

Using Neuroscience to Understand the Role of Direct Mail

Business Challenge Virtual media has experienced explosive growth in recent years, while physical media, such as print and direct mail, has declined. The UK's Royal Mail wanted to understand whether there are any differences in the communications effectiveness of physical and virtual media.

Our Response

We decided to investigate how the brain processes physical marketing materials, such as direct mail, compared to virtual (or digital) materials presented on a screen. Given the learning from other forms of advertising research about the importance of emotion in driving marketing success, there was particular interest in understanding the emotional processing evoked by the different forms of media.

Working in collaboration with the Centre for Experimental Consumer Psychology at Bangor University, we used functional Magnetic Resonance Imagery (fMRI) scanning to understand how the brain reacts to physical and virtual stimuli. fMRI allows us to look directly at brain activity and so see the brain regions most involved in processing advertising. These include quite subtle

processes that respondents can find hard to articulate verbally or which may be unavailable to introspection and so could be missed by conventional research.

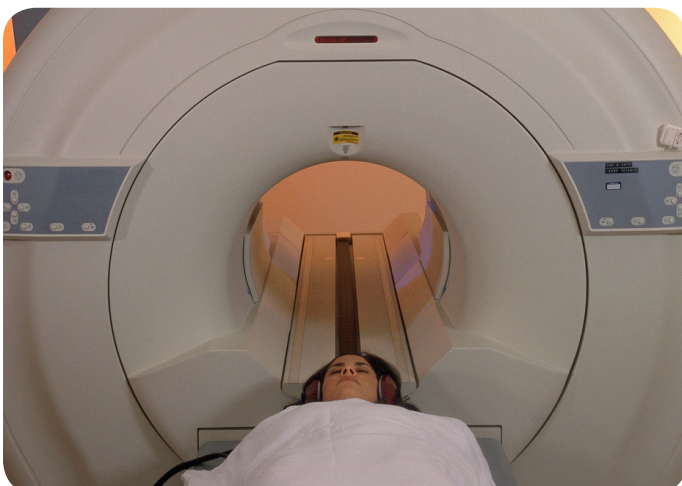
This research strongly suggests that greater emotional processing is facilitated by the physical material than the virtual.

During the research, 20 participants were shown both ads that were already in the market, and an equal quantity of "scrambled" images (which were used as control to allow for the fact that the the physical material stimulates more than one sense).



An example of a "scrambled" ad

The same material was shown on-screen (to produce the online, virtual experience) and printed on cards (to produce the physical experience). While participants interacted with the material, brain scans were used to assess how the processing of marketing messages was affected by the medium of presentation.



Research taking place using the fMRI scanner



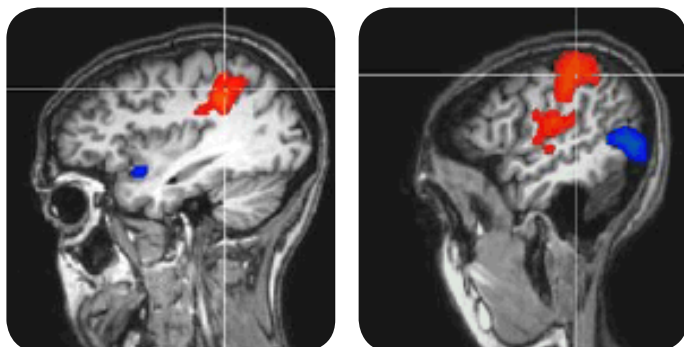
Research Insights

The work conducted on this project, to study the brain's reaction to different forms of media, went to a level not seen before in market research. Some of our key findings were:

Tangible materials leave a deeper footprint in the brain

Note: This is not just because the physical materials stimulate both sight and touch; the subtraction of brain signals from the scrambled materials accounts for this.

- Material shown on cards generated more activity within the area of the brain associated with the integration of visual and spatial information (the left and right parietal).
- This suggests that physical material is more “real” to the brain. It has a meaning, and a place. It is better connected to memory because it engages with its spatial memory networks.



Right parietal

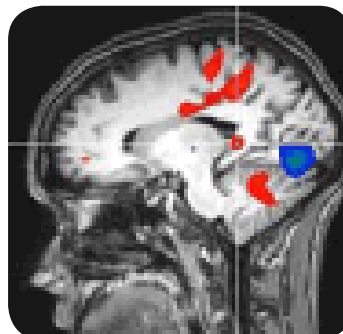
Left parietal

NB The red area in the images of the brain represents greater oxygenated blood flow (and hence activation) stimulated by physical ads. The blue areas are regions activated more by virtual ads. The “cross hairs” highlight the named brain region.

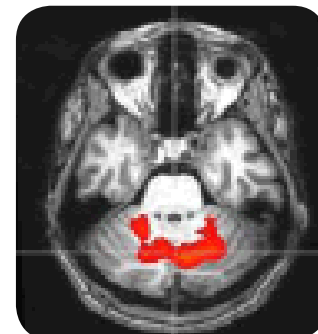
Physical material involves more emotional processing, which is important for memory and brand associations

- More processing is taking place in the right retrosplenial cortex when physical material is presented. This is involved in the processing of emotionally powerful stimuli and memory, which would suggest that the physical presentation may be generating more emotionally vivid memories.
- Physical activity generates increased activity in the cerebellum, which is associated with spatial and emotional

processing (as well as motor activity) and is likely to be further evidence of enhanced emotional processing.



Right retrosplenial cortex



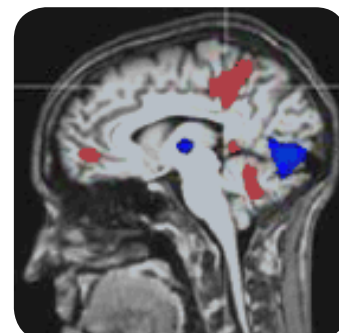
Bilateral cerebellum

Physical materials produced more brain responses connected with internal feelings, suggesting greater “internalization” of the ads

- The medial PFC and cingulate are the parts of the brain associated with emotional engagement. They are activated more by physical materials.
- The brain’s “default network” appeared to remain more active when viewing direct mail. Activity in this brain network has been associated with a greater focus on a person’s internal emotional response to outside stimuli. This suggests that the individuals were relating information to their own thoughts and feelings.



Medial FPC



Posterior cingulate into para cingulate

While in no way denigrating virtual media, which clearly has specific benefits in terms of targeting and interactivity, the study does reveal that there is something special about the physical medium.

**Royal Mail**

“The team from Millward Brown and Bangor University came up with a powerful and innovative approach to help us understand how both physical and digital media are processed by the brain. They successfully turned cutting-edge neuroscience into a practical marketing project, and delivered completely new insight identifying fascinating differences in levels of brain engagement for the two types. We have put the findings at the heart of our communications about the intrinsic power of direct mail, and how physical media have a place in any fully rounded marketing campaign.”

—James Kitovitz, Insight Manager, Royal Mail

This research strongly suggests that greater emotional processing is facilitated by the physical material than by the virtual. The “real” experience that the physical media provides means it’s better at becoming part of memory. It generates more emotion, which should help to develop more positive brand associations. The real experience is also internalized, which means the materials have a more personal effect, and therefore should aid motivation.

Business Outcome

As well as being featured in Royal Mail’s new *Mail in the Digital Age* campaign, targeted at the UK’s top 3,000 advertisers, our findings have been deployed to address more strategic aims. Primarily, these feed into the long-term goal of altering media planners’ preconceptions about the benefits of using mail; and furthermore to promote the benefits of including both physical and digital elements to achieve a “fully-rounded” and multiplier-laden media campaign.

This project also highlights when neuroscience techniques can add value to existing tools available to researchers. Conventional tools will remain the backbone of our research methods, but when it comes to subtle effects such as the way advertising is processed, neuroscience can provide an additional dimension of insight, which delves deeper into the issues. Millward Brown will continue to offer new approaches such as EEG, eye tracking, implicit association measurement or fMRI, alongside existing validated tools, when they add insight to specific client issues.

Films relating to this case study...

[*Neuroscience and why it is important to marketers*](#)

[*The neuroscience study and its findings*](#)

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