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Neuromarketing and Consumer Free Will

This article examines the impact of discoveries and methods of neuroscience on marketing practices as they relate to the exercise of individual free will. Thus, our focus centers on ethical questions involving consumers' awareness, consent, and understanding to what may be viewed as invasion of their privacy rights. After a brief introduction, the article turns to scientific literature on the brain, followed by discussion of marketing persuasion models. Ethical dilemmas within the free will paradigm and Rawlsian justice developed in moral philosophy are delineated next. The article closes with policy implications and a revised consideration of consumer privacy.

Marketers seek to influence the intricate processes of evaluation and selection by consumers, sometimes reverting to tactics and technologies that redirect decision makers without their explicit permission. Examples include product placements in videogames, movies, and television programs (see LeGresley, Muggli, and Hurt 2006). Others make use of interpersonal influences in the marketplace (McGrath and Otnes 1995; Pechmann et al. 2005). For example, marketing professionals may pay females to order specific liquors in bars or have neighbors praise particular brands of condiments or sneakers at parties (Heilbrunn 2005).

Relevant issues for our discussion are whether and to what extent marketers are willing to engage in activities that lack transparency. Few academic studies have tackled this difficult subject, providing only anecdotal evidence that the practice is more widespread than one might suspect. To address this deficit, Zinkhan, Bisessi, and Saxton (1989) asked a sample of MBA students about their willingness to deceive in a number of marketing contexts and found a broad readiness to do so in order to ensure cooperation by consumers. While the generalizability of their findings is limited, such behaviors suggest that some marketers seek to limit our understanding of their true intentions (Jeurissen and van de Ven 2006).

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For better or for worse, opportunities to influence consumers without their full awareness may increase significantly as a result of research on brain activity. Almost twenty years ago, consumer scholars recommended using brain wave measures to study the impact of promotions on buyer behavior (see Young 2002). This perspective was controversial, especially given limitations and difficulties interpreting data from electroencephalograms (Stewart 1984, 1985). However, over this period, the disciplines of neuroscience and cognitive psychology advanced and joined forces to provide an entirely new paradigm for understanding ways consumers develop, store, retrieve, and use information (Gordon 2002). Neuroscience methodologies, especially noninvasive neuroimaging technology, now enable researchers to probe brain activity at the basic neural level of functioning (Shiv et al. 2005).

The use of data obtained from brain imaging poses ethical dilemmas for marketers. Potential moral issues emerging from neuroscience applications include awareness, consent, and understanding of individual consumers. The next section explores scientific literature on the brain, followed by a discussion of neuromarketing within models of marketing persuasion. The article then describes ethical dilemmas involving the free will paradigm argued historically in moral philosophy along with Rawlsian justice. Anticipating our results, we find that the new technology may spawn difficult ethical situations, and we offer policy implications for the future, with the intent of incorporating advantages of neuroscience within the boundaries of ethical marketing.

NEUROMARKETING AND NEUROIMAGING

The term "neuromarketing" (NM) is a recently invented moniker. *The Economist* (2004) credits Jerry Zaltman with initially proposing a union of brain-imaging technology with marketing in the late 1990s, and when the Atlanta marketing firm, BrightHouse, opened a neuromarketing division in 2001, the synthesis of neuroscience and marketing began to attract attention in science, business, and journalism. Neuromarketing has been described as "applying the methods of the neurology lab to the questions of the advertising world" (Thompson 2003, 53). Recently, the *International Journal of Psychophysiology* called neuromarketing "the application of neuroscientific methods to analyze and understand human behavior in relation to markets and marketing exchanges" (Lee, Broderick, and Chamberlain 2007, 200). Indeed, improvements in neuroimaging technologies have and will continue to advance our knowledge of how people make decisions and how marketers can influence those decisions.

The use of one noninvasive neuroimaging technology, functional magnetic resonance imaging (fMRI), has experienced especially rapid growth. fMRI enables researchers to isolate systems of neurons associated with functions of the brain. For example, when a person looks at a print advertisement, light activates some of the 125 million visual neural receptors, rods and cones, in each eye. Nerve signals travel to the midbrain, which focuses the pupils and coordinates eye movement over the advertisement. Other signals from the rods and cones pass through the optic nerve fibers, some of which cross-over to the other side of the brain so that the left half of the advertisement is perceived in the right hemisphere of the brain and the right half in the left hemisphere (Carey 2005; Dubuc 2007).

The information is processed for shape, color, and spatial location as the signals pass through the lateral geniculate nuclei on their way to assembly in the visual cortices located at the back of the brain. Memories triggered by an advertisement are stored throughout the cerebral cortex and recalled through the hippocampus located deep in each brain hemisphere; the stored emotional memories and valences are processed by the amygdala, another nerve bundle located near the base of each hemisphere (Carey 2005 Dalgleish 2004; Davidson 2003; Dubuc 2007; Kandel, Schwartz, and Jessell 2000). Using fMRI, researchers are able to image the neural activity associated with vision as well as with the cognitive and affective responses to print advertisements.

Isolating neural systems formed by the one hundred billion neurons in the human brain is a complex task. fMRI is able to locate active systems by comparing images taken of a brain performing a specific function to those of the brain when not performing that function. In an active neural system, signals travel from one neuron to another by transmitting chemical compounds, called neurotransmitters, across synapses to receptors on the receiving cell. Neurotransmitters attaching to the receptors can either facilitate or inhibit a process that will result in the firing of electrical impulses that stimulates release of neurotransmitters into synapses to the receptors of the next cell (Carey 2005; Kandel, Schwartz, and Jessell 2000). Synaptic activity of the activated network of neurons causes blood to flow to the region (Logothetis 2003; Raichle and Mintun 2006). The additional blood brings more oxygen and hydrogen to the area than is needed to replenish the system of neurons, which increases the magnetic field during a scan by a small but detectable amount (Gore 2003; Matthews and Jezzard 2004).

Improvements in hardware and software technologies continue to increase the spatial and temporal resolutions of the images, that is, the clarity of each image and the accuracy of tracking changes in brain activity over time based on these small changes in magnetic field. Current magnetic

resonance imaging machines generate a 1.5-T strong magnetic force (30,000 times the force of gravity). The protons in the nuclei of hydrogen atoms in the brain, primarily located in the blood, align their axes with this strong magnetic force. A radio wave pulse of appropriate frequency is applied at an angle to the aligned axes causing the oscillating protons to absorb energy and tip their axes away from alignment with the strong force. When the pulse ends, the particles release the absorbed energy as they return to alignment with the magnetic force. This released energy is the measured magnetic resonance signal. The information in these signals is then converted via computer software into an image of a slice of the brain. The resulting image is different from a photograph or an X-ray; it is a representation of contrasts among different tissues based on the density of the hydrogen protons and the nature of the tissue containing the protons (Detre and Wang 2002; Gore 2003; Heuttel, Song, and McCarthy 2004; Kandel, Schwartz, and Jessell 2000; Patz 2007).

During an fMRI experiment, researchers scan the individual's brain while it is not performing the function of interest, referred to as a resting brain (Raichle and Mintun 2006). Then, they perform an experiment designed to activate specific brain functions of interest while researchers quickly scan, often repeatedly, to capture changes in the signal during activity. Researchers adjust data for a myriad of factors, including the time delay between the neuronal activity and the arrival of the blood supply to the area, head movements, heartbeats, and breathing. Like a fingerprint, each brain is unique, so in studies involving more than one person, researchers "warp" each participant's brain images onto a template so that brain locations can be compared across individuals. A software program tests whether specific localities in the brain are activated during the experiment. The program colors the image of a resting brain in the locations of significant increases in blood flow, highlighting relevant networks of neurons (Brown and Semelka 1999; Gore 2003; Heuttel and McCarthy 2000; Heuttel, Song, and McCarthy 2004).

Neuroimaging and Persuasion

Researchers have applied fMRI techniques and technology to investigate the nature of decision making and persuasion. For example, Knutson et al. (2005) found the neural activity associated with calculation of expected value. They measured the brain activities of participants who were provided an informational cue about the probability and magnitude of gain or loss at the beginning of an experiment. The task was to push a button within a time limit that varied with the probability of receiving the reward. After learning the cues and the rules of this reward system, subjects entered the MRI

machine and performed 288 trials. The authors found that activation of the subcortical nucleus accumbens in the forebrain is related to magnitude of payoff but not probability of gain, while activation of the mesial prefrontal cortex is correlated with magnitude and probability of gain. These findings demonstrate that such evaluations involve both affective and cognitive neural systems.

The neuroscience literature on expected value is expanding (Breiter et al. 2001; Elliot et al. 2003), as is the larger neuroscience literature on decision making (Braeutigam 2005; Glimcher 2003; Knutson et al. 2007; Sanfey et al. 2006; Shiv et al. 2005; Zak 2004). Camerer, Lowenstein, and Prelec (2005) describe the roles of affective and cognitive processes, acting either together or separately, during decision making. The mind tags almost every concept and object with a valence that is automatically brought to mind when provoked by an appropriate symbol. Even if consumers are made aware of the affective response, it is very difficult for them to override the affective influence with cognitive reasoning. The authors speculate that cognitive processes may not be able to finalize a decision without a "go/no go" message from an affective function of the brain. Conclusions of these studies about the importance of affect in decision making parallel those of psychology and marketing (Johar, Maheswaran, and Peracchio 2006; Zajonc 1998).

Three recent articles (Braeutigam 2005; Fugate 2007; Lee, Broderick, and Chamberlain 2007) and a review of the neuroscience/marketing literature suggest that synergy between these two disciplines produced new insights into the impact of affect or emotion on the memory of visual stimuli (Ambler and Burne 1999; Ambler, Ioannides, and Rose 2000; Erk, Martin, and Walter 2005; Erk et al. 2003); antecedents of trust behavior (Ioannides et al. 2000; Fehr, Fischbacher, and Kosfeld 2005; Kosfeld et al. 2005; Zak et al. 2005); factors influencing brand selection and brand equity (Ambler et al. 2004; Braeutigam et al. 2001, 2004; du Plessis 2005; Plassmann et al. 2007); viewing time for images to enter memory (Rossiter et al. 2001; Silberstein et al. 2000); reward centers in the brain (Berns et al. 2001; Erk et al. 2002; Senior 2003); differences between evaluation of personalities and products (Yoon et al. 2006); and "branding moments" in advertisements (Young 2002). A highly publicized Coke/Pepsi fMRI study by researchers at Emory University found a significant effect of brand knowledge on brain response and expressed preference (McClure et al. 2004).

In addition to scholarly research, a number of university neuroscience programs, including those at Emory, Cal Tech, and UCLA are teaming up with private consulting firms to do applied research for large organizations such as Viacom, Kimberly-Clark, and Daimler-Chrysler (Tiltman 2005). More than 90 private neuromarketing consulting firms currently operate

in the United States as well as in an increasing number of other countries (Reid 2006). The media has sensationalized many of these investigations, alleging that marketers found the "buy button in your brain" (Dias 2006) and that the population is about to be "brain scammed" (Brain Scam? 2004). As a result, use of neuroscience in marketing has both advocates and critics. Advocates (Erk, Martin, and Walter 2005; Singer 2004; Thompson 2005) propose that the combination will allow consumers and marketers to better understand what products are desired—a win/win for both parties. Critics (Herman 2005; Huang 1998; Lovel 2003; Thompson 2003) warn that consumers' ability to make logical, informed decisions about purchases will be compromised. Whether an advocate or a critic, many believe that neuroimaging methods will bring significant changes to marketing persuasion. Just as forty years ago when a single computer filled an entire room and its users hoped the reader would not chew up the punch cards, today's MRI machines are large, expensive, and noisy, but it is easy to envision them, and other neuroimaging technologies developing rapidly into powerful, portable machines.

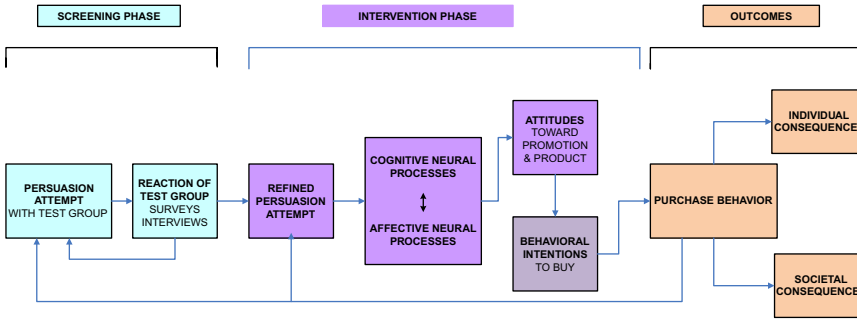
Similarly, at this point in time, conclusions drawn from the correlations between brain functions and blood flow should be viewed with caution. Their interpretation requires connecting a cognitive or affective response to neural activity, and then neural activity to a significant blood response to a region of the brain. Although neuroscientists have made significant advances in connecting neural activity to blood response, much remains to be learned about the relationship between a task-related thought or emotion and neuronal activity (Heuttel, Song and McCarthy 2004, Raichle and Mintun 2006). Nevertheless, it seems likely the new technologies will enable neuroscience and marketing researchers to better understand the role of emotions in decision making, to develop more effective methods of triggering those emotions, to build greater trust and brand loyalty, to measure intensity of an individual's likes and dislikes, and, in general, to be more persuasive marketers. The models of marketing persuasion in the next section provide a framework for thinking about the changes that advanced neuroimaging technologies may bring.

CONSUMER PERSUASION MODELS

Traditional Consumer Persuasion Model

The Traditional Consumer Persuasion Model (Figure 1) exemplifies the way marketers have typically created more effective promotions. During the *screening* phase, a group of relevant individuals is presented with a

FIGURE 1
Traditional Consumer Persuasion Model



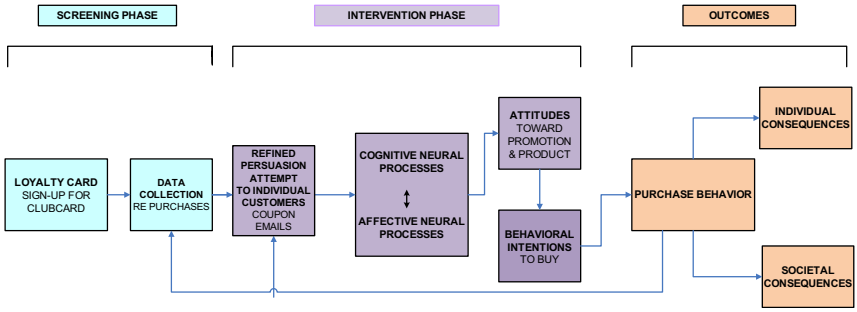
marketing stimulus, and feedback on its effectiveness is collected so that a general persuasion attempt can be refined. *Intervention* occurs when potential consumers are targeted with the resulting promotion, their cognitive and affective processes are activated, and attitudes and behavioral intentions are formed. The *outcome* phase is when a purchase occurs (or does not occur) and includes the ensuing consequences to both the individual and the larger society that can be described as positive or negative.

For example, the consumer may experience satisfaction, or even delight, with the purchase or may regret the purchase and the possible financial burden. Potential societal impacts include a boost to the overall economy or a drain if the consumer cannot pay for the item in a timely fashion. If a purchase is not made, the individual may experience regret or relief and the economy is perhaps impacted negatively in a marginal way. This model is generally accepted as an appropriate method to pursue customers and increase sales. The screening group is aware and has consented to providing feedback on various marketing stimuli. Additionally, most consumers and societal members accept this process as standard practice that does not seek to invade the private thinking and feeling of targeted consumers.

Revealed Preferences Consumer Persuasion Model

A more invasive strategy currently used by many retailers provides a second model of persuasion development based on consumer data collected at the individual level (Figure 2). For example, Tesco, Britain's largest retailer and private employer, uses a loyalty card program to record the purchasing behavior in Tesco stores of approximately 12 million UK customers and many more worldwide through Internet sales. Consumers willingly disclose personal information required for the Clubcard because

FIGURE 2
Revealed Preferences Consumer Persuasion Model



"points" based on the cardholder's total purchases can be redeemed for discounts on future purchases or for air miles in frequent-flier programs. Dunnhumby, a marketing research firm owned primarily by Tesco, analyzes customer data by correlating characteristics of products that an individual buys with those of other people with similar, but not identical, purchases and shopping habits. Tesco marketers are then able to design promotions that cater to specific clusters of individuals such as targeted e-mails and quarterly mailings. These communications include coupons for items the individual typically buys as well as for items she/he is likely to buy based on data analyses.

Tesco and others have been remarkably successful using customer information to increase their own sales and by selling information about purchasing behavior from the dataset to other retailers (Humby, Hunt, and Phillips 2007; Rigby 2006; Rohwedder 2006). In the Revealed Preferences Consumer Persuasion Model, the *screening* phase consists of signing customers up for the Clubcard as well as collecting and analyzing data on each purchase. In the *intervention* phase, the refined persuasion attempt is crafted through specific e-mails, coupons based on consumer preferences, and in the future via grocery carts with small LCD screens containing advertisements targeted to the individual shopper. Cognitive and affective responses, attitude formation and behavioral intentions, and purchase decisions unfold consistent with *outcomes* of the former model.

Information about purchasing decisions is fed back to marketers to refine succeeding persuasion attempts. As with the Traditional Model, engaged individuals are aware and consent to what might be deemed under other circumstances as an invasion of their privacy, at least during the screening phase. However, it is doubtful that the majority understands the extent of the statistical manipulations of their personal data that inform the

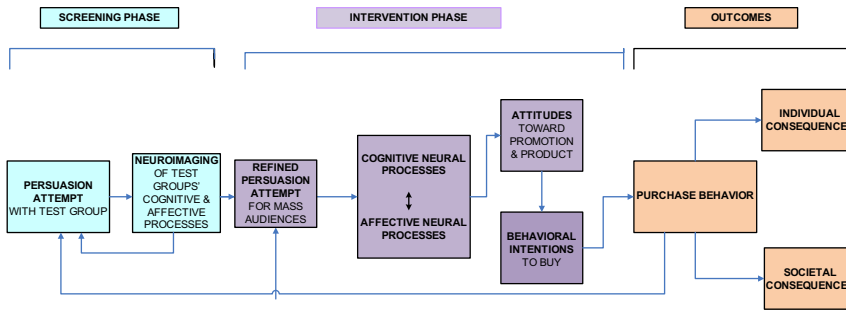
intervention phase, even though it is recounted in a recent book titled *Scoring Points* (Humby, Hunt, and Phillips 2007). The major difference between the Revealed Preferences Model and the Traditional Model is that customer preference data are collected and used to target the individual as well as others "like" him or her. The feedback obtained through purchases is also much more specific and accurate. Tesco's stated marketing goal is to give people what they want, and they have been creative in the use of data to determine preferences.

Collective Neuromarketing Persuasion Model

The Collective Neuromarketing Persuasion Model (Figure 3) differs from the first two models only in the *screening* phase. As opposed to study groups or loyalty cards, this model introduces neuroimaging techniques into the consumer behavior paradigm. Here, a subset of consumers agrees to neuroimaging measurement while observing various marketing stimuli. The new measurement methods record important nonconscious affective influences, and the results are then used to design future persuasion attempts.

During the *intervention* phase, the refined persuasion attempt is based on brain scan data of the test group and is presented to future potential buyers in relevant settings. The stimulus is processed by consumers, through cognitive and affective mechanisms, to form an attitude toward the brand or product. If neuromarketers are successful triggering affective areas of the brain associated with rewards or pleasure, the consumer develops a positive attitude toward the product, forms a behavioral intention to buy, and ultimately purchases the item in question (*outcome* phase). The purchase behavior forms a feedback loop to the screening phase where persuasion

FIGURE 3
Collective Neuromarketing Consumer Persuasion Model



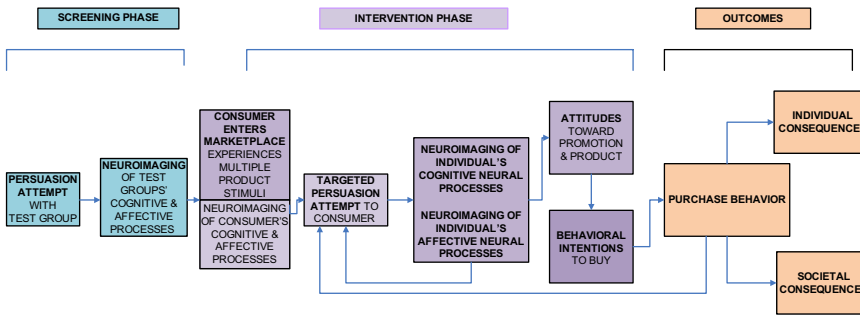
attempts are continuously refined. This process allows for constant revision of marketing stimuli based on a combination of brain imaging in tandem with actual consumer behavior. As in the two previous models, the screening phase is conducted with participants' awareness and consent, with the major difference being the invasiveness of data collection on consumer reactions to promotions through brain scans and their subsequent usages.

Individual Neuromarketing Persuasion Model

The Individual Neuromarketing Model (Figure 4) is a look at the possibilities that may exist in the coming years. As with the collective neuromarketing model, the *screening* phase consists of neuroimaging used with a test group of consumers. However, the *intervention* phase in this model is directed only at individuals as opposed to an undifferentiated mass of consumers. For instance, consider a buyer who enters a marketplace such as a department store or mall where she/he typically is bombarded with marketing stimuli. In order to better understand its impact, retailers may neuroscreen potential customers upon entering, registering reactions to what they see, hear, feel, touch, taste, and/or smell, and combining these measurements and outcomes with previous readings based on earlier visits.

As a consequence, marketing attempts could be targeted directly to consumers based upon their brain scans. For example, if neuroimaging data suggest a positive response to the touching of jewelry, the consumer may experience a personalized discount prominently displayed in their sightline in order to provide encouragement for purchase. While subjected to these specific persuasion attempts, the individual's brain is continuously monitored to determine if the stimuli are having the desired effects. When the transaction is or is not completed, the results might be fed back and

FIGURE 4
Individual Neuromarketing Consumer Persuasion Model



recorded to create an increasingly more sophisticated picture of the consumer.

The Individual Neuromarketing Model suggests the greatest concerns about personal awareness and consent, barring some form of voluntary or government-mandated disclosures like the ones occurring now on genetically modified foods. Additionally, while marketer use of neuroimaging technology will allow consumers to experience exceptionally accurate and effective marketing stimuli, concerns exist about how individuals' privacy will be maintained, who ultimately owns brain scans, whether scans can be sold to other persons or institutions, and what happens to extraneous information, such as health problems, revealed by the scans. Such issues are indicative of both possibilities and dilemmas that lie ahead at the intersection of marketing and neuroscience.

Together, persuasion models suggest new forms of consumer miscomprehension that may lead to additional privacy concerns. While a burgeoning literature is developing on topics such as neuroethics, its primary focus is on applications outside the marketing domain. The next section attempts to fill this void by bringing a unique perspective to neuroethics within a consumer-driven context that is organized around the concept of free will. This philosophical premise is described briefly, and the resulting argument frames the ethical implications caused by neuroscience thinking and practice. Models are evaluated by uniform criteria, followed by closing remarks that signal the broader policy implications that may become important as our understanding and training advances.

NEUROSCIENCE, FREE WILL, AND PERSUASION ATTEMPTS

Earlier discussion of neuroscience shows that our biology has an overwhelming impact on decision making and action, suggesting that even morality may be outside our purview (see Fukuyama 2002 for an excellent discussion). Implicit to this belief is that *knowing* what portions of our brains are stimulated may *reveal* the nature of resulting behaviors. Also noted previously, technology necessary to create visual and dynamic representations of such processes is developing rapidly, and machinery that is both portable and unobtrusive may soon be available for use by researchers and marketers. Such equipment could allow monitoring of consumers with or without their awareness, permission, or understanding.

This "brave new world" (Huxley 1932) begs the question as to appropriate responsibilities between consumers and those parties that seek to influence their beliefs, feelings, and behaviors. Among philosophers there are differences of opinion on the nature and primacy of human beings that

may inform this debate (see Klemke 2000). At one end of the spectrum are scholars who believe that all living creatures are similar, with some having a few distinctive features but still operating by instinct (Flanagan 2002). Other researchers who cross the boundaries between science and ethics recognize these genetic predilections yet believe in our ability to rise above biology. (Once again see the review by Fukuyama 2002.) Part of this distinction is based on the long-standing debate concerning free will and its role in our transcendence beyond nature (Baggini 2005).

The concept of the freedom of the will moved front and center during the Age of Enlightenment in eighteenth-century Europe, when philosophers argued about our capacity to use rational judgments to determine both truth and moral behavior (Wallerstein 1997). Succeeding generations of scholars examined various aspects of this construct, often suggesting that our culpability in situations is dependent upon making conscious choices among the variety of options available and acting voluntarily (Hospers 1953; Spence 1996). A term coined to represent this context is *uncaused causer* (Greene and Cohen 2004), which recognizes that current behavior is not perceived to be controlled by anyone or anything external to the decision maker (Levy 2003). As a consequence, free will provides a basis upon which people have sought to differentiate themselves from each other and exert that their lives have real importance. Modern approaches eschew beliefs in externally imposed meaning in favor of internally generated yearning (Baggini 2005).

Applied ethics scholars have used such theories in business/marketing contexts to provide a normative structure whereby actions and outcomes in exchange relationships can be judged (see Murphy, Laczniak, and Wood 2007). A complementary approach to free will is contractualism, and the work of Rawls (1971) is at the centerpiece of its applications (see Brock 1998; Toenjes 2002). His frame provides legitimate standards by which the distribution of rights and responsibilities can be determined to the consensual agreement of exchange partners. These agreements are based on individual dignity that social arrangements should not violate.

Inherent to this perspective is the division between inequities that result from poor decision making and inequalities that are due to conditions beyond one's control (Tan 2001). For example, differences in relative power, resources, or information based on dissimilarities in effort or contribution to exchange relationships are morally acceptable (Cohen 1997). However, inequities due to discrimination, selfishness, or other forms of unjustifiable external constraints clearly are immoral. As a whole, Rawlsian justice suggests that social actors must find ways to interact that satisfy these conditions and produce solutions that are acceptable to all parties

(Zanetti 2001). In the final analysis, Rawls (1971) believes that rational people will establish systems of exchange that avoid downside risks associated with poor starting positions and allow for fair allocations.

Our contention is that neuroscience findings and methods hold the potential for marketing practices that threaten consumers' abilities to follow preferences and dictates according to free will (Greene 2003) and contradict Rawlsian justice. This context suggests that external constraints on decision making imposed by applications of neural manipulation are possible violations. Transgressions are particularly troublesome when manipulation occurs without explicit awareness, consent, and understanding. The next subsections examine the ethical issues that arise in company-to-customer communications. Potential dilemmas are delineated using the models described previously as the frame of reference, and disruption of the will advances as representations move from the traditional to neuromarketing models. Concerns related to screening, intervention, and outcome phases are presented using language involving the exercise of choice.

Ethical Issues for Traditional and Revealed Preference Models

The Traditional Model follows the more conventional path in the development and dissemination of marketing communications for mass audiences. Advertisements or other persuasion attempts are assessed using a variety of techniques, including paper and pencil or baseline physiological measures. While potential ethical conflicts may arise, the primary practice is that test consumers are aware of and consent to these assessments prior to and during exposure to marketing stimuli in the screening phase. Lack of transparency may occur, for example, in the use of one-way mirrors or other forms of unobtrusive observation of reactions, but such procedures typically involve behaviors in a more public setting and therefore may not necessarily be viewed as violating individual privacy rights.

The same perspective may be true of the Revealed Preferences Model whereby consumers willingly disclose a host of private information about themselves in what they believe to be reciprocal relationships with firms. These data often are used in subsequent persuasion attempts that are targeted directly at individual consumers. Since these persons have agreed to this arrangement by virtue of their participation, it can be assumed that they willingly acknowledge and accept use of their profiles in ways that expand opportunities for them to do business with focal retailers or other involved marketers.

Nonetheless, the free will frame presented earlier suggests possible ethical violations that are a function of the lack of true awareness *and* consent

on the part of subjects and targeted consumers. Even under the Traditional Model, it is unlikely that participants in development of various marketing stimuli fully understand the uses of information gleaned during the screening phase and how they might be used during future persuasion attempts. Additionally, while the responses provided are typically applied in summary form only, the rights to use this information pass to the agency or firm without an informed assessment of potential consequences by test consumers. The outcomes of data manipulation and usage are considerably greater for the Revealed Preferences Model since information is more likely to be of a sensitive nature, sold to third-party marketers, and used to profile specific consumers without even cursory awareness.

Ethical Issues for the Collective Neuromarketing Persuasion Model

The Collective Neuromarketing Model also follows the traditional path involved in the creation of marketing communications for targeted consumers. The primary difference is that neuroimaging technology is used during screening of persuasion attempts, which represents a quantum change in marketers' ability to judge the impact of communications relative to measures discussed under the previous models. Not only does neuroimaging allow researchers to "read the minds" of test subjects more accurately, it also permits them to delineate which stimuli trigger excitement, trust, pleasure, i.e., the emotions that lead people to buy. To the extent these stimuli are unrelated to product characteristics, the result is an attempt to manipulate the consumer's purchase decision.

Another area of concern is the degree to which test subjects understand fully the personal nature of brain scans that are now property of a marketing group or organization. If the research protocol leaves the test subjects unaware of potential privacy issues, such lack of transparency may jeopardize intimate neurological data.

After screening is finished, marketing managers begin a controlled release of stimuli into the marketplace designed to influence cognitive and affective neural processes of consumers. Once again, a quick inspection of these procedures suggests similarity with current marketing practices. However, the underlying intent is to trigger emotions that encourage purchase rather than to provide consumers with accurate information on which to make beneficial decisions.

The free will frame presented earlier suggests that the primary ethical violation is a function of the lack of awareness, consent, and understanding on the part of targeted consumers. Given these conditions, potential customers are unable to make informed decisions about the extent to which

they would choose to be influenced by such marketing stimuli. Some scholars may contend that this problem exists with *all* persuasion attempts since they often are placed in our sensory path without tacit permission and the strategic intentions of their developers remain unknown. Nonetheless, a fundamental distinction between other marketing and collective neuromarketing tactics is that the former attempts to change beliefs, attitudes, and behaviors through well-recognized means, while the latter are expert attempts to trigger buying emotions in consumers.

Ethical Issues for the Individual Neuromarketing Persuasion Model

The Individual Neuromarketing Model mirrors the possible ethical issues associated with the screening phase of the previous models; however, the similarities end there. Once the range of possible neural reactions are explored fully, potential customers are exposed to marketing stimuli with the intent of creating an individual profile for the purpose of manipulation using a running series of fine-tuned persuasion attempts that are continuously monitored and recorded. The first ethical dilemma that arises within the intervention phase concerns whether consumers are aware of and consent to omnipresent scrutiny and to targeted/personal exposure to marketing stimuli. The worst case scenario involves the use of neuroimaging technology in public contexts where consumers would be oblivious to its employ and/or its resulting effects on brain functioning and decision making. Such a context limits consumer free will and violates Rawlsian ethics since a rational person would never select to be so manipulated.

The next logical scenario allows for awareness of monitoring and development of personalized marketing tactics using neuroscientific methods and technologies without true consent. While this combination may seem unlikely, the possibility exists that consumers will agree to enter a public shopping environment where they undergo screening in order to maintain access to marketplace activities that are not easily found elsewhere. Thus, their perceived or real consumption restrictions may cause potential customers to subject themselves to unwanted invasion of private mental processes and to bombardment of their personal space with intrusive marketing stimuli. These concerns also exist with the previous scenario, but awareness may reduce the possibility of manipulation, leaving ethical violations associated with obligatory consent rather than ignorance of intent.

The final scenario applicable to this model includes situations where consumers are aware of and consent to scrutiny and persuasion attempts. This situation eliminates many of the dilemmas noted with the two previous scenarios, but a few issues remain. First, agreement does not ensure a

complete understanding of how personalized targeting will impact buyer behavior, likely necessitating warning systems and social marketing programs that are currently used for addictive or complex products such as tobacco and alcohol or financial services and healthcare. A second problem becomes one of relative quality of consumption of persons without these opportunities. Given the inequities in our material world, some consumers are likely to experience vulnerability because of their lack of access to such technologies. The third issue involves how beneficial a resulting purchase is to the consumer. When a consumer purchases a product based on a decision in which marketing stimuli unrelated to product characteristics cause affective neural systems to override cognitive processes, the final purchase outcome may not always be in the best interest of the consumer.

CLOSING REMARKS

This investigation brings disparate literature and secondary research together in order to explore the complex persuasion environment for marketers and consumers of their goods and services resulting from neuroscientific discoveries. Ethical dilemmas are exacerbated by use of neuromarketing methods and data, and center on issues of consumer free will and privacy. The ability to exercise free will in purchasing decisions is informed by Preston's (2002) discussion of problematic "antifactual" advertising content consisting of puffery, obvious false claims, and lifestyle claims. While not technically considered "deceptive advertising," by the Federal Trade Commission, they clearly fail to inform consumers about products—ostensibly the basis of rational purchasing decisions. Neurotechnology enables marketers to refine persuasion attempts using noninformative or misinformative content, with the potential to trigger very positive affective responses in consumers. While some may argue that this technique only encourages consumers to buy *what* they really want, Rotfeld (2007) questions the whole premise of selling people *only* what they want. He suggests that marketing should be "going beyond giving consumers what they like," but rather "helping more people understand what they really should want" (p. 384) or need. This stance speaks to the importance of marketplace education so consumers can exercise free will around purchasing decisions based on accurate information.

Issues of awareness, consent, and understanding form a cohesive set of moral questions that are addressed, in part, by free will and Rawlsian justice. For example, behind a "veil of ignorance" where one fails to know whether she/he is the marketer or consumer, would she/he select to be oblivious, ignorant, or restricted? The answer is a clear "no" from the

perspective of any individual looking out for her/his best interest, and for whom the ability to exercise free will is a high priority.

Unfortunately, self-regulation and public policy lag behind current practice and future opportunities. Just as copyright and varied intellectual property laws established prior to the Internet fail to serve existing legal needs, so our thinking about lack of transparency surrounding promotional activities should be updated to include neuromarketing methods. Many within the academic and practitioner communities may suggest that the natural skepticism of consumers developed over centuries of dealings in the marketplace will provide a natural barrier to potential harm. Nonetheless, distrust is only activated in ways that are relevant to accumulated experiences, and this "brave new world" portends new transparency concerns that may have insidious effects as well as unknown consequences.

Regardless, the potential restriction of free will and privacy invasiveness enabled by neuroimaging technology requires attention by governmental and academic constituencies. The rapid collection, assessment, and deployment of brain scanning data anticipated by the latter models reveal new terrain for researchers and legislators interested in the protection of consumer rights. Questions as to who owns such information, how it may be combined with other databases in order to develop more sophisticated and targeted marketing efforts, and under what conditions it may be sold or traded with others represent areas that will require attention. The Federal Trade Commission standards, as articulated in their *Fair Information Practice Principles*, are a good starting point and are designed to acknowledge the rights of consumers (www.ftc.gov/reports/privacy3/fairinfo.shtm).

These principles are built around five core ideals. The first is notice/awareness and is central to the remaining standards. Under this guiding principle, consumers should be told who is collecting data, its possible uses, and any potential recipients. The second is choice/consent, which is consistent with our previous discussion on neuromarketing. Consumers are given the opportunity to opt-in or opt-out of the collection of information and also have the ability to tailor the nature of their data and its uses. The third is access/participation, which is concerned with the consumer's capacity to view, verify, and contest the completeness and accuracy of information about them in a timely and efficient way. The fourth is integrity/security and requires that marketers, and their firms ensure that data are up to date and protected against unauthorized access or manipulation.

The fifth principle involves enforcement/redress. Given our free will premise, marketing practitioners should be expected to communicate the uses and outcomes of neuroimaging technology prior to consumer

exposure, to allow individuals to opt-out of any or all aspects of the collection process without penalty, to provide easily accessible and understandable feedback on personal information, and to ensure that appropriate safeguards are in place to prevent unwanted third-party exposure. The first line of defense is self-regulation and would require a cross-disciplinary group of scholars and practitioners to come together to develop standards, assessment mechanisms, and sanctions. If this fails to resolve the most serious problems, private remedies through the court system may establish the criteria upon which neuromarketing activities will be judged and constrained, leading to legislative solutions and lawmaker control.

In conclusion, the issues of freedom of will, privacy rights, and the development and dissemination of advertisements by business operations are broadened significantly by the inclusion of neuroscience methods and findings. The conjoining of marketing and neuroscience clearly is in its infancy, and only the Collective Neuromarketing Model is in use by a growing assortment of scholars and practitioners. Yet, adoption of the Individual Neuromarketing Model is more than musings in postmodern novels. It represents possibilities that will need a combination of voluntary compliance and regulatory oversight in order to avoid some of the dilemmas noted here. A critical role for policy makers and consumer scholars is to inform this debate by monitoring the latest neuroscientific findings and evaluating their implications for ethical marketing practice.

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