

The Food Marketing Defense Model: Integrating Psychological Research to Protect Youth and Inform Public Policy

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*Marketing practices that promote calorie-dense, nutrient-poor foods directly to children and adolescents present significant public health risk. Worldwide, calls for government action and industry change to protect young people from the negative effects of food marketing have increased. **Current proposals focus on restricting television advertising to children under 12 years old, but current psychological models suggest that much more is required. All forms of marketing pose considerable risk; adolescents are also highly vulnerable; and food marketing may produce far-reaching negative health outcomes.** We propose a food marketing defense model that posits four necessary conditions to effectively counter harmful food marketing practices: awareness, understanding, ability, and motivation to resist. A new generation of psychological research is needed to examine each of these processes, including the psychological mechanisms through which food marketing affects young people, to identify public policy that will effectively protect them from harmful influence.*

Over the past 30 years, the prevalence of obesity in the United States and around the world has risen at alarming rates (Ogden et al., 2006; WHO, 2003). The trend is especially disturbing among young people. In 2004, over one-third of children and adolescents in the United States were overweight or at risk of becoming overweight, more than triple the rates in 1971. Even young people who are not overweight face increased risk of chronic disease due to diets high in calories,

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This work was supported in part by the Robert Wood Johnson Foundation, Rudd Foundation and Rudd Center for Food Policy and Obesity at Yale University. JAB was supported by Grant R01-MH60767 from the National Institute for Mental Health. We thank Amy Ustjanuskas and Sarah Speers for their assistance in preparing the manuscript.

sugar, sodium, and fats, and low in whole grains, fiber, and calcium (Institute of Medicine [IOM], 2006; Olshansky et al., 2005; Robinson & Sirard, 2005). As a result of diet-related diseases, children in the United States today may be the first generation to live a shorter life than their parents (Olshansky et al., 2005). Public health experts believe that the food environment is a leading cause of this obesity epidemic, due in part to the overwhelming number of marketing messages that encourage consumption of calorie-dense food products of low nutritional value (Brownell & Horgen, 2004; IOM, 2006).

A number of solutions have been proposed to counteract the unhealthy influence of food marketing, ranging from bans on all television advertising to children (currently in place in Sweden and Quebec) and bans on junk food marketing to children (in the United Kingdom), to defaulting to industry self-regulation and education to resolve the problem (the approach favored in the United States; see Harris, Pomeranz, Lobstein, & Brownell, 2009b; Sharma, Teret, & Brownell, 2009). Discourse on the relative merit of these solutions is limited, however, by lack of thorough evaluation, open questions regarding how food marketing affects youth, and incorrect assumptions about how to protect them against negative influences.

This article reviews the psychological models that can be applied to better understand how food marketing affects children and adolescents and how to protect them from unhealthy influence. We first summarize existing research on the scope and impact of food marketing to children and adolescents and the concern that this advertising almost exclusively promotes foods of poor nutritional quality. We then present the “food marketing defense model” as a new approach to understand how food marketing affects young people, the conditions necessary to effectively defend against its negative impact, and why many commonly proposed solutions are unlikely to resolve the problem. The theoretical review begins with a summary of the psychological models traditionally presented in the food marketing literature, as well as evidence that these models do not explain many demonstrated marketing effects. We then discuss more recent psychological theories, including social cognitive and social developmental models, to explain additional processes through which food marketing may influence young people and to present unique risks resulting from their overexposure to food marketing that promotes highly desirable, but unhealthy products. These more recent psychological models raise numerous questions about young people’s awareness, understanding, ability, and motivation to resist the unhealthy influence of current food marketing practices and highlight the need for additional research to better evaluate potential solutions. We conclude the theory and research section with an agenda for psychological research to inform the policy discussion. The final section presents an overview of the public policy debate surrounding food marketing to youth that is currently underway in the United States and around the world, and the critical need for psychological research to answer numerous open questions in this debate.

Food Marketing to Children and Adolescents: Scope and Impact

Massive spending by the food industry to directly target children and adolescents demonstrates the importance placed on this market: over \$1.6 billion in 2006 in the United States alone (FTC, 2008). Children's exposure to television food advertising, in particular, has been well documented in the United States, the United Kingdom, Australia, and across Europe (European Heart Network, 2005; Hastings, Stead, McDermott, & Forsyth, 2003; IOM, 2006; Kelly, Smith, King, Flood, & Bauman, 2008). In 2004, the average child in the United States viewed approximately 15 television food advertisements every day (FTC, 2007). The primary concern is not the food advertising per se, but the fact that nearly all of these advertisements promote products that young people should only consume in very limited quantities. For example, 98% of food advertisements seen by children are for products high in sugar, fat, and/or sodium (Powell, Szczpka, Chaloupka, & Braunschweig, 2007). Around the world, advertising for calorie-dense, low-nutrient foods predominates on children's television (European Heart Network, 2005; Folta, Goldberg, Economos, Bell, & Meltzer, 2006; Hastings et al., 2003; IOM, 2006). In most countries in Europe and Asia, for example, the most common products advertised to children include confectionary, sweetened cereals, fast food, savory snacks, and soft drinks (Consumers International, 1996, 1999, 2004). Although food advertising to adolescents has been studied less extensively, foods of low nutritional value also comprise 89% of food ads seen by this age group in the United States (Powell, Szczpka, & Chaloupka, 2007). In contrast, public service announcements represent only 0.8% of nonprogramming content viewed by children on television (Powell et al., 2007).

In recent years, the amount of television advertising has remained relatively constant, whereas alternative forms of food marketing have ballooned (Federal Trade Commission [FTC], 2007; Forrester Research, 2005; IOM, 2006). According to a recent U.S. FTC (2008) report documenting food company expenditures in 2006, more than half of all food marketing targeted to youth (\$870 million) was spent on other forms of marketing (i.e., not traditional television advertising), including marketing in venues where young people spend a great deal of time (e.g., \$186 million in schools and \$71 million on the Internet); promotions on packaging and at the point-of-sale (\$195 million); and toy giveaways at fast food restaurants (an estimated \$360 million). Food companies also spent significant amounts on newer forms of marketing designed specifically to circumvent active, deliberate processing of marketing messages (Eisenberg, McDowell, Berestein, Tsiantar, & Finan, 2002), for example, product placements in the entertainment content of movies, television, music, and video games; sponsorships of popular sports and entertainment events; and cross-promotions and licensing agreements with other child-targeted products (e.g., movies, toys, games, even youth-related

charities). In total, \$235 million was spent in 2006 on cross-promotions or celebrity tie-ins targeted to youth.

The FTC (2008) also highlights marketing programs used disproportionately to target a youth audience, including cross-promotions (72% of all cross-promotion expenses were used to reach a youth audience), philanthropy tie-ins (67%, such as Kellogg's Frosted Flakes "plant a seed" campaign to replace children's ball fields), events marketing (66%), and mobile marketing, or marketing via cell phones (57%). Chester and Montgomery (2008) documented the increasing number of creative new digital methods that food companies have found to market to young people, including social media marketing (e.g., promotions on Facebook or Twitter), viral videos on YouTube, and "widgets" (i.e., small applications that can be downloaded to a child's own computer or cell phone that allow companies to deliver targeted ads to users and their friends). As with television advertising, most other forms of marketing promote primarily calorie-dense, low-nutrient foods, including marketing in schools (GAO, 2005), on the Internet (Chester & Montgomery, 2007; Moore & Rideout, 2007), in magazines (Cowburn & Boxer, 2007), and on packaging in the supermarket (Elliott, 2008; Harris, Schwartz, & Brownell, 2009c).

Although food companies spend relatively little of their marketing budgets on the Internet compared to other programs, health researchers raise specific concerns about industry websites targeted to children and adolescents (Chester & Montgomery, 2007, 2008; Moore & Rideout, 2007). These websites may be highly effective because young people spend significant amounts of time interacting with advertising content, the content is highly involving and entertaining, there are no restrictions limiting children's exposure, and country-level regulations cannot stop access to Internet sites that originate in other countries. Examples of highly engaging content include advergames (i.e., company-sponsored video games in which brand images and messages are embedded in the content); viral features to encourage children to send emails with brand-related information to their friends; commercials for children to watch as many times as they wish; extras to continue the "brand experience" after logging off, such as screen savers or desktop logos; and promotions specifically aimed at children (Moore & Rideout, 2007). Advergames, for example, were found on 73% of youth-targeted food company websites, with up to 67 different games on one website alone (General Mills' Millsberry).

Joining these concerns about the variety and amount of unhealthy food marketing to young people are issues regarding the messages commonly conveyed. Television advertising portrays primarily unhealthy eating behaviors and positive outcomes from consuming nutrient-poor foods. Snacking at nonmeal times appeared in 58% of food ads during children's programming (Harrison & Marske, 2005), and only 11% were set in a kitchen, dining room, or restaurant (Reece, Rifon, & Rodriguez, 1999). In addition to good taste, the most common product

benefits communicated include fun, happiness, and being “cool.” Even during preschool programming on public television, fast food promotional spots predominate with messages that associate fast food with fun and happiness (Connor, 2006). Health advocates also raise concerns about industry strategies that encourage children to nag their parents to buy the advertised products (Center for Science in the Public Interest [CSPI], 2003). Termed “pester power” or more euphemistically “team decision making” by the advertising industry, children’s influence over their parents’ purchases is estimated to total \$300 to \$500 billion every year (McNeal, 1998). For younger children who do not have the ability to purchase products on their own, targeting them with promises of fun and happiness and prompts to ask their parents for advertised products is an obvious marketing strategy. This same strategy is also used successfully to promote bigger-ticket items to older children and adolescents, including groceries and restaurant meals (Hitchings & Moynihan, 1998; Yankelovich, 2005).

Unhealthy Impact of Food Marketing

Comprehensive reviews of the literature on food marketing, much of it conducted in the 1970s and early 1980s, conclude that television food advertising increases children’s preferences for the foods advertised, as well as their food choices and requests to parents for advertised products (see Hastings et al., 2003; IOM, 2006; Story & French, 2004). These reviews highlight the need for additional research on causal effects of food marketing in several domains, including effects of nontelevision marketing; effects on very young children and adolescents; and direct causal effects on preferences and consumption of categories of foods and broader nutrition-related beliefs and behaviors. The IOM report also highlights the need for research on the effectiveness of marketing as a tool to promote healthy preferences and behaviors.

Public health researchers have responded with an increasing number of studies that demonstrate direct causal effects of exposure to food advertising on young people’s diet and health, including increases in snack food consumption (Halford, Boyland, Hughes, Oliveira, & Dovey, 2007; Halford, Gillespie, Brown, Pontin, & Dovey, 2004; Harris, Bargh, & Brownell, 2009a); overall calorie consumption (Epstein et al., 2008); lower fruit and vegetable consumption 5 years later (Barr-Anderson, Larson, Nelson, Neumark-Sztainer, & Story, 2009); and higher rates of obesity (Chou, Rashad, & Grossman, 2008).

Opportunity for a New Generation of Psychological Research

Whereas renewed research on food advertising effects is valuable, the public debate about food marketing has shifted. The discussion today has turned from the question of whether food marketing negatively affects the health of young

people, to a debate over how to protect them from its obvious influence (Robinson & Sirard, 2005; Swinburn et al., 2008). Recent pledges by the food industry in the United States to reduce unhealthy marketing to children (Council of Better Business Bureaus [CBBB], 2006), as well as a recent ban on junk food advertising to children in the United Kingdom (Office of Communications [OFCOM], 2008), clearly suggest that companies believe they must respond to public perceptions about negative effects of food marketing. Many public health advocates voice concerns that these and other efforts do not provide enough protection; however, there is no clear consensus about the additional measures required (Harris et al., 2009b). A fundamental question remains as to how to protect young people against the unhealthy influence of food marketing. Is the only sure protection to severely limit youth exposure to all food marketing, or is exposure to some forms of marketing, marketing of some foods, or marketing to some individuals acceptable, or even potentially beneficial?

In our view, a significant window of opportunity has opened for a new generation of psychological research, one that focuses on *how* marketing affects children and adolescents. In recent years, little research has applied current psychological theories and methods to understand the mechanisms through which food advertising affects the health and nutrition of young people. Widely held assumptions, adapted from the psychological theories of the 1970s, are still commonly presented in the present-day literature on food marketing effects (see Calvert, 2008), and these assumptions inform proposed solutions. Without a more refined understanding of the underlying psychological processes that produce these effects, proposed solutions must rely on guesswork. The following proposes an alternative theoretical approach to explain how food marketing affects young people and a new framework to evaluate potential solutions to protect them from unhealthy influence.

How Food Marketing Affects Young People and How to Protect Them: The Need for a New Approach

The most common models used to explain the effects of food marketing assume an information processing approach (McGuire, 1976) in which persuasion is posited to follow a conscious and rational sequential path from exposure to behavior. This path is assumed to be mediated by preferences, attitudes, and beliefs about the advertised products (see IOM, 2006). The information processing approach focuses on individuals' attention, perception, and interpretation of the information presented in marketing. Information that is actively attended to and processed is assumed to have the greatest impact and, conversely, exposure to more subtle forms of marketing (e.g., brand logos on school materials or banner ads on websites) will be less effective. Similarly, early researchers who studied effects

of advertising on children applied Piagetian theory to posit age-specific stages in children's consumer development resulting from differences in their cognitive abilities (see John, 1999). This stage model approach predicts that greater cognitive maturity will reduce the effects of marketing as children become better able to defend against marketing messages (John, 1999; Ward, Wackman, & Wartella, 1977). Both approaches also presume that knowledge about nutrition, the harmful effects of eating junk food, and the persuasive intent of advertising will help to counteract the effects of information presented in unhealthy food marketing.

Many proposed solutions to the childhood obesity crisis have been based on these early models. Restrictions on television advertising to children only, public service announcements and advertising to promote healthy eating and exercise, and media literacy curricula in schools presume that younger children are more vulnerable to advertising influence and that the ability to resist will develop with age and understanding (see Harris et al., 2009b). Increasingly, however, research demonstrates that these solutions are not adequate and, in some cases, may even backfire and increase the harmful effects of food marketing (e.g., Albarracin, Wang, & Leeper, 2009; Chernin, 2007; Wardle & Huon, 2000).

In contrast, more recent psychological models suggest more pervasive effects of food marketing exposure that may be difficult to counteract. For example, social cognitive theories predict that repeated exposure to food advertising can also lead directly to beliefs and behaviors without active, deliberate processing of the information presented (e.g., Bargh & Ferguson, 2000; Dijksterhuis, Chartrand, & Aarts, 2007; Strack & Deutsch, 2004; Wilson & Bar-Anan, 2008). These models predict that adolescents, and even adults, are also susceptible to food marketing effects, and that these effects can occur without conscious perception of the marketing stimulus. Current marketing practices are often grounded in these newer psychological theories, and these automatic effects may be especially pernicious and difficult to defend against. More current developmental models, in particular those that view the role of marketing as one of many socialization influences that interact with other media, family, peers, and social institutions, provide additional evidence that all youth may be especially vulnerable. Marketing practices such as viral marketing (messages and advertising content transmitted from peer to peer), social media marketing, celebrity endorsements, and product placements appear to appeal to the unique developmental needs of older children and adolescents to establish their own identity, and hence may be more powerful and dangerous compared to other forms of marketing.

We propose, therefore, that the traditional models used to explain advertising effects have overemphasized the importance of children's understanding of persuasive intent and cognitive ability to defend against direct marketing attempts. This emphasis may have limited public health researchers' ability to identify effective solutions to the unhealthy effects of food marketing.

Defending Against Unhealthy Marketing Influence

More recent psychological theories suggest that cognitive abilities and understanding of the persuasive intent of marketing are necessary but not sufficient to protect young people from unhealthy influence. Wilson and Brekke (1994), for example, propose several necessary conditions for individuals to defend against “mental contamination,” or the unwanted effects of external stimuli such as food advertising. These conditions include the cognitive ability to resist; awareness of the magnitude and direction of the influence; and the motivation to defend against influence. The research on young people’s ability to defend against the unhealthy influence of food advertising, however, has focused primarily on the first criterion (i.e., cognitive ability) and only one type of influence (i.e., direct persuasive attempts).

The consumer behavior literature commonly presents another approach to defending against advertising influence: the “knowledge persuasion model” (KPM) (Friestad & Wright, 1994). This model incorporates more recent conceptions of developmental processes. It assumes that recognition of persuasive intent is needed to defend against advertising influence, but goes beyond the cognitive stage approach to propose that this ability does not appear automatically with age; continued experience is also needed to identify and learn how to successfully cope with persuasive attempts. As a result, the ability to defend against persuasive attempts develops throughout childhood, and even into adulthood, as individuals interact with new types of stimuli and persuasion agents (i.e., marketers) invent new tactics. This approach is similar to Wilson and Brekke’s (1994) in its assumption that effective defenses require individuals to understand the processes through which marketing attempts to influence them and that different forms of marketing may influence through different processes.

The Food Marketing Defense Model

We propose a new model that builds on these two approaches, but also incorporates challenges that are unique to resisting the influence of food marketing (see Figure 1). The food marketing defense model proposes four necessary conditions for individuals to effectively resist food marketing stimuli: (1) *Awareness*, including conscious attention to individual marketing stimuli and comprehension of their persuasive intent; (2) *Understanding* of the effects resulting from exposure to stimuli and how to effectively defend against those effects; (3) *Ability*, including cognitive capacity and available resources to effectively resist; and (4) *Motivation*, or the desire to resist. This model recognizes that the ability to resist marketing influence will differ not only for different forms of marketing, but also in different contexts, and that additional cognitive resources are required to inhibit desire for the extremely tempting but unhealthy food products commonly presented in food

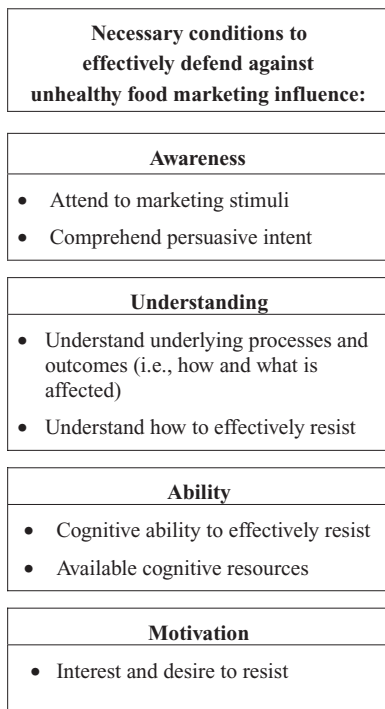


Fig. 1. The food marketing defense model.

marketing. In addition, it acknowledges that young people may not always be motivated to resist the influence of marketing.

The following section utilizes the food marketing defense model as a framework to present existing knowledge about young people’s awareness, understanding, ability and motivation to resist marketing influence based on traditional information processing and consumer development models. We then present evidence that these models cannot explain many effects of more recent forms of marketing and marketing to older children and adolescents and that a new approach is required to understand how food marketing affects young people and protect them from unhealthy influence.

Traditional Models of Food Advertising Effects and What They Cannot Explain

Advertisers first began marketing directly to children in the late 1960s and early 1970s, primarily on television. This practice raised considerable public

concern at the time and spurred an important body of research on children and advertising during the 1970s (see Gunter, Oates, & Blades, 2005; Kunkel et al., 2004; John, 1999). As discussed, most of these studies were based on prominent psychological theories of the day, primarily the serial information processing model (McGuire, 1976) and the stage model of cognitive development (Piaget, 1972).

Information Processing Approach

According to McGuire's original serial information-processing model (1976), individuals must actively process the information presented in advertising through successive stages, from attention to the ad through comprehension, encoding and agreement with the message, before a positive attitude is stored in memory and available for use in decision making and behavior. This model assumes that advertising must positively impact each stage of processing before the next stage can occur, and that greater positive influence at each stage leads to more effective advertising.

Consumer behavior and public health researchers continue to rely on an information-processing approach to examine how initial exposure to advertising ultimately leads to purchase and consumption behavior. Many of the variables used to measure the effectiveness of advertising campaigns, as well as the effects of marketing on children, are based on this serial stage model of information processing (see Haley & Baldinger, 1991). Advertising reach and frequency track the number of times the message reaches each individual in the target market (i.e., exposure). Copy tests to evaluate new advertising ideas often use qualitative methods to assess understanding and agreement with the product information presented. Recognition and recall tests measure the extent to which advertising messages have been encoded in memory and the accessibility of that information. Finally, longitudinal studies track changes in explicit attitudes and product preference to determine long-term effects of advertising.

The majority of the research on food advertising to children and youth has also assumed this serial information processing approach. Several comprehensive reviews of the literature document numerous studies that provide convincing evidence that "food marketing works" (see Hastings et al., 2005; Kunkel et al., 2004; IOM, 2006; Story & French, 2004). Through laboratory experimental and field study methods, research has demonstrated direct causal effects of exposure to advertising on children's recall and preferences for advertised products (e.g., Borzekowski & Robinson, 2001; Goldberg, Gorn, & Gibson, 1978; Gorn & Goldberg, 1982; Roedder, Sternthal, & Calder, 1983), and a connection between advertising and children's requests for the products they see advertised

(Borzekowski & Robinson, 2001; Buijzen & Valkenburg, 2003; Isler, Popper, & Ward, 1987; Robertson & Rossiter, 1976).

Not all information processing models assume that thoughtful attention to information is required to effectively persuade. More recent dual process models, typified by the “elaboration likelihood model” (ELM) (Petty & Cacioppo, 1986) and the “heuristic-systematic model” (Eagly & Chaiken, 1993) are also commonly referenced in the consumer behavior literature. These models posit that attitude change can occur either through active processing of the advertising message (i.e., the central or systematic route) or through other characteristics of the advertisement not related to the central message (i.e., the peripheral or heuristic route). ELM has been tested most extensively in the marketing literature, but primarily with adults (Petty & Wegener, 1999; Petty, Cacioppo, & Schumann, 1983). According to these studies, advertising features that are not related to the product or its benefits, including enjoyable music, attractive models and scenery, and associations with popular events, can also persuade when the consumer is not engaged in effortful processing. The ELM research with adults demonstrates that attitudes developed through this peripheral route tend to be relatively unstable and not reliable predictors of behavior. The most enduring changes are predicted to result from “elaboration” or thoughtful consideration of all relevant information. As a result, television advertising that actively engages the consumer in a deliberative consideration of product benefits would be expected to produce the strongest persuasive effects, according to the ELM. However, as discussed in the following sections, food marketers commonly utilize strategies to persuade through the peripheral route, and these practices are also highly effective.

Stages of Consumer Development

Developmental researchers have also applied Piagetian theory to posit age-specific stages in children’s development as consumers (see John, 1999). This line of research clearly demonstrates that, before age 7 or 8 years, children do not have the cognitive capacity to understand that advertising presents a biased point of view (see Gunter et al., 2005; Kunkel et al., 2004; John, 1999; Ward et al., 1977). According to numerous studies, before age 8 years, most children believe that advertising is intended simply to provide them with information, and they are much more likely to believe that commercials always tell the truth.

Because young children cannot actively deliberate on the information presented in advertising and therefore counteract the impact of marketing messages, many contend that any form of advertising to young children is inherently unfair (see Kunkel et al., 2004). Summarizing the literature, the APA Task Force on Advertising to Children (Kunkel et al., 2004) states,

We believe that the existing base of knowledge about young children’s limited comprehension of television advertising presents a clear and compelling case in support of a restriction on all advertising primarily directed to audiences of children below the age of 7–8 years.

Table 1. Defending Against Food Marketing Effects: What We Know

Awareness	Understanding	Ability	Motivation
Recall and recognition of advertising and brands begins in preschool	TV food advertising affects Brand recall/recognition Brand preference Explicit brand attitudes	Older children have the ability to produce counterarguments, but need a cue to activate them	Indirect evidence indicates that many children, adolescents and even adults are not motivated to resist food marketing appeals, but very little research has been conducted
Awareness of persuasive intent for TV ads appears by age 7 or 8	Requests to parents Young children are not capable of understanding Counterarguments at the time of exposure are effective		
Media literacy increases comprehension of persuasive intent			

This is the age at which most children develop the first critical aspect of comprehension about the selling intent of advertising messages, and *prior to this point* [emphasis added] they are inherently susceptible to commercial persuasion, (p. 22).

Ward et al. (1977) first proposed the corollary to this finding: once children understand the persuasive intent of advertising, they will possess a “cognitive filter” that provides a defense against unwanted influence. In support of this hypothesis, children do become increasingly skeptical about advertising with age. Disbelief in advertising claims and mistrust of advertiser motives peak at age 11 or 12 years, and skepticism remains high through adolescence (Boush, Friestad, & Rose, 1994). During middle school, knowledge about specific advertising tactics also increases in a linear fashion.

Others propose that the cognitive ability to critically process advertising information is not sufficient to create an automatic defense against advertising (John, 1999). John argues that middle childhood is a period of cued consumer processing. Children can engage in defenses against advertising only if they understand the potentially misleading tactics and appeals used by advertisers *and* access this knowledge while viewing commercials, but this second ability may not mature until at least age 14 years. For example, in a study of 9- and 10-year-olds, viewing a film with information about advertising tactics caused the children to produce spontaneous counterarguments about advertising they saw later, but only if they were also given a cue to activate that knowledge when they were watching the ads (Brucks, Armstrong, & Goldberg, 1988). Accordingly, most proposals to restrict food marketing today call for protection of children under age 12 years (Hawkes, 2007).

Table 1 summarizes findings from these lines of research on children’s awareness, understanding and ability to resist marketing influence. As discussed, these approaches have been effective at informing industry, government, and the health

community about the harmful effects of advertising to younger children, but cannot explain effects of newer forms of marketing that persuade through less direct routes, how older children and adolescents may be affected, or unique health effects due to the promotion of highly palatable foods of poor nutritional quality. In addition, we propose that overemphasis on these traditional models has reinforced common misperceptions about food marketing effects that have limited public health researchers' ability to devise effective solutions to protect young people.

Common Misperceptions About Food Marketing Effects

Common misperceptions fall into three inter-related areas: (1a) marketing tactics that consumers process in a less active manner will be less effective; (1b) marketing tactics that consumers do not consciously perceive will have no effects; (2a) skepticism about marketing and comprehension of persuasive intent reduces marketing effects; (2b) cognitive maturity also reduces marketing effects; and (3) increased knowledge of nutrition, health and the persuasive intent of marketing will counteract food marketing effects. Increasingly, however, research demonstrates that these assumptions are incorrect.

Effects of less active consumer processing. Livingstone and Helsper (2006) highlight the inconsistencies between a cognitive stage model of consumer development and the ELM information processing model. Younger children only have the cognitive ability to process advertising through the peripheral route, whereas older children can process marketing information through the more enduring central route; therefore, ELM predicts that older children and adolescents should be influenced to a greater extent.

A few studies have tested this hypothesis. In support, researchers have found no evidence that children, ages 7–11, elaborate on advertising content; the central route to persuasion does not appear to exist in this age group (Derbaix & Bree, 1997; Moore & Lutz, 2000; Livingstone & Helsper, 2006). Similarly, adolescents were able to elaborate on print advertising content when instructed to do so, and their memory of advertising details improved in a high elaboration condition (Edens & McCormick, 2000). Elaboration had no effect, however, on adolescents' cognitive or emotional evaluations of the advertising, in contrast to studies of ELM conducted with adult populations. Similarly, a study with three different age groups (4–7 years, 8–11 years and 12–15 years) manipulated level of involvement with advertising by promising a gift for evaluating the advertisements, and found no differences in advertising effectiveness by level of involvement for any of the age groups (Te'eni-Harari, Lampert, & Lehman-Wilzig, 2007). It appears that children do not process advertising messages through the effortful, deliberate route proposed by information processing theories, and yet they continue to be

highly affected. In addition, adolescents may have the ability to engage in effortful processing, but they appear to be equally persuaded by advertising messages that utilize a peripheral route.

Effects of marketing not consciously perceived. Product placements provide a case study in why new approaches are needed to understand the effects of more recent forms of marketing. Placements represent one form of marketing specifically designed to deactivate skepticism and defenses against persuasive influence (Eisenberg et al., 2002). They have been studied fairly extensively in the consumer behavior literature, but research that has assessed effectiveness using traditional measures of brand recall and explicit brand cognitions have found mixed results (see McCarty, 2004). Several studies have demonstrated, however, that conscious brand recall or recognition is not required for product placements to affect brand evaluations and choice. For example, Law and Braun (2000) and Law and Braun-LaTour (2004) found that visual-only placements (i.e., a product package that appeared in the background) resulted in lower recall and recognition than more prominent placements (i.e., placements that included both visual and auditory mention, and were central to the story line), but they had an equally strong effect on brand preferences.

Explicit memory for product placements was not required in another study that examined children's response to placements in movies (Auty & Lewis, 2004). The children viewed a short segment of the movie *Home Alone*, set during a meal. In the experimental condition, the scene showed a Pepsi bottle on the table and Pepsi was mentioned by name; in the control condition, the scene included a discussion of unbranded "macaroni and cheese." Following the viewing, children who saw the "Pepsi" scene were significantly more likely than the control group to select Pepsi over Coke. The same effects occurred with younger children (6–7 years old) and older children (11–12 years old), and the effects occurred whether or not the children explicitly recalled seeing or hearing about Pepsi in the movie. These findings provide clear evidence that marketing effects occur even in the absence of conscious awareness of marketing stimuli.

Marketing effects in spite of skepticism and understanding persuasive intent. Although older children and adolescents express high levels of skepticism about advertising (Boush et al., 1994), they continue to be highly involved consumers of advertising. According to a variety of recall and recognition measures, teens remembered significantly more advertising than adults (Dubow, 1995). Much of this involvement appears to be focused on the entertaining features of marketing. In one study, 5th graders expressed fascination with the entertainment and executional elements of commercials (e.g., visual techniques, music, and story lines), even for

products they would not personally use (e.g., carpets and diapers) (Moore & Lutz, 2000). An ethnographic analysis described how adolescents engaged in highly enjoyable social interactions daily that revolved around advertising, from reciting jingles and catch phrases, to “decoding” of advertising meaning, to “ritual enactment of advertising scripts” (Ritson & Elliott, 1999).

A few studies provide direct evidence that understanding persuasive intent does not provide an automatic defense against advertising influence. For example, Ross et al. (1984) found that knowledge of advertising tactics increased from age 8 to 14 years, but this increased knowledge did not correlate with a reduction in the influence of advertising on product preferences for the older children. In one study of food advertising effects, exposure increased preferences for advertised foods among highly skeptical 11-year-olds, and these effects were equal to those found with 5-year-olds (Chernin, 2008). Similarly, pre-existing knowledge of the persuasive intent of advertising did not moderate the effects of food advertising on product preference (Chernin, 2007). Even 6-year-olds exhibited knowledge of the persuasive intent of an advergame: 61% believed that the purpose of a Froot Loops game was to get children to buy the cereal, and 39% believed it was to eat the cereal (Mallinckrodt & Mizerski, 2007). Playing the Fruit Loops game still increased children’s preferences for Fruit Loops over another cereal, and persuasion knowledge was not related to their choice.

For adults, the best predictor of negative attitudes about an ad was whether the viewer spontaneously produced counterarguments while viewing (Wright, 1973). These spontaneous counterarguments appear to provide a much better defense against advertising than other persuasive defenses, including source derogation (e.g., skepticism or critique of advertisers), but they require effort to activate. As discussed earlier, older children have the ability to produce counterarguments about advertising, but they must be cued to do so (Brucks et al., 1988). Even when the children produced counterarguments about the commercials, however, they did not produce counterarguments about the products themselves, providing further evidence that understanding persuasive intent may not actually reduce the attractiveness of products advertised.

Cognitive maturity and marketing effects. Alcohol and tobacco researchers have consistently demonstrated that adolescents are more susceptible to advertising influence than are adults and that they should be protected from exposure (see Pechmann, Levine, Loughlin, & Leslie, 2005). This literature highlights unique developmental factors in adolescence that increase vulnerability to alcohol and tobacco advertising, including a reduced ability to inhibit impulsive behaviors and to resist immediate gratification for longer-term rewards, as well as greater responsiveness to peer influence and image advertising. Although adolescents have received little attention in the food marketing literature (IOM, 2006), these

same processes are also likely to make this age group highly vulnerable to food marketing.

Increasing knowledge of persuasive intent and good health. Research in these areas provides perhaps the most discouraging news about current public health efforts to counteract food-marketing effects. Media literacy education in schools has been encouraged to teach children critical viewing skills and skepticism about advertising as a means of defense (American Academy of Pediatrics, 2006; Brown, 2001). In a discussion of media literacy efforts, Kunkel et al. (2004) conclude that these programs effectively increased children's self-reported skepticism of advertising; but "Only a single study among all of the evidence in this realm has documented any reduction in children's desires for the advertised products as the result of a media literacy training effort" (p. 15). In a more recent experiment, children who were exposed to a media literacy video exhibited *higher* preferences for the advertised products in the video than children who were not exposed (Chernin, 2007). Although media literacy education has helped to reduce children's susceptibility to alcohol and tobacco advertising (Austin & Johnson, 1997; Primack et al., 2006), there is no evidence that it reduces susceptibility to food marketing.

Education about healthy eating or marketing to promote healthy foods may be equally ineffective strategies to counteract unhealthy marketing influences. First, it is hard to imagine that government could fund enough healthy messaging to compete with food industry marketing. Second, accurate beliefs about the healthiness of both healthy and unhealthy foods are not associated with food preferences or consumption of healthy or unhealthy foods in children and adults (Glanz, Basil, Maibach, Goldberg, & Snyder, 1998; Harris & Bargh, 2009; Neumark-Sztainer, Wall, Perry, & Story, 2003). Similarly, in spite of consistently very high implicit preferences for fruits over unhealthy snack foods in an Implicit Associations Test (IAT) ($M = .81$, $SD = .47$), 69% of the same children chose cookies or crackers instead of an apple as a snack (Harris, 2008). Overconsumption of foods of poor nutritional quality, therefore, does not appear to be due to a lack of understanding about healthy versus unhealthy food options. Finally, food marketers have objected to solutions that propose marketing healthy foods to children, stating that children do not respond to marketing messages that promote the health benefits of foods (FTC, 2008). This objection is supported by research that shows an implicit belief among children and adults that healthy food does not taste as good as unhealthy food (Baranowski et al., 1993; Raghunathan, Naylor, & Hayer, 2006; Wardle & Huon, 2000). These findings all suggest that marketing for unhealthy foods designed to taste great may always possess an unfair advantage over marketing and education to promote healthy foods.

A similar approach proposed to counteract the effects of promoting foods of low nutritional quality calls for increased depictions of physical activity in

food marketing. This solution is often suggested by the food industry as a way to encourage children to burn off excess calories (CBBB, 2006). Some public health experts warn that these attempts may simply serve to create a “healthy” halo for the unhealthy foods promoted, a strategy that was commonly used in tobacco advertising (Brownell & Warner, 2009). In addition, a recent study demonstrated that exposure to print messages that promoted exercise (similar to those used in public service campaigns to promote exercise) actually increased consumption of unhealthy snack foods (Albarraçin et al., 2009).

In summary, alternative theoretical approaches are needed to explain how food marketing affects young people and to identify effective solutions to protect them from marketing practices that promote calorie-dense, low-nutrient foods, often in ways specifically designed to minimize resistance. According to the food marketing defense model, a renewed research focus on the psychological processes underlying food marketing effects and potential solutions is required in several key areas: (1) young people’s awareness of the existence and persuasive intent of newer forms of food marketing; (2) how they are affected by less direct forms of marketing and by marketing that takes advantage of developmental processes; (3) broader health and diet outcomes resulting from exposure to food advertising specifically; (4) effective strategies to counteract appeals to consume highly tempting, but unhealthy foods; and (5) children and adolescents’ motivation to resist these appeals.

Applying Current Psychological Models to Explain How Food Marketing Affects Young People

In the following sections, we apply research from the social cognitive and social developmental literature to examine additional underlying mechanisms of food marketing effects. We discuss implications of these more recent models on our understanding of how young people are affected by food marketing and potential outcomes resulting from exposure. Psychologists have applied more current models primarily to explain general consumer behavior; however, we also present evidence of psychological processes that may be unique to food marketing and especially harmful when the marketing stimuli involve unhealthy foods that are difficult to resist. When available, we will present research that has examined effects of food marketing to youth; however, we supplement the discussion with related research on consumer behavior of children, adolescents, and adults, as well as alcohol and tobacco advertising.

Social Cognitive Processes: The Automatic Consumer

Marketers increasingly distinguish between informational marketing, or messages that provide rational benefits and reasons to purchase or consume the product,

and emotional marketing, or messages designed to simply make the consumer feel good about the product (Advertising Research Foundation [ARF], 2008). With the exception of new product introductions and strategies to convey a new way to consume a product (e.g., Special K advertising to promote cereal as a snack), food marketing is primarily emotional. Very few real taste distinctions exist between similar brands within a category; therefore, food marketing attempts to differentiate comparable brands by establishing positive brand inferences and affective responses. This distinction between informational and emotional marketing is similar to the distinction made between the central and peripheral information processing routes in the ELM (Petty & Cacioppo, 1986). Although the ELM predicts that emotional marketing that persuades through the peripheral route will be less effective than informational marketing, food marketers have demonstrated that peripheral marketing cues can be highly persuasive. The distinction between Coke and Pepsi provide a classic example of the power of emotional advertising. Although most consumers prefer the actual taste of Pepsi over Coke (in a blind taste test), Coke drinkers' strong emotional attachment to the brand has been demonstrated at the neurological level (McClure et al., 2004).

Social cognitive models propose potential mechanisms to explain emotional marketing effects. They propose that unconscious, or automatic, processes that influence consumer decision making and behavior will also be highly effective (see Bargh, 2002; Chartrand, 2005; Dijksterhuis, Smith, van Baaren, & Wigboldus, 2005; Fitzsimons et al., 2002). These models also predict that emotional marketing that occurs under low-involvement conditions (i.e., the conditions under which most marketing stimuli are encountered) may increase the effectiveness of these forms of persuasion. In addition, social cognitive theories predict that repeated brand exposure will increase liking of the brand through mere exposure effects, and that marketing stimuli can prime consumer beliefs and behaviors directly.

Brand Inferences

Brands "can communicate complex values in a radically abbreviated fashion, condensing the essence of a brand's message into an articulate, instantly comprehended image" (Lindstrom, 2008, p. 17). Brand images incorporate beliefs about brand attributes and benefits, as well as beliefs about the users of the brand. Brand images are not intended to directly convince consumers of product superiority, but rather to create a set of positive associations with the brand in the hopes of creating a powerful and lasting affinity and loyalty (Keller, 2003). According to PKM, because consumers may not be aware of this influence, brand images resulting from inferential processes can be much more powerful than those resulting from direct communication of product benefits and features (Friestad & Wright, 1994).

Social cognitive theory has been used to conceptualize these brand associations as cognitive representations (Aaker & Biel, 1993; Escalas & Bettman, 2003; Keller, 1993, 2003; Punj & Hillyer, 2004). Keller (1993) first described brand image as an associative network (e.g., Smith, 2002). The brand name and/or logo serve as the central node in the network and are connected to all other concepts experienced, either directly or indirectly, together with the brand. When consumers encounter information about a brand, they automatically retrieve previously stored associations, including familiarity, affect, and beliefs about the brand. These schemas are also retrieved at the time of purchase or usage, and are assumed to influence brand choice.

Heath (2000) posits that advertising creates these brand associations and reinforces them every time an advertisement is viewed, even during low-involvement processing. Marketing communications are designed to establish associations between brands and both tangible and intangible product attributes and values. Brand associations with basic human motivations (e.g., accomplishment, belonging, self-fulfillment, etc.) encourage product sales (Wansink, 2003). As described earlier, children's food advertisers most commonly use marketing to associate their products with fun, happiness, and being cool, important motivations for this age group (Reece et al., 1999). Marketing strategies also commonly specify a desired user image, or an impression of the type of person who uses the brand (Biel, 1993). Marketers select actors and celebrities who convey this image to represent their brands in marketing communications.

The best marketers invest significant amounts to shape this brand image through every interaction between a consumer and their brand in the form of integrated marketing campaigns (Naik & Raman, 2003). All forms of marketing, including media advertising, product placements, packaging, and signage at the point-of-sale, company websites, celebrity endorsements and promotional tie-ins, and even charitable donations, are designed to reinforce a specific brand image. Marketers have described these efforts targeted to children as brand imprinting, or creating "product identities that penetrate our limbic brain" (Urbick, 2008). Examples of food company efforts to imprint their brand image on consumers at a very early age are disturbing: books to teach preschoolers to count with M&M's or Oreo cookies; toys and clothing with McDonald's or Hershey logos; fast food-sponsored promotional spots during preschool programming; even baby bottles with soft drink logos.

Development of brand meaning. These brand images convey powerful meanings in the minds of young consumers. Before they can read, children as young as 2 years old recognize brand logos on product packages (Valkenburg & Buijzen, 2005), and preschoolers can recall brand names seen on television (Macklin, 1996). Children as young as age 10 years can identify user images (i.e., the type of

person who uses the product) for well-known brands (Achenreiner & John, 2003; Belk, Bahn, & Mayer, 1982; Belk, Mayer, & Driscoll, 1984).

The value of brand image to food marketers cannot be overstated. The most successful worldwide food brands, Coca-Cola and McDonald's, provide an estimated \$58 and \$49 billion in shareholder value (Millward Brown, 2008). In the following sections, we will discuss the powerful effects that these brand images can have on young consumers, including their perceptions and preferences for different brands, perceptions of themselves (as users of those brands) and even impulsive purchase and consumption behaviors.

Affective Response to Marketing

One important aspect of a successful brand image is emotional: the positive affect or attitudes associated with the brand. In addition to explicit attitudes, described as brand choice or preference, these value judgments also take the form of implicit attitudes, or more generalized positive affect associated with a brand. These types of automatic, or implicit, attitudes are well documented in the social cognition literature (see Fazio & Olson, 2003).

Research on affective theories of marketing is in its early stages, and efforts are underway to identify new measures to assess emotional responses to marketing and validate them on consumer behavior (e.g., ARF, 2008; Gordon, 2001). This research has been conducted primarily with adults and indicates that, in many cases, an emotional approach to marketing can be even more effective than a direct or indirect informational approach. As most young people do not actively process the information presented in marketing, these theories also provide a promising approach to understand additional processes through which food marketing affects youth and how to counteract that influence.

Commenting on the potential consequences of repeated exposure to emotional advertising in young people, one market research company advises its clients,

Clearly, the early to mid-teenage years are ones where brands need to be investing in brand building. As consumers enter their 20s, brand preferences are established and they seek more rational support for choices they have already made. We are showing that the initial connection and affinity to a brand is made on an emotional level—and that when purchase decision time comes nearer, the young consumer is looking for affirmation for the emotional choice they have already solidified (Harris Interactive, 2004, p. 4).

Evidence of the efficacy of affective responses. In contrast to advertising that attempts to influence brand image through presentation of tangible product attributes and benefits, or even attributes of brand users, much of advertising is designed simply to entertain and/or make the consumer feel good. Companies vie for a spot on the “10 best” list of entertaining Super Bowl advertisements, and

many viewers appear to enjoy the ads more than the game (Hartlaub, 2007). This strategy is used almost exclusively in food advertising targeted to children (Reece et al., 1999), and also appears to play an important role in other common forms of food marketing (e.g., advergames, product placements, licensed characters, and logo placements).

As discussed earlier, the ELM predicts that persuasion that occurs through this peripheral route will be less effective at changing consumer behavior. Market researchers have shown, however, that affective reactions to advertising, often measured by *ad liking* or *attitude toward the ad*, are strong predictors of purchase. The ARF conducted a comprehensive analysis of copy test results from successful advertising campaigns to determine the measures that best predict future product sales (Haley & Baldinger, 1991). According to the authors, "Undoubtedly the most surprising finding in the study was the strong relationship found between the likeability of the copy and its effects on sales." Contrary to information processing theories, ad liking was more effective at predicting product sales than any other variable, including recall, awareness and message communication. Similarly, a study of company-sponsored websites found that participants' entertainment ratings of the sites better predicted future intent to purchase the products than did site interactivity (Raney, Arpan, Pashupati, & Brill, 2003). As further evidence of the dissociation between emotional and cognitive judgments, a structural equations model found that emotional response to an ad accounted for more than twice the variance in change in brand interest and purchase intent as compared to explicit brand attitudes (Morris, Woo, Geason, & Kim, 2002).

A few studies have shown that ad liking also affects brand attitudes in children. Derbaix and Bree (1997) presented 7- to 10-year-olds with known advertisements, unknown ads for familiar brands, and unknown ads for novel brands. The strongest predictors of ad liking and subsequent positive brand attitudes were children's positive evaluations of executional features in the ads, as well as their positive reactions while viewing. Moore and Lutz (2000) also found that ad liking influenced brand ratings for both 2nd and 5th graders. The authors conclude, "The evidence suggests that advertising's creative elements may play a more central role in the persuasion process than has been previously recognized within the children's advertising literature" (p. 41). Similarly, among 8- to 12-year-olds, agreement with hedonic brand attributes (e.g., "I like it," "It is cheerful/fun," "It is entertaining/amusing") predicted purchase intent more than utility attributes (e.g., "It is useful," "It is practical/handy," "It is worthless") (Pecheux, 1999). Martin et al. (2002) found that, among older children and adolescents, the strongest predictors of alcohol ad liking were liking the people in the ads, liking the story, and humor.

Therefore, continually pairing food brands with highly attractive stimuli (e.g., animated polar bears, fun activities, attractive models, and beautiful scenery)

through television and other forms of marketing will transfer to positive evaluations of the brand. Even when these stimuli have no obvious relationship to the advertised product, positive feelings and liking will transfer. Social cognitive theories predict that these automatic attitudes will strengthen and become more accessible over time as attitude objects are repeatedly associated with positive evaluations (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Once an attitude becomes highly accessible, activation of the attitude requires little or no conscious deliberation and the consistency between attitude and behavior increases (Fazio, Powell, & Williams, 1989; Fazio & Williams, 1986).

Affective transfer processes. Social cognitive theories have been used to explain how positive affect induced by advertising transfers onto the attitude object (i.e., the brand) (see Cohen, Pham, & Andrade, 2008). A number of mechanisms are proposed, including evaluative conditioning resulting from proximity between the target (i.e., the brand) and an affective response (e.g., de Houwer, Thomas, & Baeyens, 2001); an embodied cognition approach in which activation of approach tendencies associated with positive emotions translates to positive brand evaluations and behavior intentions (e.g., Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005); and phenomenal experience in which an affective response becomes a source of information or heuristic for brand evaluation (e.g., Schwarz & Clore, 1996).

Although it is too early to know whether any or all of these mechanisms explain the power of emotional food advertising, a few studies have directly demonstrated an affective transfer from media or advertising to the brand. For example, positive emotions induced by watching enjoyable television programming have been shown to increase the effectiveness of advertising during the program (Goldberg & Gorn, 1987; Yi, 2001). Shimp, Stuart, and Engle (1991) demonstrated that pairing photographs of cola brand names with positively valenced scenes increased positive attitudes toward the brands, as compared to other brands paired with neutral scenes. Similarly, in a set of affective conditioning studies, Baker (1999) demonstrated that pairing brand names with positive affective stimuli (i.e., images of popular television characters) increased brand choice. In addition, in contrast to predictions of dual process theories, these effects occurred even when participants were motivated to deliberate on their choice, and the effects persisted for at least seven days. In both of these studies, the main limitation to conditioning effects was competitive brand familiarity. In other words, brands that had already achieved high levels of familiarity among consumers were less likely to show incremental affective conditioning effects (Shimp et al., 1991), but they were also immune to threats from more positive evaluations due to affective conditioning for competitive brands (Baker, 1999). This finding supports the emphasis that food companies place on developing strong emotional connections between consumers

and their brands from a very early age through high levels of advertising directed toward young consumers.

Mere exposure effect. Social cognitive theories predict that positive affect may not even be required to create positive brand attitudes. According to the *mere exposure effect*, individuals prefer novel stimuli that they have been repeatedly exposed to over stimuli that they have been exposed to only once (Monahan, Murphy, & Zajonc, 2000; Zajonc, 1998). Research conducted with adults has confirmed the mere exposure effect on brand attitude and choice (Baker, 1999; Janiszewski, 1993). Incidental exposure to brand names during an ostensibly unrelated task resulted in increased subjective evaluation of the brands in the absence of attention or motivated processing (Janiszewski, 1993). Baker also found that mere exposure to brand names resulted in similar increases to brand choice as those found through affective conditioning. This effect was recently demonstrated with naturally occurring exposure to brand logos. Ferraro, Bettman and Chartrand (2008) showed that “incidental consumer brand exposure,” or brand exposure that occurred outside of consumers’ awareness, affected brand choice. It is likely that repeated exposure to food product names and/or logos alone, for example, when driving by fast food outlets, walking through the grocery store, passing a vending machine or reading materials with brand logos in schools, or viewing a sporting event with brand logo signage, could automatically lead to more favorable brand evaluations over time.

Priming Effects of Marketing

The theories described to this point assume that the path from food marketing exposure to consumer behavior is mediated by food preferences or attitudes. Social cognitive theory suggests, however, that marketing can also influence consumers directly through automatic processes, regardless of explicit brand beliefs and attitudes. Researchers have established a direct perception-behavior link through which subtle cues in the environment automatically affect the perceiver (see Bargh & Chartrand, 1999; Bargh & Ferguson, 2000; Dijksterhuis & Bargh, 2001; Dijksterhuis et al., 2007). Priming studies set in the laboratory repeatedly demonstrate the power of external stimuli to directly affect the perceiver outside of conscious awareness. Chartrand (2005) proposes that automatic effects on consumer behavior occur when the perceiver has no awareness of either (1) the environmental cue that triggers the response, (2) the process that causes the response, or (3) the response itself. Potential automatic responses include consumer behaviors, goals, judgments, decisions and/or emotions.

Media, including television programs and advertisements, are important real-life sources of priming influences. Exposure to aggressive behaviors and alcohol

consumption in the media can prime aggression and greater alcohol consumption by the viewer (see Anderson & Bushman, 2002; Roerich & Goldman, 1995). Studies that focus specifically on advertising demonstrate that ads can prime positive expectancies of alcohol consumption (Dunn & Yniguez, 1999); positive attitudes toward smoking (Pechmann & Knight, 2002); gender stereotypical behavior (Davies, Spencer, & Steele, 2005); and negative evaluations of fat persons (Bessenoff, 2001).

A few recent studies have demonstrated the power of priming in the marketing domain. As discussed earlier, marketers design their brand images to create associations between their products and highly salient concepts and situations (Keller, 1993). Fitzsimon, Chartrand, and Fitzsimons (2008) surreptitiously exposed participants to an Apple Computer, IBM, Disney or E! channel logo and then assessed behaviors commonly associated with characteristics of those brands. Participants who had been primed with the Apple logo subsequently exhibited more creativity than those primed with the IBM logo, and those primed with the Disney logo behaved more honestly than those primed with the E! channel logo. The authors also demonstrated that these priming effects were consistent with effects of goal priming (e.g., Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001; Chartrand & Bargh, 1996). The potential for food brand logos to prime motivations that are commonly associated with those brand images (e.g., indulgence and fun) is especially disturbing.

Others have suggested that priming effects may be especially salient in the retail environment (Chartrand, 2005; Dijksterhuis et al., 2005; Vargas, 2008). Retailers design their store layout and point-of-sale displays to convey subtle cues that encourage impulsive purchase behaviors (Underhill, 2008). Others have suggested that cues in the environment can explain how consumers make trade-offs between alternative choices when shopping (Dijksterhuis et al., 2005; Simonson, 2005). North, Hargreaves, and McKendrick (1997) demonstrated that subtle retail cues can have powerful effects: consumers purchased more French wines when stereotypical French music played in the background and more German wine when stereotypical German music played. Chartrand, Huber, Shiv, and Tanner (2008) have also demonstrated that the activation of unconscious goals affect consumer choices. For example, priming a value goal led participants to choose the less expensive pair of crew socks, whereas priming an image goal increased choice of more expensive brand-name socks. These studies suggest that food marketing could prime immediate gratification goals and increase desire to consume more of the unhealthy foods advertised.

Developmental Differences in Automatic Effects

Social cognitive theories predict that not only younger children, but all children, adolescents, and even adults are highly influenced by food marketing. Few

studies have examined these processes in children and adolescents; however, there is no reason to believe that young people would be less susceptible than adults.

Social psychologists have only recently begun to examine how implicit attitudes develop, but current theories implicate exposure to emotional marketing as a potentially significant influence. Automatic attitudes are hypothesized to develop through repeated pairings of objects or persons with emotions, motivations, situations, and other objects (see Baron & Banaji, 2006; Rudman, 2004; Strack & Deutsch, 2004). Rudman (2004) posits that early experiences, oftentimes forgotten, may be especially influential in the development of implicit, versus explicit, attitudes. This hypothesis implies that the earlier children are exposed to food advertising messages, the more susceptible they may be to long-lasting effects.

A few studies on automatic effects of advertising conducted with children and adolescents provide evidence that some automatic forms of marketing influence may, in fact, increase with age. For example, John (1999) proposes that the symbolic meaning of brands may not appear until later childhood or early adolescence. By 12 years old, children express stereotypical beliefs about owners of preferred (i.e., Nike) versus nonpreferred (i.e., Kmart) brands, in contrast to younger children who express beliefs only about the products themselves (Achenreiner & John, 2003). Only 16-year-olds, however, evaluated Kmart product owners more negatively. Similarly, an experiment that compared the effects of food advertising on evaluations of a novel brand with 2nd and 5th graders showed that the cognitive route from enjoyment of advertising to positive brand attitudes differed for the two age groups (Moore & Lutz, 2000). The 2nd graders who liked the ad rated the brand more positively, but advertising had no effect on their assessment of brand attributes. For 5th graders, however, more positive beliefs about the brand mediated the path between ad liking and positive brand attitudes. That is, for older children, simply liking the ad led to greater agreement about positive brand attributes, and these positive beliefs then led to more positive brand ratings. In the study of advergaming effects mentioned previously, playing the Fruit Loops game increased positive evaluations of Fruit Loops as compared to other cereal choices for 8-year-olds, but not for 5-year-olds (Mallinckrodt & Mizerski, 2007). These findings suggest that the transfer of positive affect from marketing to advertised products may involve higher-level cognitive inferential processes that develop with age.

In summary, modern social cognitive theories enhance our understanding of potential automatic processes through which food marketing affects brand attitudes and choice without conscious deliberation. Academic research on these consumer effects is limited, but existing studies suggest that marketing can have a powerful and long-lasting impact on the foods that young people enjoy and want to consume.

Social Developmental Processes: The Most Vulnerable Consumers

Media, including marketing messages, provide children with information to understand the social world they live in. For older children and adolescents especially, media play an informational role as they focus more on the world beyond their families and actively develop their independent identities (Dotson & Hyatt, 2005; Rubin, 1977; Valkenburg & Cantor, 2001). Additionally, media influences interact with parents and peers to shape how young people view the world and themselves (Boush, 2001; Moschis & Moore, 1982). Relatively little research has been conducted to directly test the application of social developmental theories to food marketing effects, although “social learning theory,” “uses and gratifications theory,” and ecological models of child development predict that food marketing will profoundly affect children from preschool through adolescence.

Social learning theory. Bandura (2002) proposes that children learn and model behaviors, cognition, and affect by observing other people’s actions and the consequences of those actions, “Observers can acquire lasting attitudes, emotional reactions, and behavioral proclivities toward persons, places or things that have been associated with modeled emotional experiences” (p. 137). The “symbolic” environment of the media also provides information for vicarious learning of social behaviors and attitudes. Common characteristics of children’s food advertising, including positive emotions, rewards for consumption and usage, attractive models and popular characters and celebrities, all effectively encourage observational learning. In television advertising alone, children view examples of positive rewards from consuming foods of poor nutritional quality on average 5,500 times per year (Powell et al., 2007). Reinforced by countless other messages on the Internet and in other marketing venues, children are likely to learn vicariously that consuming foods of poor nutritional value is fun, rewarding, and has no negative consequences, even if their parents never provide these foods.

Uses and gratifications theory. This model proposes that viewers do not passively receive the messages communicated by the media (Rubin, 2002). Instead, individuals select and use media in a “goal-directed, purposive, and motivated” process. Characteristics of the environment and the individual moderate the ultimate effects of media; therefore, uses and gratifications theory predicts that advertising will disproportionately affect some children (Valkenburg, 2000; Van Evra, 1995). Van Evra proposes that “Advertising’s impact ultimately may depend on how seriously children use it for information of any kind and what other sources of information they have to counter or confirm the commercial’s message” (p. 425). Some have proposed that children who do not have personal experience with the situations that appear in the media (e.g., children from low SES

backgrounds, or children who have not yet tried adult products) may be more affected as they will rely heavily on media and marketing as a source of information (Valkenburg, 2000; Van Evra, 1995). This theory also predicts that older children and adolescents may be especially susceptible to marketing influence as they look to the media, including marketing, for information to shape their own identity (Steele & Brown, 1995).

Ecological framework of development. Story, Kaphingst, Robinson-O'Brien, and Glantz (2008) propose that food marketing exists within an ecological framework. Marketing represents only one macrolevel environmental factor that impacts development directly and indirectly through its interaction with individual, social, physical and other macroenvironmental factors. They propose that food marketing is best understood when examined in connection with exposure to other food messages in the media, at home, in schools and within the community. According to this approach, understanding the interaction between peers, parents and media is essential to understanding how food marketing affects children and adolescents.

In the following section, we incorporate these social developmental theories to present additional evidence that older children and adolescents may continue to be considerably influenced by food marketing, and that these effects can occur even when they are aware of food marketing attempts and comprehend their persuasive intent. Unfortunately, it is much more difficult to empirically test these theories, especially as they relate to marketing effects. Even children whose parents significantly restrict their media exposure will be influenced through their interactions with peers and the school and community environment. We argue that effects of food marketing, and potential solutions to counteract unhealthy marketing influence, must be considered within this social context.

Evidence of Social Developmental Processes in Food Marketing Effects

Food marketing is likely to affect a young person's parental and peer relationships, as well as play a role in identity development. Numerous studies demonstrate that advertising interacts with family characteristics, peer influence, user imagery and self-identity to predict alcohol and tobacco attitudes and behaviors (see Pechmann, Levine, Loughlin, & Leslie, 2005). The sparseness of similar research in the food marketing literature illustrates the clear need for further studies that examine food marketing in a social context.

Parental relationships. As mentioned earlier, marketers who target children have inserted their product into the parent-child relationship by communicating directly with children and encouraging them to "pester" their parents to buy the products. Because older children make fewer direct product requests than

younger children, some researchers have suggested that older children may be less susceptible to advertising influence (Kunkel et al., 2004; Ward et al., 1977). John (1999) suggests an alternative explanation. Perhaps with experience, children's attempts to persuade their parents to buy advertised products become less obvious, but more effective. Empirical research supports this hypothesis. Throughout the elementary-school years, children increasingly replace direct requests with more sophisticated persuasion techniques, including logical arguments, negotiations, and information about others' beliefs (Bartsch & London, 2000; Lacznik & Palan, 2004). One study demonstrated that older children were actually *more* likely to use influence strategies suggested by advertising than were younger children (Lacznik & Palan, 2004). As a result of this newly developed skill, food advertising designed to influence family purchases (e.g., groceries or restaurant visits) may be more effective with older children.

Schor (2004) proposes that marketers also encourage parental opposition as a strategy to make their products more attractive to children and adolescents. In the case of food marketing, junk food is often portrayed as "anti-adult" (Schor & Ford, 2007). The appeal of many child-targeted foods (e.g., tongue tattoos on fruit roll-ups, lollipops in the shape of baby bottles, or green ketchup) is also largely due to their lack of appeal to adults. When children know that adults do not want them to consume a product (e.g., a clearly unhealthy food) it becomes even more desirable.

Peer influence. Through child and adolescent self-reported attitudes, Dotson and Hyatt (2005) demonstrated a process with which most parents are familiar: concerns about peer attitudes toward consumer behaviors increases with age, whereas interest in parental attitudes declines. Researchers have also noted an interaction between children's need for peer approval and the information provided by advertising. According to Valkenburg and Cantor (2001), the later elementary school years (ages 8–12) are characterized by a stage of "conformity and fastidiousness" in consumer development. The authors propose that older children "are increasingly sensitive to the thoughts, opinions, judgments, and evaluations of other children, and become very sensitive to what is 'cool' and what is 'in'" (p. 68). Advertising and other media provide a source of information about what is "cool" (Weiscott, 2005). Arnett (1995) posits that advertising slogans and symbols may be an especially useful resource because they connect adolescents to their peers around the world. Younger adolescents who exhibited higher levels of brand consciousness, measured by agreement with statements describing attention to "coolness" and status of clothing brands, appeared to be more affected by advertising, as they exhibited greater awareness and liking of product placements in movies, television, web sites, and music (Nelson & McLeod, 2005).

An experiment in the tobacco literature examined the interaction between advertising and peer influences on smoking behaviors. Exposure to cigarette advertising (using videos of ads in stores, bus kiosks, etc.), when combined with images of unfamiliar peers smoking, increased smoking-related beliefs and intentions to smoke compared to advertising and peer-only conditions (Pechman & Knight, 2002). In research on the effects of beer advertising with 3rd, 6th, and 9th graders, perceived desirability of portrayals in beer advertising (i.e., agreement that the characters are popular, smart, good-looking, strong, etc.) and identification, or the degree to which participants wanted to emulate those portrayals, predicted pre-drinking and risky behaviors (Austin & Knaus, 2000).

Identity formation. A few research studies have examined young people's use of marketing specifically to assist in identity formation. Chaplin and John (2005) demonstrated that children and adolescents incorporate brands into their self-images. When asked to construct collages to answer the question, "Who am I?," third graders included only a few brands and described their connection to the brands in more concrete terms (e.g., they wear that brand of clothes). Middle and high school students, however, included significantly more brands, discussed brand user stereotypes and chose brands that they believed fit with their own image.

Oyserman (2007) demonstrated the important role that social identities play in self-regulatory processes. The motivation to engage in a goal that requires self-regulation will depend on individuals' image of themselves, as well as their image of others who engage in that goal. Accordingly, food marketing that implies a user image associated with consumption of either healthy or unhealthy foods may be especially powerful due to its potential effect on consumer motivations to engage in healthy or unhealthy behaviors.

In summary, empirical evidence is limited, but food marketing likely affects children and adolescents' preferences and consumption of advertised foods through social developmental processes. In fact, food marketing influence may increase for older children as they increasingly focus outside the family, become more concerned about fitting in with peers, and actively search for information to shape their own identities. In addition, marketing practices that attempt to associate advertised foods with a desired image may reduce young people's motivation to resist their influence. A few studies, primarily in the alcohol and tobacco fields, provide empirical evidence of the social informational influence of marketing on older children and adolescents.

Food Marketing: The Most Dangerous Form

Compared to other media messages that affect young people, food marketing may appear relatively benign; parents express greater concern about sexual

permissiveness, violence, materialism, and ultra-thin models in the media (Speers, Harris, Goren, Schwartz, & Brownell, 2009). According to public health experts, however, the enormous amounts of marketing targeted to youth that promote primarily foods of poor nutritional quality may be one of the most important public health issues we face today (Brownell & Horgen, 2004; IOM, 2006; Swinburn et al., 2008). Food marketing affects an activity that everyone must engage in every day, several times a day. In addition, from birth, humans prefer the taste of foods high in sugar, fat, and salt (i.e., the foods most commonly advertised) (Birch, 1999). Unlike tobacco and alcohol consumption, young people do not need to learn that consuming these foods is rewarding. In addition, food marketing may disproportionately affect some populations most at risk for obesity, including African-Americans and Hispanics (Grier & Kumanyika, 2008). The effect of poor eating habits may also be one of the most difficult public health issues to resolve. Once an individual becomes obese, most interventions, aside from surgery, are not very effective (Heymsfield et al., 2007). Many experts believe that the only solution to the obesity crisis is to prevent young people from becoming overweight or obese, and the only way to do so on a large scale is to intervene at the environmental level.

As a result, the public health community has become increasingly concerned about the amount and content of food marketing targeted to youth, and the potential for food marketing to negatively impact young people's nutrition and other health-related beliefs and behaviors in significant ways (Brownell & Horgen, 2004; Harris et al., 2009b; IOM, 2006). Most of the findings we have presented thus far, however, examine effects of marketing on brand-specific beliefs and behaviors and not broader health outcomes. This shortcoming has been noted in other reviews of the food marketing research (IOM, 2006; Story & French, 2004), although one review concluded that food marketing does affect preferences and consumption of *categories* of products (Hastings et al., 2003).

More recent research has begun to address this public health concern and demonstrate a causal effect of food marketing exposure on diet and adiposity. For example, in a longitudinal investigation, exposure to television, and therefore food advertising, in middle and high school predicted lower consumption of fruits, vegetables and whole grains, as well as greater consumption of snack foods, fast food, and sugar-sweetened beverages 5 years later (Barr-Anderson et al., 2009). Epstein et al. (2008) conducted a randomized clinical trial of an intervention to reduce young children's exposure to television and computers over a 2-year period. The intervention successfully reduced children's screen use and resulted in a gradual reduction in BMI for children in the 75th or higher BMI percentile. The reduction was entirely due to reduced calorie consumption; the intervention had no effect on overall sedentary behavior. Economists, as well, have found that exposure to fast food advertising increases adiposity in children, and estimate that banning fast food advertising would reduce the incidence of overweight children by

18% (Chou et al., 2008). To date, however, few studies have directly examined the psychological processes through which food marketing affects diet and adiposity in young people (Harris et al., 2009b).

Psychological Models to Explain Food Marketing Effects

We propose several mechanisms through which food marketing may directly increase maladaptive nutrition and other health-related beliefs and behaviors. These mechanisms include effects on normative nutrition and health beliefs, expectancies about healthy and unhealthy foods, and direct priming of food consumption and attitudes. We also challenge researchers to identify and test additional potential mechanisms to explain effects of food marketing on both negative and positive public health outcomes.

Normative influence of food marketing. A critical unanswered public health question is how young people learn what and how to eat (Rozin, 1996). We do know that food preferences develop at a very early age, primarily through learning processes (Birch, 1999). We also know that, once established, these eating patterns are difficult to change (Skinner, Carruth, Bounds, & Ziegler, 2002). Parents are a key influence in the early development of food preferences (see Birch, 1999; IOM, 2006); however, outside influences become increasingly important, especially during middle childhood and adolescence (IOM, 2006). During this period, the quality of young people's diets also declines significantly. The role of outside influences in children's food preferences and diet have not been studied extensively, but peers, social institutions, the media and culture, in general, all likely play an important role (Rozin, 1996).

Communications researchers have suggested that repeated exposure to food advertising can affect food preferences through its influence on normative beliefs. According to the cultivation theory of media exposure, the cumulative effect of messages portrayed in the media leads to views of the world similar to the "symbolic world" seen in the media (see Gerbner, Gross, Morgan, Signorielli, & Shanahan, 2002). These researchers have demonstrated a relationship between amount of television viewing and concepts commonly presented in the media, including endorsement of gender stereotypical behaviors, belief that the world is dangerous, and interest in high-status, higher-paying jobs. In studies of food advertising, time spent watching television was highly correlated with the unhealthy eating behaviors promoted in food advertising, preferences for unhealthy foods, and specific beliefs—for example, that fast food meals are as nutritious as meals prepared at home (Signorielli & Lears, 1992; Signorielli & Staples, 1997).

Food marketing is likely to give young people the impression that most people regularly eat the kinds of unhealthy foods consumed in food commercials, and that most parents allow these behaviors. Psychological models suggest the importance

of these types of normative beliefs. As discussed earlier, social learning theory (Bandura, 2002) predicts that food advertising teaches children that there are no negative consequences for consuming the foods commonly presented; food marketing, and even most media, rarely convey the consequences of unhealthy eating, including weight gain, low energy levels, or long-term health effects. Similarly, health behavior models emphasize the importance of individuals' beliefs about the prevalence of negative health outcomes and the potential efficacy of health-protective behaviors (e.g., Ajzen & Fishbein, 1980; Becker, 1974). The theory of reasoned action also incorporates the motivational effect of relevant others' prescriptive beliefs about an individual's health behaviors (Ajzen & Fishbein, 1980).

Normative influences also likely affect parents when making decisions about how to feed their children. For example, parents may learn that one way to show their love is to take their children to McDonald's or to give them Oreo cookies with milk (the message in current advertising campaigns targeted to parents). In addition, in discussions with parents, we often hear them differentiate between "children's foods" and "adult foods" and express concern that their children do not like healthier "adult" foods. Most of our grandparents probably did not have that experience; significant exposure to marketing for foods high in fat, sugar, and salt, expressly designed to appeal to children, is a likely contributor. A recent study by Grier and colleagues confirms that food marketing affects parents in this manner (Grier, Mensinger, Huang, Kumanyika, & Stettler, 2007). Exposure to fast food promotions among parents was associated with greater frequency of fast food consumption by their children, and this relationship was mediated by perceptions of favorable social norms for consuming fast food. Specifically, exposure to food promotion predicted increased beliefs that family members, friends, children's friends, and community members often eat fast food and approve of eating it. These beliefs, in turn, predicted their children's fast food consumption. Most parents can attest to the difficulty of being the "mean parent" who doesn't allow their children to do the desirable things that "everyone else" does.

Expectancies and product experience. Another critical question for nutrition-related public health research is to understand how taste preferences develop. Taste perceptions are the most consistent predictor of both healthy and unhealthy food preferences and diet in children and adults (French et al., 1999; Harris & Bargh, 2009; IOM, 2006; Zandstra, de Graaf, & van Staveren, 2001). Perceived taste of unhealthy foods mediated the relationship between prior television experience and unhealthy diet in early adulthood (Harris & Bargh, 2009). In contrast, accurate beliefs about the healthiness of both healthy and unhealthy foods are not associated with food preferences or consumption of healthy or unhealthy foods (Glanz et al., 1998; Harris & Bargh, 2009; Neumark-Sztainer, Wall, Perry, & Story, 2003). The key to both discouraging unhealthy food consumption and encouraging healthy

food consumption, therefore, may be to find ways to influence how children perceive the taste of those foods.

Expectancy theory provides one potential mechanism through which food advertising may affect taste perceptions. Consumer behavior researchers propose that brand image and exposure to marketing create expectancies about a product that frame subsequent consumer experiences (e.g., Deighton, 1984; DeLiza & MacFie, 1996; Levin & Gaeth, 1988). These models borrow from social cognitive research that has demonstrated the power of automatic attitudes to bias information encoding and retrieval to reinforce pre-existing judgments (Fazio, 2001; Ferguson & Bargh, 2004; Ferguson, Bargh, & Nayak, 2005; Hastie & Park, 1986). In this way, automatic positive evaluations of products, established through affective conditioning or mere exposure effects, may lead consumers to attend more to positive information about the products and interpret ambiguous information in a positive manner. Expectancy effects are widely documented in the alcohol literature, and exposure to alcohol advertising has been linked to positive alcohol expectancies in children as early as 2nd grade (Austin & Knaus, 2000; Dunn & Goldman, 1996). Perceived desirability of people in beer ads predicted positive alcohol expectancies in children and adolescents (Austin & Knaus, 2000). Positive expectancies, in turn, predicted preferences for products with beer logos versus soda logos (assumed to be a predictor of pre-drinking behavior).

Expectancy theory predicts that attitudes can also affect sensory experiences, and a number of studies have demonstrated that beliefs or expectancies about a food will influence taste experiences of that food (see Lee, Frederick, & Ariely, 2006 for a review). For example, Coke drinkers liked the taste of a cola beverage more when it was presented in a cup with a Coke logo as compared to a plain cup (McClure et al., 2004). In an examination of novel food products, the best predictor of actual liking after product trial was expected liking of the product (Tuorila et al., 1998). Researchers have even demonstrated placebo effects of marketing in which expectancies about the efficacy of an energy drink product affected physiological responses, including blood pressure, physical responsiveness and mental acuity (Irmak, Block, & Fitzsimons, 2005; Shiv, Carmon, & Ariely, 2005).

Expectancy effects from marketing exposure have been demonstrated in a few studies with children. Preschoolers liked the taste of foods and beverages more when they were presented in McDonald's packaging, compared to the same foods in plain packaging (Robinson, Borzekowski, Matheson, & Kramer, 2007). In an experiment on the effects of food advertising on evaluations of a novel food, children who saw an enjoyable food advertisement and then tried the food for the first time rated the brand more favorably than those who tried the new food before viewing the advertisement (Moore & Lutz, 2000). The authors conclude that viewing the advertising led to product evaluations more consistent with expectancies created by the advertising. An initial positive emotional response to advertising could, therefore, set up an inclination to more readily accept positive information

about the advertised product at a later point in the decision-making process. In the case of food advertising, affective responses to television advertising and other forms of marketing may actually increase young people's taste perceptions of the unhealthy foods most commonly promoted.

Priming food-related beliefs and behaviors. The priming literature also suggests potentially powerful direct effects from exposure to food marketing. As described earlier, priming studies indicate that perception of marketing stimuli can trigger automatic consumer and goal-directed behaviors (Fitzsimons et al., 2008; Chartrand et al., 2008). These same models suggest that food marketing stimuli can also trigger automatic consumption of food and beverages. Numerous studies demonstrate that environmental cues, including sensory cues, social cues, and even seemingly unrelated cues (e.g., package size or food variety), increase food consumption (see Harris et al., 2009a; Wansink, 2006). Recent experimental studies demonstrate that exposure to television food advertising increases calories consumed during and immediately following exposure (Halford et al., 2004, 2007; Harris et al., 2009a). These effects occurred among children and adults, and affected consumption of products that were not advertised, including more nutritious options. Harris and colleagues propose that exposure to food advertising with a snacking and enjoyment message (i.e., the most common message in children's food advertising) primes consumption of any available snack food. In their studies, participants were not aware that they were affected by the advertising and the effects were not related to participants' experience of hunger. In addition, these effects did not occur after exposure to food advertising with a nutrition or health message.

These studies also raise the possibility that food marketing can prime other health-related beliefs and behaviors. For example, unhealthy food advertising could prime short-term hedonic goals, whereas nutrition advertising primes longer-term healthy eating goals (e.g., Bargh et al., 2001; Chartrand & Bargh, 2002). Different features of advertising (e.g., portrayal of eating behaviors, liking or identification with the actors or product characters, and entertaining advertising) could increase automatic consumption through initiation of persistent automatic action tendencies (Bargh & Morsella, 2009). Exposure to other, less complex, forms of marketing (e.g., brand logos or banner ads on the Internet) may also create similar effects (e.g., Fitzsimons et al., 2008).

Influence on Ethnic and Racial Minorities

African American and Hispanic youth in the United States present a unique public health concern as these populations face some of the highest risks of obesity and obesity-related diseases (Kumanyika & Grier, 2006; Ogden et al., 2006; U.S. Department of Health and Human Services, 2000). The majority of

studies that measure food marketing exposure and effects of exposure, however, have not examined these populations. As a result, the findings presented thus far may not generalize to lower-income and minority populations (Williams, Lee, & Henderson, 2008).

The need for research to measure food marketing effects on racial and ethnic minority populations is compounded by evidence that minority youth are exposed to more food marketing than other youth. African American and Hispanic youth consume 37% and 25% more media than their white counterparts (Rideout, Roberts, & Foehr, 2005). African Americans, in particular, are exposed to more marketing messages that promote low-cost, low-nutrition foods and beverages (Grier & Kumanyika, 2008). For example, ads for fast food, carbonated soft drinks and candy are more likely to appear on children's and prime-time television programming targeted to African Americans (Outley & Taddese, 2006; Tirodkar & Jain, 2003), and fast food outlets in poor African American communities are more likely to promote less healthy menu items than outlets in other communities (Lewis et al., 2005). Even billboards for fast food and sugared beverages appear nine times as often in low-income Latino communities and seven times as often in low-income African American communities as compared to white and high-income communities (Yancey et al., 2009).

Empirical evidence suggests an especially damaging potential role of targeted food marketing on at-risk minority youth. For example, ethnic minorities may be more responsive to marketing efforts targeted to them directly (Aaker, Brumbaugh, & Grier, 2000; Grier & Brumbaugh, 1999). Viewers tend to respond more favorably to similar versus different race spokespeople (Spira & Whittler, 2004); however, black characters in advertisements were more influential among black adolescents with high cultural identification than white characters were for white youth (Appiah, 2004). Oyserman, Fryberg and Yoder (2007) suggest that targeted food marketing efforts that focus on minorities' social identity could increase the unhealthy influence of these messages. In a series of studies, they demonstrated that racial and ethnic minorities incorporate risky health behaviors, including smoking and fast food consumption, as part of their in-group identity. In addition, they are likely to view healthy behaviors, including dieting, eating fruits, vegetables and other nutritious foods, as part of the white middle-class identity. When minorities' in-group identity was activated (as is likely to occur when viewing targeted marketing messages), low-income adolescents and adults endorsed more fatalistic beliefs about health promotion behaviors and correctly answered fewer questions about health. Oyserman and colleagues conclude that the most effective way to increase health behaviors among minorities may be to cue minority inclusion in "health competent" groups.

Minority youth may also be more susceptible to advertising influence in other ways. For example, evidence suggests that they may be more responsive to brands or use advertising information to assist in assimilation to the majority

culture (see Williams et al., 2008). Williams and colleagues note, however, that these assumptions have not been conclusively demonstrated and that significantly more research is needed to understand the processes that may differentially affect minority responses to marketing communications.

In summary, current psychological theories indicate that public health concerns about food marketing to youth are indeed warranted. Evidence of social cognitive and social developmental effects of marketing on young people, as well as the unique effects of food marketing on broader health outcomes, also suggests that it will be extraordinarily difficult to protect young people from the pervasive influence of unhealthy food marketing.

Protecting Young People from Unhealthy Food Marketing Practices

The U.S. marketing industry spends over \$7 billion per year in market research, primarily to identify ways to motivate consumers to try and/or consume more of their products and to evaluate the effectiveness of existing marketing programs (Council of American Survey Research Organizations, 2005). Marketers take a very pragmatic approach to identify what works. They often test alternative methods to find new and innovative ways to reach their consumers and, through a trial and error process, continually increase the effectiveness of marketing efforts. Psychological theories, therefore, have value for marketers primarily as a means to identify *what* new marketing practices could be effective, in contrast to psychologists and consumer behavior researchers who utilize psychological theories to understand *how* marketing affects the consumer. Instances of the use of psychological methods and theories to identify effective new food marketing practices raise particular concerns among public health advocates. For example, a recent award-winning campaign for Cheetos used facial coding to measure adults' emotional responses to a new advertising campaign and found that, "Positive responses to the ads (86%) were significantly higher compared to self-reported responses of 78%. In short, people liked the ads more than they were willing to admit!" (ARF, 2009). As marketers increasingly use psychological methods and theories to examine what works, the need for psychological research to examine how to defend against those effective marketing practices becomes even more critical.

Table 2 presents common food marketing practices used to reach children and adolescents, and the psychological processes through which they likely affect young people's diet and health. Many of these practices do not attempt to directly persuade young people to try advertised products or convince them that one brand is better than another. Instead, they incorporate psychological techniques to subtly influence food preferences and consumption, for example, by establishing brand associations with positive emotions or desirable user images. Additionally, many newer forms of marketing targeted to children and adolescents, including product

Table 2. Psychological Processes to Explain How Current Food Marketing Practices Affect Young People

	Direct Information Processing	Social Cognitive Processes	Social Developmental Processes
Traditional advertising (television, print and radio)			
Informational (e.g., new products, product features, or usage occasions)	✓		
Emotional (e.g., entertaining, positive associations)		✓	
Image (e.g., desirable user imagery)		✓	✓
Product placements		✓	✓
Digital marketing			
Advergaming		✓	✓
Brand experience features		✓	
Viral features			✓
Social media			✓
Mobile marketing			✓
Promotions			
Celebrity endorsements		✓	✓
Licensed characters	✓	✓	
Philanthropy tie-ins	✓	✓	
Sweepstakes and give-aways	✓	✓	
Other marketing venues			
Sponsorship logos		✓	✓
Schools	✓	✓	
In-store (e.g., packaging and signage)	✓	✓	
Events tie-ins		✓	✓
Unique food marketing effects (all forms)			
Normative influence on diet and health			✓
Taste expectancies		✓	
Priming consumption and health-related goals		✓	

placements, advergaming, and viral marketing, are designed to take advantage of young people’s unique developmental needs.

The food marketing defense model provides a framework to examine the conditions needed to defend against the influence of food marketing that utilizes sophisticated psychological techniques to encourage children and adolescents to consume. We demonstrate that these practices present numerous obstacles to young people’s awareness, understanding, ability and motivation to counteract their influence and may create a pervasive and unhealthy food environment that is almost impossible to resist. Marketing programs could utilize these same techniques to more effectively promote healthy diets to children and adolescents; however, these messages would likely be overwhelmed by the massive amount of powerful

messages that promote unhealthy eating. Very little research has directly examined the psychological processes required to defend against newer and less direct forms of marketing, and we conclude with an agenda for future research to inform public policy to protect young people against the unhealthy influence of food marketing.

Resisting Automatic Marketing Influence

Many marketing practices commonly used to promote nutritionally poor foods to young people are likely to influence through social cognitive processes. Promotions with beloved characters from popular children's television programming and movies (i.e., licensed characters) and endorsements by entertainment and sports celebrities, for example, are likely to persuade through inferences about brand users and affective transfer processes. Similarly, practices such as product placements and advergames blur the line between advertising and entertainment, and may transfer positive emotions from the media to positive associations with the brand (Montgomery, 2001; Moore, 2004). Many consider the common practice of placing brand logos on clothing, toys, school materials, and signage at the point-of-sale and entertainment and sporting events to be annoying, but harmless, marketing. Yet social cognitive theories predict that this exposure will effectively increase positive attitudes toward those brands and may even prime consumption behaviors or desires for those products.

The marketing defense model indicates that marketing programs that influence through social cognitive processes may be especially difficult to defend against and suggests a significant opportunity for research. Few published studies have examined young people's awareness of newer forms of marketing that may influence primarily through automatic processes, and their comprehension of the persuasive intent of these messages is not well understood. In addition, little is known about developmental differences in awareness and comprehension or differences by demographic group.

Answers to these research questions, however, will not resolve the question of how to defend against their influence. Young people (as well as adults) may find it difficult to believe that they are affected outside of their conscious awareness, and far more developed cognitive abilities may be required to defend against automatic influences as compared to more direct persuasive attempts. In addition, defending against the massive number of subtle marketing messages encountered daily may be extraordinarily difficult. Even if young people were aware of all the ways that marketers attempt to persuade them, actively attending to every marketing stimulus they encounter every day may be impossible. According to one estimate, consumers see 3,000 marketing messages daily (Klein, 1999). If this process takes as little as 10 seconds, defending against marketing messages would require 8 hours out of every day.

Without active processing of individual marketing messages, social cognitive theories predict that these messages will be highly effective. Gilbert (1993) proposes that when an individual is exposed to new information the mind automatically accepts it as true. Analytic work is required to overturn this belief state; therefore, the individual must possess capacity and desire, rules of logic, and correct information to reject inaccurate propositions. As discussed earlier, children do not typically engage in this type of analytic work when they view advertising. In addition, children may be especially susceptible to advertising for products that they cannot yet personally use. According to the notion of “premature cognitive commitment,” when children encounter advertising that is irrelevant to them at the time (e.g., commercials for insurance, diapers or beer), they will mindlessly process and automatically accept the information presented (Chanowitz & Langer, 1981). At a later time, when this information does become relevant, it will then be accessed and accepted without question. Premature cognitive commitment also predicts that beliefs and behaviors acquired through this type of mindless processing may be very difficult to change.

Young people could be especially susceptible to unquestioned acceptance of advertising promises if they do not critically assess marketing stimuli at the time of exposure. This hypothesis has not been testing in the food marketing literature and suggests a significant opportunity for social cognitive researchers to examine whether it is even possible to teach young people to defend against automatic influences of marketing messages.

Resisting Social Developmental Marketing Influences

Common food industry practices also exploit social developmental processes in young people, including image advertising, celebrity endorsements and product placements, and viral marketing. These forms of marketing present a different kind of barrier to protecting children and adolescents from unhealthy influence. Older children and adolescents may be fully aware of these marketing stimuli, comprehend their persuasive intent, and possess the understanding and ability to defend against them; however, their motivation to conform to the messages may be much stronger than their desire to resist. Oftentimes, these messages directly contradict messages from parents and educators who attempt to teach healthy behaviors and good nutrition, a marketing strategy that may only accentuate their appeal.

Image advertising. Snyder and DeBono (1985) differentiate between value advertising that persuades directly by focusing on the quality and functional value inherent to the product itself, and image advertising that persuades indirectly by projecting social benefits associated with product usage. They demonstrated that image advertising had greater appeal for high self-monitoring individuals (i.e., those who attend more to how their behavior is perceived by others), whereas

value advertising appealed more to low self-monitors. The authors hypothesized that image advertising influences high self-monitors because it conveys information about how to use a product to project a desirable image in social situations; this approach is also likely to be highly informative for adolescents in the process of developing their own identity. In support of this hypothesis, adolescents responded more positively to image advertisements promoting tobacco, alcohol, and soft drinks as compared to informational advertising (Kelly, Slater, & Karan, 2002). Exposure to advertising with image-oriented visuals increased participants' attitudes toward the advertisement and the brand, as well as agreement that the product category was "cool and in style" (i.e., socially desirable).

The tobacco literature documents the effectiveness of the rugged, individualistic image of the Marlboro Man to initiate smoking behaviors in adolescent males (Ellis & Northridge, 2002). Common food marketing strategies parallel the tobacco experience; for example, Burger King used the tagline "Eat like a man" to promote its Texas Double Whopper sandwich (1050 kcal, 69 g fat, and 1910 mg sodium *before* the french fries and soft drink) (Burger King, 2008). The common advertising practice that promotes children's foods as "cool" also taps into young people's motivation to assume that identity (Reece et al., 1999).

Celebrity endorsements and product placements. Identification processes among older children and adolescents may also increase the influence of marketing that utilizes celebrity endorsements or product placements (Ross et al., 1984). Russell and colleagues developed a connectedness scale to measure "the extent to which a television program influences the personal and social aspects of the viewer's life" (Russell, Norman, & Heckler, 2004). In a large sample of participants, ages 12 and older, connectedness was positively related to long-term recall of product placements and the ability to imagine characters as consumers of real brands or products. Similarly, celebrity endorsers in alcohol advertising increased adolescents' liking of the advertisement, perceived credibility of the endorser, product image, and intent to buy (Atkin & Block, 1983). Participants, ages 13–17, rated ads with celebrity endorsers significantly higher on all dimensions than did older participants (ages 18–77).

Product placements and celebrity endorsements are used disproportionately by food companies to market to adolescents (as compared to both children and adults) (FTC, 2008). The most prominent example is Coke's placement on "American Idol" that, by our count, resulted in 83 brand images or mentions in one 60-minute episode. An extended placement arrangement with the television show "7th Heaven" involved integrating Oreo cookies into the story line in clever ways (Truthfulmedia.com, 2008). For example, in multiple episodes, family members ate a snack of Oreos and milk whenever they sat down to talk. One son even proposed to his girlfriend with an engagement ring inside an Oreo cookie. Endorsements by 2008 Olympic athletes, including Michael Phelps for Kellogg's

Frosted Flakes, and LeBron James and Shawn Johnson for Coca-Cola, provide recent examples of food companies associating calorie-dense products with sports celebrities. These images are likely to appeal strongly to adolescent audiences who identify with these popular sports celebrities (see Jones, Bee, Burton, & Kahle, 2004).

Viral marketing. Viral marketing is a relatively recent strategy designed to increase the effectiveness and reach of marketing programs through word-of-mouth between peers. On food company sponsored websites, common techniques encourage visitors to send marketing messages to their friends, including invitations to play an advergaming, videos from the site (including advertisements), and “e-card” greetings. Viral marketing features are found on 74% of child and adolescent-focused food company websites compared to only 32% of adult-targeted sites (Moore & Rideout, 2007). Within the past two years, a popular new form of viral marketing has ballooned: “social media marketing” incorporates marketing messages on social media sites, such as MySpace, Twitter, and YouTube, to encourage older children and adolescents to spread the word to their peers (Chester & Montgomery, 2008). Disturbing examples of social media marketing include a “flying fry” video by McDonald’s on YouTube that depicted two Hispanic teens challenging each other to eat french fries in inventive ways, and members can become fans of Coca-Cola or Burger King or join their groups on Facebook. Taco Bell was one of the first advertisers to sign up for MySpace’s “hypertargeting” system that uses the personal information provided by MySpace users about themselves and their friends to target online advertisements.

These common food marketing practices are likely to be highly effective in deactivating all marketing defense processes. Children and adolescents may be less aware that product placements or messages from friends, for example, are marketing attempts, and their understanding and ability to defend against these more subtle forms of marketing may be much less developed. Even when they are aware of the persuasive intent and able to resist, however, many of these marketing techniques take advantage of young people’s motivation to project a desired image, fit in with their friends, and separate from their parents. Although the psychological effects of marketing practices beyond television advertising have not been well tested, they are likely to powerfully impact young people and may be especially difficult to resist. Understanding the social developmental influence of food marketing and whether it is possible to motivate young people to resist present significant opportunities for psychological research.

Resisting the Unique Influence of Food Marketing

The unhealthy but tempting food products most commonly marketed to young people suggest additional obstacles to young people’s ability to resist. Evidence

of unique effects of food marketing on category preferences and broader health outcomes also indicates that it will be more difficult to protect young people from food marketing influence as compared to other forms of marketing. Food marketing practices raise unique issues regarding young people's understanding, ability, and motivation to defend against unhealthy marketing influence.

It is unlikely that most young people, and even most adults, understand that food marketing affects their beliefs and behaviors in the ways researchers have begun to demonstrate. In the study of food advertising priming effects cited earlier, only 6 of the 98 participants believed that the food commercials might have influenced what they ate in any way (Harris et al., 2009a). Similarly, a follow-up study asked college students directly how often they are affected by food advertising on television (Harris, 2008). The most commonly perceived effect, "How hungry you feel," occurred only "sometimes" (i.e., received an average score of 3 on a scale of 1–5). Even fewer believed that food advertising ever affected their desire to eat the advertised food, interest in trying the advertised food, or preference for the brand advertised; and respondents believed that food advertising rarely affected how much they ate while watching or after watching. It is likely that children and adolescents would be even less aware of the potential for food marketing to affect their eating behaviors or food preferences.

Even if these effects were widely understood, however, food marketing is also likely to have a unique impact on young people's ability and motivation to defend against influence. The priming study of food advertising effects also provides insights into these questions (Harris et al., 2009a). In that study, restrained eaters (i.e., regular dieters) and men were affected by exposure to snack food advertising, but female nondieters were not. This finding raises the intriguing possibility that female nondieters were more skilled at defending against advertising influence or more motivated to do so. Future studies are needed to determine the reason for this difference, but it suggests that the effects of food marketing may be too powerful for many adults and, therefore, most adolescents to defend against.

Furthermore, even those able to effectively defend against food marketing influence may not possess the cognitive resources required to defend against these messages at the time of exposure. Resisting the influence of tempting images of highly desirable foods requires self-regulatory resources, and Baumeister and colleagues have demonstrated that these resources can become depleted in the short-term, especially under conditions of fatigue or when conflicting demands also require their use (Baumeister & Heatherton, 1996). As a result, food advertising may have a greater influence on both children and adults during common media exposure conditions, for example, when watching television to unwind at the end of a long day, or when children multi-task or consume multiple media

simultaneously. Additional psychological research to examine unique effects of food marketing on eating behaviors and food preferences will begin to enhance consumers' ability to resist by increasing their understanding of how they are affected. However, research to identify effective techniques to resist the powerful influence of food marketing is also required.

Marketing to Promote Healthy Diets

As discussed earlier, one commonly proposed solution to counter the unhealthy effects of current food marketing practices suggests "balancing" the unhealthy messages with a similar number of healthy messages, either through marketing to promote healthy foods or social marketing campaigns to teach young people the importance of nutrition and healthy eating (IOM, 2006).

A few studies have demonstrated that the marketing strategies typically used to promote foods of low nutritional value to children could be used to effectively promote healthy foods. For example, playing a "Pac-man" game that rewarded players when Pac-man consumed healthy snacks increased children's selection and consumption of healthy snacks, as compared to a game that rewarded consumption of unhealthy foods (Pempek & Calvert, 2009). Sesame Workshop reports that children showed greater preferences for healthy foods when they were paired with images of familiar and liked Sesame Street characters (Atkins Foundation, 2007). Preschoolers ate 50% more "X-ray vision carrots" and "tomato bursts" than carrots or tomatoes with no special names (Wansink & Payne, 2009). Clearly, more research is needed, but it appears that creative marketing approaches to promote healthy foods could increase young people's taste perceptions and preferences for these foods and, therefore, improve their diet.

Social marketing campaigns present another potential opportunity to address the obesity crisis through communications targeted to young people. Two such campaigns have proven successful in addressing youth tobacco use (American Legacy Foundation "truth" campaign) and physical activity (the Centers for Disease Control [CDC] "VERB" campaign). As discussed earlier, there is little evidence, however, that knowledge about nutrition affects actual dietary behavior (Harris & Bargh, 2009; IOM, 2006). In addition, social marketing that teaches young people about the importance of healthy eating will not teach them how to resist the tempting messages presented in food marketing, nor likely increase their motivation to resist. Petrova and Cialdini (2009) suggest alternative approaches to design social marketing campaigns to more effectively counter advertising influence. For example, by using affect- and image-based appeals and abstract claims (to match the appeals used in food marketing), highlighting the dishonesty of the message source (i.e., the food industry), and utilizing stimuli from food marketing to cue defensive responses when viewing the advertising.

Although they can be designed in ways that produce more effective outcomes, relying on social marketing and marketing of nutritious foods to offset the effects of current food marketing practices appears misguided. Even if designed effectively, it is unlikely that anyone would spend close to \$1.6 billion (i.e., the amount currently spent by food companies) to encourage children and adolescents to eat healthy products (FTC, 2008). In addition, the obesity crisis cannot be resolved by additional food marketing efforts. The root cause of obesity is that individuals consume more calories than they expend. Encouraging young people to eat more of anything, even if it is nutritious fruits and vegetables, will only result in weight gain. Eating healthy foods, therefore, must be combined with a simultaneous reduction in consumption of other foods. To our knowledge, no research has demonstrated that marketing can be used successfully to reduce consumption of any food, especially highly palatable ones. Determining whether marketing for healthy foods or social media marketing can be used to offset effects of unhealthy food marketing, therefore, presents another critical research question.

An Extensive Research Agenda

The opportunity and need for research that applies psychological theories and methods to understand how food marketing affects children and adolescents and how to effectively resist are significant. Very little is understood about young people's awareness, understanding, ability, and motivation to resist the unhealthy influence of common food marketing practices. Table 3 presents an overview of research questions that we believe are compelling. Significant advances will likely occur as researchers devote more attention to mechanisms through which food marketing, in all its forms, affects nutrition and health-related outcomes in youth populations. Additionally, research to examine how food marketing affects each of the processes in the food marketing defense model (i.e., awareness, understanding, ability, and motivation to resist) is required. Detailed understanding of these processes will aid the public health community to determine the most effective methods to protect young people against unwanted influence and encourage healthy eating beliefs and behaviors.

In summary, increasing the focus on the psychological processes through which food marketing affects young people and how to effectively resist its influence can help in several important ways, and we hope research agendas bear these in mind. The first is to help youth develop skills to better defend themselves against toxic influences. Second is to alert parents, educators, and health officials to the forms marketing takes and how it affects children and adolescents. Third is to inform the public policy agenda as efforts take shape to limit certain marketing practices (e.g., what exactly should be restricted, who needs to be protected, etc.). Fourth is to provide information to develop successful campaigns to promote healthy eating.

Table 3. Defending Against Food Marketing Effects: An Extensive Research Agenda

Awareness	Understanding	Ability	Motivation
Awareness of hidden forms of marketing (e.g., product placements, logo placements)	How food marketing affects young people through social cognitive and social developmental processes	Cognitive capacity and abilities needed to activate defenses Developmental differences in these abilities	Differences by age and demographic group Effects of different types of marketing on the motivation to resist (e.g., entertaining marketing, health claims, or appetizing foods)
Age of understanding persuasive intent for other overt forms of marketing (e.g., advergames, celebrity endorsements, etc.)	How food marketing affects broader health outcomes (e.g., category effects, diet and health outcomes, consumption)	Effects of viewing condition and media type on cognitive capacity Differences in cognitive resources required to resist some types of marketing (e.g., appetizing foods or more hidden appeals) or for some individuals (e.g., restrained eaters)	Interactions with other environmental factors (e.g., peers, family, etc.) How to increase motivation to resist Marketing targeted to young people, in general, and food marketing, in particular
How much of marketing exposure is consciously perceived?	Differences in food marketing effects by age and demographic groups How to effectively resist different forms of marketing Are different means required for different forms of marketing or different types of foods How to effectively market nutritious foods and healthy behaviors	Is it possible for anyone to resist all appeals at all times?	

Policy Implications

There is no longer question about whether food marketing is hurting youth. The IOM (2006) report on children’s food marketing sums up available knowledge in two words: “marketing works.” This is understatement. Youth marketing is powerfully effective, occurs in massive amounts, and is done in forms that thwart cognitive defenses and subvert parents’ ability to monitor what their children see and ultimately their ability to provide their children a healthy food environment.

Public support for limits on television advertising that targets young children is growing. Both the American Psychological Association (Kunkel et al., 2004) and the American Academy of Pediatrics (Shifrin, 2005) recommend a ban on television advertising to children under age 7 or 8 years. In a nationally representative poll of adults in the United States, 79% agreed that “there should be limits placed on advertising for children” (The Center for a New American Dream, 2004). Even businesspeople in the youth marketing industry agree that it is inappropriate to market to children under age 7 years (Geraci, 2004). Both Quebec and Sweden

Table 4. The Sydney Principles (Swinburn et al., 2008)

Guiding principles for achieving a substantial level of protection for children against the commercial promotion of foods and beverages.

Actions to reduce commercial promotions to children should:

1. Support the rights of children
 2. Afford substantial protection to children
 3. Be statutory in nature
 4. Take a wide definition of commercial promotions
 5. Guarantee commercial-free childhood settings
 6. Include cross-border media
 7. Be evaluated monitored and enforced
-

currently ban any form of advertising targeted to children under age 12 or 13 years. These types of global restrictions on advertising to children are driven by ethical considerations, primarily the widely held belief that children are more vulnerable to marketing influence and subject to exploitation, and not by the evidence base of marketing effects (Hawkes, 2007).

The rise in childhood obesity has raised further concerns that food marketing contributes to unhealthy food preferences and eating behaviors and increased calls for regulations to limit junk food marketing to youth (Hastings et al., 2003; IOM, 2006). The World Health Organization (WHO) has identified the “commercial promotion of energy-dense, micronutrient-poor food and beverages to children” as a significant contributor to noncommunicable diseases (WHO, 2006) and the World Health Assembly (WHA) comprised of all United Nations members, declared that the WHO should develop “recommendations on marketing of foods and nonalcoholic beverages to children” (WHA, 2007). In preparation for this recommendation, an international working group of obesity experts developed the Sydney Principles to guide the food industry in implementing responsible practices to promote foods and beverages to children (see Table 4; Swinburn et al., 2008). These recommendations were reviewed and supported by over 200 public health and marketing experts, including representatives of the food industry, and among other things, call for a “wide definition of commercial promotions.” Although the experts could not agree on the definition of “children,” over 70% believed that restrictions should include children up to age 16 years, and over half supported restrictions up to age 18 years.

There are signs of building world interest to specifically limit unhealthy food marketing to youth (Hawkes, 2007). The UK has enacted the most comprehensive statutory regulation of food marketing. In 2008, the UK Office of Communications (OFCOM) strengthened existing regulations on television advertising for foods that do not meet government-defined nutrition standards to ban junk food marketing on all children’s television stations and all programs targeted to children

under age 16 years. As of the end of 2006, at least 39 countries had imposed some form of statutory regulations or industry self-regulation to limit food marketing to children on television, and an additional 21 countries had regulations limiting food marketing in schools (Hawkes, 2007). Only two countries, however, have limited product placements or sales promotions (Finland and Spain), and only one country limits Internet marketing (Brazil). Similarly, most regulations address food marketing to children under age 12 or 13 years and presume that protections for adolescents are not required.

Hoping to prevent what we believe is inevitable government action that restricts youth marketing, the food and advertising industries have rushed to create self-regulatory programs (Sharma et al., 2009). Although the Sydney Principles specifically recommend statutory regulations (Swinburn et al., 2008), the preferred approach in most countries has been to cede regulatory authority to industry and hence to place explicit trust in industry self-regulations (Hawkes, 2007; Sharma et al., 2009). In the United States, for example, the Children's Advertising Review Unit (CARU) was established by industry to "promote responsible children's advertising" (CARU, 2008), but has been criticized for being slow, limited in authority, lax with standards, and so narrow in focus as to ignore the overwhelming majority of marketing messages (Hawkes, 2007). As mentioned, the CBBB (2006), together with many of the largest food marketing companies in the United States, pledged to "shift the mix of advertising messaging directed to children under 12 to encourage healthier dietary choices and healthy lifestyles." This reliance on industry self-regulation also concerns public health experts who suggest that numerous omissions and loopholes in self-regulatory pledges may provide significantly more public relations benefit to the food industry than real health benefits to young people (Brownell & Warner, 2009; Harris et al., 2009b; Hawkes, 2007; Wilde, 2009; Sharma et al., 2009).

Given the financial bonanza that is the youth market, the clear importance to industry to foster brand loyalty early in life, and the ease of convincing children to eat foods high in sugar, fat, and salt, there is every reason to distrust the motives of industry self-regulation and to learn from the hard lessons in areas such as alcohol and tobacco (Brownell & Warner, 2009; Sharma et al., 2009). Resources devoted by industry to marketing research, including work on neuromarketing, will always dwarf those of the public health community and will not be limited by the slow process that academic researchers contend with to secure grant funds and publish studies. Stated another way, it is the sad case that as researchers document the impact of one generation of marketing approaches, industry will have moved to the next. The greatest hope to counter this reality lies in documenting mechanisms common to all forms of marketing and aggressive policy actions to protect youth. This will happen as public opinion supports such actions. Therefore, it is important that the impact of marketing on youth be made clear to the general public, parents in particular, and that policy makers understand the actions they can take that will

have greatest benefit. An informed, progressive, and well-funded research agenda will be necessary for both to occur.

Table 5 presents a summary of policy proposals to limit food marketing that are currently under discussion and the important unanswered research questions. Potential policy approaches include the establishment of international guidelines; statutory regulations and self-regulation at the country level; restrictions on specific forms of marketing (e.g., product placements and the Internet); restrictions in school settings; and litigation against individual companies (see Harris et al., 2009b). The key research questions to be answered in all of these potential actions include, a) who should be protected; b) what forms of marketing should be regulated; c) what settings should be regulated; and d) is it possible to protect young people against these influences, or should the practices be banned altogether?

Table 5. Current Policy Initiatives and Research Questions that Can Be Addressed by Psychological Research

Policy Initiatives	Research Questions
International guidelines World Health Organization recommendation to implement an international code on the commercial promotion of food and nonalcoholic beverages to children (WHO, 2006)	Developmental differences in child and adolescent vulnerability to marketing influence Differential effects of different forms of marketing Effects of health and nutrition claims on products targeted to children Effects of marketing to parents on their children's diets
Country-level food marketing regulations FTC, FDA, CDC, and DOA Interagency Working Group on Food Marketing to Children to develop recommendations for food marketing standards (US Congress, 2009) Regulations under consideration in other countries (e.g., Australia, Canada)	Developmental differences in child and adolescent vulnerability to marketing influence Differential effects of different forms of marketing Effects on children's diets
Food industry self-regulatory pledges Council of Better Business Bureaus pledges in the United States (CBBB, 2006) Industry pledges in other countries (Hawkes, 2007)	Effects of forms of marketing not covered by most pledges (e.g., Internet, packaging, licensed characters) Effects on target audiences not covered by pledges (i.e., adolescents and parents) Effects of promoting "better for you" foods that do not meet nutrition standards established through independent criteria Effects of messages that encourage physical activity or other healthful activities, in association with unhealthy foods

Continued.

Table 5. Continued

Policy Initiatives	Research Questions
<p>Regulation of specific forms of advertising <i>Interactive advertising to children.</i> Ban supported by the Federal Communications Commission (FCC) Commissioner (Eggerton, 2008) <i>Product placements.</i> FCC calls for sponsorship identification rules and embedded advertising (FCC, MB Docket 08–90) to consider disclosure requirements for product placements on television and bans on placements in children’s programming</p>	<p>Effects of common forms of interactive advertising, including viral marketing, advergames, online commercials, and promotions Awareness and understanding of persuasive intent for interactive marketing Developmental differences in vulnerability Developmental differences in awareness and understanding of persuasive intent for product placements Effectiveness of alternative forms of commercial intent disclaimers (e.g., at the time of product mention or the beginning of programming, verbal or written, prominence, etc.)</p>
<p>Regulation of food marketing in schools (in the United States, by state law or school district ruling)</p>	<p>Developmental differences in vulnerability for implementation in elementary, middle or high schools</p>
<p>Restrictions on vending machines and other competitive foods sold in schools in place in some states and many local school districts Maine Public Law, Chapter 156 (2007) bans advertising in public schools, including a more extensive definition of advertising</p>	<p>Effects of forms of marketing commonly used in schools (e.g., brand-sponsored curricular materials, product packaging, vending machine and other signage, etc.)</p>
<p>Laws are currently under consideration in other states, including Connecticut</p>	<p>Assess child and parent interpretation of product claims and other information presented on the package or in advertisements</p>
<p>Litigation by private parties under consumer protection laws (see Pomeranz, Teret, Sugarman, Rutkow, & Brownell, 2009)</p>	
<p>Regulation of false, deceptive or misleading commercial speech</p>	
<p>May require full disclosure of product information</p>	

The psychological science community can play a critical role in this debate. As presented throughout this article, the lack of scientific support is not due to any evidence that food marketing does not have an effect. In fact, psychological theories predict that food marketing, in all its forms, has a profound negative impact on public health among young people and adults. Similarly, they predict that proposals by the food industry, such as increased marketing of “better for you” foods or portrayal of physical activity in food advertising, will not begin to counteract these effects, and could make them worse. Rather, a concerted research effort to demonstrate the applicability of newer psychological theories to food marketing stimuli and public health outcomes is required. If the adverse effects of advertising

on young people's health prove as significant and widespread as many child advocates, health professionals, and psychologists suspect, then additional empirical evidence, accompanied by efforts to raise awareness among parents and policy makers, will provide much-needed support for public health efforts to significantly restrict food marketing to youth. The need for a new generation of psychological research is critical, and the opportunities to apply current psychological theories to address this important social issue are substantial.

References

- Aaker, J. L., & Biel, A. L. (1993). Brand equity and advertising: An overview. In D. A. Aaker & A. L. Biel (Eds.), *Brand equity and advertising: Advertising's role in building strong brands* (pp. 1–10). Hillsdale, NJ: Erlbaum and Associates.
- Aaker, J. L., Brumbaugh, A. M., & Grier, S. A. (2000). Nontarget markets and viewer distinctiveness: The impact of target marketing on advertising attitudes. *Journal of Consumer Psychology, 9*, 127–140.
- Achenreiner, G. B., & John, D. R. (2003). The meaning of brand names to children: A developmental investigation. *Journal of Consumer Psychology, 13*(3), 205–219.
- Advertising Research Foundation [ARF] (2008). Innerscope research: A revolution in audience research. Retrieved from http://s3.amazonaws.com/thearf-org-aux-assets/downloads/cnc/engagement/2008-11-19_ARF_Engagement_Innerscope.pdf on February 25, 2009.
- ARF (2009). The 2009 ARF David Ogilvy Awards: Grand Ogilvy Winner. "Mischievous fun from Cheetos." Retrieved from <http://thearf-org-aux-assets.s3.amazonaws.com/ogilvy/cs/Ogilvy-09-CS-Cheetos.pdf> on July 29, 2009.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and social behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Albarracín, D., Wang, W., & Leeper, J. (2009). Immediate increase in food intake following exercise messages. *Obesity, 16*, 1–2.
- American Academy of Pediatrics, C. o. C. (2006). Children, adolescents, and advertising. *Pediatrics, 118*(6), 2563–2569.
- Anderson, C. A., & Bushman, B. J. (2002). The effects of media violence on society. *Science, 295*, 2377–2379.
- Appiah, O. (2004). Effects of ethnic identification on web browsers' attitudes toward and navigational patterns on race-targeted sites. *Communication Research, 31*, 312–337.
- Arnett, J. J. (1995). Adolescents' uses of media for self-socialization. *Journal of Youth and Adolescence, 24*(5), 519–534.
- Atkin, C., & Block, M. (1983). An experiment revealed the effectiveness of celebrity endorsers. *Journal of Advertising Research, 23*(1), 57–61.
- Atkins Foundation (2007). Sesame Workshop. *The Dr. Robert C. and Veronica Atkins Foundation – 2007 Annual Report*. Accessed at www.atkinsfoundation.org/2007AR/sesameWorkshop.asp on October 1, 2008.
- Austin, E. W., & Johnson, K. K. (1997). Effects of general and media-specific media literacy training on children's decision making about alcohol. *Journal of Health Communication, 2*, 17–42.
- Austin, E. W., & Knaus, C. (2000). Predicting the potential for risky behavior among those "too young" to drink as the result of appealing advertising. *Journal of Health Communication, 5*, 13–27.
- Auty, S., & Lewis, C. (2004). Exploring children's choice: The reminder effect of product placement. *Psychology and Marketing, 21*, 697–713.
- Baker, W. E. (1999). When can affective conditioning and mere exposure directly influence brand choice? *Journal of Advertising, 28*(4), 31–46.
- Bandura, A. (2002). Social cognitive theory of mass communication. In J. B. D. Zillman (Ed.), *Media effects: Advances in theory and research* (pp. 121–154). Mahwah, NJ: Erlbaum Associates.
- Baranowski, T., Domel, S., Gould, R., Baranowski, J., Leonard, S., et al. (1993). Increasing fruit and vegetable consumption among 4th and 5th grade students: Results from focus groups using reciprocal determinism. *Journal of Nutrition Education, 25*, 114–120.

- Bargh, J. A. (2002). Losing consciousness: Automatic influences on consumer judgment, behavior and motivation. *Journal of Consumer Research*, 29(2), 280–286.
- Bargh, J. A., & Chartrand, T. L. (1999). The unbearable automaticity of being. *American Psychologist*, 54(7), 462–479.
- Bargh, J. A., & Ferguson, M. J. (2000). Beyond behaviorism: The automaticity of higher mental processes. *Psychological Bulletin*, 126, 925–945.
- Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A. Y., Barndollar, K., & Trötschel, R. (2001). The automated will: Nonconscious activation and pursuit of behavioral goals. *Journal of Personality and Social Psychology*, 81, 1014–1027.
- Bargh, J. A., & Morsella, E. (2009). Unconscious behavioral guidance systems. In C. Agnew et al. (Eds.), *Then a miracle occurs: Focusing on behavior in social psychological theory and research*. New York: Oxford University Press, pp. 89–122.
- Baron, A. S., & Banaji, M. R. (2006). The development of implicit attitudes: Evidence of race evaluations from ages 6 and 10 to adulthood. *Psychological Science*, 17(1), 53–58.
- Barr-Anderson, D. J., Larson, N. I., Nelson, M. C., Neumark-Sztainer, D., & Story, M. (2009). Does television viewing predict dietary intake five years later in high school students and young adults? *International Journal of Behavioral Nutrition and Physical Activity*, 6, 7.
- Bartsch, K., & London, D. (2000). Children's use of mental state information in selecting persuasive arguments. *Developmental Psychology*, 36(3), 352–365.
- Baumeister, R. F., & Heatherton, T. F. (1996). Self-regulation failure. *Psychological Inquiry*, 7(1), 1–15.
- Becker, M. H. (1974). The health belief model and sick role behavior. *Health Education Monographs*, 2, 409–419.
- Belk, R., Bahn, K. D., & Mayer, R. N. (1982). Developmental recognition of consumption symbolism. *Journal of Consumer Research*, 9, 4–17.
- Belk, R., Mayer, R., & Driscoll, A. (1984). Children's recognition of consumption symbolism in children's products. *Journal of Consumer Research*, 10, 386–397.
- Bessenoff, G. R. (2001). Weight-norm internalization: The role of the self-concept in norm-related self-evaluation. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 62(4-B), 2111.
- Biel, A. L. (1993). Converting image into equity. In D. A. Aaker & A. L. Biel (Eds.), *Brand equity and advertising: Advertising's role in building strong brands* (pp. 67–82). Hillsdale, NJ: Erlbaum.
- Birch, L. L. (1999). Development of food preferences. *Annual Review of Nutrition*, 19, 41–62.
- 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, 42–46.
- Boush, D. M. (2001). Mediating advertising effects. In J. Bryant (Ed.), *Television and the American family* (pp. 397–412). Mahwah, NJ: Erlbaum Associates.
- Boush, D. M., Friestad, M., & Rose, G. M. (1994). Adolescent skepticism toward TV advertising and knowledge of advertising tactics. *Journal of Consumer Research*, 21, 165–175.
- Brown, J. A. (2001). Media literacy and critical television viewing in education. In D. G. Singer & J. L. Singer (Eds.), *Handbook of children and the media* (pp. 681–697). Thousand Oaks, CA: Sage Publications.
- Brownell, K. D., & Horgen, K. B. (2004). *Food fight: The inside story of the food industry, America's obesity crisis, and what we can do about it*. New York: The McGraw-Hill Companies.
- Brownell, K. D., & Warner, K. E. (2009). The perils of ignoring history. Big tobacco played dirty and millions died. How similar is big food? *The Millbank Quarterly*, 87, 259–294.
- 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, 471–482.
- Buijzen, M., & Valkenburg, P. M. (2003). The unintended effects of television advertising: A parent-child survey. *Communication Research*, 30(5), 483–503.
- Burger King (2008). Nutrition information. Retrieved from http://www.bk.com/Nutrition/PDFs/regional_menu.pdf on April 14, 2009.

- Calvert, S. (2008). Children as consumers: Advertising and marketing. *The Future of Children, 18*, 205–234.
- The Center for a New American Dream (2004). New American dream: A public opinion poll. Retrieved from www.newdream.org/about/pollresults.pdf on November 5, 2005.
- Center for Science in the Public Interest. (2003). *Pestering parents: How food companies market obesity to children*. Retrieved from <http://www.cspinet.org> on February 11, 2009.
- Chanowitz, B., & Langer, E. J. (1981). Premature cognitive commitment. *Journal of Personality and Social Psychology, 41*(6), 1051–1063.
- Chaplin, L. N., & John, D. R. (2005). The development of self-brand connections in children and adolescents. *Journal of Consumer Research, 32*, 119–129.
- Chartrand, T. (2005). The role of conscious awareness in consumer behavior. *Journal of Consumer Psychology, 15*(3), 203–210.
- Chartrand, T., & Bargh, J. A. (2002). Nonconscious motivations: Their activation, operation, and consequences. In A. Tesser, D. A. Stapel, & J. W. Wood (Eds.), *Self and motivation: Emerging psychological perspectives* (pp. 13–41). Washington, DC: APA.
- Chartrand, T. L., Huber, J., Shiv, B., & Tanner, R. (2008). Nonconscious goals and consumer choice. *Journal of Consumer Research, 35*, 189–201.
- Chernin, A. (2007). *The relationship between children's knowledge of persuasive intent and persuasion: The case of televised food marketing*. Doctoral dissertation, University of Pennsylvania, 2007.
- Chernin, A. (2008). The effects of food marketing on children's preference: Testing the moderating roles of age and gender. *Annals of the Academy of Political Social Science, 615*, 102–118.
- Chester, J., & Montgomery, K. (2007). *Interactive food and beverage marketing: Targeting children and youth in the digital age*. Retrieved from digitalads.org on September 10, 2007.
- Chester, J., & Montgomery, K. (2008). *Interactive food & beverage marketing: Targeting children and youth in the digital age*. Retrieved from www.digitalads.org/documents/NPLAN_digital_mktg_memo.pdf on March 28, 2009.
- Children's Advertising Review Unit (2008). About the Children's Advertising Review Unit (CARU). Retrieved from www.caru.org/about/index.aspx on April 28, 2009.
- Chou, S.-Y., Rashad, I., & Grossman, M. (2008). Fast-food restaurant advertising on television and its influence on childhood obesity. *Journal of Law and Economics, 51*, 599–618.
- Cohen, J. B., Pham, M. T., & Andrade, E. B. (2008). The nature and role of affect in consumer behavior. In C. P. Haugtvedt, P. M. Herr & F. R. Kardes (Eds.), *Handbook of Consumer Psychology* (pp. 297–348). New York: Lawrence Erlbaum Associates.
- Connor, S. M. (2006). Food-related advertising on preschool television: Building brand recognition in young viewers. *Pediatrics, 118*, 1478–1485.
- Consumers International (1996). *A spoonful of sugar—Television food advertising aimed at children: An international comparative survey*. Retrieved from <http://www.consumersinternational.org> on May 28, 2008.
- Consumers International (1999). *Easy targets—a survey of food and toy advertising to children in four Central European countries*. Retrieved from <http://www.consumersinternational.org> on May 28, 2008.
- Consumers International (2004). *The Junk Food Generation—A multi-country survey of the influence of television advertising on children*. Retrieved from <http://www.consumersinternational.org> on May 28, 2008.
- Council of American Research Survey Organizations (2005). *CASRO's Data Trends Survey: 2005 Survey Results*. Retrieved from <http://www.casro.org/pdfs/CASRO%202005%20Data%20Trends%20Results.pdf> on July 29, 2009.
- Council of Better Business Bureaus [CBBB] (2006). *New food, beverage initiative to focus kids' ads on healthy choices; Revised guidelines strengthen CARU's guidance to food advertisers*. Retrieved from <http://www.bbb.org/alerts/article.asp?ID=728> on May 15, 2008.
- Cowburn, G., & Boxer, A. (2007). Magazines for children and young people and the links to Internet food marketing: a review of the extent and type of food advertising. *Public Health Nutrition, 10*(10), 1024–1031.

- Davies, P. G., Spencer, S. J., & Steele, C. M. (2005). Clearing the air: Safety moderates the effects of stereotype threat on women's leadership aspirations. *Journal of Personality and Social Psychology, 88*(2), 276–287.
- De Houwer, J., Thomas, S., & Baeyens, F. (2001). Associative learning of likes and dislikes: A review of 25 years of research on human evaluative conditioning. *Psychological Bulletin, 127*, 853–869.
- Deighton, J. (1984). The interaction of advertising and evidence. *Journal of Consumer Research, 11*, 763–770.
- Deliza, R., & MacFie, H. J. H. (1996). The generation of sensory expectation by external cues and its effect on sensory perception and hedonic ratings: A review. *Journal of Sensory Studies, 11*, 103–128.
- 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*, 207–229.
- Dijksterhuis, A., & Bargh, J. A. (2001). The perception-behavior expressway: Automatic effects of social perception on social behavior. *Advances in Experimental Social Psychology, 33*, 1–40.
- Dijksterhuis, A., Chartrand, T. L., & Aarts, H. (2007). Automatic behavior. In J. A. Bargh (Ed.), *Social psychology and the unconscious: The automaticity of higher mental processes*. Philadelphia: Psychology Press.
- Dijksterhuis, A., Smith, P. K., van Baaren, R. W., & Wigboldus, D. H. J. (2005). The unconscious consumer: Effects of environment on consumer behavior. *Journal of Consumer Psychology, 15*(3), 193–202.
- Dotson, M. J., & Hyatt, E. M. (2005). Major influence factors in children's consumer socialization. *Journal of Consumer Marketing, 22*(1), 35–42.
- Dubow, J. S. (1995). Advertising recognition and recall by age—including teens. *Journal of Advertising Research, 35*, Sept/Oct, 55–60.
- Dunn, M. E., & Goldman, M. S. (1996). Empirical modeling of an alcohol expectancy memory network in elementary school children as a function of grade. *Experimental and Clinical Psychopharmacology, 4*(2), 209–217.
- Dunn, M. E., & Yniguez, R. M. (1999). Experimental demonstration of the influence of alcohol advertising on the activation of alcohol expectancies in memory among fourth- and fifth-grade children. *Experimental and Clinical Psychopharmacology, 7*, 473–483.
- 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). Ft. Worth, TX: Harcourt Brace Jovanovich.
- 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*, 450–463.
- Eisenberg, D., McDowell, J., Berestein, L., Tsiantar, D., & Finan, E. (2002). It's an ad, ad, ad, ad world. *Time, 160*, 38–42.
- Elliott, C. (2008). Assessing "fun foods": nutritional content and analysis of supermarket foods targeted at children. *Obesity Reviews, 9*, 368–377.
- Ellis, J., & Northridge, M. E. (2002). Tobacco and the media. *American Journal of Public Health, 92*, 895.
- Epstein, L. H., Roemmich, J. N., Robinson, J. L., Paluch, R. A., Winiewicz, D. D., Fuerch, J. H., et al. (2008). A randomized trial of the effects of reducing television viewing and computer use on body mass index in young children. *Archives of Pediatric and Adolescent Medicine, 162*, 239–245.
- Escalas, J. E., & Bettman, J. R. (2003). You are what you eat: The influence of reference groups on consumers' connections to brands. *Journal of Consumer Psychology, 13*(3), 339–348.
- European Heart Network (2005). *The marketing of unhealthy food to children in Europe*. A report of Phase 1 of the 'Children, obesity, and associated avoidable chronic diseases' project. Retrieved from <http://www.ehnheart.org/content/listpublication.asp?level0=1456&level1=1552&level2=1556> on September 14, 2008.

- Fazio, R. H. (2001). On the automatic activation of associated evaluations: An overview. *Cognition and Emotion, 15*, 115–141.
- Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual Review of Psychology, 54*, 297–327.
- Fazio, R. H., Powell, M. C., & Williams, C. J. (1989). The role of attitude accessibility in the attitude-to-behavior process. *Journal of Consumer Research, 16*, 280–288.
- Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C., & Kardes, F. R. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology, 50*(2), 229–238.
- Fazio, R. H., & Williams, C. J. (1986). Attitude accessibility as a moderator of the attitude-perception and attitude-behavior relations: An investigation of the 1984 presidential election. *Journal of Personality and Social Psychology, 51*(3), 505–514.
- Federal Trade Commission [FTC] (2007). *Children's Exposure to TV Advertising in 1977 and 2004*. Retrieved from www.ftc.gov on October 22, 2007.
- FTC (2008). *Marketing Food to Children and Adolescents. A Review of Industry Expenditures, Activities, and Self-Regulation*. Retrieved from www.ftc.gov on September 20, 2008.
- Ferguson, M. J., & Bargh, J. A. (2004). Liking is for doing. The effects of goal pursuit on automatic evaluation. *Journal of Personality and Social Psychology, 87*, 557–572.
- Ferguson, M. J., Bargh, J. A., & Nayak, D. A. (2005). After-affects: How automatic evaluations influence the interpretation of subsequent, unrelated stimuli. *Journal of Experimental Social Psychology, 41*, 182–191.
- Ferraro, R., Bettman, J. R., & Chartrand, T. L. (2008). The power of strangers: The effect of incidental consumer brand encounters on brand choice. *Journal of Consumer Research, 35*, 729–741.
- Fitzsimons, G. M., Chartrand, T. L., & Fitzsimons, G. J. (2008). Automatic effects of brand exposure on motivated behavior: How Apple makes you “think different.” *Journal of Consumer Research, 35*, 21–35.
- Fitzsimons, G. J., Hutchinson, J. W., Williams, P., Alba, J. W., Chartrand, T. L., Huber, J., Kardes, F. R., Menon, G., Raghuram, P., Russo, J. E., Shiv, B., & Tavassoli, N. T. (2002). Non-conscious influences on consumer choice. *Marketing Letters, 13*(3), 269–279.
- Folta, S. C., Goldberg, J. P., Economos, C., Bell, R., & Melzer, R. (2006). Food advertising targeted at school-age children: A content analysis. *Journal of Nutrition Education and Behavior, 38*, 244–248.
- Forrester Research (2005, May 3). Forrester Research releases US online advertising and marketing forecast—Market to reach \$26 billion by 2010. Press release.
- French, S. A., Story, M., Hannan, P., Breitlow, K. K., Jefferey, R. W., Baxter, J. S., et al. (1999). Cognitive and demographic correlates of low-fat vending snack choices among adolescents and adults. *Journal of the American Dietetic Association, 99*, 471–475.
- Friestad, M., & Wright, P. (1994). The persuasion knowledge model: How people cope with persuasion attempts. *Journal of Consumer Research, 21*, 1–31.
- Geraci, J. C. (2004, April-June). What do youth marketers think about selling to kids? *Advertising & Marketing to Children, 11*–17.
- Gerbner, G., Gross, L., Morgan, M., Signorielli, N., & Shanahan, J. (2002). Growing up with television: Cultivation processes. In J. Bryant & D. Zillman (Eds.), *Media Effects: Advances in Theory and Research* (pp. 43–68). Mahwah, NJ: Laurence Erlbaum Associates.
- Gilbert, D. T. (1993). The assent of man: Mental representation and the control of belief. In D. M. Wegner & J. W. Pennebaker (Eds.), *Handbook of Mental Control* (pp. 57–87). Englewood Cliffs, NJ: Prentice-Hall.
- Glanz, K., Basil, M., Maibach, E., Goldberg, J., & Snyder, D. (1998). Why Americans eat what they do: Taste, nutrition, cost, convenience and weight control concerns as influences on food consumption. *Journal of American Dietetic Association, 98*, 1118–1126.
- Goldberg, M. E., & Gorn, G. J. (1987). Happy and sad TV programs. How they affect reactions to commercials. *Journal of Consumer Research, 14*, 387–403.
- Goldberg, M. E., Gorn, G. J., & Gibson, W. (1978). TV messages for snack and breakfast foods: Do they influence children's preferences? *Journal of Consumer Research, 9*, 200–205.
- Gordon, W. (2001). The darkroom of the mind: What does neuropsychology now tell us about brands. *Journal of Consumer Behaviour, 1*(3), 280–292.

- Gorn, G. J., & Goldberg, M. E. (1982). Behavioral evidence of the effects of televised food messages on children. *Journal of Consumer Research*, 9, 200–205.
- Government Accountability Office [GAO] (US). (2005). School meal programs. In R. N. GAO-05-563 (Ed.), *Competitive foods are widely available and generate substantial revenues for schools*. Washington, DC: GAO.
- Grier, S. A., & Brumbaugh, A. B. (1999). Noticing cultural differences: Ad meanings created by target and non-target markets. *Journal of Advertising*, 28, 79.
- Grier, S. A., & Kumanyika, S. K. (2008). The context for choice: Health implications of targeted food and beverage marketing to African Americans. *American Journal of Public Health*, 98, 1616–1629.
- Grier, S. A., Mensinger, J., Huang, S. H., Kumanyika, S. K., & Stettler, N. (2007). Fast-food marketing and children's fast food consumption: Exploring parents' influences on an ethnically diverse sample. *Journal of Public Policy and Marketing*, 26, 221–235.
- Gunter, B., Oates, C., & Blades, M. (2005). *Advertising to children on TV: Content, impact and regulation*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Haley, R. I., & Baldinger, A. L. (1991). The ARF copy research validity project. *Journal of Advertising Research*, 31(2), 11–31.
- Halford, J. C. G., Boyland, M. J., Hughes, G., Oliveira, L. P., & Dovey, T. M. (2007). Beyond-brand effect of television (TV) food advertisement/commercials on caloric intake and food choice of 5–7-year-old children. *Appetite*, 49, 263–267.
- Halford, J. C. G., Gillespie, J., Brown, V., Pontin, E. E., & Dovey, T. M. (2004). Effect of television advertisements for foods on food consumption in children. *Appetite*, 42, 221–225.
- Harris Interactive (2004a). *Trends & Tudes*, 3(11). Retrieved from www.harrisinteractive.com/newsletters/k12news/HI_Trends&TudesNews2004_v3_iss11.pdf on November 5, 2005.
- Harris, J. L. (2008). *Priming obesity: Direct effects of television food advertising on eating behavior and food preferences*. PhD thesis, Yale University, New Haven, CT.
- Harris, J. L., & Bargh, J. A. (2009). Television viewing and unhealthy diet: Implications for children and media interventions. *Health Communication*, in press.
- Harris, J. L., Bargh, J. A., & Brownell, K. (2009a). The direct effects of television food advertising on eating behavior. *Health Psychology*, 28, 404–413.
- Harris, J. L., Pomeranz, J. L., Lobstein, T., & Brownell, K. D. (2009b). A crisis in the marketplace: How food marketing contributes to childhood obesity and what can be done. *Annual Review of Public Health*, 30, 211–225.
- Harris, J. L., Schwartz, M., & Brownell, K. D. (2009c). Marketing foods to children and youth: Licensed characters and other promotions on packaged foods in the supermarket. *Public Health Nutrition*, in press.
- Harrison, K., & Marske, A. L. (2005). Nutritional content of foods advertised during the television programs children watch most. *American Journal of Public Health*, 95, 1568–1574.
- Hartlaub, P. (2007, Feb. 1). The 10 best Super Bowl ads of all time. MSNBC.com. Retrieved from www.msnbc.msn.com/id/16691199 on April 17, 2009.
- Hastie, R., & Park, B. (1986). The relation between memory and judgment depends on whether the judgment task is memory-based or on-line. *Psychological Review*, 93, 258–268.
- Hastings, G., Stead, M., McDermott, L., & Forsyth, A. (2003). *Review of research on the effects of food promotion to children*. Glasgow, UK: Center for Social Marketing, University of Strathclyde.
- Hawkes, D. (2007). Regulating food marketing to young people worldwide: Trends and policy drivers. *American Journal of Public Health*, 97, 1962–1973.
- Heath, R. (2000). Low involvement processing—a new model of brands and advertising. *International Journal of Advertising*, 19, 287–298.
- Heymsfield, S. B., Harp, J. B., Reitman, M. L., Beetsch, J. W., Schoeller, D. A., Erondy, N., & Pietrobelli, A. (2007). Why do obese patients not lose more weight when treated with low-calorie diets? A mechanistic perspective. *American Journal of Clinical Nutrition*, 85, 346–354.
- 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, 511–517.

- Institute of Medicine [IOM] (2006). National academy of sciences, committee on food marketing and the diets of children and youth. In J. M. McGinnis, J. Gootman & V. I. Kraak (Eds.), *Food marketing to children and youth: Threat or opportunity?* Washington, DC: Institute of Medicine of the National Academies.
- Irmak, C., Block, L. G., & Fitzsimons, G. (2005). The placebo effect in marketing: Sometimes you just have to want it to work. *Journal of Marketing Research*, *XLII*, 406–409.
- Isler, L., Popper, E. T., & Ward, S. C. (1987). Children's purchase requests and parental responses: Results from a diary study. *Journal of Advertising Research*, *27*, 28–39.
- Janiszewski, C. (1993). Preattentive mere exposure effects. *Journal of Consumer Research*, *20*, 376–392.
- John, D. R. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. *Journal of Consumer Research*, *26*, 183–213.
- Jones, S., Bee, C., Burton, R., & Kahle, L. R. (2004). Marketing through sports entertainment: A functional approach. In L. J. Shrum (Ed.), *The psychology of entertainment media: Blurring the lines between entertainment and persuasion* (pp. 309–322). Mahwah, NJ: Lawrence Erlbaum Associates.
- Keller, K. L. (1993). Conceptualizing, measuring and managing customer-based brand equity. *Journal of Marketing*, *57*, 1–22.
- Keller, K. L. (2003). Brand synthesis. The multidimensionality of brand knowledge. *Journal of Consumer Research*, *29*, 595–600.
- Kelly, K. J., Slater, M. D., & Karan, D. (2002). Image advertisements' influence on adolescents' perceptions of the desirability of beer and cigarettes. *Journal of Public Policy and Marketing*, *21*, 295–304.
- Kelly, B., Smith, B., King, L., Flood, V., & Bauman, A. (2008). Television food advertising to children: the extent and nature of exposure. *Public Health Nutrition*, *10*, 1234–1240.
- Klein, N. (1999). *No logo: Taking aim at the brand bullies*. New York: Picador.
- Kumanyika, S., & Grier, S. (2006). Targeting interventions for ethnic minority and low-income populations. *The Future of Children*, *16.1*, 187–207.
- Kunkel, D., Wilcox, B. L., Cantor, J., Palmer, E., Linn, S., & Dowrick, P. (2004). *Report of the APA task force on advertising and children*. Retrieved from www.apa.org/releases/childrenads.pdf on November 22, 2004.
- Laczniak, R. N., & Palan, K. M. (2004). Under the influence. *Marketing Research*, *16*(1), 34–40.
- Law, S., & Braun, K. A. (2000). I'll have what she's having: Gauging the impact of product placements on viewers. *Psychology & Marketing*, *17*(12), 1059–1075.
- Law, S., & Braun-LaTour, K. A. (2004). Product placements: How to measure their impact. In L. J. Shrum (Ed.), *The Psychology of entertainment media: Blurring the lines between entertainment and persuasion* (pp. 63–78). Mahwah, NJ: Lawrence Erlbaum Associates.
- Lee, L., Frederick, S., & Ariely, D. (2006). Try it, you'll like it: The influence of expectation, consumption, and revelation on preferences for beer. *Psychological Science*, *17*, 1054–1058.
- Levin, I. P., & Gaeth, G. J. (1988). How consumers are affected by the framing of attribute information before and after consuming the product. *Journal of Consumer Research*, *15*, 374–409.
- Lewis, L. B., Sloane, D. C., Nascimento, L. C., Diamont, A. L., Guinyard, J. J., Yancey, A. K., & Flynn, G. (2005). African Americans' access to healthy food options in South Los Angeles restaurants. *American Journal of Public Health*, *95*, 668–673.
- Lindstrom, M. (2008). Brand kids. *Young Consumers*, *9*(1), 66–67.
- Livingstone, S., & 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.
- Macklin, M. C. (1996). Preschoolers' learning of brand names from visual cues. *Journal of Consumer Research*, *2*(4), 304–319.
- Mallinckrodt, V., & Mizerski, D. (2007). The effects of playing an advergame on young children's perceptions, preferences and request. *Journal of Advertising*, *36*, 87–100.
- Martin, S. E., Snyder, L. B., Hamilton, M., Fleming-Melici, F., Slater, M. D., Stacy, A., Chen, M., & Grube, J. W. (2002). Alcohol advertising and youth. *Alcoholism: Clinical and Experimental Research*, *26*(6), 900–906.

- McCarty, J. A. (2004). Product placement: The nature of the practice and potential avenues of inquiry. In L. J. Shrum (Ed.), *The psychology of entertainment media: Blurring the lines between entertainment and persuasion* (pp. 45–61). Mahwah, NJ: Lawrence Erlbaum Associates.
- McClure, S. M., Li, J., Tomlin, D., Cypert, K. S., Montague, L. M., & Montague, P. R. (2004). Neural correlates of behavioral preference for culturally familiar drinks. *Neuron*, *44*, 379–387.
- McGuire, W. J. (1976). Some internal psychological factors influencing consumer choice. *Journal of Consumer Research*, *2*(4), 302–319.
- McNeal, J. U. (1998). Tapping the three kids markets. *American Demographics*, *20*, 37–41.
- Millward Brown (2008). *Brandz Top100 Brand Ranking: 2008*. Retrieved from www.brandz.com/upload/BrandZ-2008-RankingReports.pdf on February 25, 2009.
- Moschis, G. P., & Moore, R. L. (1982). A longitudinal study of television advertising effects. *Journal of Consumer Research*, *9*, 279–286.
- Monahan, J. L., Murphy, S. T., & Zajonc, R. B. (2000). Subliminal mere exposure: Specific, general and diffuse effects. *Psychological Science*, *11*(6), 462–466.
- Montgomery, K. C. (2001). Digital kids: The new on-line children's consumer culture. In D. G. Singer & J. L. Singer (Eds.), *Handbook of children and the media* (pp. 635–650). Thousand Oaks, CA: Sage Publications.
- Moore, E. S. (2004). Children and the changing world of advertising. *Journal of Business Ethics*, *52*, 161–167.
- Moore, E. S., & Lutz, R. L. (2000). Children, advertising and product experiences: A multimethod inquiry. *Journal of Consumer Research*, *27*, 31–48.
- Moore, E. S., & Rideout, V. J. (2007). The online marketing of food to children: Is it just fun and games? *Journal of Public Policy and Marketing*, *26*(2), 202–220.
- Morris, J. D., Woo, C., Geason, J. A., & Kim, J. (2002). The power of affect: Predicting intention. *Journal of Advertising Research*, *42*(3), 7–18.
- Naik, P. A., & Raman, K. (2003). Understanding the impact of synergy in multimedia communications. *Journal of Marketing Research*, *XL*, 375–388.
- Nelson, M. R., & McLeod, L. E. (2005). Adolescent brand consciousness and product placements: Awareness, liking and perceived effects on self and others. *International Journal of Consumer Studies*, *29*(6), 515–528.
- Neumark-Sztainer, D., Wall, M., Perry, C., & Story, M. (2003). Correlates of fruit and vegetable intake among adolescents: Findings from Project EAT. *Preventive Medicine*, *37*, 198–208.
- Niedenthal, P. M., Barsalou, L. W., Winkielman, P., Krauth-Gruber, S., & Ric, F. (2005). Embodiment in attitudes, social perception and emotion. *Personality and Social Psychology Review*, *9*, 184–211.
- North, A. D., Hargreaves, D. J., & McKendrick, J. (1997). In-store music affects product choice. *Nature*, *390*, 132.
- OFCOM (2008). Ofcom Milestones 2007–2008. Retrieved from <http://www.ofcom.org.uk/media/features/milestone> on February 12, 2009.
- Ogden, C. L., Carroll, M. D., Curtin, L. R., McDowell, M. A., Tabak, C. J., & Flegal, K. M. (2006). Prevalence of overweight and obesity in the United States, 1999–2004. *JAMA*, *295*, 1549–1555.
- Olshansky, S. J., Passaro, D. J., Hershow, R. C., Layden, J., Carnes, B. A., Brody, J., Hayflick, L., Butler, R. N., Allison, D. B., & Ludwig, D. S. (2005). A potential decline in the life expectancy in the United States in the 21st century. *The New England Journal of Medicine*, *352*, 1138–1145.
- Outley, C. W., & Taddese, A. (2006). A content analysis of health and physical activity messages marketed to African American children during after-school television programming. *Archives of Pediatric and Adolescent Medicine*, *160*, 432–435.
- Oyserman, D. (2007). Social identity and self-regulation. In A. W. Kruglanski & E. T. Higgins (Eds.), *Social psychology: Handbook of basic principles*. (2nd ed., pp. 432–453). New York: Guilford Press.
- Oyserman, D., Fryberg, S. A., & Yoder, N. (2007). Identity-based motivation and health. *Journal of Personality and Social Psychology*, *93*, 1011–1027.
- Pecheux, C. (1999). Children and attitude toward the brand: A new measurement scale. *Journal of Advertising Research*, *39*(4), 19–29.

- Pechmann, C., & Knight, S. J. (2002). An experimental investigation of the joint effects of advertising and peers on adolescents' beliefs and intentions about cigarette consumption. *Journal of Consumer Research*, 29, 5–19.
- Pechmann, C., Levine, L., Loughlin, S., & Leslie, F. (2005). Impulsive and self-conscious: Adolescents' vulnerability to advertising and promotion. *Journal of Public Policy and Marketing*, 24(2), 202–221.
- Pempek, T. A., & Calvert, S. L. (2009). Tipping the balance: Advergaming to promote low-income African-American children's consumption of nutritious foods and beverages. Unpublished manuscript.
- Petrova, P. K., & Cialdini, R. B. (2009). Novel approaches toward resistance to persuasion. In Hastings, Bryant & Angus (Eds.), *Handbook of social marketing*, in press.
- Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. New York: Springer-Verlag.
- Petty, R. E., Cacioppo, J. T., & Schumann, D. (1983). Central and peripheral routes to advertising effectiveness: The moderating role of involvement. *Journal of Consumer Research*, 10(2), 135–146.
- Petty, R. E., & Wegener, D. T. (1999). The elaboration likelihood model: Current status and controversies. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology*. New York: The Guilford Press.
- Piaget, J. (1972). *The child's conception of the world*. Totowa, NJ: Littlefield, Adams.
- Pomeranz, J. L., Teret, S. P., Sugarman, S. D., Rutkow, L., & Brownell, K. D. (2009). Innovative legal approaches to address obesity. *Millbank Quarterly*, 87, 185–214.
- Powell, L. M., Szczepka, G., & Chaloupka, F. J. (2007). Exposure to food advertising on television among US children. *Archives of Pediatric and Adolescent Medicine*, 161, 553–560.
- Powell, L. M., Szczepka, G., Chaloupka, F. J., & Braunschweig, C. L. (2007). Nutritional content of television food advertisements seen by children and adolescents. *Pediatrics*, 120, 576–583.
- Primack, B. A., Gold, M. A., Land, S. R., & Fine, M. J. (2006). Association of cigarette smoking and media literacy about smoking among adolescents. *Journal of Adolescent Health*, 39, 465–472.
- Punj, G. N., & Hillyer, C. L. (2004). A cognitive model of customer-based brand equity for frequently purchased products: Conceptual framework and empirical results. *Journal of Consumer Psychology*, 14, 124–131.
- Ragunathan, R., Naylor, R. W., & Hoyer, W. D. (2006). The unhealthy = tasty intuition and its effects on taste inferences, enjoyment, and choice of food products. *Journal of Marketing*, 70, 170–184.
- Raney, A. A., Arpan, L. M., Pashupati, K., & Brill, D. A. (2003). At the movies, on the web: An investigation of the effects of entertaining and interactive web content on site and brand evaluations. *Journal of Interactive Marketing*, 17(4), 38–53.
- Reece, B. B., Rifon, N. J., & Rodriguez, K. (1999). Selling food to children. Is fun part of a balanced breakfast? In L. C. Machlin & L. Carlson (Eds.), *Advertising to children: Concepts and controversies* (pp. 189–208). Thousand Oaks, CA: Sage Publications.
- Rideout, V., Roberts, D. F., & Foehr, U. G. (2005). Generation M: Media in the lives of 8–18 year-olds. Retrieved from www.kff.org/entmedia/upload/Generation-M-Media-in-the-Lives-of-8-18-Year-olds-Report.pdf on November 5, 2005.
- Ritson, M., & Elliott, R. (1999). The social uses of advertising: An ethnographic study of adolescent advertising audiences. *Journal of Consumer Research*, 26, 260–277.
- Robertson, T. S., & Rossiter, J. R. (1976). Short-run advertising effects on children: A field study. *Journal of Marketing Research*, 13, 68–70.
- Robinson, T. N., Borzekowski, D. L., Matheson, D. M., & Kraemer, H. C. (2007). Effects of fast food branding on young children's taste preferences. *Archives of Pediatric and Adolescent Medicine*, 161, 792–797.
- Robinson, T. N., & Sirard, J. R. (2005). Preventing childhood obesity: A solution-oriented research paradigm. *American Journal of Preventive Medicine*, 28, 194–201.
- Roedder, D. L., Sternthal, B., & Calder, B. J. (1983). Attitude-behavior consistency in children's responses to television advertising. *Journal of Marketing Research*, 20, 337–349.

- Roerich, L., & Goldman, M. S. (1995). Implicit priming of alcohol expectancy memory processes and subsequent drinking behavior. *Experimental and Clinical Psychopharmacology*, 3, 402–410.
- Ross, R. P., Campbell, T., Wright, J. D., 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, 185–202.
- Rozin, P. (1996). Sociocultural influences on food selection. In E. D. Capaldi (Ed.), *Why we eat what we eat* (pp. 233–263). Washington, DC: APA.
- Rubin, A. M. (1977). Television usage, attitudes and viewing behaviors of children and adolescents. *Journal of Broadcasting*, 21, 355–369.
- Rubin, A. M. (2002). The uses-and-gratifications perspective of media effects. In J. Bryant & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (pp. 525–548). Mahwah, NJ: Lawrence Erlbaum.
- Rudman, L. A. (2004). Sources of implicit attitudes. *Current Directions in Psychological Science*, 13(2), 79–82.
- Russell, C. A., Norman, A. T., & Heckler, S. E. (2004). The consumption of television programming: Development and validation of the connectedness scale. *Journal of Consumer Research*, 31, 150–161.
- Schor, J. B. (2004). *Born to buy: The commercialized child and the new consumer culture*. New York: Scribner.
- Schor, J. B., & Ford, M. (2007). From tastes great to cool: Children's food marketing and the rise of the symbolic. *Journal of Law and Medical Ethics*, 10, 21.
- Sharma, L. L., Teret, S. P., & Brownell, K. D. (2009). The food industry and self-regulation: Standards to promote success and to avoid public health failures. *American Journal of Public Health*, in press.
- Schwarz, N., & Clore, G. (1996). Feelings and phenomenal experience. In E. Higgins & A. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (1st ed.). New York: Guilford, pp. 385–487.
- Speers, S., Harris, J. L., Goren, A., Schwartz, M. B., & Brownell, K. D. (2009). Public perceptions of food marketing to youth: Results of the Rudd Center Public Opinion Poll, May 2008. Retrieved from www.yaleruddcenter.org/news.aspx?id=35 on October 19, 2009.
- Shifrin, D. (2005). *Remarks at Federal Trade Commission Workshop*. Retrieved from www.saap.org/advocacy/washing/dr_%20Shifrin_remarks.htm on November 14, 2005.
- Shimp, T. A., Stuart, E. W., & Engle, R. A. (1991). A program of classical conditioning experiments testing variations in the conditioned stimulus and context. *Journal of Consumer Research*, 18, 1–12.
- Shiv, B., Carmon, Z., & Ariely, D. (2005). Placebo effects of marketing actions: Consumers may get what they pay for. *Journal of Marketing Research*, XLII, 383–393.
- Signorielli, N., & Lears, M. (1992). Television and children's conceptions of nutrition: Unhealthy messages. *Health Communication*, 4(4), 245–257.
- Signorielli, N., & Staples, J. (1997). Television and children's conceptions of nutrition. *Health Communication*, 9(4), 289–301.
- Simonson, I. (2005). In defense of consciousness: The role of conscious and unconscious inputs in consumer choice. *Journal of Consumer Psychology*, 15(3), 211–217.
- Skinner, J. D., Carruth, B. R., Bounds, W., & Ziegler, P. J. (2002). Children's food preferences: A longitudinal analysis. *Journal of American Dietetic Association*, 102, 1638–1647.
- Smith, E. R. (2002). Mental representation and memory. In D. Gilbert, S. Fiske & G. Lindzey (Eds.), *Handbook of social psychology* (4th ed., Vol. 1). New York: McGraw-Hill.
- Snyder, M., & DeBono, K. G. (1985). Appeals to image and claims about quality: Understanding the psychology of advertising. *Journal of Personality and Social Psychology*, 49, 586–587.
- Spira, J. S., & Whittler, T. E. (2004). Style or substance? Viewers' reactions to spokesperson's race in advertising. In J. D. Williams, W.-N. Lee & C. P. Haugtvedt (Eds.), *Diversity in advertising: Broadening the scope of research directions* (pp. 247–257). Hillsdale, NJ: Erlbaum.
- Steele, J. R., & Brown, J. D. (1995). Adolescent room culture: Studying media in the context of everyday life. *Journal of Youth and Adolescence*, 24(5), 551–577.

- Story, M., & French, S. (2004). Food advertising and marketing directed at children and adolescents in the U.S. *International Journal of Behavior, Nutrition and Physical Activity*, 1, 3.
- Story, M., Kaphingst, K. M., Robinson-O'Brien, R., & Glanz, K. (2008). Creating healthy food and eating environments: Policy and environmental approaches. *Annual Review of Public Health*, 29, 253–272.
- Strack, F., & Deutsch, R. (2004). Reflective and impulsive determinants of social behavior. *Personality and Social Psychology Review*, 8, 220–247.
- Swinburn, B., Sacks, G., Lobstein, T., Rigby, N., Baur, L. A., Brownell, K. D., Gill, T., Seidell, J., & Kumanyika, S. (2008). The 'Sydney Principles' for reducing the commercial promotion of foods and beverages to children. *Public Health Nutrition*, 11, 881–886.
- Te'eni-Harari, T., Lampert, S. I., & Lehman-Wilzig, S. (2007). Information processing of advertising among young people: The Elaboration Likelihood Model as applied to youth. *Journal of Advertising Research*, 47(3), 326–340.
- Tirodkar, M. A., & Jain, A. (2003). Food messages on African American television shows. *American Journal of Public Health*, 93, 439–441.
- Truthfulmedia.com (2008). It could happen here. Retrieved from <http://www.youtube.com/watch?v=rwTlxgQXWFM> on February 12, 2009.
- Tuorila, H. M., Meiselman, H. L., Cardello, A. V., & Leshner, L. L. (1998). Effect of expectations and the definition of product category on the acceptance of unfamiliar foods. *Food Quality and Preference*, 9, 421–430.
- Underhill, P. (2008). *Why we buy: The science of shopping*. New York: Simon & Schuster.
- Urbick, B. (2008). Make a big impression on kids. *Brand Strategy*, 224, 46–47.
- U.S. Department of Health and Human Services [USDHHS] (2000). *Healthy People 2010*. Retrieved from www.healthypeople.gov/document/tableofcontents.htm on April 6, 2009.
- Valkenburg, P. M. (2000). Media and youth consumerism. *Journal of Adolescent Health*, 27S, 52–56.
- Valkenburg, P. M., & Buijzen, M. (2005). Identifying determinants of young children's brand awareness: Television, parents, and peers. *Journal of Applied Developmental Psychology*, 26(4), 456–468.
- Valkenburg, P. M., & Cantor, J. (2001). The development of a child into a consumer. *Applied Developmental Psychology*, 22, 61–72.
- Van Evra, J. P. (1995). Advertising's impact on children as a function of viewing purpose. *Psychology & Marketing*, 12(5), 423–432.
- Vargas, P. T. (2008). Implicit consumer cognition. In C. P. Haugtvedt, P. M. Herr, & F. R. Kardes (Eds.), *Handbook of consumer psychology* (pp. 477–504). New York: Lawrence Erlbaum Associates.
- Wansink, B. (2003). Using laddering to understand and leverage a brand's equity. *Qualitative Market Research*, 6, 111–118.
- Wansink, B. (2006). *Mindless eating: Why we eat more than we think*. New York: Bantam Books.
- Wansink, B., & Payne, C. (2009). X-ray vision carrots and tomato bursts. Presentation at the Annual Meeting of the School Nutrition Association, Las Vegas, NV, June 29, 2009.
- Ward, S., Wackman, D. B., & Wartella, E. (1977). *How children learn to buy*. Beverly Hills, CA: Sage Publications.
- Wardle, J., & Huon, G. (2000). An experimental investigation of the influence of health information on children's taste preferences. *Health Education Research*, 15, 39–44.
- Weiscott, M. (2005). Tweens: A consuming army. *Playthings*. Retrieved from <http://www.playthings.com/article/CA6255964.html> on October 19, 2009.
- Wilde, P. (2009). Self-regulation and the response to concerns about food and beverage marketing to children in the United States. *Nutrition Reviews*, 67, 155–166.
- Williams, J. D., Lee, W.-N., & Henderson, G. R. (2008). Diversity issues in consumer psychology. In C. P. Haugtvedt, P. M. Herr & F. R. Kardes (Eds.), *Handbook of consumer psychology* (pp. 877–912). New York: Lawrence Erlbaum Associates.
- Wilson, T. D., & Bar-Anan, Y. (2008). The unseen mind. *Science*, 321, 1046–1047.
- Wilson, T. D., & Brekke, N. (1994). Mental contamination and mental correction: Unwanted influences on judgments and evaluations. *Psychological Bulletin*, 116, 117–142.

- World Health Assembly (2007). *Resolution WHA60.23. Prevention and control of noncommunicable diseases: Implementation of the global strategy, item 2 (6)*. Adopted by the World Health Assembly, 60th, May 14–23, Geneva, Switzerland. Retrieved from <http://www.who.int>. on February 15, 2008.
- World Health Organization [WHO] (2003). Obesity and overweight fact sheet. Retrieved from www.who.int/dietphysicalactivity/media/en/gsf Obesity.pdf on September 1, 2007.
- WHO (2006). Marketing of food and nonalcoholic beverages to children. *Proceedings of the Representative WHO Forum Technical Meeting*, May 2–5, Oslo, Norway.
- Wright, P. L. (1973). The cognitive processes mediating acceptance of advertising. *Journal of Marketing Research*, 10, 53–62.
- Yancey, A. K., Cole, B. L., Brown, R., Williams, J. D., Hillier, A., Kline, R. S., Ashe, M., Grier, S. A., Backman, D., & McCarthy, W. J. (2009). A cross-sectional prevalence study of ethnically targeted and general audience outdoor obesity-related advertising. *The Millbank Quarterly*, 87, 155–184.
- Yankelovich (2005, June 27). Leveraging “pester power” is no way to build a brand, according to Yankelovich youth study. Press release. Retrieved from <http://www.yankelovich.com/media/Youth%206.15.05%20Press%20Release%20Disney.pdf> on December 5, 2005.
- Yi, Y. (2001). Cognitive and affective priming effects of the context for print advertisements. *Journal of Advertising*, 19(2), 40–48.
- Zajonc, R. B. (1998). Emotions. In D. T. Gilbert, S. T. Fiske & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., pp. 591–632). Boston: McGraw-Hill.
- Zandstra, E. H., de Graaf, C., & van Staveren, W. (2001). Influence of health and taste attitudes on consumption of low- and high-fat foods. *Food Quality and Preference*, 12, 75–82.