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The next few years will see a dramatic expansion of digital food and beverage marketing. The food industry is at the forefront of research and innovation in the interactive marketing arena, working with dozens of ad agencies, marketing firms, and high-tech specialists to design campaigns that take advantage of young people's engagement with social networks, interactive games, mobile phones, online videos, and virtual worlds.¹ Major brands have significantly increased their spending for online display advertising, exhibiting double- and in some cases triple-digit growth.² For example, Coca-Cola's spending was up 163 percent in 2009 from 2008; Dr. Pepper witnessed 427.9 percent growth; Kellogg's was up 225.3 percent; PepsiCo 68.6 percent; Wendy's 355.7 percent; General Mills 105.6 percent; and McDonald's spent 47.4 percent more.³

Food marketers pay particularly close attention to ethnic minorities.⁴ As the fastest growing demographic sector, African-Americans and Hispanics are also important trendsetters who are influencing the consumption patterns, new media behaviors, and even many of the products of the broader youth market.⁵ Today's minorities are predicted to become the majority, comprising almost half of all American youth by 2050.⁶

Yet, in the midst of this expanding digital marketplace, scholars still have little knowledge of just how these new forms of marketing are influencing child and adolescent behavior. The 2005 Institute of Medicine study noted the serious lack of research on digital marketing in the peer-reviewed literature.⁷ In the years since its publication, only a small number of scholarly studies have examined the health implications of interactive food marketing to young people.⁸ While a robust field has emerged to study digital media in young people's personal, social, and political lives, academic research on the role of marketing in youth digital culture remains seriously underdeveloped.⁹ There is a large infrastructure of proprietary market research on children and interactive media, but these efforts are primarily intended to support commercial marketing and advertising.¹⁰ And though the academic field of marketing theory and research has generated a valuable body of literature on the digital marketplace, not much attention has been paid to children.¹¹

The research and public debate over food marketing directed to children have focused almost exclusively on television commercials, as have the self-regulatory frameworks developed to address the issue.¹² While the digital media and marketing system encompasses television, it exhibits a number of characteristics that make it distinctly different. The ability to engage with youth *interactively* takes the basic marketing paradigm to a new level, challenging the prevailing theories and methods that have guided media research in the past, and requires scholars to take a fresh look at how we approach the study of food marketing and its impact on young people's behaviors. The traditional research emphasis on the *content* of television commercials and their *effects* on behavior and attitudes of young children is rooted in an earlier set of relationships in the mass media that are less applicable to contemporary practices. New models, research methods, and agendas are needed that can accommodate the

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changing nature of marketing in the digital era.

This report summarizes the research we conducted under a grant from the Robert Wood Johnson Foundation's Healthy Eating Research program. In the following pages, we present a brief summary of our conceptual framework for understanding digital marketing and its role in promoting unhealthy food and beverages to children. We first

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provide a brief snapshot of key concepts of digital marketing and their implications for young people's health. Next, we outline the challenges these concepts raise for researchers, and highlight relevant theoretical models for understanding how the new framework acts on children and youth; we also identify crucial gaps in our knowledge. Finally, we offer an agenda for future studies that can help us better understand the new marketing paradigm and support evidence-based policymaking.

Six Unique Concepts Define a Framework for Digital Marketing

Intensive digital marketing campaigns for fast food, snacks, and sweetened beverages combine an integrated set of digital practices designed to engage children and youth continuously (see Figure 1). We have identified six defining concepts that constitute unique features of digital media and marketing.¹³

Ubiquitous Connectivity. Children and teens now move seamlessly, and often simultaneously, across a spectrum of platforms—from laptops to desktop computers to cell phones to televisions.¹⁴ Marketers design their campaigns to take advantage of young people's constant connectivity to technology, their geographic locations, and the fluidity of their media experiences. The ubiquitous nature of new media makes it difficult for researchers to take into account the entirety of an individual's interaction with marketing. Neither the "medium" nor the "message" can be easily identified or isolated. While it is still important to understand how youth respond to individual media platforms and marketing appeals, they cannot be examined in isolation. Rather, researchers will need to find ways of assessing synergies across platforms, as well as how these platforms and the marketing content within them reinforce each other and create multiplier effects.

Engagement. In contrast to the passive experience of watching television, the increasingly participatory environment of interactive media facilitates active engagement.¹⁵ This is particularly the case for children and youth, whose enthusiastic involvement with social networks, blogs, text messaging, and online video makes them the most engaged demographic group.¹⁶ Engagement is a fundamental goal of contemporary digital marketing. Rather than simply exposing consumers to a particular message, product, or service, engagement means creating an environment in which young people are actually interacting with the brand, befriending the product, and integrating it into their personal and social relationships. Engagement also refers to the emotional connection between consumers and brands, which can be measured

through a variety of techniques, including *neuromarketing*, which uses the tools of neuroscience to test the impact of marketing on the brain.¹⁷ While researchers studying television food advertising could count the number of commercials a child might have seen during particular viewing periods, assessing engagement in the digital marketing context must take into account multiple elements, such as type and duration of interaction with a brand as well as degree of emotional involvement, in order to capture the full extent of a marketing campaign's impact.

User-generated Content. Digital technologies make it possible for marketers to enlist youth in creating and distributing brand-related content, including advertisements, products, and packaging for their

favorite products. In this way, youth are not passive viewers of commercial messages, but active practitioners in the marketing enterprise. User-generated-media campaigns employ a variety of techniques to encourage consumers to become involved in creating marketing messages. In most cases, companies create a template and provide incentives to foster participation. The practice turns the conventional model of advertising on its head, transforming children and teens from passive viewers of commercials into ad producers and distributors. This raises a number of key questions for researchers. For example, rather than focus on understanding the persuasive intent of an ad, scholars may want to explore other key issues such as how creating and promoting one's favorite products may intersect with identity development, especially during the critical period of adolescence.

Personalization. Through ongoing data collection and tracking, digital marketers can create personalized marketing and sales appeals based on a customer's unique preferences, behaviors, and psychological profile. Personalized marketing evolved from "customer relationship marketing" (CRM), a practice that predated the advent of the World Wide Web, but has become exponentially more sophisticated in the Digital Age with the advent of a new generation of media platforms, software, and measurement tools.¹⁸ For example, behavioral targeting has become a core strategy



Figure 1

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of contemporary marketing, a linchpin of many digital media campaigns targeting young people—not only online, but also on cell phones, video games, and other new platforms.¹⁹ The practice uses a range of online methods—including cookies and invisible data files—to track the online behaviors of individuals.²⁰ Through a variety of new techniques, marketers use these data to create personalized marketing and sales appeals based on a customer's unique preferences, behaviors, and psychological profile.²¹ Personalization creates an entirely new set of issues that were not part of

the traditional advertising and marketing paradigm, requiring researchers to take into account the individualized nature of commercial transactions in the digital environment, which often involves techniques that are not transparent to the user.

Social Graph. Participatory Web 2.0 platforms—particularly social networking sites such as Facebook—are further enhancing marketers' ability both to know the nature and extent of an individual's social relationships, and use them for highly sophisticated social media marketing campaigns. Social networking platforms have added a feature to digital marketing that is distinct and important: the ability to tap into the *social graph*, which is the complex web of relationships among individuals facilitated and tracked online, enabling marketers to access and influence both individuals and their communities in ways that were never before possible.²² Using a host of new techniques and measurement tools, social media marketers can know the breadth and depth of these online social relationships, as well as how they function, understanding who influences whom, and how the process of influence works. These social media campaigns target teens at a point in their lives when they are relying less on their parents and family and more on friends. There are many aspects of these new forms of digital marketing that need to be explored, including the role of peer influence in brand promotion, and the intersection of online social interactions with eating behaviors.

Immersive Environments. State-of-the-art animation, high-definition video, and other multimedia applications are spawning a new generation of immersive environments, including interactive games and three-dimensional virtual worlds, which marketers are using for brand promotion. Immersive environments surround and engross a person with powerful, realistic images and sounds, creating an experience of being inside the action, a mental state that is frequently accompanied by “intense focus, loss of self, distorted time sense, effortless action.”²³ These environments often trigger a sense of “presence,” which is defined as “being there,” a subjective feeling as if one is actually physically in the virtual environment.²⁴ Immersive marketing techniques are designed to create particularly intense experiences, plunging users into the center of the action through the use of avatars or “first-person-shooter” devices that induce a strong sense of subjectivity, heighten emotional arousal, and trigger

unconscious processes. The growing use of augmented reality, video, and 3-D virtual environments—already migrating to mobile platforms—means that all digital media experiences will be increasingly immersive in the not-too-distant future.

Scholars will need to take these six unique concepts into account when designing studies of how young people are responding to digital marketing, addressing, for example, the role that flow, presence, and subjective experience might play in making young people susceptible to food and beverage promotions. An important challenge for research on digital marketing campaigns will be understanding how the components interact in a unified framework with one another and with traditional media marketing.

Implications for Young People’s Health

Food marketing is an important part of the environment contributing to young peoples’ health behaviors.²⁵ Eating behaviors are highly complex, resulting from the interplay of multiple factors that impact health and nutrition, as well as the connections between people and their social, physical, and macro-level environments.²⁶ Thus, we need to consider how digital marketing intersects with other factors—social, psychological, and biological—that play a role in food consumption by children and youth. While marketing is generally regarded as part of the macro-level environment, digital media cut across all three of these environmental domains.

Because the digital marketing and media system has become such an integral part of young people’s lives, it encompasses their social environments, and in many ways aspects of their physical environments, especially through location targeting on mobile devices. Unlike television, where children’s exposure to commercials is limited to relatively brief intervals during the times when they are viewing programs, the ubiquity of the digital media culture enables marketers to reach and engage young people across multiple contexts. Marketing is now woven into the very fabric of young people’s daily experiences, integrated not only into their media content, but also into their social and personal relationships. Thus, we can no longer speak of marketing *messages* as isolated, measurable units; rather, we need to consider the synergistic nature of marketing *interactions* across a variety of platforms. Nor is marketing confined to a particular time and place; for example, it can be seeded through the *social graph* and then distributed widely, reinforced, and multiplied through a viral process that has no bounds. *Exposure* to marketing may be less important than the nature and degree of *engagement* with marketing and brands. In some cases, young people are actively *participating* in the development of the product, the design of the package, and the creation and distribution of the marketing. *Personalization* means that each individual has his or her own unique interactions and relationships with brands and the companies that produce and promote them. The increasingly *immersive* nature of all digital media means that young people are not just *viewing content*, but *inhabiting media environments* where entertainment, communication, and marketing

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are combined in a seamless stream of compelling sounds and images.

The impact of marketing is further enhanced and intensified by new forms of monitoring and measurement that were not possible before the advent of digital media. Measurement has been fully integrated into content, delivery systems, and user interactions. Through *web analytics*, *conversation targeting*, and other forms of surveillance, marketers can now track individuals online, across media, and in the real world,

monitoring their interactions, social relationships, and locations. Increasingly, these various forms of analysis can take place in real time, following users' movements and behaviors from moment to moment, and assessing their reactions to marketing techniques. As a result, different marketing approaches can be tested, refined, and tailored for maximum effect.

Research evidence has already established that television commercials are an important contributing factor in youth consumption of unhealthful food.²⁷ The combination of strategies and techniques that snack food, soft drink, and fast food companies are using to reach and engage youth through digital marketing is potentially a great deal more powerful. Furthermore, while sugar, fats, and salt are particularly appealing to humans, these taste preferences may disproportionately affect African-Americans and Hispanics.²⁸ Food marketing encountered by African-American and Hispanic youth tends to promote less healthful foods, and is less likely to support positive nutrition.²⁹ Because digital media play such a powerful and influential role in the lives of these young people, digital food marketing targeted at ethnic minority groups may further amplify these effects. All children and adolescents are engaging with digital food marketing during critical periods of their development when they are being socialized into the larger culture, forging their own identities, and establishing the habits and behaviors that are likely to stay with them for the rest of their lives. Social norms, attitudes about food, and consumption patterns, may become routine, automatic, and in many ways, unconscious.

Rethinking the Research Paradigm

With the increasing concern about childhood and adolescent obesity, a few scholars have begun to turn their attention to food marketing in digital media. However, for the most part, these studies have been somewhat narrow in scope, focusing on those aspects of digital marketing (particularly food-company-sponsored advergames) that can be easily quantified and measured through content analysis and other traditional mass communication methods.³⁰ These studies have also relied primarily on the cognitive theoretical model that has dominated both research and public policy on children and advertising for the last several decades.³¹ Drawing from Piaget's theories

of child development, three successive developmental stages have been identified during which children acquire increased abilities to understand advertisers' intentions to persuade them. It is not until children reach the age of 7 or 8 that they have the cognitive ability to recognize the persuasive intent behind a television advertisement.³² By age 12, children are able to articulate a more critical comprehension of advertising intent and become more skeptical.³³ According to this age-based, "cognitive defense" approach, regulatory safeguards are necessary only for the younger segment of the youth population.³⁴

In recent years, however, some scholars have begun to critique the cognitive model, suggesting other theoretical approaches for assessing the impact of contemporary marketing.³⁵ While no one theory can fully explain the complex ways in which contemporary food marketing influences the health behaviors of children and adolescents, we see several theoretical models and approaches that may be useful building blocks for helping scholars develop an understanding of how digital marketing works. Below, we briefly consider three: *dual-process models of persuasion*; *models of affective response*; and *models of familiarity and social norms*.

Dual-Process Models of Persuasion. Dual-process models of persuasion are commonly utilized in consumer behavior research to understand how advertising and other marketing efforts influence consumption-related behaviors. Two separate and distinct sets of mental processes—explicit and implicit—are at work in persuasive communication. *Explicit processes* are consciously accessible, while *implicit processes* "are activated automatically and effortlessly, without intention or awareness, and are thus difficult to control."³⁶ This model may explain why adolescents, even with their greater cognitive capacities and skepticism, may not be any better than younger children at resisting some advertising appeals. Digital marketing routinely relies on implicit persuasion. For example, if brands are "embedded" into an entertainment context, as with product placement in movies and television or in-game advertising, they can still be influential without being consciously recognized or recalled.³⁷ Similarly, the "elaboration likelihood" and the "heuristic systematic" models posit that attitude change can take place either through active and conscious processing of advertising messages (referred to as the "central route") or through the "peripheral" or "heuristic" route, which can include a number of elements in an advertisement that are unrelated to the product or its benefits.³⁸ Digital marketing incorporates many features that could be pathways in this "peripheral route," and thus influence young consumers' responses. Recent research has suggested that dual-process models of persuasion may be a more appropriate approach for understanding new media marketing strategies.³⁹

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Models of Affective Response. Brand marketing, even outside the digital context, is increasingly focused on instilling more emotional responses rather than conscious, deliberate ones. But with digital marketing, there are additional elements that are purposely designed to circumvent the deliberate elaboration or conscious processing of product attributes. The role of *affect* in persuasion has generally been construed as a mediator in dual-process models. That is, the role of emotions has been studied in terms of the influence of emotional appeals on people's use of the central route relative to the peripheral route. A number of scholars have proposed that unconscious, or automatic, processes may underlie responses to emotionally oriented advertising.⁴⁰ This may be particularly important with children and adolescents.⁴¹ The Advertising

Research Foundation's initiative on engagement, as well as many other contemporary research and marketing practices in the digital arena, are purposely designed to circumvent the deliberate elaboration or conscious processing of product attributes and to elicit emotional responses.

Models of Familiarity and Social Norms. Given the ubiquity of digital media, exposure to marketing has become frequent and commonplace, engendering a level of familiarity that may go unnoticed yet result in significant marketing effects. According to the *mere exposure effect model* (also called the *familiarity principle* in social psychology), people exhibit a preference for things because they are familiar with them.⁴² Young people are likely to develop positive associations with logos they encounter in various forms throughout their daily experiences.⁴³ If merely being exposed to a logo repeatedly and in different contexts can produce enhanced positive attitudes, what might be the impact of such practices as appropriating brand logos as part of one's social network profile, or developing a video to demonstrate one's loyalty to the brand and then distributing it among friends? Some evidence already points to such effects in a digital context.⁴⁴ This category of theories also highlights the importance of understanding norms related to digital marketing. Scholars have noted that unhealthful eating behaviors may emerge and flourish in environments where that behavior is viewed as normal and acceptable.⁴⁵ Repeated exposure to marketing stimuli—especially stimuli that are processed less consciously—may lead to perceived norms regarding specific foods and beverages. When the ubiquity of marketing brands and icons is combined with the various forms of engagement and integrated into social interactions, the impact of familiarity and social norms may be further intensified. It is critical for researchers to understand the effect of synergy across digital platforms, as well as digital synergy with other (traditional) marketing methods. Contextual factors must also be taken into account, especially when researching ethnic minority youth and other cultural subgroups.⁴⁶

Although we have highlighted some relevant theories and models, additional approaches need to be explored that could provide further insights for guiding the

study of digital food marketing. For example, the obesity research paradigm developed by the African American Collaborative Obesity Research Network (AACORN) is framed as an ecological model that includes variables specifically focused on studying African-American communities and may be adapted to examine other sub-cultural groups.⁴⁷ It is also important to consider the theories that digital marketers cite as influential in developing their strategies.⁴⁸ For example, social media marketers have drawn from social network theory to design their techniques for influencing consumers through online social networking platforms.⁴⁹

A number of broader questions need to be at the core of any research agenda for understanding digital food marketing's impact on young people. For example: What is the role of age difference in how youth are affected by digital marketing? How does implicit persuasion work in the digital context? How does it vary depending on the marketing techniques employed? What role do ethnicity, income, geographic location, and gender play in a young person's relationship to digital marketing? How aware are young people of the various techniques that marketers use to target them? To what extent and in what ways are they aware of the risks involved with certain forms of digital food marketing? How does digital marketing increase desire, not only for specific food and beverage brands, but also for unhealthful products in general? As scholars begin to address some of these questions, we suggest several areas of inquiry that deserve particular focus:

What role do ethnicity, income, geographic location, and gender play in a young person's relationship to digital marketing? How aware are young people of the various techniques that marketers use to target them?

Adolescent Vulnerabilities. Adolescents are at serious risk for obesity, and the teen years are a critical developmental period, during which long-term consumer habits and eating behaviors are established and reinforced.⁵⁰ Yet, this age group has not received the same level of scholarly attention that has been focused on younger children, particularly with regard to food marketing.⁵¹ Because of the emphasis on cognitive theory in much of the advertising effects research, scholars have viewed adolescents as more knowledgeable about marketer intentions, and thus better able to resist advertising and marketing influences.⁵² However, recent research suggests that biological and psychosocial attributes of the adolescent experience may play an important role in how teens respond to marketing, making them more vulnerable than they were thought to have been in the past, especially when they are distracted, are in a state of high arousal, or are subjected to peer pressure.⁵³ These are exactly the conditions that digital marketing is often designed to induce. All of these issues need to be explored further if we are to understand fully how these processes work in digital food marketing. Some specific questions that should be addressed through empirical research are: What role does self-esteem play in contributing to a young person's vulnerability to specific kinds of unhealthful foods, as well as specific forms of digital marketing promoting those foods? Do young people who are already overweight or obese have greater susceptibility to these forms of marketing? How do digital media increase arousal among teens? What types of media experiences (e.g., video games,

online video, interactive television) are more likely to induce these states? What role does mood play in an adolescent's vulnerability to digital marketing? How do digital media trigger mood variation?

Identity. The role of identity formation in the commercial digital context is an important related area for further research. Consumer researchers have begun to examine how marketing contributes to “self-brand connections” among children and

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adolescents, with very little attention to the role of digital marketing in this process.⁵⁴ Many digital marketing strategies (particularly social media campaigns) purposely seek to exploit this nexus of self-identity and brand identity. But we still know very little about how these interrelationships influence young people. For example, how are brands that one has appropriated as part of one's identity used to express that self to others? The intersections of brand identity and personal identity may be particularly influential with ethnic minority youth, who share general youth challenges such as developing a personal identity and fitting in with peers, yet are also confronted with the added task of developing an ethnic identity, which is important to their self-esteem.⁵⁵ More generally, ethnic-targeted marketing may serve identity-development purposes among minority youth, and this relationship

may support enhanced responsiveness to digital target marketing. Understanding the processes and mechanisms that underlie the relationship appears to be a fruitful area for future research. For example, does digital marketing intensify the impact of food and beverage brands on teens' identities? And if so, how? And while this is an important area of inquiry for all children, investigations should also consider additional or different influences that emerge specifically for minority youth. For example, are there specific identity-relevant targeted strategies that enhance receptiveness among minority youth?

Targeted Digital Marketing to Ethnic Minority Groups. Driven by the sheer number and growth of minority youth, as well as by their favorable usage patterns and cultural trendsetting, digital marketers have made understanding and reaching minority youth a priority. Target marketing to African-American and Hispanic youth influences their consumption choices by affecting the awareness and availability of food-related information and options, and can contribute to perceived norms.⁵⁶ Further, research suggests that ethnic minority youth are more interested in, positive towards, and influenced by marketing than non-Hispanic whites. Moreover, minority youth are important cultural models who influence the behaviors of the larger youth population.⁵⁷ As a consequence, minority youth may be subject to multiple layers of vulnerability, given family circumstances, normative exposures to obesity, and the contexts in which they live.⁵⁸ Unfortunately, however, there is very limited research on ethnic minority youth and marketing, especially of direct relevance to digital.⁵⁹ In the face of such

aggressive market research and digital promotion of unhealthful foods to African-American and Hispanic young people, research is urgently needed to address a number of key questions, including: What are the specific issues with regard to vulnerability and receptivity of digital marketing efforts among youth of color? When considering lower income youth of color, are there particular effects of digital marketing that depend on the settings and circumstances of the youths' lives? Does geolocation targeting through mobile phones and other devices take particular advantage of those youth who are already more disadvantaged than others, such as those who live in unhealthy contexts?

Impulsivity and Addictive Behaviors. So-called “rewarding foods,” those that are high in sugar, fat, and salt, “are altering the biological circuitry of our brains,” as David Kessler explains in his book, *The End of Overeating*. “Sugar and fat are reinforcing, and cues, quantity, concentration, and variety all increase that reinforcement value.”⁶⁰ Food and beverage manufacturers continually research and perfect these combinations of flavors and tastes in order to maximize their appeal to consumers.⁶¹ Cues may include emotional memories of a particular kind of food, or other kinds of positive associations. Over time, such responses become habitual.⁶² These ingredients, as well as other food additives, may also trigger an addictive process in the brain in ways that are similar to how drugs of abuse work.⁶³ So far, researchers have not examined the role of digital media and marketing in any of these processes, which is an area that deserves focused attention. When products with compelling and addictive properties are marketed to young people through contemporary digital techniques, their impact on health behaviors may be compounded. For example, snack foods with high fats, sugars, and salts are often inserted seamlessly into immersive virtual environments and interactive games.⁶⁴ These environments are already known to induce a “flow” experience in users, where cognitive responses are less likely to be elicited. Might they also act as contextual cues that trigger food cravings? To the extent that these experiences are habitual, as they often are with interactive games and virtual worlds, could their impact be further intensified through repeated interactions? Similarly, could cravings be triggered through mobile marketing by targeting young people with fast-food promotions and discount coupons when they are near a fast-food restaurant? These types of campaigns could create powerful contexts in which resistance to marketing messages would be particularly challenging. Studies are needed to explore these and other related hypotheses.

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Methods for Studying Digital Media and Marketing

Flexible and innovative approaches are needed to understand the complex ways that youth are interacting with this new commercial media culture. Much of this research

will need to be collaborative and interdisciplinary, combining expertise from various fields to pose hypotheses that cut across disciplines and across levels of influence.⁶⁵ For example, the research methods that academic scholars are employing to study youth engagement with digital media culture—including qualitative, ethnographic investigations of youth subcultures—provide models for exploring digital marketing.⁶⁶ Many researchers across academic fields, as well as within industry, are adapting ethnographic techniques to study behavior online, dubbed *netnography*, to understand how multicultural youth use and are influenced by social networks and other digital media.⁶⁷ Studies undertaken on youth and digital marketing must also be grounded in the real-world practices of the contemporary marketplace, which is not static but constantly evolving. This will require close, ongoing monitoring of market research, theories, platforms, and techniques. The plethora of new metrics are a clear departure from more traditional types of measurement, and need to be fully understood in order to design research methods that academics can use for testing the health impacts of food and beverage marketing in the digital media. The toolbox of techniques that digital market researchers use to assess youth consumer behavior could also be adapted for academic researchers, as long as these techniques are employed in accordance with academic standards for ethical research. Specific measures could be developed for assessing each of the key concepts; these measures, in turn, could be incorporated into a model for understanding the impact of food marketing on attitudes and behaviors.⁶⁸

The toolbox of techniques that digital market researchers use to assess youth consumer behavior could also be adapted for academic researchers, as long as these techniques are employed in accordance with academic standards for ethical research.

Research to Inform Policy

Studies that can apply what social scientists are learning to critical issues in the legal and policy arenas are also urgently needed. Though the government has limited ability to ban advertising and marketing content because of important constitutional protections for free speech, there are several areas where it can develop safeguards that may limit what marketers can do, especially in areas of particular sensitivity.⁶⁹ For example, practices that undermine rational decision-making in the marketplace and tap into the unconscious/subconscious processes may be inherently deceptive or unfair.⁷⁰ These may include augmented reality, immersive environments, and similar techniques. Other practices that warrant close attention are: integration of marketing and “content” to make the two indistinguishable; linking point of influence to point of purchase (for example, in mobile marketing campaigns); peer-to-peer strategies employed in the social graph, especially on social network platforms; prizes, contests, and other incentives designed to encourage participation in marketing strategies and to facilitate

data collection; behavioral targeting, smart ads, and dynamic product placement; and the use of neuromarketing to develop implicit persuasion techniques aimed at under-age youth.⁷¹

Addressing these new marketing practices may require new legal theories and regulatory approaches that can take into account both contemporary marketing practices and recent research on child and adolescent behavior. For example, should the panoply of techniques used to target young people online—behavioral targeting, social media surveillance, and the like—be subject to greater government scrutiny than traditional advertising “messages”? Should marketing that is designed to bypass rational decision making be considered differently from protected commercial speech? There is an urgent need to revisit the cognitive defense model that has provided the theoretical underpinning for much of children’s advertising policy and self-regulation since the 1970s.⁷² The model seems particularly out of date in light of the strategies used by today’s digital marketers. Finally, the growing public debate over online privacy requires researchers to address the policy issues related to data collection and behavioral targeting, which have become a central strategy in digital food-and-beverage promotion efforts.

Addressing these new marketing practices may require new legal theories and regulatory approaches that can take into account both contemporary marketing practices and recent research on child and adolescent behavior.

Conclusion: Researchers Must Expand Their Investigations to Accommodate the New Framework for Digital Food Marketing

Digital marketing is advancing rapidly, and is poised to reach a crucial tipping point in the very near future, as expenditures for Internet and mobile advertising continue to rise. Major food and beverage companies are investing heavily in global research and development strategies designed to enhance their ability to promote brands through interactive media—with particular focus on social media, online video, neuromarketing,

Major food and beverage companies are investing heavily in global research and development strategies designed to enhance their ability to promote brands through interactive media—with particular focus on social media, online video, neuromarketing, mobile marketing and location marketing.

mobile marketing, and location marketing.⁷³ Facebook's recent \$50 billion valuation reflects its new role as a “must-have” ad buy for marketers targeting youth.⁷⁴ Google and other leading digital advertising companies are working with market research firms to document what they say is growing evidence that online ads lead to increased store sales.⁷⁵ New techniques for data collection, monitoring, profiling, and targeting are being rolled out almost daily, along with sophisticated cross-platform measurement tools that can assess and fine-tune the impact of digital campaigns with greater and greater precision.

To date, academic researchers concerned about the impact of food marketing on children and adolescents have been unable to stay abreast of these developments, or to

understand fully the nature and scope of their impact on young people's behaviors. A coordinated and strategic effort is urgently needed to address the dramatic changes in the advertising and marketing landscape, and to develop public health interventions and regulatory safeguards for reversing the youth obesity epidemic.

- 1 See, for example, Advertising Research Foundation, "NeuroStandards Collaboration," <http://www.thearf.org/assets/neurostandards-collaboration> (viewed 26 Feb. 2011). Microsoft Advertising and Carat presented research involving Quick Service Restaurants (QSRs) and the influence of the Internet. "Digital is Core to the Journey: Mobile is Especially Influential," they explained. Microsoft Advertising and Carat, "The New Shopper: Today's Purchase Path and the Media that Influences It," n.d., <http://advertising.microsoft.com/wwdocs/user/en-us/researchlibrary/researchreport/US-Online-Consumer-Retail-Research-Carat-Microsoft-Advertising.pdf> (viewed 24 Feb. 2011). See also Jeff Chester and Kathryn Montgomery, "Interactive Food & Beverage Marketing: Targeting Children and Youth in the Digital Age," May 2007, <http://www.digitalads.org/documents/digiMarketingFull.pdf> (viewed 25 Feb. 2011).
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