critically on the observations they make, with studies showing their requests for products decline.

FOOD AND BEVERAGE PREFERENCES

Food and beverage advertising, including for chain restaurants, comprises a major category of all advertising on Australian television (New South Wales Department of Health content analysis indicates approximately one quarter in 2006). The same content analysis found 43 per cent of all food advertising was for high fat/high sugar foods and 36 per cent was for core foods (such as dairy breads, pasta). Around 48–49 per cent of food advertising in times defined by the study as 'children's viewing times' was for high fat/high sugar foods.¹

Although estimates of children's exposure to advertising for high fat, salt and sugar (HFSS) foods vary considerably between studies, it seems that children are exposed to more advertising for HFSS foods compared with other food products that fulfill core dietary requirements. In the top 20 rated programs with children, the above study found around 66 per cent of food advertising was for high fat/high sugar foods. These programs tend to be

¹ Children's viewing hours were defined in the study as comprising Monday–Friday 6.30–8.00, 9.00–9.30, 15.00–20.30; and Saturday–Sunday 7.00–20.30.

broadcast in the evening and are popular with audiences generally. Overall, children's exposure to television food advertising appears to be declining modestly as this category of advertisement decreases and children view less commercial television (140 minutes per day for 0–14 year olds in 2001 to 121 minutes in 2006).²

Empirical research shows correlations but not causal relationships between children's exposure to advertising and knowledge about diet and nutrition, and preferences as indicated by requests (but not necessarily actual consumption) of advertised foods. The research also establishes correlations between television advertising and 'healthy' as well as 'unhealthy' knowledge, attitudes and behaviours on a broad range of issues to do with diet and lifestyle.

Research evidence establishes a correlational relationship between television viewing and obesity in children and teenagers (as distinct from viewing television advertising specifically). While watching television is a sedentary activity, studies indicate that the association between viewing television and childhood obesity is not simply due to inactivity and relates to increased energy consumption associated with television viewing. This appears to be a consistent finding when other influences, such as hereditary and socio-demographic factors are controlled for. However, the relative contribution to increased energy intake of advertising, snacking, and other factors has not been isolated.

On the basis of a substantial body of work, Ofcom stated that it was difficult to determine the relative contribution of television advertising compared with all the other factors that influence children's food choice and health. It also stated that it was difficult to disentangle the contribution of television viewing as a factor associated with obesity. Ofcom concluded that estimates vary, but some suggest 'advertising/television' exposure accounts for some two per cent of the variation in 'food choice/obesity' (Ofcom, 2006a, Annex 9, pp. 2, 13–14).

INTERACTIVE MEDIA

There is an increasing range of media channels available to children today, with interactivity, including advertising and marketing in new media venues, having the potential to blur the distinction between commercial and non-commercial content. A review of industry activity indicates that advertisers are using interactive media, such as internet games on food product websites, to appeal to children.

Children tend to be receptive to new technology in a way that older generations may not be, so it is reasonable to expect advertisers to develop campaigns for new media and to measure their effectiveness. However, as distinct from children's sophistication in adopting and using new media, studies indicate that their cognitive capacity to process advertising messages remains unchanged in the new media environment.

Given the apparent popularity of interactive websites for children, children's sophistication with new technology and the goal-directed and initiative-based approach of interactive media audiences, interactive marketing in new media environments may be highly effective. On the other hand, interactive media may also be used effectively for non-commercial purposes (education and information) with children as well as for commercial purposes.

MEDIA LITERACY

Media literacy education includes a range of formal and informal lessons designed to help audiences understand both the techniques used by media producers to create media messages,

² In 2006, children in the five to 12 age group watched television in their greatest numbers between the hours of 7.00–8.00 pm, with an average audience of 275,000 (representing 8.1 per cent of the total viewing audience at that time). This timeslot also attracted the highest average 0–14 age group audience in 2001 (579,000) and 2005 (487,000), which indicates a consistent pattern in children's peak viewing time over the past five years.

including television advertising, and the intent of those messages to inform, entertain and persuade.

Research shows that, where schools implement media literacy curriculum, this has a modest effect in equipping children with skills to understand commercial messages. However, additional support from parents and other members of the community is generally needed if media literacy is to have a greater effect. While parents, in particular, appear to be influential in demonstrating appropriate media habits and demonstrating more robust understanding of media functions, it appears that they require media literacy to be able to assist their children.

Furthermore, one study suggests that formal media literacy may be more useful for challenged learners, but that children who are more capable will gain little additional benefit. This corresponds with the findings of cognitive development research which indicates that, compared with cognitive development, media literacy has only a limited effect on children's understanding of commercial messages in the media.

GENDERED, RACIAL AND CULTURAL PORTRAYALS

Content analyses of television advertising in the United Kingdom and the United States have examined portrayals of gender, race and culture, identifying a level of over- and under-representation of certain groups, as well as stereotyping of roles, in television advertising to children. While researchers draw implications about these portrayals for children's social perceptions, the UK and US contexts of these studies may limit their application to Australia.

THE STATE AND PERSPECTIVE OF KNOWLEDGE

The current review has found that the scope, consistency and quality of the research literature about children and television advertising is poor. However, Sonia Livingstone (2005) suggested that a view of the literature as weak may be based on unfair judgments about standards of evidence possible with social research about media and children generally. Indeed, it is difficult to establish a causal relationship between popular media and audience outcomes. Furthermore a large proportion of the research into children and television advertising has review and reflection about the existing body of empirical literature, rather than conducting primary empirical research.

It is a general view of the authors that there is little quality data available about the role of advertising in children's lives early in the 21st century in Australia (and other developed countries). New, systematic, ecologically valid, empirical research on effects of children's exposure to advertising in all electronic media used by children should be commissioned and robustly funded. Who should fund this research is, of course, the critical but difficult question to answer. Any research that emerges in the coming years must address the multi-factorial relationship between advertising and children's thoughts, feelings and behaviours.

Introduction

The Children's Television Standards (CTS) were implemented in their current form in 1990 by the then Australian Broadcasting Tribunal (ABT). Compliance with the CTS is monitored by the Australian Communication and Media Authority (ACMA) under the *Broadcasting Services Act 1992*. The CTS were developed following community and industry consultations and taking account of available research. The CTS attempt to balance:

- public interest concerns that children's special viewing needs are met and they are protected from possible harmful effects of television
- the commercial television industry's reliance upon advertising revenue and the need to fund quality programs for children
- the child audience's lack of earning or 'buying' capacity, reflected in the limited range of product categories in advertising to children, and also in children's reliance on others (parents most often) to obtain products they might see advertised on television.

CTS provisions

CHILDREN'S AND PRESCHOOL CHILDREN'S PROGRAMS

The objectives of the CTS are to provide for children to be specifically catered for in programming, including Australian programming and to provide for the protection of children from the possible harmful effects of television. Commercial television licensees must broadcast a total of at least 390 hours of C (children's) and P (preschool) programs per year, of which 260 hours must be C programs and 130 hours must be P programs. For the purposes of the CTS, children are people younger than 14 years of age.

- Licensees must broadcast at least 30 minutes of C programs every weekday between the hours of 7.00 am and 8.00 am or 4.00 pm and 8.30 pm and, in addition, at least 130 hours per year at any time in the C band (the periods of time 7.00 am to 8.00 am Monday to Friday; 4.00 pm to 8.30 pm Monday to Friday; 7.00 am to 8.30 pm Saturday, Sunday and school holidays).
- Licensees must broadcast at least 30 mins of P programs every weekday in the P band (the period of time 7.00 am to 4.30 pm Monday to Friday).
- Licensees must nominate in advance the time slots during which C and P programs will be broadcast.

All C and P programs must be classified by ACMA prior to broadcast.

ADVERTISING DIRECTED TO CHILDREN

The advertising provisions of the CTS were designed to take account of children's developmental stages and to address concerns about the effects of advertising on children. The relevant provisions are CTS 10 and CTS 13–23 (inclusive).

The CTS prohibit advertising during P periods and place limitations on the broadcast of advertisements during C periods. During a C period in which an Australian C Drama is broadcast, the maximum amount of advertisements, program promotions, station identifications and community service announcements is 13 minutes per hour. Otherwise, each 30 minutes of a C period may contain no more than five minutes of advertisements.

In setting these limits, ACMA recognises the practical issues involved for the Australian free-to-air commercial stations in funding quality children's programs and the role advertising plays in securing such funding.

The CTS aim to ensure that advertising material directed to children is presented clearly and in a way that children understand. The CTS include requirements for the presentation of advertising and other material to children, such as the presentation of prizes, competitions, and nutritional information. There are prohibitions on the host selling of products and on advertising alcoholic drinks, and restrictions on the number of times a commercial can be broadcast during C programs. The CTS prohibit misleading advertising and require factual and clear presentation.

UNSUITABLE MATERIAL

The CTS prohibit the broadcast of unsuitable material, both in programs and commercials, in designated children's viewing times as determined by the CTS. Programs and commercials must not:

- demean individuals or groups of people on the basis of race, nationality, ethnicity, gender, sexual preference, religion or mental or physical disability;
- present images or events in a way which is unduly frightening or distressing to children;
- depict unsafe uses of a product or unsafe situations which may encourage children to engage in activities dangerous to them; or
- advertise products officially declared unsafe by a Commonwealth authority or by an authority having jurisdiction within a licensee's service area.

COMMERCIAL TELEVISION INDUSTRY CODE OF PRACTICE

Under section 6.20 of the Commercial Television Industry Code of Practice, commercials and community service announcements directed to children 'must exercise special care and judgement', and comply with the requirements in CTS 17–21. Accordingly, CTS rules about content of advertisements, pressure in advertisements, clear presentation, disclaimers and premium offers and competitions apply, under the Code of Practice, to all advertising directed to children (defined in the code as people younger than 14 years of age).

The Code of Practice also contains three provisions which restrain advertising directed to children for food and beverages. The Code of Practice states that these types of advertisements:

- 6.23.1 should not encourage or promote an inactive lifestyle;
- 6.23.2 should not encourage or promote unhealthy eating or drinking habits;
- 6.23.3 must not contain any misleading or incorrect information about the nutritional value of the product.

Section 6.24 of the code prohibits the selling or promotion of products and services by the host or any other regular presenter or character (host selling) in programs directed to children.

REVIEW OF THE CTS

Whilst there have been various technical changes to the CTS since they were implemented by the ABT, they have not been subject to major change.³ ACMA is undertaking a full review of the CTS.

THIS RESEARCH

This report reviews the literature relevant to the provisions of the CTS that govern television advertising to children. The report is intended to update ACMA's understanding of the current state of research knowledge about these issues and assist ACMA's consideration of whether the advertising provisions of the CTS continue to serve the public interest in the context of the current review.

Similar research summaries completed elsewhere such as *Childhood obesity – food advertising in context* by the Office of Communications in the United Kingdom (Ofcom, 2004) and *Marketing food to children: the global regulatory environment* by the World Health Organization (Hawkes, 2004) have demonstrated the need for such a review in part because they focused on the narrower issue of food advertising on diet and physical activity, so offered little evidence about other advertising content and effects, and in part because they were developed in the policy and regulatory context of other countries.

The review of research reported here considers the influence of television advertising on young people and attempts to reflect the contemporary state of research, which has progressed since the early 1990s when the CTS were last considered.

Research questions

Eight research questions were developed by ACMA in conjunction with the research brief. These questions were generated from the provisions of the CTS dealing with advertising to children. Additional research questions were suggested by the Centre for New Media Research and Education (CNMRE) research team's work with the literature.

- RQ1. What are the key developmental stages of childhood that influence children's response to television advertising? This goes to questions such as the age at which children can distinguish advertising from other program content and children's understanding of the intent behind advertising.
- RQ2. What is the available evidence about the impact of, and concerns about repetition of advertising on children?
- RQ3. What is the research evidence concerning children's understanding of, and response to the use of program characters, figures, cartoons and children's celebrities in television advertising directed to them?
- RQ4. What is the available evidence about children's response to premium offers in television advertising directed to them?
- RQ5. What is the available evidence around television advertising and the behaviour and attitudes of children? For example, the onset of socially inappropriate behaviour and children's use of 'pester-power'?

³An overview of the history of the regulation can be found at www.acma.gov.au/ACMAINTER.65654:STANDARD:1240125723;pc=PC_91816

- RQ6. What is the relationship between children’s television advertising exposure and their food and beverage preferences? What is the evidence in relation to Australian children?
- RQ7. What is the available evidence about children’s response to different forms of interactivity for example, competitions, short message service (text messaging), interactivity in digital pay television, direction to brand/program affiliated websites?
- RQ8. What is the role of children’s media literacy in mitigating the influence of television advertising?
- RQ9. What is the available evidence about gendered, racial and cultural television advertising portrayals and children?
- RQ10. What are the research methodology and quality issues that affect the conclusions drawn about the impact of television advertising on children?

KEY CONCEPTS

Concepts used throughout this report are often treated casually in the literature. For the purposes of using them with some level of precision, the following definitions provided the research team with a standardised framework.

Advertising	Limited in this report to paid commercial time for messages targeted to children and carried over television, and using television advertising in conjunction with other media, such as redirection to a web page, is included in this definition. Advertising not connected with television is noted accordingly. This report will substitute commercial for advertising intermittently for the purpose of varying expression.
Attitude	An affective response to a stimulus object, as distinct from behaviour, in that an attitude may inform behaviour, but predicting behaviour from an attitude is not supported by social-cognition, cognitive or behavioural research findings.
Behaviour	An action performed either individually or jointly with others, often assumed, but not always demonstrated, to be caused by an exogenous stimulus.
Child development	The progression of physical and mental change in human maturation from infancy to adulthood—accepted contemporary theories of child development predict patterned changes that can be grouped into progressively more complex stages of maturity.
Cognition	An idea or thought—accepted contemporary theories of human cognition account for perception, attention, storage and retrieval of information. Cognition may incorporate negative, neutral and positive evaluation.
Concern	An emotion formed from care joined with fear, anxiety or sympathy for a thing.
Directed (to)	Targeting a particular audience.
Effect/impact	A change in state resulting from a demonstrated causal agent—generally accepted as having been demonstrated when the

relationship between a causal agent and the changed state are observed in a controlled study of the relationship.

Emotion	A mental feeling—generally, may be anchored negatively (such as grief or sorrow) or anchored positively (such as joy or gratification).
Evidence	Knowledge based on propositions that have been tested using careful observation.
Exposure	Viewing television content—viewing television advertising may be direct by virtue of choosing or being directed to view content or it may be incidental by virtue of presence in a room in which others are purposefully viewing or in which one is engaged in other activities but within sight or hearing distance of the content.
HFSS	High in fat salt and sugar content—used to describe foods that may be unhealthy if they constitute a disproportionately large part of a person’s diet. The five most common foods in this category are confectionery, soft drinks, crisps, fast food and sugared breakfast cereals.
Host selling	The promotion of products or services by the host, presenter, or any regular character of a program
Pester power	The actions of children, such as multiple requests and complaining, to persuade parents to purchase goods that parents might not otherwise intend to purchase.
Preference	The choice of one activity or content over another.
Research quality	Clarity and precision of communication as well as objective and evidentiary basis of claims in research may determine the usefulness or application of the research for making pre-emptive judgments about how television advertising works on or effects child audiences. Absence of these factors may render a work subject to claims of low research quality while presence of these factors may render a work subject to claims of high research quality.
Response	Resulting reaction to a stimulus—in advertising to children, the term is imprecise until adjoined with a modifier such as cognitive, emotional or behavioural. A behavioural response is more precisely understood and classified distinctive from other types of responses such as cognitive and emotional.
Understanding	A degree of mental grasp about a thing associated with the ability to recognise it based on experience or conceptual or categorical classification.

Findings

Child development

RQ1: What are the key developmental stages of childhood that influence children's response to television advertising? This goes to questions such as the age at which children can distinguish advertising from other program content and children's understanding of the intent behind advertising.

The view that children progress through stages of maturation from infancy through to adulthood remains the dominant paradigm in the social and medical sciences. Indeed, contemporary development theories continue through the life-span until death (Neville, Thomas, & Bauman, 2005; Sly, Hopkins, Trapido, & Ray, 2001).

A review of 25 years of research on children's television found that children's understanding of television progresses throughout childhood and adolescence (John, 1999). This understanding changes in a series of cumulative steps from basic ability to distinguish advertisements from programming content, through to an understanding of the persuasive intent of advertisements, to detecting bias and deception, to knowledge of selling tactics and scepticism as well as appreciation of advertising as a source of social meaning (John, 1999).

The research presented in this literature review places the stages of cognitive development relevant to television advertising within an age-based continuum. However, while cognitive development operates universally in the same sequence, it does not operate universally at exactly the same ages. The research on cognitive development presented here is from a range of jurisdictions and is a body of work that underpins the majority of research on children and advertising, including the research questions considered in the remainder of this literature review.

DEVELOPMENTAL STAGES OF CHILDHOOD

Researchers who considered the potential impact of television advertising on children have adopted the prevailing view of staged development, particularly Jean Piaget's cognitive stages (Piaget & Inhelder, 1969), and have also published their research in paradigmatically-aligned journals such as the *Journal of Developmental and Behavioural Pediatrics* and *Child Development* (Anderson & Levin, 1976; Galst, 1980; Galst & White, 1976; Greer, Potts, Wright, & Huston, 1982; Levin, Petros, & Petrella, 1982; Ruble, Balaban, & Cooper, 1981; Strasburger, 2001; Zuckerman, Ziegler, & Stevenson, 1978). The common academic and industry approach to studying the relationship between children and their media is to examine the kinds and quantities of content children are exposed to against the different ways children use that content, based on their staged level of development (Harrison, 2004).

In 2002, the Australian Broadcasting Authority (ABA) commissioned research to determine whether creating programs for the child audience requires particular attention to the unique characteristics of children at different Piagetian stages of cognitive development (Durkin, 2002). Particular interest was directed at Australian C Drama and whether the CTS focus on children younger than 14 years of age was appropriate. Durkin found that regardless of environmental factors, children develop toward adulthood bounded by predictable stages of cognitive capacity. Durkin noted that, though environmental factors such as quality of education and social and material resources contribute to variability found in children's cognitive capacities within stages, these factors are not determinative of children's abilities.

Piagetian stages of cognitive development follow the same sequence regardless of culture, but vary modestly in their timing across any population, meaning that while most children will reach a given stage at around the same age, some will arrive earlier and some later. The four main stages, each of which incorporates substages, follow this basic sequence:

- birth to two years – sensorimotor stage;
- two to six years – pre-operational stage;
- six to 11 years – concrete operational stage; and
- 11 years to adult – formal operational stage.

Progressively over these stages, children develop a range of faculties relevant to television advertising, including:

- distinguishing advertising from program content;
- recalling and awareness of advertising;
- recognising and understanding persuasive intent of advertising;
- liking and skepticism of advertising; and
- cognitive defence to advertising.

Birth to two years

The **sensorimotor stage** is marked by the child learning about and mastering the spatial and object-oriented world by developing and using reflexes, habits, reactions, coordination, early logic; understanding of objects as permanent even when out of sight; formulating and attaining goals; and emergence of creativity. Imitation of others' actions, even machine actions, is an important part of the way the youngest of children learn about the spatial and object-oriented world.

Children at this stage usually view television, including advertising, with their parents; see the way their parents watch television advertising; and attend to interesting sounds, patterns and colours in advertisements (McNeal, 1992). Infants and toddlers can express desire for particular sounds smells and tastes and develop early feelings of want, early preferences for objects shown in advertisements and interest in, and preferences for, certain features of television advertisements themselves (Valkenburg & Cantor, 2002).

Two to six years

The **pre-operational stage** is when children use mental symbols like words or pictures; demonstrate intuition; focus on the self; misrepresent the physical world (such as not understand complex cause and effect); focus on one characteristic of a thing (such as colour or shape); group objects on the basis of one dimension; and see some features (such as tallness) as larger than other features (such as wideness).

The implications for the role of television advertising at the preoperational stage can be broken down into a progression from age two until about age six or seven. Beginning around the age of two, children taken shopping by their parents begin to make requests for products during shopping visits (McNeal, 1992). Known as ‘pester power,’⁴ children at this age begin to nag and negotiate with their parents for items, demonstrating their focus on self and single qualities, or aspects of a product such as its ‘advertised fun’ (Valkenburg & Cantor, 2002). By the time children are three years of age, they may start to exercise selection of products with their parents’ permission and supervision and sometimes make independent purchases or product selection decisions with parental supervision (McNeal, 1992).

Distinguishing advertising from program content

Children at the pre-operational stage do not distinguish advertising from program content and tend to view commercials as a form of ongoing entertainment in line with the programs they are watching (Blosser & Roberts, 1985; Buijzen & Valkenburg, 2003; Gunter, Oates, & Blades, 2005; Millwood Hargrave & Livingstone, 2006; Wartella, 1980). It is not until about the age of five that children can demonstrate very simple awareness of advertising as distinct from television programming (McNeal, 1992; Kunkel et al., 2004; Kunkel, 2001) where they can usually do no more than identify and label advertisements (John, 1999).

Programs may separate advertising messages from programming content, either by prohibiting advertising during children’s programming or by using visual, aural or temporal buffers (such as bumper messages like ‘we’ll be back after these messages’) to indicate to children when a block of advertising begins and when it ends (Kunkel et al., 2004). The use of a bumper or separator between programming and advertising is effective at informing children of a change in content, even if it does not advise them specifically what the nature of that change is (for example, from entertainment to persuasion) or why it is presented (Ward et al., 1977; Weigel & Watt, 1992). However Weigel and Watt (1992) found that between ages four and six, children were unreliable in their ability to understand the difference between a program and a commercial, even when separators between the two were used.⁵

Before the age of six, children do not understand the selling intent of advertising (Adler et al., 1977; Bever, Smith, Bengen, & Johnson, 1975; Donohue, Meyer, & Henke, 1978; Meyer, Donohue, & Henke, 1978; Sheikh, Prasad, & Rao, 1974; Ward, Wackman, & Wartella, 1977) and are likely to see television advertising as an information source (Blosser & Roberts, 1985).

Six to 11 years

Called the **concrete operational stage**, this is a period in which children’s logical thinking is more developed. At this stage, children can conceptualise multiple dimensions of a task or problem; easily reverse processes or orders of tasks to understand their relationships (such as in addition and subtraction of numbers); order objects or steps in serial fashion; recognise that physical objects can conserve their properties even though they may change other properties (such as the shape of a fixed amount of clay not changing the overall mass of the clay); classify objects according to one characteristic; and take the perspectives of others and imagine different physical points of view.

⁴ See RQ 5 for research on television advertising and children’s ‘pester power’.

⁵ One explanation for this finding is that even children’s ability to identify ‘program’ from ‘commercial’ increases between three and five years of age, but not between three and four or four and five. In other words, statistically robust differences in this line of research can only be discerned by relatively large developmental differences as determined by age as a proxy (Levin et al., 1982). Cognitive development operates universally in the same sequence, but not universally at exactly the same ages, which explains this measurement problem in research on advertising and children.

The implications for the role of television advertising at this stage include slowly developing cognitive, rather than simple emotional, defences against advertising messages (Robertson & Rossiter, 1974); beginning to understand the persuasive intent of messages and the purpose of advertising; and having the ability to explain the persuasive purpose of advertising to others (John, 1999), but usually only when prompted by the questions of adults (Brucks, Armstrong, & Goldberg, 1988; Millwood Hargrave & Livingstone, 2006; Moore, 2004), because the persuasive purpose of advertising is not an extant and spontaneous concern of children of this age.

The dimensions children use to discriminate among brands and to establish brand preferences increases by age. Their abilities may also be determined by whether they have experience with the particular class of product such as food versus toys versus apparel (Bahn, 1986). Thus, as children age, they develop more direct experience with consumer behaviour and have higher-level schema or pre-existing experiences on which to draw for their understanding. In other words, age and experience are paramount in understanding advertising and consumer domains. Where there is interest in a product, children in the later years of the concrete operational stage demonstrate the ability to evaluate advertised products on a range of criteria and dimensions and consider alternative products to those advertised in specific advertisements (Valkenburg & Cantor, 2002).

Recall and awareness of advertising

Both recall and awareness of advertising develop and improve as children develop cognitive skills. Recall is the ability of children to remember products and brands that they have seen in television commercials, and awareness is their ability to recognise and understand the content of the message they are seeing. However, recall and awareness do not indicate children's ability to comprehend the persuasive intent of advertising.

Young children's ability to recall advertising is poor and their ability to understand advertising is also limited. A recent study of brand awareness and recall for 12 brand logos found that among 196 children aged two to eight years, older age related to improved memory, but not to improved brand recognition (Valkenburg & Buijzen, 2005). Another way of looking at this finding is to say that children have capacity to recall minor details, but that this capacity does not appear to predict comprehension in earlier years. The implication is that perception and recognition are developed early, but stimulus, storage and subsequent retrieval are abilities linked directly to developmental progression over a longer period.

Children aged four to 10 years were tested for their recall and understanding of television advertisements in a study by Oates, Blades and Gunter (2002). The researchers found that recall of advertising content increased by age and number of exposures, with children requiring only one exposure to the advertisement to recognise a product brand, but with the youngest children mainly unable to recall brand names after multiple exposures.⁶ The researchers also found that 'none of the 6-year-olds, only a quarter of the 8-year-olds and a third of the 10-year-olds discussed advertising in terms of persuasion,' suggesting that recall does not indicate an ability to understand persuasive intent.

Taken together, these studies indicate that the ability of children to recall television advertisements is primarily dependent on their cognitive capacity. Moreover, advertising awareness (recognition and understand messages) becomes more sophisticated over time.

Recognise and understand persuasive intent of advertising

American research has found that children under seven years of age are unable to recognise the persuasive intent of advertising messages on television but that, by age seven or eight,

⁶ See further RQ 2 for research on the repetition of television advertising and children.

children have rudimentary skills with which to discern persuasive appeals (Kunkel et al., 2004; Kunkel, 2001). Swedish research, by comparison, has found that this skill was developed at 10 to 12 years of age (Jarlbrog, 2001), three to five years later than was reported by Kunkel and his colleagues.

In a study of 153 children ranging from five to eight years old, Bijmolt, Claasen and Brus (1998) found that most children were able to distinguish commercials from program content at this age and that the children displayed some insight into advertising intent when assessed using non-verbal measures such as drawing (verbal measures produced less evidence of insight). As with other studies, a child's age was positively related to better comprehension and ability to distinguish advertisements from programs.

Recent focus group research with 50 UK children aged seven to 11 found that children believe the primary role of advertising is to inform and that advertising uses persuasion or pressure primarily to compensate for inferior product (Duff, 2004). Children also believed that humour and surprise resolution of problems in commercials contributed to their enjoyment. Despite this level of understanding, children themselves thought television advertisements influenced their knowledge of, and demand for, advertised products.

Liking and scepticism of advertising

As children's cognitive abilities develop, their positive attitude to advertising begins to decline. As positive attitudes toward advertising decline steadily during the concrete operational period (Robertson & Rossiter, 1974), scepticism grows, with older children in this stage independently voicing criticism and distrust of the persuasive and commercial intent of advertising (Boush, 2001; John, 1999; Millwood Hargrave & Livingstone, 2006). Early US research on the abilities of 120 children aged between six and 12 to think critically about sugared food products demonstrated that, as children aged, they were better able to evaluate products sceptically (Lambo, 1981).⁷

By age eight, children understand advertising appeals and have the ability to reject them; however, many choose not to use this ability and generally do not feel the need to think critically about, or reject, advertising without prompting by an adult (Brucks et al., 1988). After age eight, children tend to think negatively about television advertising to the point of finding it an irritation and interruption to their more goal-directed pursuits, such as enjoying a television program (Riecken & Yavas, 1990; Sheikh & Moleski, 1977).

Cognitive defence to advertising

Cognitive defence is the ability to deflect, see through and think sceptically about advertising appeals. Cognitive defence is developed with age as trust, liking, scepticism, exposure to the commercial world and so on, are learned and used to counteract the use of tactics used by advertisers and marketers.

A number of mediators have been found to limit the impact of advertisements and improve 'cognitive defences' at each stage of development. Parental communication and parenting styles are most important among these. However, the effect appears to be tiered with parents first affecting media literacy skills, which in turn affect how advertisements are understood and the subsequent degree to which they have an impact (Boush, 2001).⁸

Brucks, Armstrong and Goldberg (1988) demonstrated that children ages eight and nine have robust cognitive filters to understand and deflect television advertising appeals, but may choose not to use them. A sample of 102 year four students were divided by treatment and control conditions in which some were exposed to an educational film about how to 'read'

⁷ See further RQ 6 for research on television advertising and children's food and beverages preferences.

⁸ See further RQ 8 for research on the role of children's media literacy.

advertisements, while others were not. In their record of responses to advertisements they had just viewed, children from both groups did not appear to be thinking sceptically or critically. Three days later, when quizzed on the intent and appeals of advertisements they had just viewed, children from both groups did appear to think sceptically and critically. Though the treatment group scored slightly higher than the control (18 versus 15 out of 20), the control group scored high enough to suggest they were sceptical and critical of their own accord. The authors argued that when cued to think sceptically, children at this cognitive developmental level are able to do so, but may not feel the need to respond critically to advertisements without being prompted to think about intent and appeals.

Eleven years to adult

The **formal operational stage** formulates into adulthood by allowing young people to function cognitively much like adults, for example, to think abstractly and make inferences; to think in terms of probabilities and grades rather than absolutes; and to begin processing information on everything from morality to sexuality and social conditions.

The implications for the role of television advertising at this stage are similar to those for adult viewers. In the period between ages 11 and 14, older children and younger adolescents demonstrate higher levels of cognitive processing and these, more than the assistance of training or the intervention of others, contribute to higher order understanding of the role and function of advertising messages (Robertson & Rossiter, 1974). For example, the specific tactics and techniques used by professional communicators are better understood and this is combined with more sophisticated scepticism and thinking about the role of advertising in contemporary society (Boush, Friestad, & Rose, 1994).

Children in the formal operational stage may not always detect persuasive intent in advertising. A longitudinal qualitative study of the formal features used in advertisements (such as repetition, testimonials, music and imagery) and children's understanding of advertisements, indicated that many students missed the intent and sponsor behind many messages (Fox, 1995). Of 150 students in grades six to 12, only five said they recognised a commercial source or business behind a Pepsi soft drink commercial that Pepsi had stylistically designed to look like a public service announcement (Fox, 1995). The implication of this research is that even though cognitive development predicts understanding about the intent of advertising and the formal features commonly used to convey it, commercial designers and producers may use other tactics that confuse or challenge the growing sophistication of older children and adolescents.

AGE, MEDIA LITERACY AND INFLUENCE OF ADVERTISING

The age-related development of higher levels of understanding of the function of advertising and ability to think critically about its intent and appeals has led to the policy conclusion that younger children are necessarily more influenced by advertising than are older children. Studies such as Brucks, Armstrong and Goldberg (1988) and Fox (1995) support the view that development by older children of cognitive defences to advertising does not mean they are not influenced by advertising. Early research on the content of television advertising directed to children indicated that language in advertising, while used to promote products, may be purposefully constructed to confuse younger children at lower levels of cognitive development (Bloome & Ripich, 1979). More recently, Livingstone and Helsper (2004) reviewed research on the formal features of television advertisements directed to children. They noted that different age groups responded to different formal stimuli in commercials. For example, colours and characters tended to attract and affect younger children, and message text attracted older children. This research indicates that advertising may be created

for children with their cognitive abilities in mind to leverage or accommodate their stage of cognitive development.

Based on a review of two linked research literatures about advertising and children's food choice, Livingstone and Helsper (2006) concluded that there was little empirical evidence cited in support of the claim that younger children are more vulnerable to advertising influence (p. 565). They note anomalies in the literature, for example, Moore and Lutz (2000, cited in Livingstone & Helsper, 2006) who found older children were more attentive to advertising than younger children, with greater effects in the over 11 years age group than the seven to eight years age group. Lewis and Hill (1998, cited in Livingstone & Helsper, 2006) found that children continued to be influenced by advertising even as they became more cynical, as did adolescents (Edens and McCormick, 2000, cited in Livingstone & Helsper, 2006). Livingstone and Helsper conclude that precisely because literacy levels vary with age, different processes of persuasion operate at different ages, and that the assumption of a single persuasion process is not useful in explaining children's response to advertising and its influence.

CONCLUSIONS

Cognitive development mediates children's understanding of television advertising and therefore the effects of advertising subsequent to exposure. It is rare in social research to observe a factor in a cause and effect model as clearly dominant as the influence of cognitive development on children's response to advertising. Other factors, such as parental intervention, media literacy, consumer experience and program/advertisement separators each play a role in helping children understand television advertising directed to them. However, cognitive development is the demonstrated, leading mediator of advertising influence on children.

The cognitive developmental stages identified by Piagetian psychologists appear as relevant today as they did fifty years ago. In reception, understanding and consequent behaviour, children require more than a decade to reach the sophistication and ability of adults to know the intent, context, appropriateness and veracity of advertisers' claims. Research demonstrates that it is only as children progress through stages of cognitive development that they acquire the ability to distinguish advertising from program content, come to understand the persuasive intent of appeals or develop scepticism about advertising. Further, cognitive development is linked to children's recall ability and predicts their trust and liking of advertising.

The two critical ages by which children generally understand important qualities of television commercials are five or six years of age, when children can generally distinguish advertising from program content; and age seven years, when children are generally able to recognise the persuasive intent of advertising.

Children from two to six years of age tend to view commercials as a form of on-going entertainment in line with programs they are watching, which underpins the need for clear separation of advertising (and other forms of commercial content) from program content.

Children from six to 11 years of age develop the ability to think sceptically about advertisements' persuasive intents and appeals, but may not think about advertisements critically without being prompted to do so. Children's cognitive defence to advertising begins to develop at this stage. However, studies show that children and adolescents aged 11 years and over and in later stages of cognitive development may still misunderstand the persuasive intent of advertising.

Television advertising directed to children is not uniform and employs a variety of formal features and mechanisms to draw the attention of children and communicate with them

(Livingstone & Helsper, 2004). The Livingstone and Helsper (2006) review suggests that because literacy levels vary with age, different processes of persuasion are effective with children at different ages, so that more developed cognitive defences do not necessarily mitigate the influence of advertising on older children.

Advertising repetition

RQ2: What is the available evidence about the impact of, and concerns about repetition of advertising on children?

Throughout the 1970s, social researchers explored the effects of advertising repetition out of concerns that repetition could place undue pressure on children. Evidence of a negative effect of repetition was not clearly established (Belch, 1982; Cox & Cox, 1988; Rethans, Swasy, & Marks, 1986) and since that time, research has not focused on this aspect of advertising to children. Note also that most of the research on repetition has been conducted with adults, particularly university students, and not children in different stages of cognitive development.

ATTENTION, RECOGNITION AND RECALL

In order for repetition to have an effect on child audiences, children must first pay attention to advertising, recall it and recognise which products have been advertised.

Zuckerman, Ziegler and Stevenson (1978) compared the distribution of attention given by children between the ages of eight and 11 to program and commercial content, and found that children's attention to television is sporadic. When placed in a play room where they were free to watch television and play with toys and games, children's attention to television was not high, with 27 per cent of children on average attending to television programs, as opposed to 73 per cent on average attending to other activities, such as playing. The average proportion of children watching television dropped from 27 per cent to 17 per cent when commercials were aired and researchers also observed that attention to each commercial dropped over the time the commercial ran, suggesting short commercials might work as well as, or better than, longer commercials. The research also found that children's recognition memory of which products had been advertised was poor, with the children recognising an average of 19 out of 36 segments of commercials.

A recent study of 77 first grade and 69 fourth grade students of both sexes examined children's processing of television advertisements by testing their recall of stimuli in audiovisual, audio-only and video-only conditions (Maher et al., 2006). The research investigated how much information children were able to recall from a single exposure to a television advertisement, how much accuracy there is in their recall and how this recall differs according to age. Results demonstrated that, generally, children are able to recall much information from a single exposure to a television advertisement accurately and that recall increased with age. Visual information appears to be more memorable and readily recalled than audio information with visual stimuli tending to have adverse effects on the processing of audio information.

The research of Zuckerman et al. and Maher et al. show that single exposures and short advertisements may work as well as repeated and longer advertisements but the effect, in the end, depends on attention and recall, neither of which are guaranteed by repeated exposure. The implication, then, is that one exposure is sufficient to convey a critical message to children, but that audio content may not be received well in the first exposure. Repeated exposures to an advertisement may help children obtain more information, particularly about disclaimers and conditional features such as technical requirements (batteries) and set inclusions (such as pieces being sold separately).

PREFERENCES AND BEHAVIOUR

In addition to the effect of repetition on recall of advertising, studies have explored the effect of repetition on preferences for advertised products. Research has demonstrated that repetition enhances children's recall accuracy and affects children's stated attitudes and preferences, but has not established that repeated exposure converts to behaviours like requesting (pester-power), purchasing and consuming advertised products.

In an experiment with 151 male children between the ages of eight and 10, Gorn and Goldberg (1980) examined the effects of repeated exposure to commercials on children's recall, recognition and preferences. The boys were randomised into six groups with five conditions and one control. The control group watched an animated program without any embedded commercials. The conditions groups watched a cartoon program in which six different advertisements for one brand of ice cream were embedded, varying either by the number or combination of advertisements shown. The children were more accurate than not in recalling the number of advertisements they were exposed to, with no significant difference in recall between those who saw the same advertisement and those who saw variations of the advertisement. Those who saw three or five advertisements were more likely to identify the correct name of the ice cream brand and the number of flavours. While repetition improved recall accuracy for specific information, it did not have an effect on the participants' preferences or planned behaviour.

Research has examined whether repetition has an impact on behaviours, usually observed through questions about whether the child would ask for or purchase the product, having seen the advertisement. Goldberg, Gorn, and Gibson (1978) showed repeated commercials for HFSS foods to one treatment group and public service announcements for eating fruits and vegetables to a comparison group. Compared with foods shown less frequently, foods shown repeatedly were those the participants said they would purchase. Children shown commercials for 'healthy' foods repeatedly reported negative attitudes to, and reduced intentions to purchase, HFSS foods. The authors concluded that exposure, through repeated viewings of an advertisement can produce both positive and negative attitudes depending on the message content. The authors also demonstrated that repeated exposure to a television advertisement for a toy makes that toy more desirable than a toy shown less often.

While these early studies demonstrate that repetition may affect recall, attitudes and preferences, they do not indicate whether repeated exposure translates to behaviour like pestering for products, purchasing products or consuming products.⁹

REPETITION AND ADVERTISING EFFECTIVENESS

The level of repetition of an advertisement may affect whether it is received positively or negatively by an audience and how the advertisement affects viewer attitudes, preferences, and behaviours. The implication is that positive reception enhances advertising effectiveness, whereas negative reception decreases effectiveness. The state at which an advertisement is most effective or is most positively received by the viewer by virtue of a given number of repeated exposures is known as 'wearin'. The complementary idea of 'wearout' is the state at which the advertisement ceases to be effective or is responded to with negativity by the viewer.

While the following research on the effects of advertising repetition was conducted with adults, it may have limited application to older children from age 11 when they enter the

⁹ See further RQ 4 for research on television advertising and the behaviour and attitudes of children (including pester power) and RQ 6 for research on children's advertising exposure and their food and beverage preferences.

formal operational stage of development. The research demonstrates that the effect of repetition on the effectiveness of advertisements on adults depends on the interplay between repetition and other variables, such as brand familiarity, knowledge of product class, advertisement length and complexity.

Experiments with adults have shown that attitudes toward brands and purchase intentions were not affected by repetition and that repeated exposure was found to create negative thoughts about the advertisement (Belch, 1982). More recent research demonstrated that an interaction effect between familiarity and repetition predictably favoured repetition and familiar brands—wearin with repetition operated better for familiar brands and wearout with repetition was more common for unfamiliar brands (Campbell & Lane, 2003; see also Rethans et al., 1986 for product class).

A study with university students demonstrated that the length of a commercial may determine the effectiveness of repetition. The study found that repetition of longer commercials led to wearout after between four and eight repetitions, but that longer informational commercials were more effective than shorter informational commercials (Singh & Cole, 1993). Confirming this, a series of quasi-experiments in the US by Jeong (2005) found that audiences' brand recognition and liking of advertising were enhanced more by the repetition of short advertisements than either by repetition of longer advertisements or by adding to the length of a particular advertisement.

Other studies have found that the effect of repeated advertising helped adults understand difficult appeals, but with easy appeals the effectiveness of the advertisement declined with repeated exposures (Anand & Sternthal, 1990). Evaluations of complex advertisements become more positive with repeated exposure, suggesting more receptiveness to the message, while evaluations of simple advertisements did not improve (Cox & Cox, 1988).

One of the largest studies ever conceived for testing repetition effects (Blair, 2000) concluded that:

- a single exposure can produce an effect;
- advertisements that do not use persuasion techniques, such as sex appeal (as opposed to information techniques), do not result in wearin over repeated exposure; and
- advertisements that do use persuasion techniques demonstrate eventual wearout, but do not appear to result in wearin or become optimal over exposures (in other words, the advertisement either works from the start or not, but does not work forever).

Blair and Rabuck (1998) published similar research using different methodologies in which these findings were also produced.

CONCLUSIONS

Research findings on effects of repetition on children's understanding of advertising directed to them is equivocal and with most of the research conducted more than 25 years ago in the United States, results may not be able to be generalised to the contemporary Australian experience. Aside from Maher, Hu and Kolbe (2006) this review identified little recent research into the implications of advertising repetition for child audiences.

Furthermore, the research on repetition focuses on cognitive, rather than behavioural outcomes. While it does show that repetition enhances recall and has an effect on children's stated attitudes and preferences, it does not establish whether repeated exposure converts to behaviour like requesting (pester-power), purchasing and consuming advertised products.

Early studies found that children apply relatively low levels of attention to television advertisements, suggesting that the necessary antecedent to an effect of advertising: watching the commercial, is not always present.

Some research suggests that memory of products advertised tends to be poor among children, indicating that repeated exposures are necessary to communicate advertising messages to children. However, other research has shown that recall of information can be high for children with just one exposure, with recall increasing with age and additional exposure increasing comprehension. Because of children's cognitive under-development, repetition of advertising messages may improve children's understanding of the content of the message (as distinct from the persuasive intent of the message).¹⁰

With adults, repetition has been shown to create more positive attitudes (wearin) about an advertisement or product when the message is complex and more frustration (wearout) when the message is simple, or primarily informational. Repetition has been shown to work better for wearin with familiar products, but not for persuasive appeals over simple information appeals. The research with adults demonstrates that an advertisement's effectiveness in influencing attitudes and behaviours depends on a range of interrelated factors, of which repetition is one.

Possible implications of the results of the research on adults is that repetition is likely to be most effective for advertisements that appeal to children from the start rather than those that do not attract attention. Older children who have begun to develop scepticism of advertising may find repeated product advertising an annoyance where the product is unfamiliar or of limited relevance to their experiences or needs. It may be that familiarisation with brands in early childhood produces greater advertising effectiveness with repetition at later stages of development. While the complexity of an advertisement may improve advertising effectiveness for adults, to the extent that younger children cannot process multiple factors at once until well into the concrete operational stage,¹¹ the likely impact of repeated exposure of complex advertisements is likely to be less robust. Importantly, these inferences are untested in the literature.

Characters

RQ3: What is the research evidence concerning children's understanding of, and response to the use of program characters, figures, cartoons and children's celebrities in television advertising directed to them?

The use of characters, figures, cartoons and children's celebrities in television advertising to children is designed to attract children's attention to the advertisement, create positive associations between the character and the product or brand and ultimately to lead children to pursue the advertised product. Characters are used as endorsers of commercial products, either within advertisements or in programs (including competitions and prize-giving associated with a commercial interest). Both industry and consumer advocacy literature acknowledges that characters are used in advertising to improve the persuasive intent of the message.

¹⁰ See further RQ 1 for research on cognitive development and children's ability to understand the persuasive intent of advertising.

¹¹ As discussed in RQ1.

ATTENTION AND APPEAL

Early research on the *Sesame Street* television program demonstrated that characters are effective in attracting children's attention (D. R. Anderson & Levin, 1976). More recently, as part of an empirical study, Neeley and Schumann (2004) summarised the debate on use of characters in television advertising directed to children. They concluded that industry evidence demonstrates characters are effective at attracting children's attention (particularly children in the sensorimotor and early pre-operational stages of cognitive development), and are effective at helping children connect with products by identifying with characters (particularly children between the pre-operational and concrete operational stages of development). They also found that very young children do not differentiate between animated and human characters and that, for children in pre-operational and concrete operational stages of development, both animated and human characters are effective in creating positive attitudes toward products.

Children's cognitive level determines which character traits appeal to children and what response children may have toward the character. In the first instance, characters attract attention and young children between infancy and two years are drawn to soft and safe characters that appear friendly and have simple, one-dimensional personalities (Lawrence, 2003). Between ages two and three, children demonstrate the ability to recognise and label characters they see frequently on television advertisements and begin to demonstrate interest in both the character and product being advertised (Acuff & Reiher, 1997).

Interest in characters intensifies around the age of five, particularly for boys (Bashford, 2004), because growing cognitive sophistication affords children the ability to discern more detail about the character's visual characteristics, by which children in the pre-operational stage are able to group, class and express (Lawrence, 2003). By the ages of six and seven, when children move into the concrete operational stage, humour appreciation emerges and children migrate away from characters that are seen to appeal to younger children. Toward the end of the concrete operational stage, children aged eight and above appreciate more complicated, sophisticated and 'edgier' characters that appeal to their increased analytical skills (Lawrence, 2003).

RECALL, RECOGNITION AND ATTITUDES

Studies have examined whether the use of characters improves children's ability to recall, recognise and understand advertising directed to them and whether this translates to attitudes, preferences or behaviours.

One of the most detailed studies available on the influence of televised advertising characters on children was that by Mizerski (1995). The author examined recognition and attitudes toward categories of products among 790 American children between the ages of three and six years. Children were shown images of Mickey Mouse, Captain Crunch, Tony the Tiger, Ronald McDonald, Joe Camel, the Marlboro Cowboy and Charley Tuna, among others. As the children's age increased, the characters were increasingly popular and attitudes toward the products represented by the characters also became more favourable. Recognition was also positively related to attitudes to the products. This study indicates that the use of characters increases in effectiveness as children develop cognitively.

A recent study of 103 children aged two to five explored the effects of animated spokes-character action and voice to determine whether this intervening formal feature of an advertisement would determine children's attention, recognition and attitudes toward a product (Neeley & Schumann, 2004). The children were divided into two groups and shown a 15-minute television program embedded with test commercials at three points during the

program along with other commercials (that had ceased airing on commercial television before the study children were born). The test commercials featured characters newly created for the study: group one seeing a character paired with a cheese biscuit and group two seeing a character paired with a fruit snack. Afterwards children responded to questions in a face-to-face interview in which they were shown pictorial flashcards to measure recognition and attitudes. The authors found that children were unreliable in their ability to recognise the character and product, to report favourable attitudes toward the product or to indicate purchase intention. They did find a weak positive correlation between attention and character recognition and between character and product recognition as well as character and positive product attitude.

PURCHASE INTENTION AND SELECTION

Once a television advertisement with a character attracts attention, the child's recognition of the character may enhance longer-term memories of the product and brand. A study of 253 children aged 10 to 17 years in California (Chen, Grube, Bersamin, Waiters, & Keefe, 2005) tested children's affective (liking/disliking) responses to a range of elements featured in advertisements, such as people, animals, characters, music, story and humour. The relationship between advertising likeability and its potential influence was also tested. It found that likeability of advertisements overall was created by positive responses to specific elements featured in the advertisements, which correlated to advertising effectiveness as measured by purchase intentions for the product and brand. Advertisements that focused primarily on product qualities were rated less favourably and evoked less desire to purchase the product, indicating that characters would be more likely than product qualities to enhance advertising effectiveness.

Although not published in a refereed journal, early results from initial research by the Sesame Workshop indicates that *Sesame Street* character stickers placed on a particular food increased its selection (Kotler, 2005). In the control group where no characters were used, when offered a choice between a picture of broccoli and a picture of a chocolate bar, 78 per cent of children chose the chocolate bar over the broccoli. In the test group, when offered a choice between a picture of broccoli with an Elmo character sticker on it and a picture of a chocolate bar with an unknown character sticker on it, only 50 per cent of children chose the chocolate bar over the broccoli. The use of the Elmo sticker had a similar effect on chocolate bar choices. Overall, more children chose the broccoli with the Elmo sticker (50 per cent) than without the Elmo sticker (22 per cent) and more children chose the chocolate bar with the Elmo sticker (89 per cent) than without the Elmo sticker (78 per cent).

CONCLUSIONS

Characters are effective in attracting children's attention in television programming and both animated and real-life characters draw children's attention to advertising. Characters attract positive responses when children identify features about the characters they like (younger children in particular) or identify emotionally with characters (older children in particular), with children in different stages of cognitive development being drawn to different character traits. Research also indicates that the use of characters in advertisements is positively associated with memory and attitudes toward products.

Owing to their cognitive under-development, younger children fail to differentiate between animated and real-life characters. Further, cognitive development research demonstrates that children slowly but progressively develop the ability to distinguish advertising from programming content; therefore the use of characters in advertisements has the potential to confuse children about the distinction between advertising and programming content.

Premium offers

RQ4: What is the available evidence about children's response to premium offers in television advertising directed to them?

A premium is anything offered with or without additional cost that is intended to induce the purchase of an advertised product or service, such as a collectable toy. Premium offers are usually conditional upon the purchase of the product, and are used in advertisements for products to attract interest and help market those products.

The concern surrounding the use of premiums in advertising directed to children is that the desire for the premium may overshadow the desire for the underlying product. For example, in relation to 'fast food' the concern is that the premium drives children's preferences, rather than the appeal or characteristics of the food.

Print media coverage about the use of premiums in advertising directed to children has increased over the past year in pace with the growing concern about food advertising and obesity.¹² Articles have referred to the 'gimmick' nature of premiums (Canning, 2006) and the focus of advertising on the premium rather than the product (Maley, 2005). An Australian content analytic study that attempted to quantify the use of premium offers in food advertisements broadcast during a 63-hour sample of 'C' and 'G' programming, found that 20 per cent of food advertisements sampled featured a premium offer (Morton, Stanton, Zuppa & Mehta, 2005).¹³ Out of a total of 1,721 advertisements, 544 were food advertisements (32 per cent of all advertisements were for food). Of the 544 food advertisements, 111 (or 20 per cent) featured a premium offer.¹⁴

ATTENTION, PREFERENCES AND BEHAVIOUR

Early research has demonstrated that premiums capture attention and generate interest in both advertisements and products advertised, and influence preferences for products. However, these cognitive and affective responses do not translate well to behavioural outcomes such as requests or purchases (Miller & Busch, 1979).

Heslop & Ryans (1980) evaluated the effectiveness of premium appeals directed to children on 280 Canadian children aged four to eight who were shown a 22-minute animated program with three commercial breaks featuring a cereal either with or without a premium, according to each experimental condition. After viewing, both mother and child were informed they could select one of three brands for each of the five products on display, as payment for participation in the study. The authors concluded, '...the use of premiums may affect the child's preferences, but are less likely to influence the child's requesting behaviour and even less likely to affect the cereal purchased by the mother' (p. 420). The authors cautioned that, to 'gain increased confidence in the findings, different levels of premium attractiveness and different advertising approaches need to be studied across an even broader age range of children' (p. 419–420). This research suggests that premiums influence preferences, but are imperfect predictors of behaviour.

¹² See further RQ 6 for research on television advertising and children's food and beverages preferences.

¹³ In April 2001, a total of 63 hours of children's television programs, including those classified as 'C' (12.5 hours) and 'G' (50.5 hours) were videotaped from Adelaide's three commercial channels (7, 9 and 10). The viewing times selected for their relevance to children were 7.00–10.30 am and 3.30–7.30 pm Monday to Friday, and 7.00–11.30 am Saturday.

¹⁴ The authors also expressed these findings as a percentage of programming type: Out of 12.5 hours of 'C' programming sampled, 35 of 97 food advertisements shown featured a premium offer (36 per cent of food advertisements in C). Out of 50.5 hours of 'G' programming sampled, 76 of 447 food advertisements shown featured a premium offer (17 per cent of food advertisements in G).

An early observational study of parent-child interaction in supermarkets suggested that premium appeals do affect behaviour (Atkin, 1978). Nearly half of all children in the study chose cereals based on a premium offer and many mothers reported choosing products based on a premium appeal. Children who told their mothers about a premium were more likely to get the cereal than children who did not point out the premium when requesting the product.

The difference in the conclusions of the Heslop and Ryans (1980) study and the Atkin (1978) research may be explained by context. Atkin observed the effect of premiums on shopping behaviour in supermarkets. Heslop and Ryans' study focused on television advertising exposure with less naturalistic purchasing measures (selection of brands from select products on display).

In a recent Australian qualitative study (Roberts, 2005) comprising nine focus groups and in-depth interviews with 22 mothers of primary school children, all mothers reported that premiums led to pestering and begging for product purchases. Mothers thought that premiums involving collectables were particularly influential in driving demand for food products such as sweet cereals, chips and fast food.¹⁵ Mothers also noted that their children associate 'fun' with premiums (such as the trading of Tazos or cards) and, subsequently, the brand. However, 'fun' was also associated with products themselves, as distinct from the premium (participants said their children play with 'fun foods' by, 'dunking (Dunkaroos), unwinding (Roll-ups) and shredding (Cheese Stringers)' (para. 13)). As to the effectiveness of premium offers independently, this research is not conclusive. It is not possible to delineate all the potential causes for the increased demand for advertised products reported by the mothers, the author noting that 'free toys, high sensory appeal, collectability, trading dimensions' and licensed character promotion on packages work powerfully together (para 22).

Children's stage of cognitive development will also influence their response to premium offers. A study of children in the pre-operational stage demonstrated that they are one-dimensional in their approach to selecting between products (Carruth, Skinner, Moran & Coletta, 2000). The authors conducted in-home interviews with 34 mothers and 34 children aged five and six and a 'grocery store game' where nine pairs of products in classes like cereals, yoghurts and drinks were presented for 'purchase'. Each product differed on one or two key attributes such as packaging, premium offer, character promotion and games to play included with the product. Children in the study demonstrated they were only able to select from paired objects in the grocery store game based on one attribute. This one-dimensional thinking implies that younger children cannot weigh the pros and cons of advertised products, and are likely to make product requests and purchases based on what is, for them, the most salient feature shown in a television commercial.

CONCLUSIONS

Empirical evidence indicates that premium offers work to attract children and create interest in the product. The implication of cognitive development research is that, as young children in the pre-operational stage (two to six years) can only process one dimension of product information at a time, a premium which dominates a television advertisement may be the only thing some children are able to process.¹⁶

Although premiums may affect children's interest in and preferences for products, behavioural outcomes, such as requests and purchases, do not necessarily follow as a result.

¹⁵ See further RQ5 for research on television advertising and children's behaviours (including pester power).

¹⁶ Children in the later years of the concrete operational stage (six to 11 years) demonstrate the ability to evaluate advertised products on a range of criteria and dimensions.

While research on premiums in marketing (Atkin, 1978 and Roberts, 2005) demonstrates the potency of premiums generally, quantitative studies relating to television advertising (Miller & Busch, 1979 and Heslop & Ryans, 1980) suggest there is likely no link between television advertising of premiums and children's behaviour, although some of these authors do caution that further research is necessary.

Pester power

RQ5: What is the available evidence around television advertising and the behaviour and attitudes of children? For example, the onset of socially inappropriate behaviour and children's use of 'pester-power'?

A common theme in research on effects of television advertising on children is that younger 'consumers' have less financial and discretionary power with which to make purchases on their own. For this reason, the penultimate behaviour advertisers might wish for children to engage in is requesting that a parent or guardian make purchases of advertised products on their behalf. The term 'pester power' describes the actions of children such as multiple requests and complaining to persuade parents to purchase goods that parents might not otherwise intend to purchase. This phenomenon is most often studied in relation to advertised food or toy products.

Interest in pester-power has focused on children's diet and health over recent year, with considerable coverage in specialised and mainstream print media from around Australia. Much of the popular print media asserts a causal link between television advertising and pester-power on the basis of parents' own experience and observations (Thomson, 2005; Hughes, 2006; "'Weighing in on the side of healthy eating,' 2006; L. Anderson, 2006a). The nature of the relationship between television advertising and children's requests for advertised products has also been the subject of much academic and policy research.

PERSUASION AND PURCHASE BEHAVIOUR

Many studies have demonstrated weak to moderate relationships between exposure to advertising and the use of pester-power (Arnas, 2006; Brody, Stoneman, Land & Sanders, 1986; M. Buijzen & Valkenburg, 2000; Caron & Ward, 1975; Center for Science in the Public Interest, 2003; Fletcher, 2004; Galst & White, 1976; Gunter et al., 2005; Heslop & Ryans, 1980; Jarlbro, 2001; Kunkel, 2001; Robertson & Rossiter, 1977). They conclude that viewing television advertisements predicts which products are the bases of pestering behaviour and how frequently pestering occurs. The different methodologies used in the studies noted above, coupled with the fact that more recent studies indicate that exposure to television advertising is one of many factors that lead to pestering behaviour, suggests that advertising contributes only partly to the problems with pester behaviour that parents report.

Caron and Ward (Caron & Ward, 1975) found that children who were exposed to television commercials for toys for Christmas not only developed the initial idea for the toy but repeatedly pestered their parents to buy it. Children who completed advertising diaries demonstrated they regularly pestered parents for toys, foods and other goods based on their exposure to advertisements. Children in the pre-operational stage (two to six years) who view television advertising more request more (Isler, Popper, & Ward, 1987).

Early research by Galst and White (1976) to determine how much influence television advertisements had on unhealthy eating patterns as a result of pestering parents at supermarkets suggested that pester-power may be a function not only of advertising, but its

intersection with other elements of marketing, such as shop displays.¹⁷ This study divided children into two groups: one which viewed television advertisements and one which did not. While the authors observed a positive relationship between television advertising exposure variables and the number of requests made at the supermarket, they concluded that television advertising interacts with other stimuli to effect children's pestering.

A US study by Brody, Stoneman, Lane and Sanders (1981) attempted to assign a more definite influential cause of food commercials on children's tendency to pester their parents into purchasing HFSS foods.¹⁸ Mothers and their children were divided into three groups: a mother-child viewing group who watched a program with embedded food product advertising; a child-only viewing group who watched the same content, but without their mothers present; and a control group of mothers and children who viewed the same program, but without the food product advertising. After viewing, mothers and their children were sent into a large room resembling a grocery store and were instructed to shop as they normally would for a week's worth of groceries. The children in the groups that saw the commercials made twice as many attempts to persuade their mothers to buy the food products advertised than the children in the control (no commercials) group.

More recently, an experiment by Robinson, Saphir, Kraemer, Varady and Haydel (2001) examined the effect of a classroom education program in media literacy to reduce the effects of media exposure on children's pestering behaviour for toys. One of the findings of this naturalistic pre-test post-test experiment with 105 students between the ages of eight and nine was that children and parents who reported reductions in television viewing over the duration of the study both reported fewer purchase requests. The conclusion from this research is that television viewing time (including advertising and program content) is positively correlated with pestering.¹⁹

Cognitive development research has indicated that younger children were more likely to pester than older children (Pecora, 2007), but that older children were more successful in using pestering to get their mothers to make purchases than younger children (Galst & White, 1976).

CONCLUSIONS

Children who are exposed to television advertising are exposed to new ideas about products that interest them. As research findings about pester power are often made in the context of the broader marketing mix, conclusions about the effect of television advertising specifically on pester-power are not necessarily able to be drawn. The correlation between exposure to television advertising and pestering parents to purchase products advertised is weak. However, a fairly clear associative link between television advertising and pester-power seems to be apparent. Pester-power appears to be enhanced when advertising is part of a larger marketing mix, including in-store displays and labelling, and has the potential to interact with the use of characters and premium appeals.

Simple correlational research in the US indicates that pre-operational children who view more television advertising request more. Research about children's cognitive development tells us that, as children age, they develop the cognitive capacity to contextualise and act critically upon the observations they make, and their requests for products declines.

¹⁷ See further RQ 6 for research on television advertising and children's food and beverages preferences.

¹⁸ See further RQ 6 for research on television advertising and children's food and beverages preferences.

¹⁹ See further RQ 8 for research on media literacy and television advertising.

Food and beverage preferences

RQ6: What is the relationship between children's television advertising exposure and their food and beverage preferences? What is the evidence in relation to Australian children?

Children's diet and eating behaviours represent a substantial amount of the literature on children and advertising, reflecting a recent focus of public policy both overseas and in Australia on childhood obesity, and community concern about addressing this (Anderson, 2006b; Ashley, Wintour & Oliver, 2003; Crawshaw, 2006; 'Federal and state govts clash over junk food ads', 2006; Ives, 2004; Meade & Sinclair, 2005; Milliner, 2006; Robotham, Lee, & Nader, 2006; Vernon, 2005). A range of policy strategies designed to address the factors identified as contributing to childhood overweight and obesity have been advanced (Catford & Caterson, 2003; Center for Science in the Public Interest, 2003; Dalmeny, Hanna, & Lobstein, 2003; Foster, Gore & West, 2006; Hawkes, 2004; Horgen, 2005; Kraak & Pelletier, 1998; Licence, 2004; Ofcom, 2006b; Robinson, Bloom & Lurie, 2005).

The research on children's television advertising exposure and their food and beverage preferences clusters around three main topics:

- children's exposure to food and beverage advertising (comprising the measurement of children's television viewing, prevalence and scheduling of food and beverage advertising, and categories of food and beverage advertised);
- the influence of food and beverage advertising on children's knowledge, attitudes, preferences and behaviours; and
- the contribution of television viewing, including advertising, to childhood overweight and obesity.

A proportion of that research investigates whether there is an association between food consumption and advertising, while other research seeks to analyse and measure media content (Kunkel, 2001; Kunkel et al., 2004).

CHILDREN'S EXPOSURE TO FOOD AND BEVERAGE ADVERTISING

Children's potential level of exposure to food and beverage advertising is related to their pattern of television viewing. Watching television is common for children worldwide, particularly in the United States (Kotz & Story, 1994; Dietz Jr & Gortmaker, 1985) and the United Kingdom (Hitchings & Moynihan, 1998). While estimates vary, it appears that Australian children watch less television than their American and British counterparts depending on the children's age (Salmon et al., 2005; Carter, 2006).

A 2006 study conducted by the Australian Centre for Health Promotion (ACHP) for New South Wales Health (Australian Centre for Health Promotion, 2006) noted that children's time spent watching television had declined since 2002 (Australian Centre for Health Promotion, 2006).

OzTam ratings figures analysed by ACMA indicate that in 2001, children aged five to 12 years watched free-to-air television for 151 minutes per day (for commercial television, the 2001 daily average was 124 minutes per day). In 2006, the daily average of free-to-air television viewing for the five to 12 age group was 130 minutes (commercial television: 112 minutes per day). In 2006, children in the five to 12 age group watched television in their greatest numbers between the hours of 7.00 and 8.00 pm, with an average audience of 275,000 (representing 8.1 per cent of the total viewing audience at that time). This timeslot also attracted the highest average audience in the 0–14 years age group in 2001 (579,000)

and 2005 (487,000), which indicates a consistent pattern in children's peak viewing time over the past five years.²⁰

A large proportion of research on food advertising both in Australia and overseas uses content analysis to document the prevalence and nature of food advertising that children are exposed to (cf., Shelov et al., 1995). Of direct relevance to this literature review are the content analyses of Australian television advertising, and these go back a decade or more (cf., Hill & Radimer, 1997).

Like much of the research on television advertising to children, sampling techniques, measures, concepts and definitions vary and are not applied consistently.²¹ Thus, any content analysis may be critiqued with respect to sampling technique and relevance over time, and the Australian studies are no exception (Free TV, 2005).

The following Australian studies adopt differing measures and definitions of categories, but all attempt to quantify amount and type of food and beverage advertising to which children are potentially exposed. Analyses of food and beverage advertising on Australian television have been conducted predominantly from the health sciences perspective.

The ACHP research for New South Wales Health, referred to above, recorded a week of commercial free-to-air television broadcast between 6.00 am and 11.00 pm in May 2006. The study analysed advertisements in time periods defined by the study as 'children's viewing times'.²² The research replicated a 2002 study reported in Neville et al. (2005), which sampled a narrower range of time periods defined as 'children's viewing times'. Comparing the findings the research found:

- overall rates of food advertising on free-to-air commercial television declined from 31.1 per cent of advertising to 26.2 per cent between 2002 to 2006;
- 'core' foods such as dairy, breads, cereals and fruit and vegetables comprised 36 per cent of food advertisements,²³
- 'high fat/high sugar' foods comprised 43 per cent of food advertisements, although this advertising category has declined from 54 per cent in 2002;
- confectionery (13 per cent) and fast food restaurants (11 per cent) remained the two most frequently advertised food categories, although both these categories decreased;
- these were followed by bread, cereals, rice and pasta (nine per cent) and dairy (eight per cent);
- fruit and vegetables made up two per cent of food advertisements in 2006, up from less than one per cent in 2002;
- the analyses of scheduling of food advertisements showed a higher proportion of 'high fat/high sugar' food advertising occurred during the identified children's viewing times than overall (48 to 49 per cent compared to 43 per cent);

²⁰ On average, over the period 2001 to June 2006, commercial television lost 99,000 viewers in the 0–14 years age group (a reduction of 17 per cent).

²¹ For example, in content analyses on food advertising to children, some studies include supermarket advertising as food advertising, whereas others do not; in addition, some studies sample children's programming times only, whereas others sample a wider range of programming. Further, the terms 'unhealthy food' or 'junk food' (often pejorative) are sometimes applied to some or all HFSS foods.

²² The New South Wales Department of Health study defined children's viewing hours as comprising Monday-Friday 6:30–8:00, 9:00–9:30, 15:00–20:30; and Saturday–Sunday 7:00–20:30.

²³ This study accounted for food advertising by supermarkets as 'miscellaneous', a group comprising recipe helpers, tea, coffee, alcohol, local restaurants/cafés, supplements, vegemite and throat lozenges.

- children's exposure to food advertisements and non-core foods is most affected by intensive advertising for high fat/high sugar foods in programs that are popular with children—in children's top 20 rated programs, advertising for 'high fat/high sugar' foods accounted for around 66 per cent of food advertisements.²⁴

Based on Australian Film Commission (AC Nielsen/Ozta) data about children's viewing habits, the study concluded that Australian children between five and 12 years of age see as many as 96 food commercials per week, of which 63 are for foods high in fat and sugar, amounting to about 5,000 television food advertisements per year (note this may be an overestimate if calculated on all children's viewing rather than viewing of commercial television).

Another 2006 content analysis (Chapman, Nicholas & Supramaniam, 2006), for the Cancer Council of New South Wales, recorded 645 hours television and a total of 10,593 advertisements on three commercial free-to-air television channels between 7.00 am and 9.00 pm on two weekdays and both weekends days. Each advertisement was categorised as either a 'non-food ad', 'healthy/core food ad' or 'unhealthy/non-core food ad' according to set criteria. The study found:

- thirty-one per cent of the advertisements analysed were for food;
- eighty-one per cent of the food advertisements were for non-core foods; fast food and takeaway being the most advertised food category, followed by chocolate and confectionery;
- on weekdays, the number of advertisements for non-core foods increased throughout the day to peak at more than five advertisements per hour in the 6.00 pm to 9.00 pm time slot; and
- the early morning time slot on Saturday was the most concentrated period for advertising non-core food, with more than six advertisements screened per hour.

A slightly older content analysis of types of foods advertised during children's television programming examined conformity with the recommendations of the Australian Guide to Healthy Eating (AGHE) developed and published by the Australian Commonwealth Government Department of Health and Ageing (Zuppa, Morton & Mehta, 2003). Sixty-three hours of programs classified as 'C' or 'G' were recorded and 544 food advertisements analysed with the following results:

- twenty-one per cent were for 'core foods' (breads and cereal, fruits, vegetables, milk and meat groups);
- seventy-nine per cent were for 'non-core foods' (fast food restaurants and extra foods: soft drinks, chocolates and confectionery) as outlined by the AGHE; and
- fast food, chocolate and confectionery made up more than 50 per cent of advertisements shown.

The authors concluded that television food advertising that children were to children in Australia did not support the recommendations of the AGHE for healthy eating.

Taken together, the studies indicate that food and beverage advertising, including for chain restaurants, comprises a major category of all television advertising, and that the advertising

²⁴ The following were reported in the study as the top 20 rated programs on commercial channels (ranked by audience) for 5–12 year olds in the Sydney market in the study week: *The Simpsons*; *Big Brother – Intruders Go In*; *Flipper and Lopaka – The Search For Neptune's Trident*; *Australia's Funniest Home Video Show*; *Big Brother Live Nomination*; *Neighbours*; *Big Brother – Friday Night Live*; *Big Brother Sun*; *Big Brother*.

of HFSS foods is more prevalent than the advertising of food products that fulfil core dietary requirements. Overall, in general viewing times as well as traditional children's viewing times, this prevalence of HFSS food advertising has been identified. While exact estimates vary as to the number and type of food advertisements children see, the research indicates that children may be exposed to significant amounts of advertising for HFSS foods, in line with their television viewing patterns.

Content analyses and studies conducted in the US (Arnas, 2006; Coon & Tucker, 2002; Kuribayashi, Roberts, & Johnson, 2001), New Zealand (Hammond, Wyllie, & Casswell, 1999; Wilson, Signal, Nicholls, & Thomson, 2006) and the UK (Gorn & Goldberg, 1982; Hastings et al., 2003; Ofcom, 2004) report similar findings overall to those presented in the Australian research. One US study compared caloric intake with recommended daily intake and food types compared with dietary recommendations finding that total intake of food in advertisements shown in general audience programs, if consumed, would represent diets of 2,000 calories more than the recommended daily intake (Harrison & Marske, 2005). The study, conducted for the UK Food Standards Agency (Hastings et al., 2003) found that advertised diet sharply contrasted with that recommended by the public health sector and that children in the UK were exposed to extensive HFSS food advertising.

Ofcom (2004) noted that children do most of their television viewing outside of traditional children's program times and reported around one in five (19 per cent) of all of the television advertisements seen by children is for food, soft drinks or chain restaurants. Twenty-nine per cent of all of the advertising seen during children's airtime is for these products, with younger children having greater exposure to this advertising because they spend more time watching television in children's viewing times.

KNOWLEDGE, PREFERENCES AND BEHAVIOURS

The *Review of Research on the Effects of Food Promotion to Children* (Hastings et al., 2003) outlined three threads of interest in research on the effects of food promotion on children's food knowledge, preferences and behaviour (p. 11):

- food knowledge, including general perceptions of what foods are 'good' and 'bad' to eat, and understanding of nutritional concepts;
- food preferences, defined as including both liking for specific foods and preferences between different foods; and
- food behaviour, defined broadly as including purchasing and purchase-related behaviour, consumption behaviour, and diet and health status.

Only a small number of recent empirical studies report either experimental effects of television advertising on attitudes, or correlational relationships or survey findings that relate television advertising exposure to obesity. Some overseas studies demonstrate a correlation between children's food advertising exposure, expressing preferences for HFSS foods, and food-related behaviour such as choosing and eating those foods. However, of this small volume of studies, most conclude that the correlational evidence is generally weak, that the correlations are small and that other factors correlate more strongly to food-related behaviours than does advertising.

Carter (2006) cites two separate literature reviews that conclude 'that there is sufficient evidence to suggest food advertising has an independent effect on preferences, purchasing behaviour and consumption of food by children at both brand and category levels' (Coon & Tucker, 2002; Hastings et al., 2003) (p. 8), but the evidence is not conclusive. The Hastings review (Hastings et al., 2003) found that food promotion (including television advertising)

appeared to have an effect on the foods children choose (based on correlational evidence of reported in-home behaviours rather than experimental evidence). This modification of behavior works at both the brand level and the food category level.

Television advertising

Advertisements may lead to misconceptions among children about the nutritional value of certain foods. An early study found that children who view advertising tend to make erroneous claims about the nutritional values of different foods (Ross, Campbell, Huston Stein & Wright, 1981). An analysis of children's television programming in the US revealed that 49 per cent of food advertisements had implicit messages that the food was nutritious or healthy (Kotz & Story, 1994).

A later US cultivation analysis confirmed a strong presence of advertisements for sugared foods and examined the effects of the advertisements on children's nutritional awareness (Signorielli & Staples, 1997). It established a relationship in a survey study between the amount of television viewed and a preference for unhealthy foods. The authors argued that children learn acceptable behavior through watching television and the obesity-promoting theme of television continues to be prevalent in advertisements and accepted by viewers, particularly children. Consequently, children can become confused and consider unhealthy foods to actually be healthy.

Early studies cited in the Hastings review (Gorn & Goldberg, 1982; Gorn & Goldberg 1980b, as cited in Hastings et al., 2003) were reported as finding that 'exposure to either confectionery advertisements, fruit advertisements or dietary public service announcements had no impact, either positive or negative, on children's attitudes towards snack food consumption' (p. 17). However, other early studies demonstrated correlational relationships between advertising exposure and reduced inhibitions for eating HFSS foods (Dawson, Jeffrey & Walsh, 1988).

Borzekowski and Robinson (2001, cited in Hastings et al., 2003) conducted a randomised control trial with preschoolers of two to six years of age. Children viewed a popular cartoon either with or without embedded advertisements. Children were subsequently asked to identify their preference for similar pairs of food products, one of which appeared in the advertisement. It was found that children who were exposed to the advertisements were more likely to choose the advertised product than those who were not exposed to the advertisements. It took only one or two exposures to the 10 to 30 second advertisement to influence the children's preferences. The greatest preference differences were for products that had two advertisements rather than one.

The Hastings review reported that the Norton study (Norton et al., 2000, as cited in Hastings et al., 2003) found that 'television advertising was significantly associated with preferences for a small number of foods, and that this occurred independently of other motivational factors influencing food preferences' but that '[i]t was not possible, from the results presented, to judge the strength of influence of advertising relative to the other influences examined' (p. 18).

As the Norton study suggests, factors other than television advertising influence children's food preferences. Young (2003b) identified a number of cultural influences on children's food preferences besides television advertisements and argued that children have their food preferences set before they are able to understand the content and motivation behind food advertising. Thus, non-media social influence on food habits, as well as the early influence of family and friends who determine the products young children will consume, are more direct causal factors of obesity (2003a).

As to the influence of food advertising on children's behaviour, one early US experiment demonstrated that healthy food commercials over a four-week period increased children's selections of healthy foods, but only when accompanied by the positive comments of adults in conjunction with the advertising message (Galst, 1980).

A later correlational study found that children tend to request food they remembered from advertisements. Hitchings and Moynihan (1998) asked children to recall as many food advertisements as possible, and those results were correlated with their purchase requests and food consumption. Out of the 10 most commonly remembered food advertisements, four were also among the 10 most commonly requested food products.

As to actual consumption behaviour, research is equivocal. In concluding that there is modest evidence of an effect of food promotion on consumption behaviour, Hastings et al. (2003) stated that 'effects were sometimes inconsistent and were not found in all the studies, but were found in sufficient studies to suggest that food promotion can, in some contexts, influence children's food consumption behaviour' (p. 16).

The Hastings review presents two sets of studies, which found that exposure to television advertisements had a significant effect on children's consumption behaviour (Gorn & Goldberg 1982/Gorn & Goldberg, 1980b; Jeffrey et al., 1982 Study 2/Fox 1981, as cited in Hastings et al., 2003) and three studies that found small associations of varying degrees of strength between exposure to television advertising (as measured by television viewing) and frequency of snacking or consumption of specific foods (Atkin, 1975b; Ritchey & Olson, 1983; Bolton, 1983, as cited in Hastings et al., 2003). A further two studies found that no effect could be concluded (Dawson et al., 1988; Jeffrey et al., 1982 Study 1, as cited in Hastings et al., 2003) and a further four studies produced results that were inconclusive (Galst, 1980; Peterson et al., 1984; Cantor, 1981; Gorn & Goldberg, 1980a, as cited in Hastings et al., 2003).

An American study by Bolton (1983, as cited in Hastings et al., 2003) identified in the Hastings review as strong is reported to have 'found that food advertising exposure had a small but significant impact on children's snacking frequency, nutrient efficiency, and, indirectly, calorific intake' and that '[t]he effect occurred independently of parental snacking frequency, child's age, parental diet supervision and child's missed meals' (p. 17.). The Hastings review noted that '[f]ood advertising exposure would seem to explain less the variance in children's snacking frequency than parents' snacking frequency' (p. 17).²⁵

As to television advertising and obesity, an international comparative ecological study (Lobstein & Dobb, 2005) found a statistically significant association, but not a causal connection, between the proportion of children overweight and the numbers of advertisements per hour on children's television ($r = 0.81$, $P < 0.005$). They also found a weaker, negative association between the proportion of children overweight and the number of advertisements encouraging healthier diets ($r = -0.56$, $P < 0.10$). This study used US, European and Australian demographic evidence to correlate the number of television advertisements per hour of children's television with the proportion of the child population documented as overweight (the study did not measure the degree of exposure to television). The authors stated that although the size of the correlation coefficients implies that advertising could explain up to half of the variation between the different countries' overweight prevalence figures, considerable variation is not accounted for, and it leaves base levels unexplained. It noted that even in countries with low levels of 'obesogenic' television advertising, levels of overweight are higher than they were one to two decades earlier, indicating that additional factors must also bear responsibility.

²⁵ See also Livingstone & Helsper, 2004 p. 23; Ofcom, 2006, Annex 9, p. 13.

A literature review on the effects of commercial television on child health in the US (Bar-on, 2000) reviewed research for pro- and anti-social behaviours with a particular focus on eating. According to the qualitative review, the author found evidence from content analyses that frequent references were made to food or the consumption of food on both commercials and programs, leading Bar-on to examine correlational and clinical research that indicated an association between exposure to television advertising and children's health. This is consistent with correlational research by Halford and colleagues (Halford, Gillespie, Brown, Pontin & Dovey, 2004) who found that obese children were more likely than lean and overweight children in the US to recognise food commercials generally. They found no difference among the children of these three weight groups on non-food television advertisements they recognised.

Research on tobacco and alcohol

A very substantial proportion of American research on children's preferences and consumption patterns in relation to advertising centres on alcohol and tobacco. Much of it centres on pro-social, anti-smoking or responsible drinking advertising campaigns (cf. Palmgreen, Donohew, Lorch, Hoyle & Stephenson, 2001; Sly et al., 2001) mostly directed at adolescents. Research on these pro-social campaigns demonstrates that despite their small number, they appear to affect attitudes and intentions (Block, Morwitz, Putsis & Sen, 2002; Center on Alcohol Marketing and Youth, 2002, 2004, 2005a, 2005b, 2005c, 2006; Hafstad & Aaro, 1997; Hershey et al., 2005; Kim, 2006; Pechmann & Reibling, 2006).

Research on the effects of alcohol and tobacco advertisements demonstrates that exposure leads to greater awareness and predicts more positive attitudes to smoking and drinking (Collins, Ellickson, McCaffrey & Hambarsoomians, 2005; Garfield, Chung & Rathouz, 2003, see also Collins, Schell, Ellickson & McCaffrey, 2003; Grube & Wallack, 1994; Henriksen, Flora, Feighery & Fortmann, 2002; McCreanor, Barnes, Gregory, Kaiwai & Borell, 2005; Shadel, Niaura & Abrams, 2002; Thomsen & Rekke, 2003). Research with Norwegian adolescents, where tobacco advertising is banned on television and in print, found that half of the sample nevertheless had been exposed to advertising of tobacco and that more exposure predicted a greater likelihood of smoking or intentions to smoke (Braverman & Aaro, 2004).

While tobacco and alcohol studies indicate that advertising does impact on awareness, attitudes and intentions, other regression research that examined cigarette smoking in terms of contextual factors such as family, peers and experience with alcohol, found advertising to be a poor predictor (Mowery et al., 2004; Pinilla, Gonzalez & Santana, 2002).

Television viewing and overweight and obesity

The debate about television advertising of food to children exists in a context of concern that obesity is a growing worldwide epidemic (Wadden, Brownell & Foster, 2002). Public health literature points to multi-factorial contributors to obesity, including hereditary, environmental, social and cultural factors. Consideration of the relative role of these complex and interrelated factors to overweight and obesity in children was not in scope for this review, which was of necessity media-focused.²⁶ However, literature reviews cited that refer to television advertising tend to place children's exposure to advertising within the framework of effects of television viewing and cite studies of television viewing and obesity (Carter, 2006; Hastings, 2003; Ofcom 2006a).²⁷

²⁶ The research question examined by the present literature review is the relationship between children's television advertising and their food and beverage preferences.

²⁷ Studies that relate to television advertising and television viewing are considered below. Note that some studies considered by these reviews include wider food promotion and health research, which is outside the

A number of these studies do establish a correlation between television viewing and obesity in children and adolescents. However, it seems from the research that it is difficult to ‘disentangle’ or isolate television advertising as a factor distinct from television exposure generally (Hastings, 2003; Livingstone, 2006; Ofcom, 2006a). Two points in particular should be noted here:

- where research does establish a correlation between television viewing and obesity, this is reported to be a small or modest relationship, and generally does not provide evidence for causation; and
- studies generally do not distinguish among three possible explanations for the observed association between television exposure and obesity: increased exposure to food advertisements; increased food intake while viewing; or reduced physical activity.²⁸

In the UK, the Office of Communications (Ofcom) published a substantial report on obesity, food promotion and advertising that included compilations of data from other sources, a literature review and new data collected for the purpose of the report (Ofcom, 2004). This found a correlation between hours of television viewing and obesity and poor diet, and found television viewing (a very sedentary activity associated with snacking) to be not the only factor, but a consistent contributor. This report also found that television advertising does have an impact on children’s food preferences, but that it is not solely responsible, finding that other factors also affect preferences.

In 2006, Ofcom added policy directions to their 2004 research and re-summarised the main findings about obesity and television advertising by stating that ‘television advertising has only a modest direct effect on childhood dietary habits. Other factors in the family home, playground, school dining room and playing fields have a greater role in driving up levels of childhood obesity when compared to the role played by commercial advertising airtime’ (Ofcom, 2006b, Foreword).

Similarly, a wide-ranging overview of the research literature on the relationship between childhood obesity and food advertising on Australian television (Carter, 2006) reported that television food advertising seems to have only a very small, indirect link to childhood obesity, with the direction of causation and specific contribution of food advertising equivocal. Carter found robust evidence to suggest that television viewing and childhood obesity are related, but qualified that this relationship is weak, with only a small independent effect size. Carter concluded that regulating television advertising, or banning all television, would have little, if any, effect on childhood obesity rates.

Livingstone’s 2006 literature review of mainly US and UK research on television advertising and child obesity concluded that there will never be a perfect experiment to establish whether television advertising causes children’s food choice and subsequent diet. (Ofcom 2006a, Annex 9) The following studies exemplify the range of potential variables that may affect the relationship between television exposure and childhood overweight and obesity.

Television viewing and energy expenditure

Television viewing is a sedentary activity (Kline, 2005; Story, 2003; Utter, Neumark-Sztainer, Jeffery & Story, 2003) lacking in physical exercise. Although some studies indicate a small correlation between television viewing and obesity, other studies that control for physical

scope of this review (for example, French et al., (2001, as cited in Ofcom, 2006a) concerning food promotion signs on vending machines).

²⁸ Ofcom (2006a, Annex 9, p 12) states that ‘many researchers suggest that all three factors operate, but further research is required to disentangle the direction of causality, the range of other causal factors operating, and the interactions among these factors’.

activity (among other factors) demonstrate that television viewing appears to be unrelated to physical activity or energy expenditure.

Carter (2006) reports a 2003 Australian cross-sectional study that ‘suggests children watching 20 hours of television or more per week (two hours 51 minutes per day) are twice as likely to be overweight or obese as children who watch less television’ (Wake, Hesketh & Waters, 2003, as cited in Carter, 2006). Carter reports that ‘this finding is replicated in an enormous study of 34 countries in Europe and North America (n=137,593)’ (Janssen et al., 2005, as cited in Carter, 2006) as well as ‘a number of American studies [which] have found that children who watch four or more hours of television each day have greater BMI than those who watch less than two hours per day’ (Gortmaker et al., 1996; Andersen et al., 1998, as cited in Carter, 2006) (p. 8–9).

As to the actual effect size of this correlation, the Australian research reported the finding that ‘television viewing accounted for 1% of BMI variance in its sample’ (Wake, Hesketh & Waters, 2003, as cited in Carter, 2006) (p. 8–9). Similarly, Carter reports ‘a meta-analytic review (52 independent samples, pooled n=44,707) [which] suggested the correlation between television viewing and body fatness was quite small ($r=0.07$; 95% CI 0.06–0.08), accounting for as little as 0.5% of variance’ (Marshall et al., 2004, as cited in Carter, 2006). Marshall and colleagues conclude that (Abstract): ‘a statistically significant relationship exists between TV viewing and body fatness among children and youth, although it is likely to be too small to be of substantial clinical relevance’ and that ‘while the total amount of time per day engaged in sedentary behaviour is inevitably prohibitive of physical activity, media-based inactivity may be unfairly implicated in recent epidemiologic trends of overweight and obesity among children and youth. Relationships between sedentary behavior and health are unlikely to be explained using single markers of inactivity, such as TV viewing or video/computer game use.’

One study identified in the Hastings review (Hastings et al., 2003) ‘indicated that television viewing was predictive, at marginally significant levels, of obesity and prior obesity in three to four years time, and that this effect occurred independently of prior obesity and family socioeconomic characteristics’ (Dietz & Gortmaker, 1985, as cited in Hastings et al., 2003) (p. 18).

Some researchers argue that television, with high penetration rates in households of wealthy nations, competes with exercise and physical activity (Utter et al., 2003). DuRant, Baranowski, Johnson and Thompson (1994) conducted an observational analysis of the amount of time American children spent watching television and their levels of physical activity. While they did not find a strong correlation between television watching and physical activity, they did recognise that the children who did the majority of their television viewing during the day and in longer blocks of time were less likely to engage in physical exercise.

Other American research has found that although children who live in unsafe neighbourhoods were more likely to watch television for longer periods, the prevalence of obesity was no higher than in neighbourhoods perceived as safe, concluding that neither television viewing nor outdoor play related to obesity levels (Burdette & Whitaker, 2005).

Australian research suggests that the sedentary and physically active behaviour of children has been virtually unaffected by, and since, the introduction of television (Carter, 2006). The author reports that sedentary behaviour associated with television viewing appears unable to explain the rising levels of childhood obesity and that any association between television and childhood obesity must relate to increased energy consumption.

Television viewing and energy intake

Studies have investigated whether children's increased body mass index relates to energy intake associated with television viewing, including children's exposure to advertisements for HFSS foods, leading to preferences, requests for and excess consumption of foods. UK research has found that, while children may be under-active in relation to recommended physical activity standards, energy input and the factors that determine the nutritional value of the energy consumed must also be considered (Halford, 2005).

Numerous cross-sectional studies have indicated that children's television viewing is positively associated with a higher intake of dietary energy in the form of fat, sweet and salty snacks, and carbonated beverages (Coon & Tucker, 2002; Coon, Goldberg & Rogers 2001; Boyton-Jarrett et al., 2003; Giammattei et al., 2003; Ofcom, 2004, Ofcom, 2006a). Generally, studies are correlational in nature and fail to provide evidence for causation, as Carter (2006) states (p. 8):

These studies assume that children watching more television have higher levels of exposure to food advertising and this is reflected in their energy-dense diets (via purchase requests to parents). However, the inherent weakness of such correlational studies is that they fail to establish the direction of causation, and do not provide evidence of a dose response between specific advertising and consumption of foods. Alternative explanatory mechanisms related to co-variables, such as poor parental supervision for example, cannot be ruled out at this stage. Thus, while it is plausible that observed differences in children's energy consumption can be explained by varied exposure to television food advertising, the evidence to date remains equivocal.

As reported in the Hastings review, one study (Coon et al., 2001, as cited in Hastings et al., 2003) found that 'television being on during meals had a significant and independent influence on children's diet' but that '[i]t was not possible from the results presented, to judge the strength of the influence of presence of television during meals relative to the other influences examined' (p. 18). Similarly, Gracey et al. (1996, as cited in Hastings et al., 2003) 'provided weak evidence that television watching had a small, marginally significant, independent influence on fat intake, but it did not assess the relative strength of the influence of television watching' (p. 18).

Matheson, Killen, Want, Varady and Robinson (2004) examined how much and what type of food third-grade and fifth-grade children eat while watching television. It was found that children consume a substantial proportion of their daily energy intake while watching television, with more than a quarter of the daily energy consumption consumed while viewing on the weekend, and nearly 20 per cent while viewing on weekdays. Snacks were consumed more frequently during television viewing than were any of the meals. Vegetable intake during television was lower than vegetable intake at other times.

Ofcom (2006a, Annex 9, p 9) presented research that indicates that eating in front of the television is associated with eating more, for girls (Francis, Lee & Birch, 2003, as cited in Ofcom, 2006a). This study assessed a sample of girls at five, seven and nine years of age, finding that girls from both overweight and non-overweight families who watched more television consumed more snacks in front of the television. Parental weight status moderated the effects of television viewing and snacking, suggesting that contextual family variables have an impact. In families where neither parent was overweight, television viewing was the only significant predictor of girls' increase in BMI. In families where one or both parents were overweight, television did not directly predict increase in BMI. However, girls from overweight families who watched more television snacked more frequently and had higher intakes of fat from energy-dense snacks, which predicted their increase in BMI from five to nine years.

The influence of parents in television was referred to in the Hastings review where one study (Ritchey & Olson, 1983, as cited in Hastings et al., 2003) compared the influence of television watching on children's consumption of sweets with the influence of parents' frequency of consumption of sweet foods and parents' attitudes towards sweet foods. Television watching made a significant independent contribution to children's consumption of sweets, although to a lesser degree than parents' frequency of consumption (p. 17).

Aside from increased energy intake, research has found that more television viewing predicts lower levels of fruit and vegetable consumption (Boynton-Jarrett et al., 2003). After adjusting for anthropometric, demographic, dietary variables and physical activity, this study demonstrated a linear regression between television viewing and fruit and vegetable intake, finding a predicted negative relationship between the two.

Of the single study that identified the direction of causality of television viewing (Robinson, 1999, as cited in Carter, 2006), Carter (2006) states (p. 9):

[O]nly a single American intervention study was identified where the direction of causality had been established; a school program encouraging children to lessen their television viewing evidenced very modest but statistically significant lower BMI scores relative to a matched control school after six months of intervention (BMI 18.38 vs 18.67). Interestingly, the same study observed no statistically significant differences between groups for changes in energy-dense food intake, moderate or physical activity, or fitness levels, leaving the explanatory mechanism behind the BMI reduction quite unresolved. It therefore remains entirely possible that excessive television viewing is a symptom of childhood obesity more than a determining factor.

Ofcom (2006a) reported this study by stating that 'reduced television viewing is followed by reduced weight gain' (Annex 9, p. 9) and noted that though the experimental group showed reduced BMI and adiposity with their reduction in television viewing, there was no reduction in high-fat foods, snacking or highly advertised foods in their diet (Annex 9, p. 8).

CONCLUSIONS

Public health literature points to a range of multi-factorial contributors to obesity, including hereditary, environmental, social and cultural factors. Consideration of the relative contribution of these complex and interrelated factors to overweight and obesity in children was not in scope for this review, which was focused on the media.

The research brief asked the authors to examine the relationship between television advertising for food and beverages and children's food preferences. The relevant studies are positioned within the wider body of research about the contribution of television to children's overweight and obesity, but the brief did not extend to a broad examination of the causes of obesity.

The findings of research in four areas were considered:

- children's television viewing, including television advertising;
- the amount and type of advertising children see on Australian commercial television;
- the influence of advertising on children's knowledge about nutrition, preferences for food and beverages and behaviours, such as food consumption; and
- the relationship between television viewing and childhood obesity.

Television remains a dominant form of electronic entertainment for children, and some correlational studies use television viewing as a measure of advertising exposure.

In 2006, children in the 0–14 years age group watched, on average, 142 minutes of free-to-air television per day, which is a decline from 170 mins per day in 2001. In 2006, 121 minutes of this viewing was of commercial television, and most of this was outside traditional children's times (peak viewing is between 7.00 pm and 8.00 pm).²⁹

While the research does not permit exact estimates as to the number and type of food advertisements children see, it does indicate children may be exposed to significant amounts of advertising for HFSS foods such as takeaway, soft drinks, chocolate and confectionery. Food and beverage advertising, including for chain restaurants, comprises a major category of all advertising on Australian television (2006 New South Wales Department of Health content analysis indicates approximately one quarter of all advertising). Within this category, there is a prevalence of advertising of HFSS foods compared with advertising of foods that fulfil core dietary requirements. The predominance of advertising for HFSS foods over core foods has been identified overall, with children's exposure to HFSS food advertising greatest when watching early prime-time programs that are popular with audiences generally. Overall, children's exposure to television food advertising appears to be declining modestly as this category of advertisement decreases and children view less commercial television.

Empirical research shows correlations but not causal relationships between children's exposure to advertising and knowledge about diet and nutrition, and preferences as indicated by requests (but not necessarily actual consumption) of advertised foods. The research also establishes correlations between television advertising and 'healthy' as well as 'unhealthy' knowledge, attitudes and behaviours on a broad range of issues to do with diet and lifestyle.

Research establishes a correlational relationship between television viewing and obesity in children and teenagers (as distinct from television advertising specifically). While watching television is a sedentary activity, studies indicate that the association between television and childhood obesity is not simply due to inactivity and relates to increased energy consumption associated with television viewing. This appears to be a consistent finding when other influences such as hereditary and socio-demographic factors are controlled for. However, the relative contribution of advertising, snacking and other factors to increased energy consumption has not been isolated.

On the basis of a substantial body of work Ofcom stated that it was difficult to determine the relative contribution of television advertising by comparison with all the other factors that influence children's food choice and health, and difficult to disentangle the contribution of television viewing as a factor associated with obesity. Ofcom concluded that estimates vary but that some suggest advertising/television exposure accounts for some two per cent of the variation in food choice/obesity (Ofcom, 2006a, Annex 9, pp 2, 13-14).

Interactive media

RQ7: What is the available evidence about children's response to different forms of interactivity for example, competitions, short message service (text messaging), interactivity in digital pay television, direction to brand/program affiliated websites?

The research interest of academics and industry in the potential of new advertising channels is in its infancy, with the *Journal of Interactive Advertising* launched in 2000. As authors of a recent literature review (Millwood, Hargrave & Livingstone, 2006) have noted, little research is available to address the impact of new media advertising and marketing on children.

²⁹ Exposure to advertising on other platforms, such as subscription television, is not accounted for in this review.

FORMS OF INTERACTIVITY

Terrestrial free-to-air broadcasting is one of more than 20 channels of electronic media available to Australian children today, whereas twenty years ago, it was one of five. Among the many channels available today are pay television; pre-recorded content on DVD; computer games both online and as stand-alone products; websites; downloadable internet content (whether commercial or community and whether in the form of peer-to-peer exchanges or downloaded for a fee) and streaming media.³⁰ Each channel may contain marketing of products and services sold in Australia.

Digital and pay television create additional opportunities with electronic program guides, scrolling text and multi-channelling presenting further interactive and advertising venues. Mobile telecommunication offers users telephone and video calling, text and picture exchange as well as premium content in text and video format. These forms of communication are able to be customised and enable viral (one to one, relational) and direct marketing, such as SMS advertising.

Programs and products that children see on television often have an online presence. The internet hosts a range of interactive applications of varying degrees of customisation: such as online news and entertainment; photographic and video sharing services; libraries of music; massively multiplayer online games; chat rooms and social networking services. These services are often available at no cost but present advertising as part of the service, and may solicit basic demographic and personal details (age, sex, postcode) in order to target such advertising. Viral marketing (by which advertisers depend on person-to-person distribution of a message, such as an email, in a chain), sponsored search engine links as well as pop-up and banner advertisements all demonstrate the new online advertising frontier.

The widespread popularity of computer games married with the uptake of computers and broadband in Australia and overseas (Brand, 2005) has led to the rapid increase in 'advergaming', in which small online games created to advertise a product or brand can be played by consumers. Websites associated with television programs, characters, premiums and toys are often embedded with small games. Brands like Mattel Hot Wheels,³¹ Bandai toys,³² Kellogg's³³ and Kinder Surprise³⁴ all have games, promotions, currently running television advertisements and other marketing tools directed to children. Miniclip³⁵ is a game site that is popular with Australian primary students. It features advertising including that by Coca-Cola, Sony, Walt Disney, Nintendo, Nike and others.³⁶ Australian children's television programs *The Wiggles*,³⁷ *Bananas in Pyjamas*³⁸ and *Hi-5*³⁹ have associated websites that include games and other activities. This demonstrates the growing links between television and the internet.

A content analysis of US food advertisers' websites in 2005 examined the use of advergaming and online marketing of food to children across 96 brands (Moore, 2006). The author

³⁰ Research from the UK with groups of children between the ages of six to 16 has shown that, although many technologies are available to children, television remains an integral part of family life (Karet, 2004). Further to this, Karet concluded that children in multi-channel television homes showed more savvy understanding and sophisticated use of all media than those in homes with a limited number of channels.

³¹ <http://www.hotwheels.com/games/index.aspx>.

³² <http://www.bandai.com/>,

³³ (cf. <http://www.frootloops.com>)

³⁴ <http://www.kindersurprise.com>.

³⁵ <http://www.miniclip.com>.

³⁶ <http://corporate.miniclip.com/advertising/>.

³⁷ <http://www.thewiggles.com.au>.

³⁸ <http://www.abc.net.au/children/bananas/>.

³⁹ <http://hi5.ninemsn.com.au/>.

suggested that commercially-sponsored websites containing games and promotions designed for children are an effective marketing force because children are engaged as willing consumers and users of these marketing communication channels because the channels feature exciting, fun, and interactive tie-ins with toys. Of the 96 brands studied, 82 had a website that targeted or included a point of interest for children, suggesting the belief on the part of marketers that such an audience is present. Websites were highly differentiated, with some focusing on information and others on entertainment. As a content analysis, this study did not measure children's activities and children's actual response to different forms of interactivity was not assessed. While specific Australian research of this nature was not found in the search for literature, one might expect that Australian children have access to similar and perhaps even the same food advertisers' sites as were examined in this study.

Advertising approaches are expected to be more diverse, sophisticated, personal, interactive and mobile as product marketers pursue child audiences. American researchers conducted a literature review on trends in food and beverage marketing to children and youth (Palmer & Carpenter, 2006). They determined that increased integration of technological approaches (for example, advergames, seeded chat rooms, embedded celebrity marketing, stealth and viral marketing) means that it will be increasingly difficult to determine a distinguishable line between non-commercial and commercial communications. More particularly, they argue that many of the counter-advertising and counter-obesity efforts often discussed in policy research will not compete with the increase of sophisticated marketing and advertising venues.

Aside from commercial activity, new media also presents opportunities to educate. Blanchette and Brug (2005) conducted a literature review about ways of increasing food and vegetable consumption among children aged six to 12 years. They found that a behavioural change to 'healthy eating' requires parental and school involvement with consistent messages, along with technology-based interventions, such as using computer games.

CHILDREN'S RESPONSE TO INTERACTIVITY

Children, particularly older children, are recognised as sophisticated users of a range of communication technologies in which advertising is finding a new venue (Palmer & Carpenter, 2006). However, cognitive development research indicates that children's capacity to process advertising messages remains dependent on their cognitive development.⁴⁰

Children's response to interactivity may depend on their goals and ability in using interactive media. Rodgers and Thorson (2000) hypothesise that audiences approach the internet as an interactive medium with more goal-direction and initiative than they do traditional electronic media such as radio and television; in other words, audiences interact with it in ways they do not with broadcast media. They argue that depending on a person's goals for using new media, from highly directed (work) to playful (games), and depending on their skill level at using the technology, online advertising will work very well or very poorly. Thus, online advertising to people who are anxious or not experienced in relation to the online environment is likely to be less effective than advertising to a 'tech savvy' computer user. An example of internet advertising that gets in the way of, or interrupts, the user's goals is pop-ups. An example of internet advertising that works with, or anticipates, the user's goals is sponsored links in a search engine. Thus, pop-ups are likely to be less effective than sponsored links. However, no evidence for this hypothesis for Australian children (or children in other countries) is available.

⁴⁰ See further RQ1 for further research on children's cognitive development.

In the absence of research about children's response to different forms of interactivity, print media reports indicate that Australian children, adolescents and young adults are using a range of interactive applications that include marketing:

- *Habbo Hotel* is an online game and three-dimensional virtual community that adolescent internet users between the ages of 13 and 18 use to congregate and interact. Originating in Finland seven years ago, it was launched in Australia in 2004 and operates with Yahoo!7 and marketing group Pacific Magazines. *Habbo Hotel* sells advertising and displays this to its claimed community of 1.2 million members worldwide, which includes more than 200,000 unique users in Australia. Reportedly, some of Australia's biggest advertisers are able to make a connection with teenagers by customising content, whereby the Habbos interact with brands within the virtual space (Alarcon, 2006, p. 7).
- Coca-Cola Australia used a website with chat rooms, forums, audio and video downloads and prizes to attract adolescents to its Live 06 campaign, with 38,000 users registering between its launch in May and July 2006 (Shoebridge, 2006). The website formed the core of the Live 06 strategy, which was promoted over other media channels, such as free-to-air and subscription television, radio, cinema and outdoor advertising.

CONCLUSIONS

Given the newness of the media environment and the absence of systematic empirical research, it is difficult to draw conclusions about how children use new media channels such as the internet, and the implications of this use. There is an increasing range of media channels available to children today with interactivity, including advertising and marketing in new media venues, having the potential to blur the distinction between commercial and non-commercial content. A review of industry activity indicates that advertisers are using interactive media, such as internet games on food product websites, as a way of targeting children.

Children tend to be receptive to new technology in a way that older generations may not be, so it is reasonable to expect advertisers to develop campaigns for new media and to measure their effectiveness. As distinct from children's sophistication in adopting and using new media, studies indicate that their cognitive capacity to process advertising messages remain unchanged in the new media environment. Given the apparent popularity of interactive websites for children, children's sophistication with new technology and the goal-directed and initiative-based approach of interactive media audiences, interactive marketing in new media environments may be highly effective. On the other hand, interactive media may also be used effectively for non-commercial purposes (education and information) with children as well as for commercial purposes.

Media literacy

RQ8: What is the role of children's media literacy in mitigating the influence of television advertising?

There is no agreed definition of the term 'media literacy' nor are the scope or parameters of the concept settled. One meaning of media literacy is the use of a formal educational curriculum and/or informal learning opportunities to help audiences decode and better understand how the media works. Some media literacy programs are designed to enable children to understand, mediate and critically appraise media content, including television programs and advertising.

Another meaning of media literacy is the use of popular media to enhance learning in the classroom. Reynolds (2006) argued that educators should use contemporary culture to highlight ideas from classical philosophy, science and other knowledge domains to create multiple connections to curriculum. By drawing students into questions, for example, about consumerism or art by using contemporary television advertising, children are given the opportunity to exercise questions and thoughts about the advertising form that they likely would not have otherwise considered. Pailloitet (2003) demonstrated the successes of media literacy generally using case studies of Canadian and Australian school initiatives, but more solidly demonstrated that media literacy often uses popular culture to help students learn language and literacy skills themselves, rather than ability to 'read' media.

THE ROLE OF PARENTS AND GUARDIANS

Some research suggests that parents and guardians (parents) have an essential role to play in children's media literacy. Hogan (2001) argued that parents and other caregivers of children and adolescents are the most important models, monitors and mediators of appropriate media use for children and adolescents. According to Hogan, parents are the best available cultural teachers for their own children because they grow to know their individual child's personality, developmental readiness and special needs. Parents are also in a position to work strategically with other parents and groups. Consequently, Hogan concludes that media education/literacy is a simple and effective approach to managing media use in the home and should be understood as a lifelong skill that will produce better media consumers.

Parents may use informal educational opportunities to explain nutrition and appropriate dietary intake to children when they see or request advertised foods. However, one study observed that parents did not make attempts to clarify advertising messages or to educate their children about nutritional behaviour when commercials featuring HFSS food products were broadcast (Brody et al., 1981).

Survey research in the US of a sample of 1,269 parents and 303 children (Jordan, 2001) found that few parents recognised the classification labels about program content that is suitably educational for children and were unaware of informational programs available for school-age children. Jordan concludes that parents need education and training as much, or more than, their children and that ratings need to be more reliable, more readily recognised and easier to understand. This is consistent with the debate that has run in Australia about the apparently low level of use parents make of television, film and game classifications when deciding what their children watch (Brand, 2007). The implication of these studies is that parents and guardians require assistance in ensuring their children select and view age-appropriate television, and therefore television advertising, content.

EFFECTIVENESS OF FORMAL MEDIA LITERACY PROGRAMS

A comprehensive review of media literacy curriculum used by schools in the US, the UK, Canada and Australia demonstrates that there is no single methodology or systematic curriculum that drives the introduction of media education, but rather the curriculum in a particular country and context tends to grow from the interest and energies of individual teachers in the classroom (Brown, 2001).

Schools and computer programs are likely to work modestly without the support of parents and the community. For example, Kelley (1991) examined whether a successful course of television literacy could be developed to cover the entire school age range, based on a common approach to improve television comprehension. Children were randomly assigned to a control (n=120) or experimental (n=120) group (the experimental group receiving the media literacy course) and a questionnaire was administered to measure comprehension. Results

indicated that the course was successful at age levels 9–10 and 11–12. It was suggested that further research might identify factors which influence television comprehension such as parental involvement and social support.

There remain calls for uniform approaches to media literacy abroad, while in Australia a media literacy component to primary and secondary education exists today. Teachers are integrating media literacy education into curricula at all grade levels and Burton (2005) identifies four interconnected components of media literacy including cognitive, emotional, aesthetic and moral dimensions. In the UK, Buckingham (2003) argues that globalised and diverse media represent a fundamental challenge to media education. Among the products of this challenge is that emerging and converging technologies combine work, study, play and entertainment, and that children's exposure to online advertisements, advergames and the pervasiveness of the consumer culture may challenge teachers and parents for the attention of children (Wartella & Jennings, 2001).

COGNITIVE DEVELOPMENT AND MEDIA LITERACY

Media literacy is widely assumed to be a 'defence' against advertising influence, with those whose literacy is lower being more subject to effects (see earlier discussion of cognitive development and influence of advertising in RQ1) and that formal literacy training that increases a child's ability to understand the intent and appeals of advertising will mitigate influence (Kunkel et al., 2004). In discussing this assumption, Livingstone and Helsper (2006) describe as 'mixed' the empirical support for the generally efficacy of media training. In relation to children's food choice, the authors note 'the significant absence of explicit discussion linking literacy and effects' in the two linked research literatures in relation to obesity and food choice.

An enduring study to demonstrate the effects of television literacy to mitigate against the effects of television advertising to children is now more than 20 years old (Ashley, 1982). It found that children who are developmentally lagging or performing poorly academically may benefit most from media literacy training, while those who are more capable will gain little additional benefit. Using a television observation laboratory in a US elementary school, Ashley conducted an experiment to evaluate how children read television, sampling 10 classes totaling 240 students in grades three to six. Half served as the experimental group and participated in media lessons, each lesson focusing on a different half-hour of programming with questions administered afterwards. The other half served as the control group and did not participate in the lessons. While the experimental classes scored better than the control classes, the variances between the two groups were not statistically significant. A sub-group of the experimental group, which was comprised of students with poorer academic performance and results, had a significant gain over the control group (20 per cent).

A more recent experiment by Robinson, Saphir, Kraemer, Varady & Haydel (2001) examined the effect of a classroom education program in media literacy to reduce the effects of media exposure on children's pestering behaviour for toys. This naturalistic pre-test, post-test experiment with 105 students between the ages of eight and nine demonstrated that children in the media education condition, compared with those in the control condition, reported reductions in requests for toys they had seen advertised on television. However, parents in the two groups did not report reduced requests, indicating that children were giving answers about their toy requests that they thought the researchers expected them to be giving. This finding suggests that self-reporting by children was subject to what some research methodologists call a 'demand characteristic', in which the participants in a study give answers that are expected by the researchers and are given by virtue of participants being aware of the expectation.

CONCLUSIONS

Media literacy education includes a range of formal and informal lessons on both the techniques used by media producers to create media messages, including television advertising and the informational, entertaining and persuasive intent of those messages

Where schools implement media literacy curriculum, this has a modest effect in equipping children with skills to understand commercial messages however there is little empirical evidence which demonstrates that media training mitigates the influence of advertising.

Additional support from parents and other members of the community is needed if media literacy is to have a greater effect. While parents may have a role to play in demonstrating and influencing appropriate media habits, it appears parents require media literacy in order to assist children.

Furthermore, one study suggests that formal media literacy may be more useful for challenged learners, but that children who are more capable will gain little additional benefit. This corresponds with the findings of cognitive development research, which indicate that cognitive development is the demonstrated, leading mediator of children's response to advertising. Compared with cognitive development, media literacy has only a limited effect on children's understanding of commercial messages in the media.

Gendered, racial and cultural portrayals

RQ9: What is the available research on gendered, racial and cultural television advertising portrayals on children?

A range of content, effects and policy papers have been published on the nature of social portrayals of gender, race, culture and age in television advertising directed to children. This research intersects with concerns about the effect of commercials generally, and at the same time it is part of a wider body of work on the effects of media representations in shaping children's ideas about the 'real' world and their role in it. While this research may not establish the exact nature of the relationships and variables operating in terms of impact, some broad effects may be discerned.

Content analytic studies are particular to the country in which they are conducted. The exact findings of overseas content analyses do not necessarily translate to Australia, as different countries have distinct racial and cultural compositions. However, they do give rise to wider consideration of the complex potentials of representation of social reality to children.

ROLE PORTRAYALS

Chandler and Griffiths (2000) conducted a content analysis on 117 toy commercials shown on television in the UK to assess the gender differences in advertising features. They found that boys' advertisements appeared 132 times while the girls' advertisements appeared 94 times. In terms of editing techniques, boys' advertisements used many more cuts while girls' advertisements used many more dissolves. For boys' advertisements, the average length of shot was 1.23 seconds, while for girls' advertisements the average length was 1.73 seconds; for a mixed audience, the average length of shot was 1.17 seconds. No female voiceovers were used for boys' advertisements, but 30 percent of girls' advertisements had a voiceover, some of which were male. Boys' advertisements had a greater percentage of long-shots (full-body) and a smaller percentage of close-ups. Girls' advertisements differed from the mixed advertisements in their lesser use of the canted shot (a tilted shot associated with dynamism, energy and activity).

In the US, advertising directed to children was found to portray male and females stereotypically, with females often presented in passive roles and males in active and occupational roles (Davis, 2003). Davis argued that perpetuation of gender stereotypes over time may be related to a reliance of advertisers on 'cognitive shortcuts' they anticipate their viewers will use while viewing their commercials.

Larson (2001) conducted a content analysis of children's television in the US. Based on the proposition that children identify more with other children than with adults, Larson argued that children will more readily develop role cues from the way children are presented than from the way adults are presented in advertisements directed to them. Of 284 single-gender commercials featuring children, 117 were girls only and 167 were boys only. An additional 292 advertisements featured boys and girls together. Nearly equal numbers of girls and boys were portrayed acting cooperatively; however, single-gender commercials portrayed girls in stereotypical domestic settings.

The trend demonstrated in recent research on gender in advertising to children is that stereotyping of characters and formal features continues. However, researchers have noted that their findings compared with earlier findings demonstrate a gradual equalisation of representation, some gains in roles, but continuing use of stereotypes in the context of portrayal.

In Larson's (2002) content analysis, 42 per cent of US television commercials featured 'White' children only, 57 per cent featured 'White' and 'AHANA' (African Hispanic Asian and Native American) children together, and one per cent featured only 'AHANA' children. Most commercials with 'White' children only were set in a 'home/indoor' setting and tended to feature toys, while commercials with 'White' and 'AHANA' children together were more likely to be portrayed in 'other/indoor' settings with 'competitive' activities, usually featuring athletic play, or eating in restaurants.

According to a more recent content analytic study of US advertising generally by Bang and Reece (2003), minorities are more likely to be seen in contexts that perpetuate societal stereotypes. For example, 'Asian Americans' were likely to be seen promoting technology and 'Whites' were more likely than 'Blacks' to be seen in a family setting. However, citing earlier content analyses, the authors argued that although 'Whites' still dominate television advertising, representations of minority groups ('African Americans', 'Asian Americans', and 'Hispanic Americans') have increased overall.

CONCLUSIONS

Social researchers of media have concluded that television advertising contains stereotypes and that these portrayals may affect children's social perceptions. The research shows that there is a level of over- and under-representation of certain groups, as well as stereotyping of roles, in television advertising in the UK and US contexts. Some studies indicate there is increasing equalisation of representation for under-represented groups (gendered, racial and cultural), but that stereotyping persists in relation to gender portrayals and that 'Whites' still dominate in representations of race and culture in the US.

The state and perspective of knowledge

RQ10: What are the research methodology and quality issues that affect the conclusions drawn about the impact of television advertising on children?

This review of literature presents over 200 references to material about the relationship between television advertising and children, including some popular print media and policy articles, a number of earlier reviews and nearly 100 refereed primary sources.

There are many gaps in the evidence on television advertising and children; a condition noted by other scholars in their reviews of this literature (Livingstone, 2006). Much of the research comprises content analyses that cannot, by definition, demonstrate a cause-and-effect relationship, and literature reviews which, by definition, offer summaries of past research may present double counting of the same primary studies.

There are many approaches to the topic of advertising directed to children in the literature, comprising different types of child development, such as physical, cognitive, socio-emotional, linguistic and moral among others. If cross-tabulated, there is a potential for as many as 45 different research foci, as shown in Appendix A, Table 10. Of these 45 potential research foci, the following dominate the literature: cognitive development and ability to distinguish advertising from program content, the impact of advertising on pester-power and the impact of advertising on preferences for foods and beverages.

Individual research studies may account for more than one intersection between the mediating role of a child's developmental state, with the independent variable of advertising medium and message as stimulus and outcomes like knowledge, attitudes and behaviours. These independent variables are not mutually exclusive since an individual study may consider variables in multiple intersections.

Finally, most research is concerned primarily with cognitive development, followed by physical development concerns. More often than not, cognitive development is conceptualised as an intervening or moderating condition through which television advertising is filtered. Physical development, however, is positioned as a dependent variable situated on body mass outcomes, or obesity.

The authors conclude that there is an absence of a systematic quantitative paradigm to direct any investigation of the influence of advertising on children's behaviour or their understanding of the role of advertising. The lack of a single consistent paradigm limits any synthesis of research findings. Further complicating synthesis is the lack of uniform reporting conventions due to the diversity of publication venues and varying conventions between investigators arising from differences in the conventions applied in different disciplines.

Data quality is relatively poor and the ability to combine results for analysis is limited because researchers have used so many different methodologies, with different variables and different participants.

For the purposes of the current review, a meta-analysis⁴¹ using a small number of quantitative studies on television advertising to children was attempted. However, variability in the quality of the data available did not permit the generation of valid results. In the course of identifying studies suitable for inclusion in a meta-analysis, the authors found that most published studies contained a number of limitations, such as a failure to report relevant statistics in adequate

⁴¹ Meta-analysis allows for the effective summation of multiple small group difference studies into a meta-analysis that combines the individual findings of the contributing research into a synthesis that is capable of detecting consistent relationships revealed in data, even if many of the contributing papers lack adequate power to detect effects individually. The reliance of meta-analysis on interpretation of quantitative data from several difference sources can be argued to increase faith in the generality of a research finding as the multiple sources usually represent more diverse sampling frames than a single study.

detail, lack of adequate description of method, inconsistency in the application of data collection methods, differences in sampling frames and an absence of appropriate controls.⁴²

In summary, much of the research on the impact of television advertising on children is marked by significant differences in sampling methodology and sampling frames, significant variations in methods of data collection and differences in the quality and degree of reporting. As a result, few published studies in this area report sufficient statistical details (for example, subgroup sizes, degrees of freedom, means and standard deviations and test values) to permit any re-analysis or meta-analysis of the reported effect sizes.

In conclusion, it is a general view of the authors that there is little quality data available about the role of advertising in children's lives early in the 21st century in Australia (and in other developed countries). New, systematic, ecologically valid, empirical research on the effects of children's exposure to advertising in all the electronic media used by children should be commissioned and robustly funded. Who should fund this research is, of course, the critical but difficult question to answer. Any research that emerges in the coming years must address the multi-factorial relationship between advertising and children's thoughts, feelings and behaviours.

⁴² In a number of instances, exact values for critical aspects of the analyses (such as the degrees of freedom of the test) were not reported. In other instances, the same data set appeared to have been reported with different authorship, which may in fact influence the estimated effect size (Morton et al., 2005; Zuppa et al., 2003).

Appendixes

A. Approach

B. Search sources and tactics used

C. Links and resources

Appendix A: Approach

This literature review was organised qualitatively and quantitatively. Qualitatively, the literature was abstracted using EndNote (Version 9.0). Organisation of the literature mirrored the research questions determined by the commissioning team at ACMA in advance and by the research team at CNMRE as the literature review introduced new concepts or focal points of relevance to the study. Primary descriptors included matters of topic in the context of science, policy or debate status.

Scientific research included secondary descriptors reflecting methodology, scope, age-groups, sample characteristics, including nationality, and an evaluation of scientific rigor. Policy materials included secondary descriptors reflecting the status of the policy, such as active, proposed or discussed, as well as an evaluation of the policy quality where appropriate. Quality assessments were influenced by high-brow press sources. Public discourse and debate was studied in terms of secondary descriptors, including source of debate, context and outcome judgment.

Research was identified by the research question(s) to which it best applied and by the type of child development it addressed, and whether the research explicitly or implicitly referred to child development. Classification of research also identified whether the research was original empirical work or whether it was a review or commentary.

Multiple nodes of inquiry

The nodal structure of the literature review is reflected in Table 1. Using this table, the authors cross-tabulated the report structure based on key research questions with descriptor classes. This topology allows readers to assess where evidence ends and conjecture begins for topics that have been explored and to determine where there is little or no evidence and/or discussion. In some cases, the intersection between key descriptors and the research question was tenuous.

The literature review was conducted using research reference databases, key journals, published lists of references and the internet. A listing of these is in Appendix C. Sources of information were categorised as ‘scientific’, ‘policy’, and ‘public discourse’. Scientific sources were those either (1) published or delivered through refereed sources whether or not they presented empirical (quantitative) data or (2) published sources for which empirical data were collected. Policy sources were those papers published either by academic or government sources, often conference proceedings. Public discourse, usually through high-brow press, often augments science and policy in grounded public perceptions and sources were included to assist the topical focus of this review.

Methodologies

Different research methods are presented in this review. Research on children and television advertising is not limited to a particular research approach, let alone a single paradigm. In the main, the research team identified studies according to dominant method including correlational studies usually based on survey research, factorial and experimental studies, content analytic studies, ethnographic and other qualitative studies and literature reviews.

Correlational and survey studies

These studies examine the association between advertising as and cognition, emotion or behaviour. Few have been published in the past decade.

Factorial and experimental studies

Experimental research is more difficult to conduct than question-asking research, but is more effective for demonstrating causal relationships. Few new experiments have been added to the literature on advertising effects since the mid-1990s. Experimental research that is conducted tends to benefit practical applications rather than social policy. For example, Maher, Hu and Kolbe recently published their findings that audiovisual effects in advertisements are more effective than story-line content in conveying information to young children in the *Journal of Advertising* (2006), which, while academic, has a strong applied focus.

Content analytic studies

Research that explores the content of advertisements directed to children is plentiful. Despite the want of some writers to infer cause and effect relationships between content and formal features presented in advertisements and child audience outcomes, these studies are useful for documenting what is ‘there’ in children’s television advertisements rather than what is happening when children are exposed to television advertisements. As evidence of their relative accessibility to researchers, more of these than correlational and experimental studies have been published in the past decade.

Ethnographic, observational and qualitative audience studies

Research using qualitative approaches, usually semi-structured observational techniques, was presented in a handful of published studies. In every case, these studies added substantively to our understanding of the child-and-television-ad relationship.

Literature review studies

In the absence of new empirical studies, researchers tend to remain occupied writing literature reviews like this one. Nearly 30 of these were found in the literature and, of these, 10 have been published in the past five years or so. Most focus on older research (John, 1999), but some are more contemporary and relatively critical of early paradigmatic thinking about the role of advertising in children’s lives (Livingstone, 2006).

Table 1: Literature review nodal structure

	RQ Num	Physical Dev.	Cognitive Dev.	Socio-emotional Dev.	Socio-linguistic Dev.	Moral Dev.
Recognition of and response to television advertisements; understanding of advertising intent	RQ1					
Impact of advertising repetition	RQ2					
Understanding and response to program characters, figures, cartoons and children’s celebrities	RQ3					
Understanding and response to premium offers and incentives	RQ4					
Impact of advertising on attitudes and behaviour	RQ5					
Impact of advertisements on food and beverage preferences	RQ6					
Responses to interactive advertising tools	RQ7					
Impact of media literacy education on effects of advertising; understanding of advertising intent	RQ8					
Impact of gendered and racial portrayals in television advertisements	RQ9					

Appendix B: Search sources and tactics used

DATABASES

Ebsco Megafire Premier	Multidisciplinary database specialising in academic journals, magazines and newspapers, many with full text and images; provides access to full-text journal articles in a wide variety of subject areas including humanities, business, social sciences and clinical health.
InfoTrac	Multidisciplinary academic journals, magazines and newspapers, many with full text and images; offers access to a wide variety of full-text journals in areas such as social sciences, humanities, education, science and technology.
PsycInfo	American Psychological Association's abstract database in psychology and related fields.
ScienceDirect	Collection of journals published by Elsevier Science and its various imprints, including Academic Press and Harcourt Health Sciences group, covering many subject areas including business, psychology, information technology, and medicine; contains more than 25 per cent of the world's science, technology and medicine information; provides access to journals in subject areas as diverse as business, arts and humanities, computer science, economics, medicine and psychology.
Factiva	A global interdisciplinary newspaper, magazine and newswire database enabling retrieval of current and older full-text articles from a wide selection of international and Australian sources; provides access to approximately 9,000 news sources in 22 languages, including influential local, national and international newspapers, leading business magazines, trade publications and newswires from every region of the world.

JOURNALS

Addiction	Child Development
Addiction Research & Theory	Child: Care, Health and Development
Advertising Age	Childhood: A Global Journal of Child Research
Alcoholism: Clinical and Experimental Research	Children's Health Care
American Demographics	Communication Research
American Journal of Health Behavior	Communication Research Reports
American Journal of Public Health	Consumers' Journal Magazine
American Journal of Public Opinion	Current Issues and Research in Advertising
American Psychologist	Developmental Psychology
Annual Review of Psychology	Educational Leadership
Appetite	Family Economics and Nutrition Review
Archive of Disease in Childhood	Family Relations
Australian and New Zealand Journal of Public Health	Health Communication
Australian Journal of Early Childhood	Health Promotion International
Australian Journal of Nutrition & Dietetics	Health Psychology
	Hispanic Journal of Behavioral Sciences

Howard Journal of Communications
IABC Communication World
International Journal of Adolescence and Youth
International Journal of Adolescent Medicine and Health
International Journal of Advertising
International Journal of Advertising & Marketing to Children
International Journal of Obesity
International Journal of Public Opinion Research
J&MC: Journalism and Mass Communication Quarterly
JAMA: Journal of the American Medical Association
Journalism Quarterly
Journal of Adolescent Health
Journal of Advertising
Journal of Advertising Research
Journal of Applied Developmental Psychology
Journal of Applied Social Psychology
Journal of Australian Studies
Journal of Broadcasting & Electronic Media
Journal of Business Ethics
Journal of Communication
Journal of Consulting and Clinical Psychology
Journal of Consumer Affairs
Journal of Consumer Behaviour
Journal of Consumer Policy
Journal of Consumer Research
Journal of Current Issues & Research in Advertising
Journal of Curriculum Theorizing
Journal of Developmental & Behavioral Pediatrics
Journal of Economic Psychology
Journal of Epidemiology & Community Health
Journal of Genetic Psychology
Journal of Health Communication
Journal of Human Nutrition and Dietetics
Journal of Interactive Advertising
Journal of Marketing
Journal of Marketing Communications
Journal of Marketing Research
Journal of Media and Religion
Journal of Nursing Scholarship
Journal of Nutrition Education and Behavior
Journal of Public Policy
Journal of Public Policy & Marketing
Journal of Studies on Alcohol
Journal of the American Academy of Child & Adolescent Psychiatry
Journal of the American Dietetic Association
Journal of Vocational Behavior
Lancet
Marketing
Mass Communication & Society
Media Psychology
Nutrition & Dietetics
Pediatric Nursing
Pediatrics
Pediatrics International
Preventive Medicine: An International Journal Devoted to Practice and Theory
Psychiatric Bulletin
Psychology of Addictive Behaviors
Psychology of Women Quarterly
Public Opinion Quarterly
Public Policy Research
Public Relations Quarterly
Review of General Psychology
Screen Education
Sex Roles
Social Behavior and Personality
Sociological Spectrum
Sloan Management Review
Theory Into Practice
The American Prospect
The Psychologist

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