

[Sonia Livingstone](#) and [Ellen Helsper](#)

## Does advertising literacy mediate the effects of advertising on children? A critical examination of two linked research literatures in relation to obesity and food choice

**Article (Accepted version)  
(Refereed)**

**Original citation:**

Livingstone, Sonia and Helsper, Ellen (2006) *Does advertising literacy mediate the effects of advertising on children? A critical examination of two linked research literatures in relation to obesity and food choice*. [Journal of communication](#), 56 (3). pp. 560-584. ISSN 1460-2466  
DOI: [10.1111/j.1460-2466.2006.00301.x](https://doi.org/10.1111/j.1460-2466.2006.00301.x)

© 2006 [Wiley-Blackwell](#)

This version available at: <http://eprints.lse.ac.uk/1018/>  
Available in LSE Research Online: Nov 2013

LSE has developed LSE Research Online so that users may access research output of the School. Copyright © and Moral Rights for the papers on this site are retained by the individual authors and/or other copyright owners. Users may download and/or print one copy of any article(s) in LSE Research Online to facilitate their private study or for non-commercial research. You may not engage in further distribution of the material or use it for any profit-making activities or any commercial gain. You may freely distribute the URL (<http://eprints.lse.ac.uk>) of the LSE Research Online website.

This document is the author's final accepted version of the journal article. There may be differences between this version and the published version. You are advised to consult the publisher's version if you wish to cite from it.

**Does advertising literacy mediate the effects of advertising on children? A critical examination of two linked research literatures in relation to obesity and food choice**

Sonia Livingstone and Ellen J. Helsper

Keywords: Advertising, Children, Age, Media Literacy, Media Effects, Food Choice

Published as:

Livingstone, S., and Helsper, E. J. (2006) Does advertising literacy mediate the effects of advertising on children? A critical examination of two linked research literatures in relation to obesity and food choice. *Journal of Communication*, 56: 560-584.

**Abstract**

It is widely assumed in academic and policy circles that younger children are more influenced by advertising than are older children. By reviewing empirical findings in relation to advertising and children's food choice, it is argued that this assumption is unwarranted. The findings do not suggest that young children are more affected by advertising than are teenagers, even though the latter are more media-literate. This article critically examines the theoretical gap in the literature regarding the relationship between advertising literacy and advertising effects. By applying a dual process model of cognitive persuasion, it is shown that the evidence is more consistent with the argument that different processes of persuasion are effective at different ages, precisely because literacy levels vary with age. Recommendations for future research on the effects of advertising on children, together with the implications for policies of regulating advertising to young children and of media literacy interventions, are identified.

---

*Authors' Notes* · For more information about this paper and the project on which this paper is based please contact Prof. Sonia Livingstone, Department of Media and Communications, London School of Economics and Political Science, Houghton Street, London WC2A 2AE, Tel. 0207 955 7710, Email [s.livingstone@lse.ac.uk](mailto:s.livingstone@lse.ac.uk), [www.lse.ac.uk/collections/media@lse/whoswho/sonialivingstone.htm](http://www.lse.ac.uk/collections/media@lse/whoswho/sonialivingstone.htm)

## **Does advertising literacy mediate the effects of advertising on children? A critical examination of two linked research literatures in relation to obesity and food choice**

### **Renewed interest in television advertising, children's food choice, and obesity**

There has been longstanding public concern over the potentially harmful effects of food promotion on children. While previous food-related concerns focused on nutrition, dental health, dieting and anorexia, high levels of concern across the developed world currently centre on the evidence of rising obesity among children (World Health Organization, 2000). In the UK, the Royal College of Physicians reported that obesity has doubled among 2-4 year olds between 1989 and 1998, and trebled among 6-15 year olds between 1990 and 2002 (Royal College of Physicians, 2004). Research by the Centers for Disease Control and Prevention in the USA also showed that since 1980 the rate of obesity for young people has doubled and, in the case of teenagers, trebled: 30% of children between the ages of 6 and 19 are now estimated to be at risk of being overweight (Centers for Disease Control and Prevention, 2004; Kaiser Foundation, 2004; Story & French, 2004).

The food industry is a major player in the field of advertising. Total UK advertising spending per annum in the categories of food, soft drinks and chain restaurants is £743 million, with £522 million spent on television advertising and £32 million spent in children's airtime (Ofcom, 2004). In the USA, a total of \$12 billion per year is spent to reach the young audience (Kunkel, et al., 2004). Food advertising on television is dominated by breakfast cereals, confectionary, savory snacks and soft drinks, with fast-food restaurants taking up an increasing proportion of television advertising for foods high in fat, sugar and salt on television (Ambler, 2004; Hastings et al., 2003; Young, 2003).

Hastings et al. (2003) recently conducted a major review of research on food promotion to children for the UK's Food Standards Agency, in response to renewed public policy attention to the role of television advertising in children's food choice (generally defined in terms of their food knowledge, preferences and behavior). A parallel review of the effects of television advertising on children was undertaken in America (Kunkel et al., 2004). Both reviews raise a familiar set of issues regarding theory, methods, and findings, for the question of advertising's role in children's food choice is heavily contested (Livingstone, 2005; Martin, 1997; Paliwoda & Crawford, 2003; Story & French, 2004). Both reviews also expressed concern, however, that the majority of studies on this topic were conducted in the 1970s and 1980s. Indeed, subsequent publications tend to reprise, with few changes, the same set of empirical studies. Before either drawing research conclusions or formulating policy responses, it therefore seems appropriate to ask how far this research can be relied upon in today's circumstances (Valkenburg, 2000).

Many aspects of the advertising process are widely held to have changed in recent decades. Children and teens represent a fast-growing market segment, and the effort and expenditure devoted to targeting them has expanded considerably (Martin, 1997; Moore, 2004; Pecheux & Derbaix, 1999; Story & French, 2004) and has become more sophisticated in its techniques (Kunkel et al., 2004; Moore, 2004; McNeal, 1992). On the other hand, children are also supposedly more sophisticated or media literate by comparison with earlier generations (Martin, 1997; Pecheux & Derbaix, 1999) though

Valkenburg (2000) questions whether evidence supports this claim. Also important are the changes in child-rearing practices and family dynamics, combining to give children a greater role in consumer decisions (Valkenburg, 2000). The media environment more generally has diversified, with commercial messages becoming more pervasive through multiple channels and cross-media promotions (Kunkel et al., 2004; McNeal, 1992; Story & French, 2004).

But the present article is not just a plea for scholars to update the empirical research base in the face of a pressing public policy agenda. Rather, our own re-visiting of the literature has led us to identify a surprising but crucial gap between research on advertising literacy and research on advertising's effects (Livingstone & Helsper, 2004). In what follows, we first characterize the problem, focusing substantively on the domain of children's food choice. We then develop a way forward, drawing on the cognitive theory of persuasion. The overall argument has wider implications beyond the current problem of obesity and children's food choice, leading us to suggest some future directions for research on children and advertising in general.

### **The importance of age in research on literacy**

We begin with the prevailing consensus regarding advertising literacy. Media literacy has been defined as "the ability to access, analyze, evaluate and create messages across a variety of contexts" (Christ & Potter, 1998, p. 7; see also Hobbs & Frost, 2003). Advertising literacy, by extension, is understood as the skills of analyzing, evaluating and creating persuasive messages across a variety of contexts and media (Young, 2003). The relationship between children's age and their developing media and advertising literacy is well established. Drawing on Piaget's theory of cognitive development (John, 1999; Valkenburg, 2000; Young, 2003), two factors are seen as crucial: being able to distinguish advertisements from programs, and being able to recognize the persuasive intent underlying advertising. The latter represents a more complex skill that develops later (Kunkel & Wilcox, 2001).

Reviews of the research on children, both in relation to food advertising and also for advertising in general, offer a consistent account of the development of advertising literacy. Piaget's preoperational stage (ages 2-7), concrete operational stage (ages 7-12) and formal operational stage (age 12+) have, following many studies of children's understanding of the nature of television advertising, been used to inform a characterization of the three main stages of advertising literacy (Bandyopadhyay, Kindra, & Sharp, 2001; Hastings et al., 2003; Kunkel, 1990; Kunkel et al., 2004; Oates, et al., 2002; Valkenburg & Cantor, 2001; Young, 2003; Young, Webley, Hetherington, & Zeedijk, 1996).

Summarizing this literature, it seems that before about 5 years old, children do not consistently distinguish advertising from programs and so regard advertising as entertainment or as information about products rather than as persuasion (Blosser & Roberts, 1985; Buijzen & Valkenburg, 2003a, 2003b; Wartella, 1980). However, by about 7 or 8 years old, children have learned to identify the persuasive intent of advertising, distinguishing it from information although, as Roedder (1981) added, they often do not use this knowledge spontaneously and must be cued to do so (see also Brucks, Armstrong & Goldberg, 1988; John, 1999; Moore, 2004). Lastly, from about 12

years old, children can articulate a critical understanding of advertising and of the intentions of its producers (Martin, 1997; Peterson & Lewis, 1988; Peterson, Jeffrey, Bridgwater, & Dawson, 1984), even becoming skeptical or distrustful of advertising (Boush, 2001; Dorr, 1986; van Evra, 1998).

### **The neglect of age in research on effects**

Between about 7 and 11 years old, children are in a transitional phase in their responses to advertising, while younger children are widely considered limited in cognitive terms, and so vulnerable to advertising. And herein lies the incongruity when we turn to the question of advertising effects. For while age, as a proxy for developmental stage, is central to advertising literacy research, it is rarely discussed in the study of advertising effects. To take a much-cited example, Borzekowski and Robinson's (2001) experiment with 2 to 6 year old children found that those who had been shown a videotape with advertisements preferred the advertised food items when compared with children who saw the same videotape without advertisements. Viewed from the perspective of advertising literacy research, one wonders whether such findings are specific to pre-school (or pre-operational) children or whether they apply across the age range? Did the observed effects occur because these children were too young to understand the nature and intent underlying advertising or would they be expected at any age? Such questions are surprisingly rarely asked.

By contrast with the research on literacy, in advertising effects research the decision to study a particular age group is rarely justified in theoretical terms. On the contrary, many studies simply announce the decision to study a particular age group (e.g. Hitchings & Moynihan, 1998; Lewis & Hill, 1998). Or, they study an age range that spans several stages in terms of advertising literacy yet pay little attention to variation within the sampled age range (e.g. Ross, et al., 1984). Literature reviews further confuse the issue by summarizing the accumulated findings of studies across very different age groups, for example combining findings from experiments on pre-schoolers and surveys of teenagers with little attention to the age range encompassed (e.g. Kunkel, 1990). This situation seems to go unnoticed because the approach commonly taken to reviewing the field of children and advertising is first to review literacy research and then, in an adjacent but separate section, to review effects research, thereby positioning the two bodies of research side by side without directly examining their theoretical or empirical relationship (e.g. Gunter & McAleer, 1997; Kaiser, 2004; Kunkel, et al., 2004; Story & French, 2004; Valkenburg, 2000; van Evra, 1998; Young, 2003).

A possible explanation for this surprising inattention to age and literacy in advertising effects research is that the theoretical framework originates with the adult population and has then been extended to the study of children. This contrasts with the study of advertising literacy where, as already noted, the theory derives from a post-Piagetian account of cognitive child development, extended to the domain of advertising. The dominant approach to advertising effects for adults is that of consumer psychology and, for children, consumer socialization, both drawing on the social psychology of persuasion. The consumer socialization perspective (Story, Neumark-Sztainer, & French, 2002) suggests that the factors influencing food choice operate at four distinct levels: Individual (psychosocial, biological and behavioral factors); Interpersonal (family,

friends and peer networks); Community (accessibility, school food policy and local facilities); and Societal (mass media and advertising, social and cultural norms, production and distribution systems and pricing policies).

In this approach, age is included as one among many individual differences, but its role in mediating the influence of each of these factors is little attended to. Indeed, often age is 'controlled for' when not the focus of the study, using statistical techniques to partial out the variation associated with age. Consequently, age is often neglected in discussions of the relative influence of the many factors that influence children's food choice. For example, in reviewing the field, Derbaix and Bree (1997) identified a range of factors known to mediate the effects of advertising in children (involvement, emotion, motivation, etc) but these were treated as individual difference factors that predicted children's attitude to the product or brand. The discussion did not refer to children's age or their stage of development in analyzing their response to persuasive messages, for instead of regarding children's age as a crucial measure of cognitive developmental stage, the consumer socialization approach treats children's age as an often-incident individual difference, permitting the researcher to treat studies with very different age samples as equivalent.

### **The gap between literacy and effects research**

The lack of integration between advertising literacy and advertising effects research is not simply a matter of internal consistency in the field. More important, there is a widespread assumption, in both academic and policy circles, that the relation between the two is in fact clear and well-established. This 'cognitive defense' view (Kunkel et al., 2004) asserts that, "the first defense against a commercial is a cognitive one, i.e. the ability to understand the informative and persuasive intents" (Derbaix & Bree, 1997, p. 209).

This view has two key consequences. First, those whose literacy is lower are assumed to be more susceptible to effects. Second, an increase in media or advertising literacy is assumed to reduce susceptibility to media effects. Since research has established that younger children are less media literate, they are repeatedly assumed to be especially vulnerable to the effects of advertising. Yet close examination of the published reviews reveals that rarely is empirical evidence cited in support of this crucial claim (e.g. Lewis & Hill, 1998; Moore & Lutz, 2000; Valkenburg, 2000; van Evra, 1995; Young, 2003). One study sought a relation between literacy and effects failed to find it: Fox (1981) found differences on cognitive measures (knowledge and understanding, distinguishing programs and adverts) between 4-5 year olds and 9-10 year olds but no age difference in the effect of advertising on behavior. Kunkel et al. (2004) cited just one study that found media literacy training to reduce advertising effects on product preferences (Feshbach et al., 1982).

More generally, the research base which could support the claimed link between literacy and effects is, at best, "quite mixed" (John, 1999, p. 190). Kunkel et al. (2004) concluded their review by noting that they could find no study that examined the statistical relation between children's understanding of advertising's persuasive intent and the impact of advertising and that, "there is little evidence that media literacy interventions can effectively counteract the impact of advertising on children of any age,

much less the younger ones who are most vulnerable to its influence” (p. 21). Our reading of the literature reviews in the field of children’s food choice suggests that this conclusion is at least tacitly acknowledged, if only by the significant absence of explicit discussion linking literacy and effects.

Notwithstanding the absence of empirical support, the relation between advertising literacy and advertising effects is widely taken for granted. For example, Wartella (1980, p. 25) expressed the hope that “appropriate learning materials will be developed to ... help children overcome their misunderstandings of television messages. By improving the skills children bring to the viewing situation we may be able to moderate the impact television has on the child.” Valkenburg and Cantor (2001) proposed that media literacy mitigates the harmful effects of advertising and television viewing on the child’s preferences and eating patterns. Dorr brought out the assumed age effect when she argued that by adolescence, teenagers’ greater understanding of the persuasive techniques of advertisers “can help children evaluate advertising claims sensibly and gain more control over the type and amount of influence commercials exert on them” (1986, p. 52).

### **Academic research and policy debates**

These and other views from the academy are used to inform policy deliberations. For the assumption that the young are especially vulnerable is the basis on which rest the frequent calls for restrictions or bans on advertising to children. The Committee on Communications (1995) in the US and the National Family and Parenting Institute (2003) in the UK are just a few of the many organizations calling for a ban on food advertising to children, especially to those younger than eight (e.g. Kaiser 2004; Kunkel, 1990; Kunkel et al., 2004; Story & French, 2004; Valkenburg, 2000). A second policy recommendation resulting from academic research is the call for media literacy training, especially for younger children, on the assumption that this will reduce the effects of advertising (Committee on Communications, 1995). As Bar-on (2000, p. 291) put it, policy should “promote media education as a means to help mitigate some of the unhealthy effects of television”.

In developed countries especially, it seems that age offers a publicly acceptable policy tool for intervening in the promotion of messages targeted at children (Samson, 2005), both because young children are assumed to be more vulnerable and because advertising to those too young to recognize persuasive intent is unfair (Kunkel, 1990; Martin, 1997), this latter claim resting more securely on literacy research. Combined with the call for more media education, the call for regulation is the predominant way in which communication scholars have sought to influence these lively and often hotly contested debates over advertising to children (Bandyopadhyay, et al., 2001; Hansen, 1997; Kunkel & Wilcox, 2001; Kunkel et al., 2004). Our purpose here is neither to undermine that attempt nor to defend the advertising industry, but rather to draw the attention of communication researchers to the empirical and theoretical weakness at the heart of their position in order that it may be addressed effectively.

### **Classifying findings of advertising effects by children's age**

We have argued that age is widely agreed to be a key factor in relation to media, or advertising, literacy, but it is rarely if ever discussed in relation to the effects of advertising. So, can we clarify whether media effects occur evenly across all age groups or are they, instead, greater at some ages than others, with older children especially being less influenced by the media? Particularly, is the assumption warranted that younger children, being less media literate, are especially vulnerable to the influence of advertising?

Although theoretical considerations of advertising effects are pitched at a general level of abstraction, concerned with cognitive and social processes, empirical research on advertising is, for practical reasons, concerned with specific product domains (food choice, toy preferences, etc). Focusing here on children's food choices, the published research was systematically re-examined in relation to children's age. To identify the range of published research, the analysis drew on the substantial and systematic review recently conducted by Hastings et al. (2003). Hastings et al. employed systematic search procedures to ensure as comprehensive a review as possible, beginning with the identification of nearly 30,000 articles before finally producing a list of some fifty original empirical studies examining the effects of advertising on children's food choice. At several stages in the systematic review process, the reliability of the selection process was checked and reported. Consequently, this list of studies was considered satisfactory for the present analysis.

The original empirical studies thus identified are classified in Table 1 according to the age sampled. The age bands used follow the main distinctions established in research on advertising literacy in order to examine the supposed link between literacy and effects. Classifying published studies using even such wide age bands proved problematic. It seems that samples are often chosen for convenience rather than on theoretical grounds, for they cut across, or overlap, the developmental stages of advertising literacy, and some articles reported only the average age, rather than the age range, of the sample. A similar judgment had to be made regarding the classification of findings: studies were classified according to whether they reported findings of effects, mixed or weak evidence for effects, or no evidence of effects. We offer Table 1, therefore, as suggestive rather than conclusive regarding trends in the literature.

Table 1 suggests that most published studies found evidence of advertising's effects rather than otherwise. Although it can be suggested that journal publication is biased towards studies that show effects, Greenwald (1975) argues that this does not invalidate the conclusions drawn. Notwithstanding continued methodological debate over media effects (Hearold, 1986; Livingstone, 1996), Table 1 clearly points to the effects of advertising. It is also apparent that there is a paucity of research regarding both younger children and adolescents. The age group that has been most systematically researched is between 7 and 12 years old, the transitional age group in terms of the development of advertising literacy. Future research on younger and, especially, older children, would provide a more balanced picture across the age range.

Most strikingly, the balance of findings by children's age in Table 1 is counterintuitive. The common-sense prediction is that younger children are more affected by advertising, while media-literate teenagers are supposedly the least vulnerable to



effects. The literature suggests a very different picture. Mixed or weak findings are more common for the youngest age group, while among 7 to 12 year olds and especially among teenagers, research is more likely to find evidence of advertising effects.

The findings in Table 1 do not permit us to conclude that younger children are more affected by advertising than are older children. Indeed, given these findings, one might conclude that children younger than seven are the least influenced by advertising while those over 12 years old are most influenced. However, one might also seek an artefactual explanation concerned with methodological issues. Arguably, measures of both advertising exposure and food choice are most difficult and unreliable for the youngest group, thus explaining why findings for the youngest group are the most inconsistent (Donohue, Henke, & Donohue, 1980). It is also possible that the research method employed has a confounding effect, since the literature includes both experiments and surveys. Since surveys typically correlate a measure of advertising exposure (typically using the proxy measure of amount of television viewed) with a measure of food choice (knowledge, preference, or behavior), the measure of exposure is imprecise by comparison with that used in experiments. In experiments, it may fairly be assumed, though it is not always stated, that the exposure is specifically to age-appropriate or, at least, child-oriented advertisements rather than to advertising in general. An artefactual explanation of the counter-intuitive observation that greater effects are found for older than younger children might be warranted if more surveys had been conducted with younger children, the imprecise exposure variable accounting for the mixed findings. We examined this possibility by reclassifying the same studies (see Table 2) and, once again, obtained some unexpected findings.

Table 2 suggests that surveys are more likely to demonstrate effects than are experiments, not that age-appropriate stimuli (as in most experiments) result in more advertising effects. Possibly a mixture of stimuli is more effective. More plausibly, it may be that the greater ecological validity of surveys reveals the effects of media exposure more clearly than experiments, even though the experiments usually focus on advertising specifically rather than television exposure in general, and even though experiments can test causal claims (Hearold, 1986). It could also be argued that surveys measure longitudinal exposure to advertising while experiments only measure short term exposure, this causing surveys to be more sensitive to measuring advertising effects. However, most surveys measure advertising exposure indirectly, through television exposure, making it difficult to separate the effects of general media exposure and other confounding variables from the specific effect of advertising exposure. The key point for our present argument, however, is that the artefactual explanation is not supported.

Last, we examine the three-way relation between age sampled, method used, and findings obtained, now including references for the classified studies (see Table 3).

Table 3 adds two key points to the emerging picture. It shows that while both experiments and surveys are used for children under 12, nearly all research on teenagers is survey based. Since surveys appear associated with clearer pro-effects findings, and in order to examine causal claims in relation to teenagers, it would seem imperative for future research to conduct experiments with over 12's before concluding that this age group is more consistently affected by advertising than younger children.

The second point revealed by Table 3 is that it is particularly for the 2-6 year olds, that experiments show the least convincing evidence for effects, while surveys are more likely find effects. This led us to re-read, and seek to compare further, those experiments which do and do not result in evidence of effects. However, no new account for the differences in findings became apparent to us and nor are they compared and discussed in reviews of the literature.

Leaving this as a question for future research, it would seem appropriate at this stage first to reject the assumption that younger children are more influenced by advertising than older children and, second, since we hesitate to draw the opposite conclusion (namely that teenagers are more affected by advertising than young children), we draw the conservative conclusion that there is evidence that children of all ages are affected by advertising. How then should the relation between age, literacy and effects be theorized?

### **A single or dual process of persuasion?**

If children of different ages, at different stages of literacy, are all affected by advertising, this must mask some underlying differences in persuasion. This leads us to explore whether different processes of persuasion occur at different ages. Our starting point is to note that the pattern of findings in the literature is consistent with dual process models of persuasion. The Elaboration Likelihood Model of Persuasion (Petty & Cacioppo, 1986), a widely-adopted socio-cognitive model, proposes two 'routes' to persuasion, each governed by different principles and affected by different factors. Although developed in the early 1980s, it remains a major framework for explaining advertising effects (Agostinelli & Grube, 2002; Chang, 2002; Chebat, Charlebois, & Gelinias-Chebat, 2001; Chebat, Vercollier, & Gelinias-Chebat, 2003; Coulter, 2005; Coulter & Punj, 2004; Scholten, 1996; Whittler & Spira, 2002). Yet it has rarely been applied to research with children or to distinguish between persuasion processes at different stages in development, as we propose here.

The Elaboration Likelihood Model of Persuasion proposes that when people pay attention to the content of the message, they will weigh and elaborate the arguments offered, being persuaded by the message only if they consider the arguments for the opinion or product convincing (this Petty and Cacioppo termed the 'central route' to persuasion). If, however, people remain relatively unengaged by the message content, they may still be persuaded by a single characteristic of a message as the status or credibility of its source (e.g. expert, celebrity) or the intensity of the message (e.g. color, sound, emotion), provided they find these appealing (this is termed the 'peripheral route' to persuasion). A similar model, the Heuristic-Systematic Model (Eagly & Chaiken, 1993), states that under some conditions, people process the arguments in a persuasive message systematically and carefully, but that at other times, they take cognitive 'short-cuts', using a range of cognitive heuristics or simple decision rules in responding to the message.

Since the central (or systematic) route to persuasion relies on the person engaging cognitively with the message, elaborating it by checking, interpreting, amplifying, etc., this process has been found to have longer lasting effects than the peripheral (or heuristic) route, which relies on more superficial or single-dimensional cues and where the

likelihood of elaborating the message is much lower. In other words, for both persuasion processes to work, the person must pay attention, but the quality of the attention is different, and therefore so are the consequences.

What conditions make the difference? Motivation and ability are crucial. Research suggests that if people are motivated to attend to the message, which depends in turn on whether they consider it likely to be personally relevant to them, and if people have the ability to engage with the message, which in this context we might reframe in terms of media literacy, then the central route becomes more likely. Persuasion thus depends on the nature of the message (the strength of the arguments, the quality of the content, etc). If the person lacks either motivation or ability (or, is low in media literacy), the quality of the arguments matters less, and persuasion will only occur if the message appeals through its incidental features (Chebat et al., 2001; Scholten, 1996; Whittler & Spira, 2002).

Contrary to the commonsense view of advertising, these models of persuasion do not assume that if a person is knowledgeable about or critical of advertising, they will not be persuaded. Indeed, a skeptical approach could result in even greater persuasion, provided the person is motivated and interested in the message content and provided the arguments in the message are strong. Nor do they assume that if someone pays little attention, they will not be persuaded. Rather, the object of their attention and the quality of that attention is more important than the amount of attention. If they do not attend to the arguments, more superficial features (e.g. a celebrity endorsement or an intensely appealing or attractive image) may catch their eye, resulting in a less enduring but still significant form of persuasion. If they attend to the arguments, those superficial features may matter less. Further, if a person attends to the arguments (the central/strategic route) but the arguments are found to be weak, there is an effect but the opposite of that desired by the advertiser: the person develops a negative view of the product, and this negative perception will persist for longer than a negative impression established through the peripheral route.

### **The dual process model and the relation between age, literacy and effects**

Applying this model to the domain of advertising food to children, we suggest that younger children are more likely to be persuaded by the peripheral route, while teenagers are more likely to be persuaded by the central route. Based on research presented earlier, it can be hypothesized that less media literate viewers (generally younger children) are more interested in such superficial or peripheral features of advertising as celebrity sources, jingles, colorful, and entertaining images (Kunkel et al., 2004; John, 1999; Bridges et al., 2004; Dalmeny, 2003; Carruth, Skinner, Moran, & Coletta, 2000; Valkenburg & Cantor, 2001). Indeed, research suggests that television watching by children under the age of eight is focused on perceptual stimuli rather than on semantic information in a message (Hoffner & Cantor, 1985; Hoffner, Cantor, & Thomson, 1989). Or, as others have argued, under about six years old, children obey the principle of 'centration', reacting to a single prominent attribute of a product (e.g. color or sound) to determine whether they like it or not (Carruth, Skinner, Moran, & Coletta, 2000; Valkenburg & Cantor, 2001).

On the other hand, it can also be hypothesized that more media literate (or older children and adults) are more attentive to the creativity or informative nature of the commercial or to the value of the product in their lives and are thereby more influenced by the quality of the arguments and claims of advertising, providing that they attend, are motivated to engage with the message, and that its arguments are convincing. Writing about adult audiences, Hawkins and Pingree (1987, p. 462) concurred that cognitive effort and attention may increase, rather than reduce, effects: "Some cognitive effort while viewing may increase learning, comprehension, or the isomorphism between television content or viewer beliefs and behaviors. In other cases, cognitive effort may decrease learning from television or increase the likelihood of beliefs opposed to those presented on television."

Kim and Rubin (1997) also challenged the association between increased literacy and reduced effects by distinguishing between different kinds of attention when they conclude that, "the facilitative activity of selectivity, attention, and involvement served as a catalyst to media effects, whereas the inhibitory activity of avoidance and skepticism served as a deterrent" (p. 120). This invites an opposition not of naivety versus critical awareness but of motivated attention versus skeptical distance thus combining the cognitive aspect of media literacy with the motivational considerations that direct attention and cognitive effort. More generally, as proposed by both information processing approaches and audience reception studies, work on adults commonly asserts that there are several elements of a message that can have an effect (Eagly & Chaiken, 1993; Livingstone, 1998) and that these may or may not 'fit' with the ways that audiences respond to the message. This places a cognitive/interpretive demand on the audience which, in turn, plays a key mediating role in processes of persuasion. Literacy and effects must be, therefore, theoretically linked.

Although such insights seem not to have been applied to thinking about children's comprehension or media literacy, the possibility for such development is promising. In reframing our understanding of the cognitive development of advertising literacy, so as to link it to the consumer socialization literature, John (1999) described the information processing of 3-7 year olds as 'limited', unidimensional, and focused on perceptual features, while she characterizes teenagers' response to advertising (11-16 years) as 'reflective' and 'strategic'. Although John assumed a single process of persuasion, her account fits the dual process model better, with the limited stage of advertising literacy mapping onto peripheral processing for the youngest children and with the reflective stage of literacy mapping onto central route processing for teenagers. For 7 to 11 year olds, on whom most effects research concentrates, we also find an explanation for the mixed findings obtained. In this stage, children are gaining an understanding of the persuasive intent of advertising but they do not always use it. In literacy terms, John (1999) labeled them 'analytical/cued', for they must be cued to use their developing analytical skills. In effects terms, however, much rests on whether the experimental situation does, in practice, cue these skills, a key issue not addressed in research reports.

### **Age-targeted advertising**

Since research reports are often uninformative regarding the advertising strategy employed in the stimulus materials to which experimental subjects are exposed (what is

the target age group, do the advertisements seek to persuade through the central/argumentative or peripheral/attractive route?), the inconsistent body of findings obtained is hardly surprising. Although it is not possible retrospectively, based on reports of published studies, to test our proposal that different routes to persuasion are more effective for different age groups, this would seem to open up a promising direction for future empirical research. Too often in the literature on both literacy and effects, ‘advertising’ remains a generic category, neglecting the possibility that children of different ages are targeted by different tactics, especially those that precisely take into account their growing literacy/skepticism. Future research could and should examine this possibility.

The value of different advertising strategies targeted on different age groups is not lost on advertisers themselves. Indeed, it must be that advertisers would not target teenagers (and adults) if media literacy simply undermines media effects. Arguably, an examination of advertising practice reveals an at-least implicit recognition (characterized as “encoding/decoding problems in advertising to children”; McNeal, 1992, p. 147) as that persuasion works in different ways for different age groups. Typically, advertisements for younger children seek to appeal through bright colors, fast pace, lively music and simple messages, often emphasizing the physical aspects of the product (Lewis & Hill, 1998). Advertisements for teenagers emphasize witty or stylish imagery, subtle messages, and references to peer group approval. Advertisers’ strategies to reach children differ from adult strategies in that they focus on new and exciting features to encourage purchase requests rather than on building brand loyalty (Bridges, Briesch, & Yim, 2004). For younger children, this exciting feature may be incidental to the product (e.g. a give-away toy). For older children, it may be a celebrity endorsement of the product (Dalmeny, 2003). For teenagers, who behave more like adults, information in the images is, supposedly, more salient and they are seen as being more likely to develop brand loyalties (Bridges, Briesch, & Yim, 2004).

### **Revisiting anomalies in the empirical literature**

The present proposal to apply the dual process theory of persuasion to the study of children and advertising resolves some puzzles and anomalies in the literature (Kuhn, 1962). For these are only puzzling, and so neglected, in the context of the theoretical consensus that younger children are more vulnerable to advertising than older children, and we suggest that these contradictory findings fit rather well with a dual process theory of persuasion. For example, Moore and Lutz (2000) found greater (not lesser) effects of advertising for children older than 11 than for younger children, noting that older children were also more attentive to advertising than were 7-8 year olds and that they approached advertising from a variety of different angles (entertainment, information, etc) while younger children use less elaborate strategies suggestive of peripheral route processing. Although little research has examined the role of source credibility, Ross et al.’s (1984; see also van Evra, 1998) much-cited study found that children older than 11 were less influenced by celebrity endorsement than those aged eight to ten. The younger children were more impressed by images of adult authority and more influenced by perceptual distortions of the product in the advertisements, again supporting the argument that peripheral route processing is more typical of younger than older children.

A study by Chan (2001) found that perceived truthfulness in advertisements declines steadily with age (from 5 to 12) but that liking for and attention to advertising does not. Similarly, Lewis and Hill (1998) noted that as children become more cynical towards advertising they continue to be influenced. Though they offer no explanation for this, we have noted earlier that central route processing can result, depending on the quality of the arguments offered, in both increased influence and increased negative responses to advertising, with the consequence that an overall assessment of responses to advertising can mask differences in response to particular advertisements.

Consistent with the suggestion that central route processing is more typical of teenagers, Gunter and McAleer (1997) argued that teens are more influenced by advertising when they are highly motivated to attend to it (while John & Lakshmi-Ratan, 1992, found no such effect for younger children). They also point out that, consistent with the Elaboration Likelihood Model, this stronger influence of central cues in older children can express itself in a stronger, more stable opinion either in favor or against the product promoted by the message (this accounting for the puzzling mixture of observable effects plus skeptical responses of teenagers in advertising research). Indeed, one resolution of the positive correlation between adolescents' skepticism towards advertising and the amount of time spent viewing television (this latter in turn also being correlated with effects such as obesity) (see Lewis & Hill, 1998; Mangleburg & Bristol, 1998), is that for teens to be influenced, the central route (which precisely relies on their skeptical approach) is used over the peripheral one.

Lastly, Edens and McCormick (2000) found that adolescents continue to be influenced by advertising, despite their greater skepticism when compared with younger children, and they identify some of the factors that affect teens' responses to advertisements, including conditions that encourage high or low argument-elaboration. Specifically, teens in a high-elaboration processing condition recalled more details from the advertisements, though many remained more sensitive to the peripheral details than to the central message of the commercial.

### **Conclusion**

This article has argued that the evidence on children's responses to advertising does not support the widely held belief that younger children are more influenced by advertising. Rather, the evidence is consistent with the view that different processes of persuasion operate at different ages, precisely because literacy levels vary by age. In short, we have suggested children of all ages could be, more or less equivalently, affected by advertising, but that the effects of advertising are dependent on advertising literacy. Thus, our hypothesis is that, because younger children have lower media (or advertising) literacy, they are more likely to be persuaded by advertising that is based on celebrities, jingles, colorful images, and attractive physical features of a product. Older children, especially teenagers, whose media literacy is greater, are more likely to be persuaded by advertising strategies based on argumentation, especially those that contain high quality arguments and responses to counterarguments.

If it was ever the case that younger children were more vulnerable to advertising than teenagers and adults, the huge expansion of the advertising and marketing industry in recent decades would seem to have led to the development of distinctive strategies to

appeal to, argue to, and persuade its very different audiences, with the consequence that across the age range, advertising has been shown to have effects. Thus, we have examined the possibility that dual process models of persuasion could be more insightful in understanding the responses of children of different ages than is the assumption of a single persuasion process. The evidence regarding advertising effects by age fits better with a mapping of the advertising literacy of older and younger children onto the central and peripheral processes of persuasion respectively, than it fits the popular assumption that less literacy means more effects.

This argument identifies some promising directions for future research in this field, for we need a better understanding of the conditions under which children and teenagers of all ages are influenced by advertising. As noted earlier, more research on the youngest and oldest age groups is needed to balance that on those in the transitional literacy age group and, especially the lack of experimental research on teenagers must be rectified. The age groups sampled in effects research should be theory-driven, clarifying the level of media literacy attained by the children and the appropriateness of this to the persuasive process hypothesized to mediate observed effects. In describing the nature of the persuasive message in effects research, it is vital also to characterize this in terms of persuasion theory (whether it is age-appropriate or not, the persuasive strategies employed, whether these favor central or peripheral processing, the presence of cues for the application of literacy skills, the children's attention, etc.). The dual process theory also suggests some new hypotheses, for example that advertising effects will last longer for older children, that source credibility will be more influential with younger children, that including weak versus strong arguments in the message will make more difference for older children, and so forth.

Lastly, this argument invites a reinterpretation not only of the existing body of research but also of its policy implications. It is now imperative to conduct interventions that seek to increase levels of media literacy and then evaluate these in relation to the hypothesized reduction of effects. Hobbs and Frost (2003) show that media literacy training can stimulate critical thinking, so that after media literacy training, students were able to identify information that was implicit or omitted in advertising; however, such critical thinking was not actually used unless directly activated by media literacy training or when explicitly invited of the young people. As yet, there is little evidence to suggest that if media literacy is increased, media effects are necessarily reduced. Moreover, one might argue that for teenagers, interventions should be less focused on media literacy and more focused on directly countering the arguments of advertising (for example through consumer awareness, provision of alternative food messages, and health information). For younger children, the use of celebrities, cartoon favorites, and familiar characters from programs in advertising should be better researched (Giles & Maltby, 2004) and then, perhaps, restricted (as in Swedish restrictions on advertising to children; Konsument Verket, 2004).

Returning, then, to the present crisis over children's food choice and rising levels of obesity, we have tried to redirect the discussion away from the often unproductive debates over research methods towards improving the theory. Research is always open to challenge in terms of the details of sample, stimulus materials, the conduct of statistical analyses, etc (e.g. Livingstone, 2004; Paliwoda & Crawford, 2003) but can perhaps be more influential if empirical research is clearly theory-driven, internally consistent, and

coherent. We have suggested that a more satisfactory account than is commonly given is already warranted by the apparently-contradictory findings in the published literature, and invite researchers in the field to put a dual process model, linking age-targeted advertising strategies, a developmental account of advertising literacy and distinct cognitive processes of persuasion, to the test.

## References

- Agostinelli, G., & Grube, J. W. (2002). Alcohol counter-advertising and the media: A review of recent research. *Alcohol Research & Health*, 26(1), 15-21.
- Ambler, T. (2004). *Does the UK promotion of food and drink to children contribute to their obesity?* Centre for Marketing Working Paper. London: London Business School.
- Atkin, C.K (1975a) *The effects of television advertising on Children. Report NO. 7: Parent-child communication in supermarket breakfast selection.* Washington, D; Office of Child Development (DHEW).
- Atkin, C.K (1975b) *The effects of television advertising on Children. Report NO. 6: Pre-adolescent's responses to television commercials.* Washington, DC: Office of Child Development (DHEW).
- Atkin, D. J., Greenberg, B. S., & Baldwin, T. F. (1991). The home ecology of children's television viewing: Parental mediation and the new video environment. *Journal of Communication*, 41(3), 40-52.
- Bandyopadhyay, S., Kindra, G., & Sharp, L. (2001). Is television advertising good for children? Areas of concern and policy implications. *International Journal of Advertising*, 20(1), 89-116.
- Bar-on, M. E. (2000). The effects of television on child health: implications and recommendations. *Archives of Disease in Childhood*, 83(4), 289-292.
- Blosser, B. J., & Roberts, D. F. (1985). Age differences in children's perceptions of message intent: Responses to TV-news, commercials, educational spots, and public-service announcements. *Communication Research*, 12(4), 455-484.
- Bolton, R. N. (1983). Modeling the impact of television food advertising on children's diets. In J. H. Leigh & J. C. R. Martin (Eds.), *Current issues and research in advertising.* (pp. p. 173-199). Ann Arbor, MI: Division of research, Graduate School of Business Administration, University of Michigan.
- Borzekowski, D. L. G., & Robinson, T. N. (2001). The 30-second effect: An experiment revealing the impact of television commercials on food preferences of preschoolers. *Journal of the American Dietetic Association*, 101(1), 42-46.
- Boush, D. M. (2001). Mediating advertising effects. In J. Bryant & J. A. Bryant (Eds.), *Television and the American Family* (2nd ed., pp. 397-412). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Brand, J. E., & Greenberg, B. S. (1994). Commercials in the classroom: The impact of channel-1 Advertising. *Journal of Advertising Research*, 34(1), 18-27.
- Bridges, E., Briesch, R. A., & Yim, C. K. (2004). Advertising decisions and "children's" product categories. Working paper. Available at: <http://www.cox.smu.edu/article/research/research.do/114>



- Brody, G. H., Stoneman, Z., Lane, T. S., & Sanders, A. K. (1981). Television food commercials aimed at children, family grocery shopping, and mother-child interactions. *Family Relations*, 30(3), 435-439.
- Brucks, M., Armstrong, G. M., & Goldberg, M. E. (1988). Children's use of cognitive defenses against television advertising: A cognitive response approach. *Journal of Consumer Research*, 14(4), 471-482.
- Buijzen, M., & Valkenburg, P. M. (2003a). The effects of television advertising on materialism, parent-child conflict, and unhappiness: A review of research. *Journal of Applied Developmental Psychology*, 24(4), 437-456.
- Buijzen, M., & Valkenburg, P. M. (2003b). The unintended effects of television advertising: A parent-child survey. *Communication Research*, 30(5), 483-503.
- Carruth, B. R., Skinner, J. D., Moran, J. D., & Coletta, F. (2000). Preschoolers' food product choices at a simulated point of purchase and mothers' consumer practices. *Journal of Nutrition Education*, 32(3), 146-151.
- Centers for Disease Control and Prevention (2004). *Overweight among US children and adolescents. National health and nutrition survey.*
- Chan, K. (2001). Children's perceived truthfulness of television advertising and parental influence: A Hong Kong study. In M. Gilly & J. Myers-Levy (eds.) *Advances in Consumer Research* (Vol. 28, pp. 207-212). Valdosta, Georgia: Association for Consumer Research.
- Chang, C. C. (2002). Self-congruency as a cue in different advertising-processing contexts. *Communication Research*, 29(5), 503-536.
- Chebat, J. C., Charlebois, M., & Gelinias-Chebat, C. (2001). What makes open vs. closed conclusion advertisements more persuasive? The moderating role of prior knowledge and involvement. *Journal of Business Research*, 53(2), 93-102.
- Chebat, J. C., Vercollier, S. D., & Gelinias-Chebat, C. (2003). Drama advertisements: Moderating effects of self-relevance on the relations among empathy, information processing, and attitudes. *Psychological Reports*, 92(3), 997-1014.
- Christ, W. G., & Potter, W. J. (1998). Media literacy, media education, and the academy. *Journal of Communication*, 48(1), 5-15.
- Clarke, T. K. (1984). Situational factors affecting preschoolers' responses to advertising. *Academy of Marketing Science Journal*, 12(4), 25.
- Committee on Communications (1995). Children, adolescents, and advertising. *Pediatrics*, 95(2), 295-297.
- Coon, K. A., Goldberg, J., Rogers, B. L., & Tucker, K. L. (2001). Relationships between use of television during meals and children's food consumption patterns. *Pediatrics*, 107(1), art. no.-e7.
- Coulter, K. S. (2005). An examination of qualitative vs. quantitative elaboration likelihood effects. *Psychology & Marketing*, 22(1), 31-49.
- Coulter, K. S., & Punj, G. N. (2004). The effects of cognitive resource requirements, availability, and argument quality on brand attitudes: A melding of elaboration likelihood and cognitive resource matching theories. *Journal of Advertising*, 33(4), 53-64.
- Dalmeny, K. (2004). Parents key to reducing overweight in children: Marketing targets children. *BMJ*, 328(7432), 169.
- Dawson, B. L., Jeffrey, D. B., & Walsh, J. A. (1988). Television food commercials effect

- on children's resistance to temptation. *Journal of Applied Social Psychology*, 18(16), 1353-1360.
- Del Toro, W. & Greenberg, B.S. (1989) Television commercials and food orientations among teenagers in Puerto Rico. *Hispanic Journal of Behavioral Sciences*, 11(2), 168-177.
- Derbaix, C., & Bree, J. (1997). The impact of children's affective reactions elicited by commercials on attitudes toward the advertisement and the brand. *International Journal of Research in Marketing*, 14(3), 207-229.
- Dietz, W. H., & Gortmaker, S. L. (1985). Do we fatten our children at the television set: Obesity and television viewing in children and adolescents. *Pediatrics*, 75(5), 807-812.
- Donohue, T. R., Henke, L. L., & Donohue, W. A. (1980). Do kids know what TV commercials intend? *Journal of Advertising Research*, 20(5), 51-57.
- Dorr, A. (1986). *Television and children: A special medium for a special audience*. Beverly Hills, CA: Sage.
- Eagly, A. E., & Chaiken, S. (1993). Process theories of attitude formation and change: The elaboration likelihood model and heuristic systematic models. In A. E. Eagly & S. Chaiken (Eds.), *The psychology of attitudes* (pp. 305-325). Fort Worth, TX: Harcourt Brace Jovanovich Inc.
- Edens, K. M., & McCormick, C. B. (2000). How do adolescents process advertisements? The influence of ad characteristics, processing objective, and gender. *Contemporary Educational Psychology*, 25(4), 450-463.
- Feshbach, S., Feshbach, N. D., & Cohen, S. E. (1982). Enhancing children's discrimination in response to television advertising: The effects of psychoeducational training in two elementary school-age groups. *Developmental Review*, 2, 385-40.
- Fischer, P. M., Schwartz, M. P., Richards, J.W., Goldstein, A.O., and Rojas, T.H. (1991). Brand logo recognition by children aged 3 to 6 years old. *JAMA*, 266(22), 3145-3148.
- Fox, D. T. (1981). Children's television commercials and their nutrition knowledge and eating habits. *Dissertation Abstracts International*, 42 (6-B): 2576.
- Galst, J. P. (1980). Television food commercials and pro-nutritional public service announcements as determinants of young children's snack choices. *Child Development*, 51(3), 935-938.
- Giamatti, J., Blix, G., Marshak, H.H., Okasa-Wollitzer, A., and Pettitt, D.J. (2003). Television watching and soft drink consumption. *Archives of Pediatrics & Adolescent Medicine*, 157, 882-886.
- Giles, D.C. & Maltby, J. (2004) The role of media figures in adolescent development: relations between autonomy, attachment, and interest in celebrities. *Personality and individual differences*, 36 (4), 813-822.
- Goldberg, M.E., Gorn, G.J., & Gibson, W. (1978a) The effects of TV messages for high and low nutritional goods on children's snack and breakfast food choices. *Advances in Consumer Research*, 5 (1), 540-545.
- Goldberg, M.E., Gorn, G.J., & Gibson, W. (1978b) TV messages for snacks and breakfast foods: do they influence children's preferences. *Journal of Consumer Research*, 5 (2), 73-81.

- Gorn, G. J., & Florsheim, R. (1985). The effects of commercials for adult products on children. *Journal of Consumer Research*, 11(4), 962-967.
- Gorn, G. J., & Goldberg, M. E. (1980a). Children's responses to repetitive television commercials. *Journal of Consumer Research*, 6(4), 421-424.
- Gorn, G. J., & Goldberg, M. E. (1980b). TV's influence on Children: The long and the short of it. *Paper presented at the 88<sup>th</sup> Annual Convention of the American Psychological Association*, Montreal, Quebec, Canada, September 1-5, 1980.
- Gorn, G. J., & Goldberg, M. E. (1982). Behavioral evidence of the effects of televised food messages on children. *Journal of Consumer Research*, 9(2), 200-205.
- Gortmaker, S. L., Must, A., Sobol, A. M., Peterson, K., Colditz, G. A., & Dietz, W. H. (1996). Television viewing as a cause of increasing obesity among children in the United States, 1986-1990. *Archives of Pediatrics & Adolescent Medicine*, 150(4), 356-362.
- Gracey, D., Stanley, N., Burke, V., Corti, B., & Beilin, L. J. (1996). Nutritional knowledge, beliefs and behaviours in teenage school students. *Health Education Research*, 11(2), 187-204.
- Greenwald, A. G. (1975). Consequences of prejudice against the null hypothesis. *Psychological Bulletin*, 82(1), 1-20.
- Gunter, B., & McAleer, J. (1997). *Children and television* (2 ed.). London: Routledge.
- Halford, J. C. G., Gillespie, J., Brown, V., Pontin, E.E., and Dovey, T.M. (2003). Effect of television advertisements for foods on food consumption in children. *Appetite*, 42(2), 221-225.
- Hansen, L. (1997). *Television advertising directed at children*. Brussels: European Commission.
- Hastings, G., Stead, M., McDermott, L., Alasdair, F., MacKintosh, A. M., Rayner, M. Godfrey, C., Caraher, M. & Angus, K. (2003). *Review of the research on the effects of food promotion to children*. London, UK: Food Standards Agency.
- Hawkins, R. P., & Pingree, S. (1987). Activity in the effects of television on children. In M. Gurevitch & M. R. Levy (Eds.), *Mass communication review yearbook* (Vol. 6, pp. 452-469). Beverly Hills: Sage.
- Hearold, S. (1986). A synthesis of 1043 effects of television on social behavior. In G. Comstock (Ed.), *Public communications and behavior: Volume 1* (Vol. 1, pp. 65-133). New York: Academic Press.
- Hitchings, E., & Moynihan, P. J. (1998). The relationship between television food advertisements recalled and actual foods consumed by children. *Journal of Human Nutrition and Dietetics*, 11(6), 511-517.
- Hobbs, R., & Frost, R. (2003). Measuring the acquisition of media-literacy skills. *Reading Research Quarterly*, 38(3), 330-355.
- Hoffner, C., & Cantor, J. (1985). Developmental differences in responses to a character's appearance and behavior. *Developmental Psychology*, 21(6), 1065-1074.
- Hoffner, C., Cantor, J., & Thomson, E. (1989). Children's responses to conflicting auditory and visual features of a televised narrative. *Human Communication Research*, 16, 256-278.
- Jeffrey, D. B., McLellam, R. W., & Fox, D. T. (1982). The development of children's eating habits: The role of television commercials. *Health Education Quarterly*, 9(2-3), 174-189.

- John, D. R. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. *Journal of Consumer Research*, 26(3), 183-213.
- John, D. R., & Lakshmiratan, R. (1992). Age-Differences in Children's Choice Behavior: the Impact of Available Alternatives. *Journal of Marketing Research*, 29(2), 216-226.
- Kaiser Foundation. (2004). *The role of media in childhood obesity*. Henry J. Kaiser Family Foundation.
- Kaufman, L. & Sandman, P.M. (1983) *Countering children's sugared food commercials: Do rebuttals help?* Paper presented at the 34<sup>th</sup> Annual Meeting of the International Communication Association, San Francisco, CA, May 24-28, 1984.
- Kennedy, C. M., Strzempko, F., Danford, C., & Kools, S. (2002). Children's perceptions of TV and health behavior effects. *Journal of Nursing Scholarship*, 34(3), 289-294.
- Kim, J. K., & Rubin, A. M. (1997). The variable influence of audience activity on media effects. *Communication Research*, 24(2), 107-135.
- Klesges, R. C., Shelton, M.L., and Klesges, L.M. (1993). Effects of television on metabolic rate: potential implications for childhood obesity. *Pediatrics*, 91(2), 281-286.
- Konsument Verket. (2004). *Interpretative advice on the prohibition of commercial advertising to children on television*. Retrieved March, 2004, from <http://www.konsumentverket.se/mallar/en/>
- Kunkel, D. (1990) The role of research in the regulation of U.S. children's television advertising. *Creation, Diffusion, Utilization*, 12(1), 101-119.
- Kunkel, D., & Wilcox, B. (2001). Children and media policy. In D. G. Singer & J. L. Singer (Eds.), *Handbook of children and the media* (pp. 589-604). Thousand Oaks, CA: Sage.
- Kunkel, D., Wilcox, B., Cantor, J., Palmer, E., Linn, S., & Dowrick, P. (2004). *Report of the APA task force on advertising and children: Psychological Issues in the increasing commercialization of childhood*. Washington, DC: American Psychological Association.
- Lewis, M. K., & Hill, A. J. (1998). Food advertising on British children's television: A content analysis and experimental study with nine-year olds. *International Journal of Obesity*, 22(3), 206-214.
- Livingstone, S. (1998). *Making sense of television: The psychology of audience interpretation* (2nd ed.). London: Routledge.
- Livingstone, S. (2004). *A commentary on the research evidence regarding the effects of food promotion on children. Report prepared for the research department of the Office of Communications*. London, UK: OFCOM.
- Livingstone, S. (2005). Assessing the research base for the policy debate over the effects of food advertising to children. *International Journal of Advertising*, 24(3), 273-296.
- Livingstone, S., & Helsper, E. (2004). *Advertising 'unhealthy' foods to children: Understanding promotion in the context of children's daily lives. A review of the literature for the Market Research Department of the Office of Communications (OFCEM)* London, UK: OFCEM.
- Mangleburg, T. F., & Bristol, T. (1998). Socialization and adolescents' skepticism toward

- advertising. *Journal of Advertising*, 27(3), 11-21.
- Martin, M. C. (1997). Children's understanding of the intent of advertising: A meta-analysis. *Journal of Public Policy & Marketing*, 16(2), 205-216.
- McNeal, J.U. (1992) *Kids as Consumers: A handbook of marketing to children*. Lexington books: London, UK.
- Moore, E. S. (2004). Children and the changing world of advertising. *Journal of Business Ethics*, 52(2), 161-167.
- Moore, E. S., & Lutz, R. J. (2000). Children, advertising, and product experiences: A multimethod inquiry. *Journal of Consumer Research*, 27(1), 31-48.
- National Family Planning Institute. (2003). *Hard sell, soft targets?* UK: National Family and Parenting Institute.
- Norton, P. A., Falciaglia, G. A., & Ricketts, C. (2000). Motivational determinants of food preferences in adolescents and pre-adolescents. *Ecology of Food and Nutrition*, 39(3), 169-182.
- Oates, C., Blades, M., & Gunter, B. (2002). Children and television advertising: When do they understand persuasive intent? *Journal of Consumer Behavior*, 1(3), 238-245.
- Ofcom (2004) *Child obesity: food advertising in context. Children's food choices, parents' understanding and influence, and the role of food promotions*. Research Report, 22 July, OFCOM, London, UK. Available at: [http://www.ofcom.org.uk/research/tv/reports/food\\_ads/#content](http://www.ofcom.org.uk/research/tv/reports/food_ads/#content).
- Paliwoda, S., & Crawford, I. (2003). *An analysis of the Hastings review*. London: Food Advertising Unit.
- Pecheux, C., & Derbaix, C. (1999). Children and attitude toward the brand: A new measurement scale. *Journal of Advertising Research*, 39(4), 19-27.
- Peterson, L., & Lewis, K. E. (1988). Preventive intervention to improve children's discrimination of the persuasive tactics in televised advertising. *Journal of Pediatric Psychology*, 13(2), 163-170.
- Peterson, P. E., Jeffrey, D. B., Bridgwater, C. A., & Dawson, B. (1984). How pro-nutrition television programming affects children's dietary habits. *Developmental Psychology*, 20(1), 55-63.
- Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. New York: Springer-Verlag.
- Ritchey, N., & Olson, C. (1983). Relationships between family variables and children's preference for and consumption of sweet foods. *Ecology of Food and Nutrition*, 13(4), 257-266.
- Robinson, T. N. (1999). Reducing children's television viewing to prevent obesity: a randomized controlled trial. *JAMA*, 282(16), 1561-1567.
- Robinson, T. N. (2001). Television viewing and childhood obesity. *Pediatric Clinics of North America*, 48(4), 1017.
- Robinson, T. N., Hammer, L. D., Killen, J. D., Kraemer, H. C., Wilson, D. M., Hayward, C., & Taylor, C.B. (1993). Does television viewing increase obesity and reduce physical activity: Cross-sectional and longitudinal analyses among adolescent girls. *Pediatrics*, 91(2), 273-280.
- Roedder, D. L. (1981). Age difference in children's responses to television advertising: An information processing approach. *Journal of Consumer Research*, 8(2), 144-153.

- Ross, R. P., Campbell, T., Wright, J. C., Huston, A. C., Rice, M. L., & Turk, P. (1984). When celebrities talk, children listen: An experimental analysis of children's responses to TV ads with celebrity endorsement. *Journal of Applied Developmental Psychology, 5*(3), 185-202.
- Ross, R. P., Campbell, T.A., Huston-Stein, A., Wright, J.C. (1981). Nutritional misinformation of children: A developmental and experimental analysis of the effects of televised food commercials. *Journal of Applied Developmental Psychology, 1*(4), 329-347.
- Ross, R. P., Campbell, T.A., Wright, J.C., & Huston-Stein, A. (1980). *Children's television commercials containing nutritional information: When do they help? When do they hinder?* Paper presented at the Biennial Meeting of the Southwestern Society for Research in Human Development, Lawrence KS, March 27-29, 1980.
- Royal College of Physicians (2004). *Storing up problems: The medical case for a slimmer nation.* (No. PUB 15112 080). London: RCP Publications.
- Samson, N. (2005) *Is pester power dead? Diet/health/obesity: How are food manufacturers, retailers and advertisers tackling the challenge?* ESOMAR Conference on Age, London (UK), February 2005.
- Scholten, M. (1996). Lost and found: The information-processing model of advertising effectiveness. *Journal of Business Research, 37*(2), 97-104.
- Stoneman, Z., & Brody, G. H. (1981). Peers as Mediators of Television Food Advertisements Aimed at Children. *Developmental Psychology, 17*(6), 853-858.
- Stoneman, Z., & Brody, G. H. (1982). The indirect impact of child-oriented advertisements on mother-child interactions. *Journal of Applied Developmental Psychology, 2*(4), 369-376.
- Story, M. & French, S. (2004) Food advertising and marketing directed at children and adolescents in the US. *International Journal of Behavioral Nutrition and Physical Activity, 1*(3), no page numbers.
- Story, M., Neumark-Sztainer, D., & French, S. (2002). Individual and environmental influences on adolescent eating behaviors. *Journal of the American Dietetic Association, 102*(3), S40-S51.
- Taras, H. Salis, T. Patterson, T., Nader, P. & Nelson, J. (1989). Television's influence on children's diets and physical activity. *Journal of Developmental and Behavioral Pediatrics, 10*(4), 176-180.
- Valkenburg, P. M. (2000). Media and youth consumerism. *Journal of Adolescent Health, 27*(2), 52-56.
- Valkenburg, P. M., & Cantor, J. (2001). The development of the child into a consumer. *Journal of Applied Developmental Psychology, 22*(1), 61-72.
- van Evra, J. (1998). *Television and child development.* London: Lawrence Erlbaum Associates.
- Wartella, E. (1980). Children and television: The development of the child's understanding of the medium. In C. Wilhoit & H. DeBock (Eds.), *Mass communication review yearbook* (Vol. 1, pp. 516-553). Beverly Hills, CA.: Sage.
- Whittler, T. E., & Spira, J. S. (2002). Model's race: A peripheral cue in advertising messages? *Journal of Consumer Psychology, 12*(4), 291-301.
- Wiman, A.R., & Newmand, L.M. (1989). Television advertising exposure and children's

- nutritional awareness. *Journal Academy of Marketing Science*, 17(2), 179-188.
- Wong, N. D., Hei, T. K., Qaundah, P. Y., Davidson, D. M., Bassin, S. L., & Gold, K. V. (1992). Television Viewing and Pediatric Hypercholesterolemia. *Pediatrics*, 90(1), 75-79.
- World Health Organization. (2000). *Obesity: Preventing and managing the global epidemic*. (No. No. 894). Geneva: WHO.
- Young, B. (2003). Does food advertising influence children's food choices? A critical review of some of the recent literature. *International Journal of Advertising*, 22(4), 441-459.
- Young, B., Webley, P., Hetherington, M., & Zeedijk, S. (1996). *The role of television advertising in children's food choice*. London: Ministry of Agriculture, Fisheries and Food.

**Table 1: Findings of the effects, or otherwise, of television advertising on children's food choice, by age of children sampled in study**

| Age range | Evidence of effects | Mixed/weak evidence | No evidence of effects |
|-----------|---------------------|---------------------|------------------------|
| 2-6 yrs   | 11 studies          | 5 studies           | 5 studies              |
| 7-11 yrs  | 20 studies          | 5 studies           | 1 study                |
| 12-16 yrs | 10 studies          | 3 studies           | 0 studies              |

Note 1: Classification by evidence of effect was determined on the basis of the authors' self-reporting of their results. Non-significant effects were classified as 'no evidence of effects'. The label 'mixed/weak evidence' was given to articles that combined both significant and non-significant results and, again, generally reflected the description of the article given by the author(s). Studies were classified as containing 'evidence of effects' when the authors described significant effects of advertising on children's food choice.

Note 2. The number of studies in Table 1 reflects the fact that some studies contained more than one age group and were thus included in more than one category.

**Table 2: Findings of the effects, or otherwise, of television advertising on children's food choice, by method used in the study**

| Method     | Evidence of effects | Mixed/weak evidence | No evidence of effects |
|------------|---------------------|---------------------|------------------------|
| Experiment | 10 studies          | 5 studies           | 4 studies              |
| Survey     | 12 studies          | 4 studies           | 1 study                |
| Other      | 5 studies           | 0 studies           | 0 studies              |

Note. In classifying the studies for the above table, each study was assigned to one cell only.

**Table 3: Findings of the effects, or otherwise, of television advertising on children's food choice, by age sampled and method used**

| Age/<br>Method | Evidence of effects   | Mixed/weak evidence  | No evidence of effects   |
|----------------|---|--|--|
| 2-6 years      |   |  |  |
| Experiment     | Borzekowski & Robinson 2001<br>Brody et al. 1981<br>Stoneman & Brody 1982<br>Kaufman & Sandman 1983<br>Gorn & Goldberg 1980b  | Ross et al. 1980, 1981<br>Goldberg et al. 1978b<br>Goldberg et al. 1978a<br>Peterson et al. 1984 | Galst 1980<br>Clarke 1984<br>Jeffrey et al. 1982<br>Dawson et al. 1988 |
| Survey         | Bolton 1983 (study 1977)<br>Wong et al. 1992<br>Robinson et al. 1993<br>Taras et al. 1989<br>Dietz & Gortmaker 1985   | Ritchey & Olson 1983   | Fischer et al. 1991  |
| Other          | Atkin 1975a   |  |  |
| 7-11 years     |   |  |  |
| Experiment     | Kaufman & Sandman 1983<br>Gorn & Goldberg 1980b<br>Robinson 1999<br>Brucks et al. 1988<br>Gorn & Florsheim 1985<br>Lewis & Hill 1998<br>Stoneman & Brody 1981<br>Halford et al. 2003                                    | Ross et al. 1980, 1981<br>Peterson et al. 1984<br>Gorn & Goldberg 1980a                          | Galst 1980   |
| Survey         | Bolton 1983 (study 1977)<br>Wong et al. 1992<br>Taras et al. 1989<br>Dietz & Gortmaker 1985<br>Wiman & Newman 1989<br>Buijzen & Valkenburg 2003b<br>Gortmaker, et al. 1996<br>Coon et al. 2001<br>Giamattei et al. 2003 | Atkin 1975b<br>Norton et al. 2000  |  |
| Other          | Atkin 1975a<br>Klesges et al. 1993<br>Hitchings & Moynihan 1998   |  |  |



| 12-16 years |   |   |  |
|-------------|---|---|--|
| Experiment  |   |   |  |
| Survey      | Wong et al. 1992<br>Wiman & Newman 1989<br>Buijzen & Valkenburg<br>2003b<br>Brand & Greenberg 1994<br>Gortmaker, et al. 1996<br>Giamattei et al. 2003<br>Dietz & Gortmaker 1985<br>Del Toro & Greenberg<br>1989 | Norton et al. 2000<br>Gracey et al. 1996<br>Atkin 1975b |  |
| Other       | Atkin 1975a<br>Klesges et al. 1993  |   |  |

Note: Only those studies based on empirical evidence related to food advertising and children were included in this Table. The selection of studies for inclusion was based on the comprehensive review of food advertising effects on young people by Hastings (2004).