

Editorial

A manifesto for neuromarketing science

In recent years, the rise of the application of neuroscientific research methods to market research has resulted in some strident criticisms and rather apocalyptic predictions in the popular press (e.g., Burne, 2003; Thompson, 2003; Blakeslee, 2004; Tierney, 2004; Withchalls, 2004; Lee Hotz, 2005; McConnon, 2007; Carr, 2008). Certainly, it is worth being concerned about the unscrupulous use of neuroscientific research for commercial gain for many reasons; not least of which is the use of technology and expertise which could be more fruitfully employed in a socially beneficial manner, rather than to sell more widgets. As well as this, it is not out of the question that marketing executives may find the compelling images and convoluted language employed in commercial neuromarketing studies to be rather seductive, while in reality they have been told little which was not already to be expected, or could be discovered using simpler methods. Yet in another sense those early soothsayers of doom were wrong about the impact of neuromarketing. Neuromarketing is here and, instead of creating legions of consumer zombies controlled by omnipotent corporations who use neuroimaging to create hypereffective advertising campaigns, we have seen the beginnings of a more rigorous, and altogether more relevant, scientific approach to the study of marketing questions. In fact, the mistake made by so many early commentators on the dangers of neuromarketing was to ignore the large quantities of scholarly marketing research appearing which employed neuroscientific methods to gain greater insight into questions which have long exercised the greatest minds in marketing science. The marriage of cognitive neuroscience and marketing research has indeed seen the production of many scientific endeavors examining a wide variety of different social phenomena associated around market exchanges. Rather than commercial applications, more balanced recent discussions define neuromarketing as “... *the application of neuroscientific methods to analyze and understand human behavior in relation to markets and marketing exchanges*” (Lee *et al.*, 2007). While this is a stalwart definition we are now in a position to elaborate it further and provide a framework for the continued evolution of this form of organizational cognitive

neuroscience (OCN; Butler and Senior, 2007). The journal you now hold in your hands is the product of this evolution and a snapshot of where scholarly neuromarketing research currently stands.

The enthusiastic debate in the popular press which surrounded the emergence of neuromarketing was probably inspired by the oft-cited but discredited notion of a “buy button in the brain.” This phrase describes the attempts to locate a mythical region of the human brain that when activated would drive subsequent consumer behavior, perhaps without consumers being consciously aware of this. Of course, those with long memories or an interest in the area will recall similar criticisms of another now-discredited concept; subliminal advertising. Nevertheless, the very fact that purchase behavior is not a simple binary social response – that is, you see an advertisement and then buy the product – renders attempts to identify its single location moot (*cf.* Lee and Kacen, 2008). However, there is method to this apparent madness because, quite conversely, the pursuit of the “buy button in the brain” also offers us the chance to engage in a Faustian pact of sorts. More specifically, by identifying the cortical substrate/s that are engaged in compulsive consumer behavior we have a means by which to focus therapeutic regimes that can target consumption/marketing disorders such as pathological spending/gambling. Nevertheless, contemporary neuromarketing can offer us much more than this, such as an insight into the various processes that are evident within market exchanges. Processes such as distribution channels, pricing policy, ethical branding, etc., are all considered within a market exchange but until now have been the domain of marketing research based around social psychology, econometrics, and other social sciences.

Indeed, during the early evolution of neuromarketing it could conceivably have been considered a form of applied social psychology. But due to the fact that neuromarketing is essentially the study of the cortical substrates of social influence in an applied setting it must now be considered a scientific subdiscipline in its own right. The applied nature of neuromarketing is also the hallmark of its larger cousin, OCN (Butler and Senior, 2007). It is of course possible for social psychologists to study social influence, but it is the fact that neuromarketers study its neural signature within its natural ecology that makes the approach unique.

The field has evolved considerably and, due to the nature of neuromarketing research, it is important that several pointers are followed to ensure that research is carried out in a successful fashion. Some of these pointers may seem like common sense and indeed they may be, but we have provided specific rationale for their inclusion here.

All neuromarketing research needs to have a strong theoretical background with a clear experimental hypothesis. At first pass this may seem like common sense however on closer inspection things do start to get a bit complicated. At its core is the fact that cognitive neuroscience is involved in measuring the relationship between the

brain and mind. Within this relationship we have a paradox, it is conceivable that the cognitive neuroscientist can measure some intangible aspects of the mind-brain relationship and thus free themselves from the Popperian constraints of falsifiability (Senior and Rippon, 2007). As the neuromarketing scientist is building on the established effects that the cognitive neuroscientist has already discovered, in almost all cases neuromarketing experiments can and should be defined with distinct *a priori* and falsifiable hypothesis. Such an approach would not only allow the neuromarketing scientist to make larger advances in the understanding of the topic area but should also allay any undue criticism of the experimental procedures.

Developing on from this point is a need for neuromarketing scientists to pay special attention to subject recruitment and inclusion. Given that neuromarketing is the applied study of social influence it makes sense that the participants who are studied fit as tightly as possible into that applied niche. For example, there is no point in studying female participants if the variable of interest concerns male consumers. This may seem like a fairly straightforward assumption but given that the element of influence that we the neuromarketers are interested in studying is often specific there is often little point in studying heterogeneous populations. This is a rather different philosophy to many methods currently pre-existing in marketing research, and further exemplifies the need for marketing researchers who are interested in conducting neuromarketing studies to spend considerable time in designing appropriate studies. Otherwise results will ultimately be meaningless, despite the attractive brain images which may be produced. Furthermore, a special caveat must be made regarding the study of children and other vulnerable populations. Serious ethical consideration must be given to the appropriateness of studying paediatric or other relevant populations where there appears no benefit to the subject (as there is in e.g., medical research). This issue is covered in more depth by Murphy *et al.* in this very issue.

Given the range of the questions that could be addressed within a neuromarketing paradigm, such projects should be reviewed by local Institutional Review Boards (IRBs) with special consideration. For example, the presentation of pictures of emotional faces to subjects while they undergo a brain imaging procedure may be a fairly ubiquitous procedure within mainstream cognitive neuroscience. However, the presentation of sexually explicit imagery in a series of advertisements and the correlation of engendered brain activity with motivational behavior raises several unique questions. Such questions may fall outside the current remit of most IRBs who may be used to more standard empirical approaches. Accordingly, it is important that a neuroethical framework be adopted when considering neuromarketing studies. Neuroethics is a subdiscipline of bioethics and can best be described with the bipartite model of Roskies (2002). Here, neuroethics is divided into the ethics of

practice; that is, what are the implications for consent (and similar issues) when presenting participants with various stimuli (see e.g., Shaw *et al.*, 2008) and the ethics of potential discovery; that is, what are the implications for understanding the cortical mechanisms for moral and ethical cognitions and the like. One quickly realizes that, given the type of research that is possible here, a full appraisal of the potential risks is very much needed.

The studies which have been collected together under the banner of this special issue of the *Journal of Consumer Behavior* span an extremely wide range of issues related to the above discussion. We were delighted with the variety and quality of submissions in response to our call for papers, and the papers in this special issue together provide a unique picture of the state-of-the-art of neuromarketing science both in theoretical and empirical terms. We begin the special issue proper with a group of three papers which are primarily overviews of various aspects of the field. In *A Current Overview of Consumer Neuroscience*, Mirja Hubert and Peter Kenning expand somewhat on earlier definitions of neuromarketing by differentiating between consumer neuroscience as the scientific discipline and neuromarketing as the managerial application of the findings from this discipline. This is an interesting distinction, although not one which we would necessarily concur with – most basically since marketing as a discipline is about considerably more than consumer issues, as Lee *et al.* (2007) pointed out. Hubert and Kenning provide an excellent introduction to prior work in the field, as well as an approachable overview of the various key brain structures most likely to be relevant to consumer neuroscience. As such this is a most excellent place to start for the uninitiated.

Our second paper is focused on an absolutely vital area for consideration by any researcher who wishes to conduct research in the neuromarketing area – namely neuroethics. In *The Neuroethics of Neuromarketing*, Emily Murphy, Judy Illes, and Peter Reiner, three world leaders in the area of neuroethics, present a strongly argued case for the primacy of ethical considerations in the conduct of both academic and commercial neuromarketing research. Beginning with an interesting and illuminating parallel with the idea of subliminal advertising, Murphy *et al.* focus on the idea of obtaining information from, or manipulating the behavior of, consumers without their knowledge, which has clear ethical implications. Following this, they deal with the critical issue of subject vulnerability, which has implications for those involved in commercial and academic research. Perhaps most interesting for many will be the discussion of the “seductiveness” of neuroscientific findings, and the temptation which many researchers have to provide very simple answers to what are complex questions. Murphy *et al.* conclude with an early version of a code of ethics for what they term the neuromarketing “industry,” although we would argue that such a code is also likely to be of considerable use to scholarly research as well.

Following from this is Tyler Perrachione and John Perrachione's *Brains and Brands: Developing Mutually Informative Research in Neuroscience and Marketing*. This particular paper – as well as being very informative in its own right – is an excellent example of a cross-disciplinary collaboration between a neuroscientist and a marketing researcher. Given our own previous work (e.g., Butler and Senior, 2007; Lee *et al.* 2007; Lee and Chamberlain, 2008) it should be no surprise that we consider such collaborations to be vital to the continuing flourishing of neuromarketing, and OCN as a whole. Perrachione and Perrachione first provide an illuminating introduction to the key features of neuroscientific research which is likely to be of significant benefit to the development of future high-quality neuromarketing research. Following this, Perrachione and Perrachione show how marketing researchers can understand key marketing questions from the perspective of the neuroscientist – that is, in terms of questions of brain structure and function. Such framing endeavors are likely to significantly increase the chances of fruitful cross-disciplinary collaboration. The paper introduces some fascinating contemporary issues in neuroscience, and shows how they may impact on our understanding of consumer behavior. Finally, Perrachione and Perrachione provide an important critical discussion of commercial marketing applications of neuroscientific methodologies.

Our second group of papers consists of empirical neuromarketing research, and as such each provides some absorbing insights into both their topics of interest, as well as the mutually informative nature of neuromarketing research itself. Beginning with *The Proactive Brain: Using Little Information to Make Predictive Judgements*, Moshe Bar and Mital Neta synthesize a set of empirical studies to show how the brain continuously generates predictions of the future, based on very little information. Ultimately, much discussion centers on what appears to be a human preference for curves rather than sharp edges, linking back to the idea that sharp edges may be an implicit signal of danger at first perception. This has important implications within a marketing context, which are shown in the context of product design and advertising. This paper is an example of how very basic neuroscientific findings can have substantive implications for marketing issues and questions, and all that is needed in such cases is an informed interpretation of such findings.

Following this is Baldeesh Gakhal and Carl Senior's *Examining the Influence of Fame in the Presence of Beauty: An Electrodermal Neuromarketing' Study*. This study provides an excellent example of how neuromarketing (and indeed, neuroscientific) research does not have to consist only of studies involving the use of direct cortical measuring devices such as fMRI and MEG scanners. Gakhal and Senior use the well-accepted method of measuring the electrodermal activity (EDA, which has also been called galvanic skin response/GSR, or skin conductance response/SCR) of subjects in

order to explore differences between the efficacy of either celebrity or beauty in driving consumer behavior and intentions. Such an approach is illuminating for various reasons, particularly since – given that celebrities tend to be considered more attractive *per se* – any such differences may be hard to detect using traditional marketing research methodologies. The key contribution of this paper is to begin to unpack what may have been something of a confound in our previous understanding of how celebrity really influences consumer intentions via advertising.

Next, Marco Stoll, Sebastian Baecke, and Peter Kenning present *What They See is What they Get? An fMRI Study on Neural Correlates of Attractive Packages*. This study is an illustrative example of what has become in recent times the “classic” neuromarketing study, in that it takes a basic neuroscientific finding and attempts to transfer it to a marketing-relevant context. In the present case, the basic finding is that the brain appears to process negative and positive visual stimuli in different manners. Stoll *et al.* apply this idea to the packaging of products, showing that indeed attractive and unattractive packages appear to process differently, with attractive packages showing significantly more activity in reward and attention-relevant areas of the brain than unattractive packages, which conversely showed increased activity in areas associated with aversion. This is an interesting finding, given that it used as stimuli actual packages rather than ones expressly designed to be attractive and unattractive. That subjects still exhibited such differences in activity as are found in basic neuroscientific research (where much greater contrasts in stimuli are generally used) has important implications for researchers and practitioners. It may be interesting to speculate what the bases of “attractiveness” were here, and perhaps this can be partly linked back to Bar and Neta’s earlier paper.

The fourth of our empirically based papers is *How Choice Ambiguity Modulates Activity in Brain Areas Representing Brand Preference: Evidence From Consumer Neuroscience* by Hilke Plassmann and Peter Kenning. This paper builds on one of the few areas of neuromarketing research which has received considerable attention over a period of years, namely that of brand preference. As Plassmann and Kenning show, prior work has explored how brands work to influence consumer preferences for similar products, as well as influencing the actual consumption experience for branded products. Plassmann and Kenning extend this work to include a consideration of choice ambiguity. Using an fMRI study, they find that increased activity in areas relevant to brand preference is triggered by the interaction between brand information and ambiguity. This finding is important as it supports a signaling theory of the brand rather than a cognitive psychological theory, which would instead imply that brand information reduces ambiguity, thus triggering preference. As such, Plassmann and Kenning’s work here is a good example of a theoretically

driven neuromarketing study, and it shows how the incorporation of neuroscientific paradigms can help further unravel the complex nature of marketing phenomena, and advance our understanding considerably.

Our final group of papers reprises the first section, in that it contains a set of theoretical papers that speculate on the underlying philosophical frameworks which may be relevant for neuromarketing. Firstly, Gordon Foxall's *Reward, Emotion, and Consumer Choice: From Neuroeconomics to Neurophilosophy* provides a wide-ranging thesis regarding the current utility of research into the neuroscience of economic behavior, and how this may be improved. Foxall begins with a discourse on the nature of neuroeconomics, and follows this with a consideration of how justified it is that consumer choice is considered implicitly to be rational rather than emotional. Central to this discussion is the role of reward in motivating consumer choice and emotion, which is covered first in terms of neuroscience, and then in terms of specifically consumer behavior. Following this is a critique of the perspectives offered by current neuroeconomic and, by extension, neuromarketing research, leading to an account of how neurophilosophy may fruitfully use neuroeconomic findings. Finally, a set of directions for future research in this area is proposed.

The following paper, Justin Garcia and Gad Saad's *Evolutionary Neuromarketing: Darwinizing the Neuroimaging Paradigm for Consumer Behavior* touches on many of the issues already mentioned in previous papers, providing an interesting integrative framework for future neuromarketing research. Beginning with a review of salient neuroimaging literature relevant to marketing research, Garcia and Saad go on to critique the main body of existing work as somewhat atheoretical, and subject to an "illusion of explanatory depth," meaning that the sophistication of the techniques may give off a sense of false profundity, whereas in reality the majority of studies lack *a priori* hypotheses or strong theoretical foundations - amounting to little more than "fishing expeditions" for neural activation. Conversely, it is the thesis of Garcia and Saad that evolutionary theory can provide a strong underlying theoretical framework to guide neuromarketing research in the future. Such an approach looks likely to help explain why certain patterns of activation are likely to be observed, and thus have significant implications for how human behavior in marketing contexts can be explained with more accuracy - surely a key goal of any neuromarketing manifesto.

Finally, we present an invited commentary from Michael Butler, of the Organizational Cognitive Neuroscience Centre at Aston University. In *Neuromarketing and the Perception of Knowledge*, Butler shows the relevance of the emerging neuromarketing discipline to the perennial tension between research and practice

in organizational research. Butler's main thesis is that scholarly and practitioner audiences have different perceptions about knowledge, and it is down to the knowledge development community to attempt to reconcile these differences. The paper suggests a novel update of previous models of research to incorporate concepts of power and media reporting – key issues in neuromarketing research given its potential for societal impact. As such, Butler's piece provides an appropriate place to both end this state-of-the-art collection, and perhaps ignite another debate. We hope that this collection of papers will both stimulate and inspire readers to think about this novel and exciting research area, and even to consider engaging in research in the area.

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