

How our brain assess bargains

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Dr Paul Mullins and Dr Helen Morgan from the School of Psychology put a shopper through the fMRI scanner.

It turns out that we may not be as good at bargain hunting and taking advantage of supermarket 'offers' as we think. That's according to early results from a study which brain-scanned people undertaking a 'virtual' supermarket shopping trip to buy party-food.

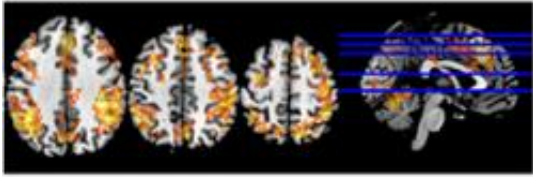
The 'supermarket shoppers' were [brain](#)-scanned to test their reactions to promotions and special offers in a major cutting-edge project by UK-based SBXL, one of Europe's leading shopping behaviour specialists and Bangor University's respected School of Psychology.

Dr Paul Mullins, a Senior lecturer in psychology at Bangor University, said:

"We were really excited about this new research. Using Bangor University's 3Tesla MRI system in this way has allowed us to investigate the neural basis of decision making. We know from other research that people are not as good at making [rational decisions](#) as they might expect, often using "rules of thumb" and educated guesses to evaluate decisions. Using brain imaging techniques we hope to get a better understanding of how the brain responds to special offers and how this may influence the decisions we make. This also gives us the chance to do some research on how we make decisions in a real world context."

Volunteers had their brains scanned using Bangor University's own 3T MRI scanners while they took part in an especially devised virtual grocery-shopping task. The 'shoppers' were asked to imagine they were shopping for a party and asked to save as much money as possible. Images of generic versions of various products, combined with an offer were projected onto a screen. Participants were asked to push a button to choose how many items of the product to 'purchase', before moving on to the next item. The offers included discount offers, multi-buy offers such as 2 for £2 or 3 for £4 and "special offers" which had no information about savings. Some of the offers were actually "bad" offers that did not provide a saving and which actually cost more than the original price. The volunteers, spanned a considerable age range and of both genders, although there were slightly more women than men.

The psychologists are still analysing much of the data collected, but their preliminary results have already shown a few interesting insights.



An example of the fMRI images being captured and analyzed.

Mullins continues: "It turns out we are not as good at picking good offers as you might expect, with the average shopper in our experiment only picking 60% of good offers compared to bad. We also found that age had a strong negative affect on the ability to choose good offers, with older people less able to choose good offers over bad ones. We find this latter effect very interesting and would like to do some more research to find out why this may be the case."

The team's brain imaging data showed that choosing a good offer from a bad offer activated an extensive network of areas.

Dr Helen Morgan, a member of the team commented: "this is not that surprising – there is a lot going on when we do something like this- but it is nice to see this reflected in the data. Our data also agrees with previous research suggesting that as offers, or decisions get more complex, instead of working things out, our brains take shortcuts, and may guess that an offer is good. Interestingly, in our study people were just as good at selecting good complex offers from bad as they were for less complex ones, suggesting this guessing method may be as good in some cases as "working it out"."

Dr Emily Cross, another one of the lead researchers, noted that:

"The advantage of using fMRI to image the brain while actively making shopping decisions is that it enables us to see how the whole brain responds, including the 'deeper' areas of the brain, such as those associated with emotion and desire. This lets us understand more about what makes an offer appealing: in some cases the choice appears to be more rational, and in other cases we can see emotional circuitry getting involved in the decision-making process".

The team have deeper analyses planned on the data and are excited to see what additional results they will find.

Professor James Intriligator, who runs the Consumer Psychology Masters programme at Bangor University adds: "Although we have studied consumer decision making for years using traditional decision making tasks, we hope studies of this nature will tell us a lot about how we respond to different types of competing information in the world around us. In particular we are interested in how factors we are unconsciously aware of can override what might be considered the optimal choice based on conscious judgements. We hope this partnership with SBXL will lead to further research in this area."

This was a commercially funded study, and has several benefits for the team's research aside from those directly related to the insights about how we deal with competing offers. MRI centres are expensive for Universities, and doing commercial research of this nature can help to supplement the running costs, and allow academics to fund other research of a basic or clinical nature. Research of this nature is also useful for the School's students to be involved with, demonstrating how the theories and techniques they learn about on their course can be applied in real world contexts. For instance students on Masters in Neuroimaging, and a Masters in Consumer Psychology courses can

benefit greatly from getting involved in studies like this, gaining direct experience not only of neuroimaging techniques, but some exposure to how their research may be used in the real world. This may be a less tangible aspect of studies of this nature, but none the less a real one.

SBXL's managing director Phillip Adcock said the MRI scanners were an excellent way of building physical evidence which could back up other research findings.

"We know from previous SBXL research that the brain behaves illogically when faced with the sort of information overload that shoppers are faced with in a typical supermarket. Previous research has shown us that nearly 20 per cent of shoppers are likely to put special offers in their basket even if they are more expensive than the normal product, and we know that nearly half of shoppers ignore buy-one-get-one-free items and only choose one. Now we have a reliable and scientific way of validating this research and understanding exactly what is happening in the brain during the weekly shop," he said.

Provided by Bangor University

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