

Branding the brain: A critical review and outlook

Hilke Plassmann^{a,*}, Thomas Zoëga Ramsøy^{b,c}, Milica Milosavljevic^d

^a INSEAD, Boulevard de Constance, 77305 Fontainebleau, France, and Decision Neuroscience Group, Cognitive Neuroscience Unit, INSERM, Ecole Normale Supérieure, Paris, France

^b Decision Neuroscience Research Group, Department of Marketing, Copenhagen Business School, Frederiksberg, Denmark

^c Danish Research Centre for Magnetic Resonance, Copenhagen University Hospital Hvidovre, Hvidovre, Denmark

^d Division of Computation and Neural Systems, California Institute of Technology, Pasadena, CA, USA

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Abstract

The application of neuroscience to marketing, and in particular to the consumer psychology of brands, has gained popularity over the past decade in the academic and the corporate world. In this paper, we provide an overview of the current and previous research in this area and explain why researchers and practitioners alike are excited about applying neuroscience to the consumer psychology of brands. We identify critical issues of past research and discuss how to address these issues in future research. We conclude with our vision of the future potential of research at the intersection of neuroscience and consumer psychology.

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Introduction

The application of neuroscience to consumer psychology, and in particular to branding, has gained popularity over the past decade in academic research and business practice: in the last decade the number of publications in top marketing journals and Google references around this topic has grown exponentially and the same holds for the number of neuromarketing companies founded (see Fig. 1).

The birth of the field of consumer neuroscience has generated wide-ranging, ongoing debates of whether this hybrid field benefits its parent disciplines (consumer psychology and neuroscience) and, within them, what forms these benefits might take (Ariely & Berns, 2010; Kenning & Plassmann, 2008; Lee, Broderick, & Chamberlain, 2007; Plassmann, Ambler, Braeutigam, & Kenning, 2007). The goal of consumer neuroscience is to adapt methods and

theories from neuroscience—combined with behavioral theories, models, and tested experimental designs from consumer psychology and related disciplines such as behavioral decision sciences—to develop a neuropsychologically sound theory to understand consumer behavior.

To appreciate the value of combining neuroscience with consumer psychology, it is important to understand the broad range of insights available from neuroscience. Neuroscience is the study of the nervous system that seeks to understand the biological basis of behavior. This range of insights is too broad for the study of consumer psychology, which is why in the following paragraphs we briefly clarify which areas within neuroscience are the most relevant for consumer neuroscience.

Neuroscience research ranges from studying single cells (cellular neuroscience) to studying how different brain areas or complex brain systems, such as the visual system, interact (systems neuroscience). Because of the complexity of consumer behavior,

* Corresponding author.

E-mail addresses: hilke.plassmann@insead.edu (H. Plassmann), tzr.marktg@cbs.dk (T.Z. Ramsøy), mmilosav@hss.caltech.edu (M. Milosavljevic).

URL: <http://www.decisionneuroscience.net> (H. Plassmann).

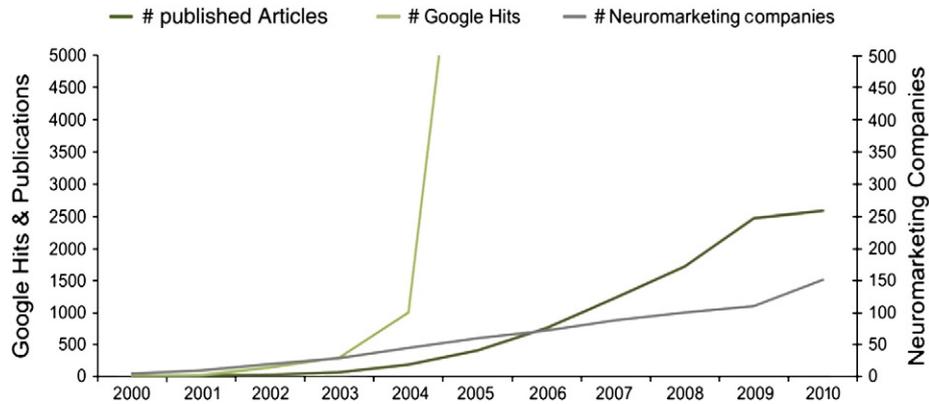


Fig. 1. Growth of research applying neuroscience to marketing over time.

insights from systems neuroscience are crucial for consumer neuroscience, whereas those from cellular neuroscience currently are limited.

Neuroscientists study species ranging from the primitive (such as sea snails, fruit flies, and leeches) to the complex (such as mammals and primates). Most consumer neuroscience studies investigate mental processes in human subjects, but a few selected studies also use non-human primates or small animals such as monkeys as subject populations.¹

Another important distinction is between clinical and non-clinical research in neuroscience. Clinical research, known as neurology, studies how nervous system disorders, trauma, tumors and injuries affect cognition, emotion, and behavior in patients as compared to healthy subject populations. In general, consumer neuroscience studies consumer responses in healthy subject populations.²

A last critical distinction is between consumer neuroscience, which refers to academic research at the intersection of neuroscience and consumer psychology, and neuromarketing, which refers to practitioner and commercial interest in neurophysiological tools, such as eye tracking, skin conductance, electroencephalography (EEG), and functional magnetic resonance imaging (fMRI), to conduct company-specific market research. Neuromarketing has received considerable attention in the corporate world, and the growth of neuromarketing companies over the last decade has been impressive (see Fig. 1).

The goal of this paper is to shed light on what neuroscience can bring to the table to advance our understanding of the consumer psychology of brands. In particular, we aim to provide an overview of the current state of research in this area, identify

critical issues of past research and discuss how to address these issues in future research. We conclude with our vision of the future potential of research at the intersection of neuroscience and consumer psychology.

What is currently done: toward an interdisciplinary understanding of consumer decision making

In this section, we review previous work in neuroscience pertinent to understanding underlying processes involved with brand decisions. We structure the review using a simple consumer decision-making framework based on prior work in consumer psychology (Fig. 2; Kahneman & Snell, 1992; Kahneman, Wakker, & Sarin, 1997; Rangel, Camerer, & Montague, 2008; Wirtz, Kruger, Scollon, & Diener, 2003). We also use this framework to integrate previous consumer neuroscience studies that are directly related to branding questions and to point the way for future applications in consumer research.

The framework divides the stages that are required for brand preference formation over time into four basic components: (1) representation and attention, (2) predicted value, (3) experienced value, and (4) remembered value and learning. Below we explain these basic components and review previous findings on the underlying neuropsychological processes of each of those components. The main brain areas involved with each component of the model are shown in Fig. 3.

Representation and attention

The amount of information consumers are exposed to is enormous, yet our processing capacity is limited. Each second we are exposed to an estimated 11 million bits of information that reach us through all our senses, yet humans are capable of processing only around 50 bits of that information, letting most of the input go by unnoticed (Wilson, 2002). How consumers represent, attend to, and perceive incoming information may have a profound influence on their behavior. In the current section, we discuss representation (i.e., brand identification) and attention.

¹ There are at least two major reasons to study non-human subjects in consumer neuroscience. First, studying animals allows consumer neuroscientists to make causal links between brain areas and specific behaviors. Animal work allows the application of more invasive methods to brain systems that animals and humans have in common. Second, if consumer neuroscience researchers are using evolutionary theories to explain phenomena in consumer behavior such as behavioral biases, using an animal model allows evolutionary inferences (i.e., going back in the evolutionary chain).

² However, there are several reasons to use patient populations in consumer neuroscience. The most prominent one is to use patients with brain lesions to establish causal relationship between brain regions and consumption behavior. At the end of this paper, we will discuss some of these aspects as potential future developments.

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