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The impact of digital out of home advertising on people, places and purchases

A neuroscience study

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in association with Ocean Outdoor

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Introduction

Out of home advertising has undergone a transformation over the past six years. Many new sites have full motion, Wi-Fi enabled, large format screens that can broadcast moving images and content in real time and can even interact with audiences, matching content to the people in the vicinity. Other sites, even without this interactivity, are bigger and more dynamic than ever before.

There is no doubting the power and ability to engage of spectacular outdoor digital screens like the IMAX, the Liverpool Media Wall, the Two Towers East and West. But what has been hard to quantify is the visual WOW factor of spectacular outdoor - and what it actually delivers to the brand or advertiser seeking evidence of response, value and return on investment.

As industry investment in the big, the bold and the multi-sensory grows, the question for advertisers, real estate owners and media owners is not whether these sites have an impact, but how this impact is achieved and how it can be maximised going forward. The answer lies not just in measuring audiences, reach and response, but in understanding how outdoor media is truly perceived, and how it is succeeding in cutting through an increasingly cluttered urban landscape.

In this paper, Heather Andrew, a founder of Neuro-Insight UK, explains how modern brain imaging technology can be applied to measure people's emotional, sub conscious responses to different forms of outdoor media, from static paper and paste posters to multi-sensory advertising billboards.

With reference to visual attention, emotional intensity, desirability and memorability, Heather investigates brain response to the latest generation of outdoor advertising sites and explains the cognitive processes that underlie their success. The conclusions have implications that are fundamental to the planning, design and development of outdoor advertising within Britain's urban landscapes. A better understanding of the way consumers respond can inform and influence the next generation of city billboards, making them as relevant, beautiful and as unique as some of the nation's most iconic buildings.

Background and objectives

Specialist neuro-research company, Neuro-Insight UK, carried out a study looking at brain response to outdoor advertising, focusing in particular on the impact of premium outdoor digital sites – how they are working, which poster sites elicit the most powerful responses and what actually happens when people connect with premium outdoor advertising.

Neuroscience is well suited to delivering insight in an increasingly complex media landscape. It does away with the need for people to consciously identify – and then articulate - what's driving their behaviour, or to make conscious judgments about the relative impact of different types of message. Instead, it provides a means of looking at the emotional, sub-conscious responses that underlie behaviour.

The study was commissioned by Ocean Outdoor, a premium outdoor media owner. Instinctively Ocean had always known that premium digital outdoor advertising captured attention. But Ocean wanted to replace instinct with research, to scientifically quantify brain response and provide evidence of its positive long-term impact on consumer behaviour.

Technology

In the last couple of decades, there have been huge advances in the understanding of basic brain function. Neuroscientists now know that the brain is highly specialised and, by plotting which parts of the brain are active in response to a given piece of communication, can acquire insight into what people are thinking and feeling about that communication.

Simply asking people for their views and feedback gives only part of the picture. Any verbal response, written or spoken, has to be filtered through the left hemisphere of the brain, which is the side that deals with words and details. But the overall feel of something, and much of its emotional impact, is experienced in the right hemisphere. When people are asked to describe how they feel about something, the verbal left brain tends to dominate and put an overly rational spin on their responses.

In contrast, measuring brain response gives the whole brain picture; providing an accurate window on responses that people could find difficult, or even impossible, to articulate, but which can still impact on their behaviour.

Neuro-Insight uses a unique brain-imaging technology called Steady State Topography (SST), which uses a lightweight headset to pick up electrical signals resulting from brain activity. The headset is easy to fit and comfortable to wear, and research can be carried out in a normal room, with no need for a laboratory or hospital setting. SST was pioneered originally in academic research, and is robust and well-validated. Studies are quantitative, and all the measures used by Neuro-Insight in its market research are based on scientific data that has been extensively investigated and peer-reviewed.

Methodology

For this study, 115 respondents were pre-recruited. They were told that the study was concerned with response to urban environments, but nothing was said about posters in particular.

On arrival at the research location, they were taken on a bus ride around West London, with the route taking in a number of different outdoor advertising sites so that their real life impact was top of mind. Respondents then returned to the research location where they watched films of an extended journey they had just undertaken, featuring a range of out of home sites, both from Ocean and non-Ocean.

The sites in the film were all large format but ranged from simple paper and paste 48-sheets to unique large-format structures and digital screens, like the IMAX and Holland Park Roundabout. To look at the results at a more granular level, in analysing the data we created five categories of poster sites, comprising:

Non-Ocean standard	Paper and paste sites; not digital or multiboard
All non-Ocean	Made up of non-Ocean “premium” and “standard large format” sites
Premium non-Ocean	More than the standard paper and paste sites; digital or multiboard or striking structure/location
All Ocean	All Ocean sites, including “unique” sites
Ocean unique	Striking structure/location and also digital and/or multiboard

Data was collected from a number of areas of the brain, but the metrics that were primarily used for the analysis reflected the responses that we hypothesised to be important in the effectiveness of out of home advertising:

Visual attention indicates whether people register a site at all – if it doesn't catch their attention they're likely to miss the message altogether.

Emotional intensity measures the strength of an emotional response. High levels of emotional intensity prime the brain to remember things better and so are important in driving memory encoding.

Desirability shows whether this emotional response is a positive one – the specific measure used here is the desirability of objects in the visual field.

Long-term memory encoding is the most important measure of all. If information isn't stored – or "encoded" - into memory it's simply not there, and can't impact subsequent behaviour. Numerous studies have shown a correlation between long-term memory encoding and subsequent decision-making and purchase intent; so this is the ultimate metric to look at in terms of communication effectiveness.

SST fieldwork taking place

Analysis and Results

Analysis focused on peaks of response across each of the four measures, reflecting a hypothesis that successful out of home advertising has to evoke strong responses in each of these areas of the brain. First, it needs to catch people's attention, to cut through the urban environment. But attention alone isn't enough, and doesn't correlate with memory or subsequent actions. So we hypothesised that great outdoor advertising also needs to elicit a strong and positive emotional response – the WOW factor – that tells the brain that something important is going on. This primes the brain to remember what follow; hence the last measure, long-term memory encoding which, as described above, correlates with subsequent purchase decisions.

Visual Attention

In a cluttered urban environment, capturing attention is no easy task, but the study showed there was a clear hierarchy of response, with unique and premium posters commanding higher levels of response than standard paper and paste formats.

Emotional Intensity

Emotional intensity was highest for the unique sites, and it was lowest for standard sites.

The higher responses to the unique and premium sites were driven primarily by right brain responses – reflecting their overall, emotional impact, creating and supporting the elusive WOW factor that media owners seek. And, vitally, the emotional response was also a positive one.

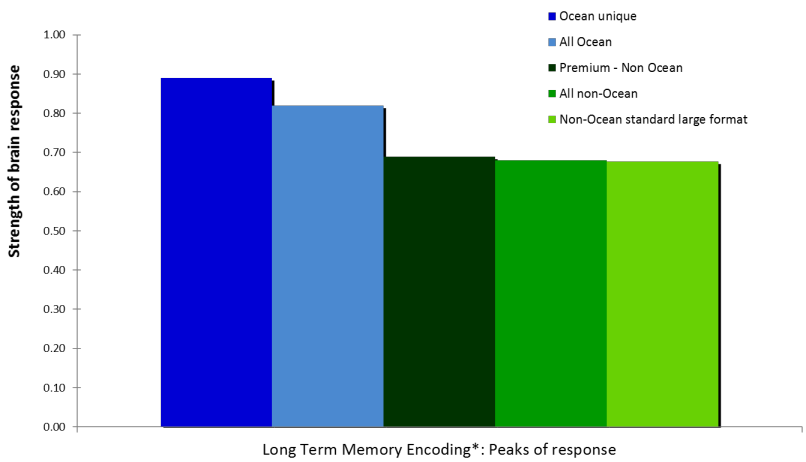
Desirability

One of the other measures that we used, desirability, indicates the attractiveness of objects in the visual field and, again, this response was highest for the unique sites and lowest for the standard sites.

Memory Encoding

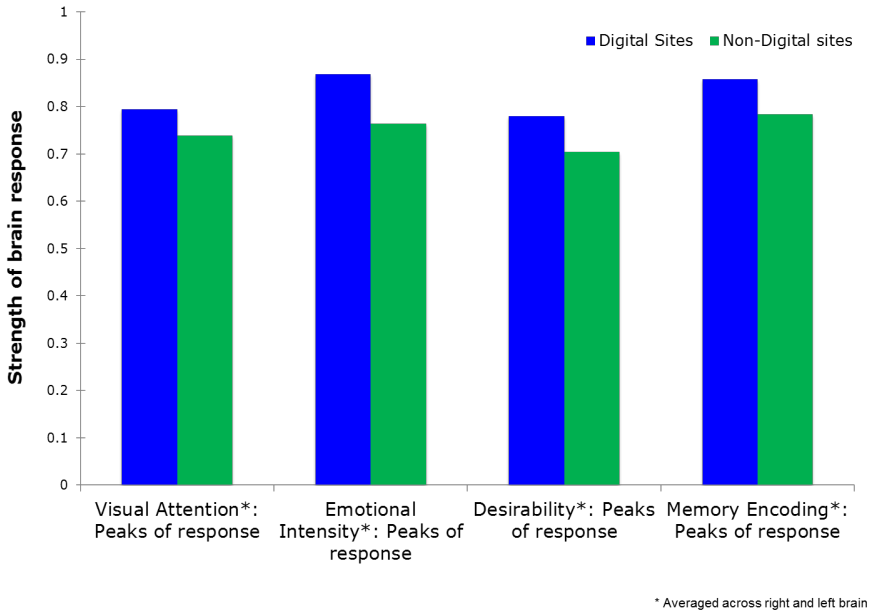
As described earlier, memory encoding is ultimately the most important metric used in the study, because it's this measure that correlates with subsequent decision-making and purchase intent. In the end, the effectiveness of an advert depends on how strongly it is encoded into memory.

In measuring memory encoding, once again the same hierarchy was observed, with unique digital sites having the greatest impact.



Memory encoding response to the different categories of poster in the study had a clear hierarchy

This hierarchy of response was most evident of all for digital sites, particularly those that involved an element of movement. Our brains are primed to respond to changes in our immediate environment, and moving screens attract much stronger responses than static images; clearly demonstrating their greater effectiveness.



Digital sites out-performed static ones across all key metrics

We can conclude that, across all measures, there is a clear performance hierarchy for poster sites: Best of all are the unique sites, followed by all Ocean sites, then non-Ocean premium, and finally non-Ocean standard large format sites.

Creative Impact

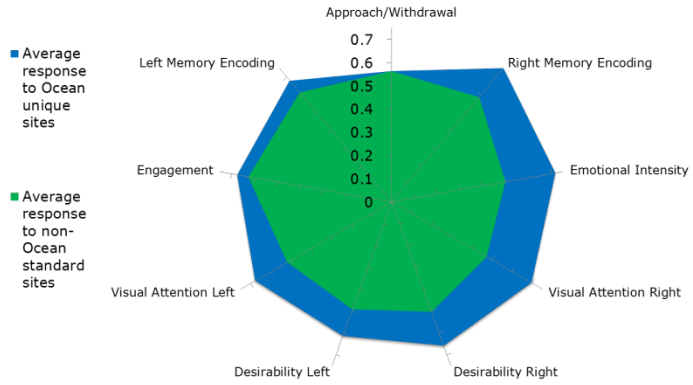
A hierarchy of response was therefore clear, but the sites used in the study featured different creative executions, and we needed to examine whether the campaigns featured on the sites were driving the results that we were seeing. To investigate this, we looked at the results for four campaigns that featured on both Ocean and non-Ocean sites in the study.

What we found was that, even when comparing only executions from the same campaign, our observed hierarchy was still clearly visible; Ocean sites still outperformed non-Ocean sites, and the unique sites performed best of all.

Right Brain Impact

The clue as to why the unique and premium sites in the study elicited such strong and positive responses lies in the response of the right brain in particular.

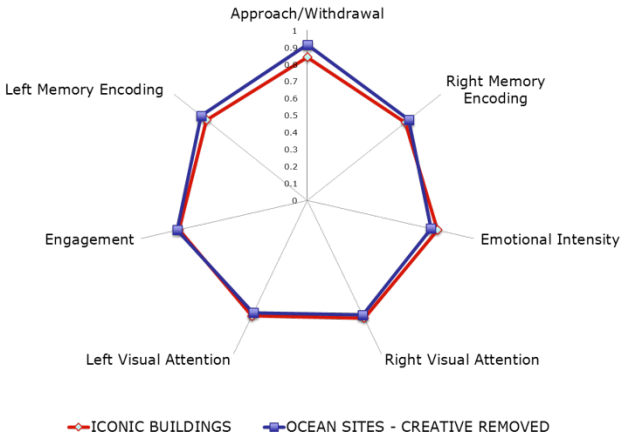
We know that the right brain is responsible for the overall feeling that a stimulus, in this case a poster site, generates. In the case of this study, the biggest difference between premium and standard sites were observed in the right hemisphere of the brain; reflecting the powerful overall impact of unique and premium sites – the WOW factor.



The more spectacular sites elicited higher levels of right brain response (shown on the right of the radar chart above)

Interestingly, this is the same impact that is elicited by other impressive structures. To give an alternative view on iconic poster sites, the study compared responses to iconic poster sites with those elicited by a range of iconic buildings - Big Ben, The Gherkin, The London Eye, Tower Bridge and The Shard.

We wanted a simple comparison of one type of structure with another, and so we took Ocean's landmark sites and photo-shopped out the posters that they carried, so that what we were looking at in this part of the study were blank outdoor sites. Even with creative removed, the Ocean sites elicited a pattern of brain response that was almost identical to that associated with the iconic buildings.



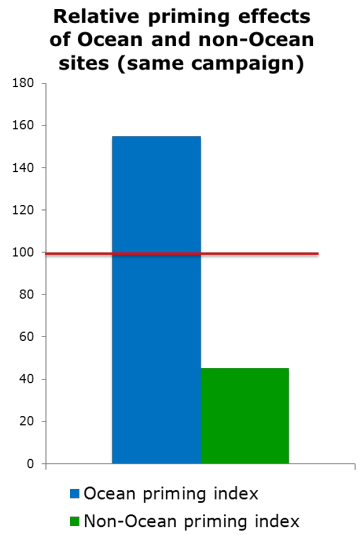
The pattern of brain response elicited by iconic buildings was very similar to the pattern associated with Ocean sites, even with creative treatments removed

Measuring The Priming Effect

Our final piece of analysis was to investigate whether Ocean's sites had any priming effect on the other sites included in the study. In other words, did seeing an advert on an Ocean site first create such an impact that it makes people responded better when they saw an ad for the same brand afterwards, on a standard site?

As part of the study methodology, we rotated the order in which people were exposed to Ocean sites (all classified as unique or premium sites) and non-Ocean sites (a mixture of premium and standard large format). Both types of site featured certain shared campaigns, and this allowed us to look, across our four key measures, at changes of response between first and second viewings of posters from the same campaign.

What we found was that, for those people who saw a campaign on Ocean first, their subsequent viewing of the same campaign on another site was higher than would have been expected without any priming effect. This indicated that seeing an Ocean site first has a relative strengthening effect on subsequent viewing of a non-Ocean site. This observation did not hold true in reverse, for those who saw non-Ocean sites first; demonstrating that unique and premium Ocean sites had a positive priming effect on subsequent viewings, but that this did not hold not true for the non-Ocean sites in the study.



The red line on the graph shows anticipated levels of response to repeat viewing of a campaign without a priming effect. Responses above this line indicate a positive priming effect

Study Conclusions

Our hypothesis was that, in order to achieve great results, outdoor advertising needs to capture attention and then engage emotions, and so drive memory encoding and subsequent purchase behaviour.

The study validated the hypothesis that we had started with; that iconic sites work because of the emotional impact they elicit. In particular, we could draw a number of key conclusions:

Premium outdoor sites generate stronger and more positive emotions, and are better encoded into memory than standard sites. So the best outdoor sites deliver a win: win. Audiences enjoy them more and advertisers get better results.

There's a powerful WOW factor, evidenced by strong right brain responses, that is driving emotional response and, in turn, leading to higher levels of memory encoding. Given that the latter is the key brain indicator for subsequent behaviour, it provides strong evidence for the effectiveness of these iconic sites in particular.

The strength of the response to these sites is driven by the sites themselves, not just by the creative treatment featured. Digital sites are particularly effective, especially when movement is involved, and the best sites continue to have an impact beyond the initial viewing of them, in priming the brain to respond more positively to subsequent executions from the same advertising campaign, even when these are carried on more standard poster formats.

Appendix

Neuro-Insight is a market research company that uses unique brain-imaging technology to measure how the brain responds to communications. Based in Melbourne, Australia, the company has been operating commercially since 2005 and now has a strong global presence with operations in the US, UK, Europe and Asia-Pacific.

The technology used by Neuro-Insight known as Steady-State Topography (SST), records and measures electrical signals at the scalp in order to build a second by second picture of activity in the brain. This type of measurement is based on event related methodology, which is a widely used and well-established in the field of neuroscience. The application of SST in the field of neuroscience has been validated by research and used in clinical applications for over fifteen years.

Neuro-Insight is the only company in the world licensed to use SST, allowing it to deliver unique insights into how a piece of communication impacts responses at both a rational and an emotional level. The technology was first developed by Professor Richard Silberstein and his co-workers, Geoffrey Nield, David Simpson at the Swinburne University of Technology in Australia.

Professor Silberstein has applied SST to both commercial and academic projects. He has spoken about it as a keynote speaker at conferences throughout the world and has published over 180 papers; using peer-reviewed research to demonstrate the value of SST and the validity of the measures that it uses.

All activities are carried out in strict accordance with an ethical policy, set up to ensure that the privacy of respondents is always respected and that the company operates only in areas where use of brain imaging technology is believed to be appropriate and ethical.

Academic papers and other references

Frontal steady-state potential changes predict long-term recognition memory performance (Richard B. Silberstein, Philip G. Harris, Geoffrey A. Nield, Andrew Pipingas) - International Journal of Psychophysiology 39 2000 79]85

Brain-lmaging Detection of Visual Scene Encoding in Long-term Memory for TV Commercials (John R. Rossiter, Richard B. Silberstein, Philip G. Harris, Geoffrey E. Nield) – Journal of Advertising Research, March-April 2001

Brain activity correlates of consumer brand choice shift associated with television advertising (Richard B. Silberstein and Geoffrey E. Nield) - International Journal of Advertising, 27(3), pp. 359–380.

http://www.marketingweek.co.uk/news/brands-look-to-neuroscience-to-make-spend-smarter/4005192.article

http://www.research-live.com/features/memory-stick/4008855.article

http://www.research-live.com/news/news-headlines/john-lewis-takes-grand-prix-at-ipa-effectiveness-awards/4008556.article