

Market Researchers make Increasing use of Brain Imaging

Although it is now more than thirty years since EEG was first used to evaluate viewer responses to television commercials¹ and a decade since the introduction of fMRI, it is only in the past eighteen months or so that one has started to hear the unmistakable rumble of an approaching band wagon! The name of that bandwagon is Neuromarketing.

Hailed by some leading market researchers as the most important advance in their industry for a century it has also been dismissed by sceptical neuroscientists as verging on a pseudo-scientific scam. A recent editorial in *Nature Neuroscience*, for example, suggested that many cognitive scientists who had watched colleagues in molecular science grow rich were now 'jumping on the commercial bandwagon,' adding that, "According to this view, neuromarketing is little more than a new fad, exploited by scientists and marketing consultants to blind corporate clients with science."²

That interest in Neuromarketing is growing rapidly is beyond doubt. A recent edition of the trade publication Admap (May 2005) gave over almost an entire issue to the subject, the Market Research Society's conference earlier in the year devoted a substantial section to the topic while the ESOMAR Congress, a world association of research professionals, due to be held in Cannes this September, is presenting several key-note papers on the subject. It has been reported that eight new fMRI facilities, intended for Neuromarketing rather than medical purposes, have opened over the past twelve months in the United States.

While the first use of fMRI as a marketing tool was reported by Gerry Zaltman of Harvard towards the end of the 1990's² the term 'Neuromarketing' was only coined by Professor Ale Smidts in 2002 and it was not until 2004 that the first ever Neuromarketing conference was held at Baylor College of Medicine in Houston.

Of the three brain-imaging techniques currently used in Neuromarketing - fMRI (Functional magnetic reso-

nance imaging), QEEG (Quantitative electroencephalography) and MEG (magnetoencephalography) - it is fMRI which has captured the greatest interest among market researchers and enjoyed the widest publicity in the general and marketing trade press.

The piece of research most frequently cited in this context concerns the use of fMRI to investigate the impact of brand perception on consumer taste preferences conducted at the above mentioned Baylor College of Medicine. In this study researchers repeated the famous Pepsi/Coca-Cola blind taste test challenge while scanning the brains of volunteers. When ignorant of which beverage they were sampling, the subjects favoured Pepsi with their scans revealing activation of the ventromedial prefrontal cortex (a reward centre). When aware of which brand they tasted, however, the scans revealed activity in the hippocampus, midbrain and dorsolateral prefrontal cortex - areas associated with memory, emotions and emotional information processing. This led the researchers to conclude that a preference for Coke is more influenced by the brand image than by the taste itself.³

Other studies have used brain-imaging to evaluate video clips and TV advertisements, study decision making among shoppers and even to investigate the likely impact of political advertising during the recent presidential election. An unpublished study at the University of California, Los Angeles, for example reported differences in the neural responses of Democrats and Republicans to commercials depicting the 9/11 terrorist attacks.

MEG has also been used for Neuromarketing purposes, albeit to a far lesser extent. In one study, it was used to measure decision making among consumers in a 'virtual' supermarket. The authors reported that the right parietal cortex became active only when faced with a preferred brand and concluded that this region was involved in making conscious decisions about shopping choices, and, perhaps, for "more important life choices too."⁴

When it comes to QEEG, we must declare an interest since we are both directors of Neuroco, a newly formed company specialising in the application of this technology for commercial purposes. Among the numerous projects for which we have used QEEG over the past twelve months were; analysing the responses of viewers to television commercials and other forms of advertising, exploring the effects of looking at happy or sad facial expressions, exploring the mental states of motorists dri-



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² Brain Scam? *Nature Neuroscience* Vol.7, No. 7, July 2004, page 683.



Subject wired and carrying a Track-it ambulatory EEG in Lakeside shopping centre, Essex.



Subject wearing electro-cap behind the wheel of her car during a study of brain activity and driver stress.

ving against a deadline and examining how people react to an unexpected 'freebie'.

We believe that QEEG rather than fMRI or MEG is most likely to emerge as the technology of choice in Neuromarketing, since it is simpler and less expensive to use and enables recordings to be made in a wide range of natural environments.

Although spatial resolution is poor, it is capable of producing a continuous record of ongoing neuronal activity. Furthermore it is backed by more than 2,500 research papers published in peer reviewed journals going back more than two decades.^{5,6,7,8}

Clearly there are many pitfalls awaiting those who fail fully to appreciate the inevitable limitations of all brain imaging technologies when used for market research rather than medical diagnosis. Tempted by unscrupulous 'specialists' who dangle before them the tantalising prospect of being able to 'read' the mind of consumers, even cynical advertising and marketing executives may be persuaded to part with large sums of money to little or no great purpose. This seems especially likely to happen where fMRI is used since, in our experience, non-professionals tend to be overly impressed by the images it produces and all too likely to confuse correlation with causation.

In our view QEEG, when used in conjunction with other qualitative research methods, can provide insights into consumer choices which would not otherwise come to light. In some instances it may be that these cannot be articulated, no matter how skilled the interviewer or how co-operative the subject, because they operate below the level of conscious awareness. In other cases the very act of acquiring information may interfere with the cognitions researchers are attempting to measure. This happens when, for example, people are instructed to move a so called 'interest' lever to indicate which parts of the screen has caught their atten-

tion while watching TV commercials.

The use of brain-imaging will never enable marketing professionals to discover that Holy Grail of market research, a 'buy button' - some mythical region of the brain which need only be stimulated to compel consumers to purchase a product whether or not they actually want to do so! It will never be found because, of course, it does not exist!

More realistically, we believe, Neuromarketing offers the prospect of gaining a better understanding of how the brain responds in a wide variety of everyday situations. In addition to proving of great commercial value such research offers the possibility of increasing our knowledge of brain function among a non-clinical population as it extends powerful medical technologies into a new and challenging area of research.

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