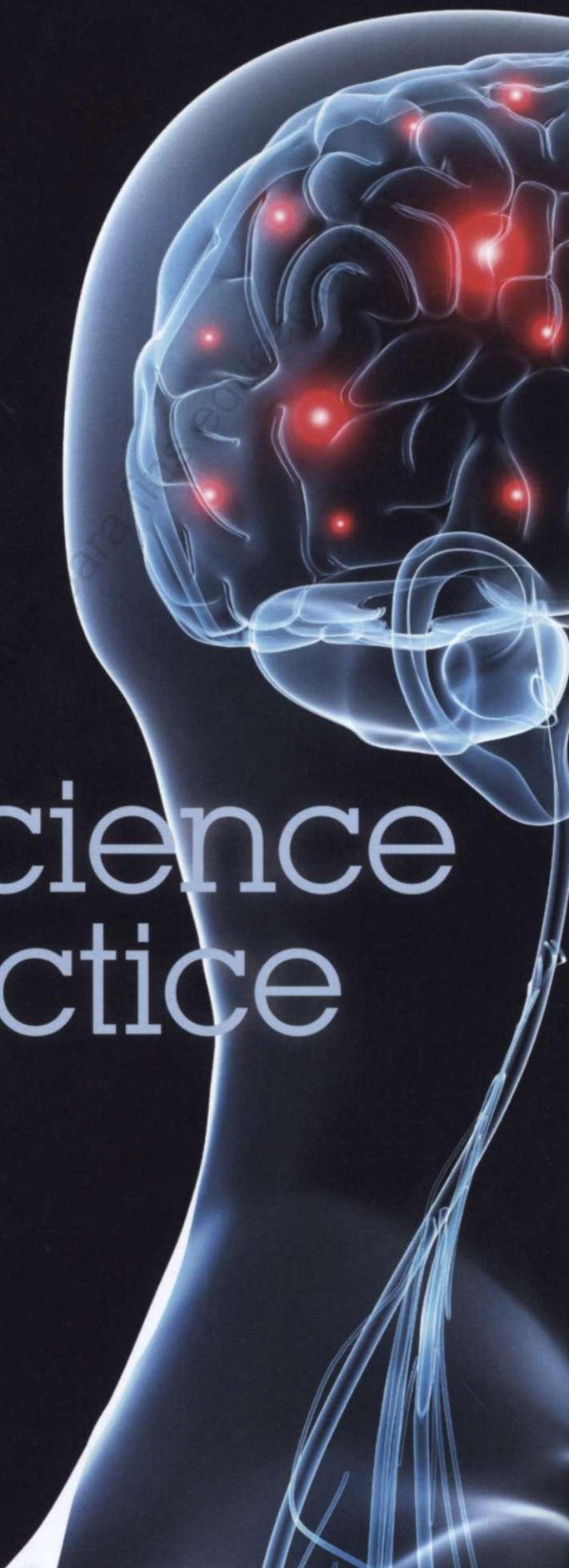


FOCUS

NEUROSCIENCE IN PRACTICE



Neuroscience in Practice

The definitive
guide for
marketers



Through neuroscience, we can determine how people really respond, not how they think they should respond. **Thom Noble** of NeuroStrata examines how neuroscience can be used to improve the accuracy and quality of market research

To date, the new field of neuromarketing research has created excitement, optimism, scepticism and rejection in equal measure. Researchers and planners are universally intrigued at the potential that neuroscience may offer, but unsure of how it may be applied, to what benefit, and at what cost.

Here we attempt to provide some balanced thinking on the topic, and some much-needed clarity on its prevailing, practical, day-to-day application in the marketplace. From a brief overview of the underlying science, we introduce the main tools being deployed and what outputs they can and can't deliver. With the primary emphasis on implementation, we provide examples of real-world studies, a look at the specific areas of added-value insights, and for those eager to take their first steps, guidance on how to best navigate this new territory and get the most out of it.

THE SCIENCE

"We have learned more about the brain in the last five years than in all of the rest of human history combined." So says Nobel Prize winning neuroscientist Eric Kandel. And the pace of discovery keeps accelerating, according to Dr Michael Smith, a leading global consultant in consumer neuroscience. He likens the way the brain creates thoughts, feelings and intentions to a waltz; a network of specialised brain processors, orchestrated by its frontal regions, seamlessly connecting perceptions, memories, needs and goals into decisions and actions. Spawned by this rapid advancement in brain science, sophisticated tools for analysing brain activity and other physiological measures are increasingly being used to also explore the drivers of marketplace behaviour.

Neuromarketing scientists and practitioners are developing newer



DID YOU KNOW?

1 Your brain is on cruise control

It glides on System 1 autopilot, guiding automatic, non-conscious or implicit decision-making. Every second, your sensory system is encoding millions of data bits. In contrast, at a conscious level, you are aware of just a few dozen bits.

2 Your brain is hungry for energy

It weighs only about 3 lbs i.e. 2 % of typical body weight. Yet accounts for 25% of the body's typical 'ticking over' energy consumption. Your brain actively seeks to aid processing fluency and reduce energy consumption.

3 Conscious thinking saps energy resources

System 1 processing is not only encoded with minimal effort but related stimulus often feels more familiar, comfortable and likeable. System 2 thinking (active, explicit, consciously-controlled reasoning) is more metabolically demanding and less fluently processed.

4 Processing fluency impacts response

Even small tactical changes to ads, packs, sensory or experiential characteristics can aid brain processing fluency and impact perceptions at the sub-conscious level. If executed well, design changes may draw the consumer in closer (both physically and metaphorically). If executed poorly, they may just as easily push the customer away, to another shelf, another brand, TV channel or website.

techniques to better gauge responses to communication, creativity, design, products, and multi-sensory experience. The power and attraction of this approach is its objective recording of non-articulated reactions to stimulus. In contrast, most conventional market research techniques rely on subjective and overtly articulated consumer response.

As has long been recognised – and frequently empirically demonstrated – people's subjective reports are both incomplete and include after-the-fact rationalisations for decisions that miss or misinterpret what was really driving their behaviour. While not necessarily reflecting any intent to mislead on the part of respondents, they frequently lack direct conscious access to what determines their feelings, intentions and actions. As such, how can they accurately explain their motivations?

Many contextual and motivational factors influencing behaviour may operate at an implicit emotional level, yet may directly impact perceived attractiveness, product preferences and brand loyalties. Noted neurologist Antonio Damasio, in his book *Descartes' Error*, suggests a 'somatic marker' hypothesis in which pre-conscious emotions affect decision-making and behaviour by rapidly triggering 'gut' reactions. Seemingly cold, rational, conscious deliberations are thus impacted at a completely non-conscious level.

For example, if a brand were to incorporate an image of a snake on its product packaging, it might trigger a fight-or-flight response; the shopper rejects the brand, although unaware of the primal aversion to the image which influenced their choice.

Similarly, in *Thinking Fast and Slow*, Nobel Prize-winner Daniel Kahneman differentiates between what he characterises as largely independent modes of brain activity: 'System 1 Thinking' is fast and parallel, automatic, preconscious, and driven by emotions and associations. In contrast, 'System 2 Thinking' is slow and sequential, deliberate and rule-based, and uses conscious calculation to arrive at decisions. These systems operate in parallel and are largely complementary in the functional benefits they provide.

According to Dr Smith, it appears that much routine, everyday consumer decision-making relies on System 1. But when the consumer is directly questioned, System 2 is more likely to be invoked to provide responses and articulated or explicit rationales as to why choices were made in the first place. This fundamental disconnect is both a substantial source of measurement 'noise' for conventional market research methods, and a major reason why conventional methods may entirely fail to provide key insight into unlocking purchase decisions.

It's almost as if, within each of us are two

people; and up until now, market researchers have been listening to only one of them; and, as we now know, the less influential one.

Be it for evaluating response to a bold blue-sky innovation or a subtle pack design tweak, simply asking the consumer what they think has thus far failed to provide adequate insight. Instead, consumer neuroscience is demonstrating that a more powerful approach is to also gauge the momentary implicit responses a stimulus elicits in the first fraction of a second after exposure to something; a time-frame well before the onset of conscious awareness. Neuroscientific and physiological approaches can thus allow researchers to assess immediate, unedited, and pre-conscious feelings in a way that directly complements insights derived from more conventional, explicit techniques.

THE METHODS

The methods currently in day-to-day use for measuring non-articulated or pre-conscious consumer response, range from highly technical brain-imaging applications (fMRI) to those that measure changes in physiology in other parts of the body. Another set of techniques measure implicit response via psychological association and behavioural tests.

Each has something to offer in their own way, and when used judiciously, can provide extremely useful and often complementary ways in which to improve insight into what drives perception and behaviour.

The key to navigating into this area is to understand the relative pros and cons of each technique. However, equalitatively important is to appreciate that the nascent industry is far from commoditised. Even within specific tools, e.g. EEG, very significant differences exist between suppliers, depending on their scientific credentials, the rigour of their study protocols, the grade of equipment deployed and their experience in robust data interpretation.

For the sake of simplicity, these different techniques can be grouped into three main approaches: NeuroMetric (Brain or Neural response), BioMetric (Biological or Physiological response) and PsychoMetric (Psychological or Implicit response).

NEUROMETRICS

The direct measures of brain activity used in neuromarketing include techniques such as electroencephalography (EEG) and functional magnetic resonance imaging (fMRI). These techniques are powerful and at the more specialist, harder-core end of the spectrum, relative to other methods – Biometrics and Implicit or Psychometric tools.

EEG

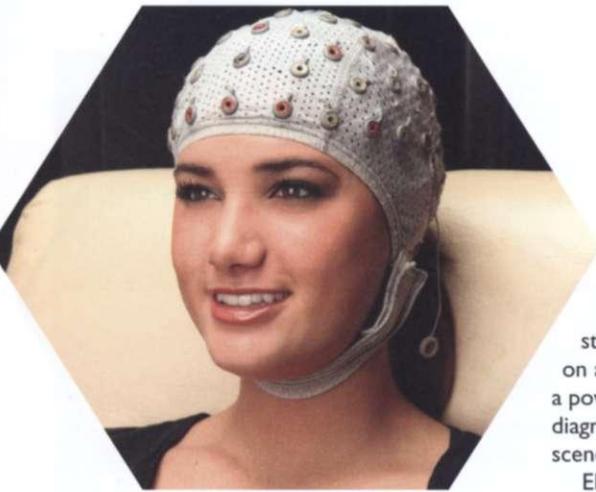
EEG techniques differ depending on the degree of sophistication and the type of study under consideration. However, without adherence to the stricter protocols and 'high-density' equipment used in clinical practice around the world, the integrity of the results will inevitably be undermined. A typical current high-density EEG study takes two to four weeks from go-ahead to debrief and is often an analytical combination from two or three different sources, i.e. the EEG 'brain signal' data, eye-tracking information and sometimes self-reported surveys or follow-up qualitative. Blending of the EEG results with other outputs is increasingly common.

The costs, location and participant



recruitment are not dissimilar to high-end focus groups. On average 20-40 target respondents are selected and recruited in much the same way as traditional research. With compliance to certain specific strictures, fieldwork can take place within regular research facilities or offsite in, for example, hotels, as long as they meet the requirement for noise levels, electrical

interference shields, temperature, humidity, lighting, lack of distractions on the walls etc. For real-world shopper/mobile insight, companies such as Sands Research, an EEG specialist, have developed portable systems to record response while the participant is on the move, in a store or in a car showroom.
 EEG studies are wide-ranging and can be



used in early stage ideation, brand proposition refinement, product and packaging design, all forms of advertising and comms creation, and activation work, including in-store and online evaluations. They can include multisensory assessments e.g. fragrance, tactile and taste optimisation and experiential analysis.

More advanced clients have already migrated from individual *ad hoc* studies to fixed facilities or neurolabs in which tests are conducted on a daily basis and managed by a dedicated team of specialists. The labs may be sited in an existing client R&D or innovation centre, or in a new-build site. A variation is a 'floating' or mobile capability, with studies conducted wherever required but centred on a fixed hub. Timeshare models are emerging too, as clients seek the benefits of regular neuro-studies but with reduced overhead costs.

So what does a typical EEG study look like? After the usual formalities on arrival, the participant is fitted with a head-cap with multiple EEG sensors (Sands Research uses 65). The sensors record the micro-electrical activity of neurons firing across the brain. For eye-fixation data in a mobile setting, eye-tracking glasses are worn. In stationary and screen-based studies, e.g. screen-based ad-testing, infrared desktop tracking systems are used. The respondent sits comfortably while eye movement and brain patterns are calibrated before the test stimulus itself is screened. Further post-stimulus calibrations of brain patterns are typically undertaken. The actual data recording duration may be up to 30 to 40 minutes, before uncapping. It is then that, if required, questionnaires, surveys or perhaps interviews are undertaken.

How is EEG testing different and of value to an advertiser, creative or R&D team? For the first time, neuromarketing research offers non-verbal, unconscious responses,

overcoming the biases and distortions inherent in focus, survey or rating scale studies. Its ability to record brain function on a millisecond-by-millisecond basis allows a powerful granularity to data reporting and diagnostics, e.g. cause-and-effect triggers for scene-by-scene TV ad evaluation.

EEG specialists develop their own proprietary algorithms and databases to analyse particular response patterns. These are customarily built around attention and emotional engagement-related patterns (sometimes extended to certain memory responses too), and are derived by their neuroscience advisors and informed by a deep body of academic EEG literature on a technique which has been around for decades. Sands Research has developed a Neuro-Engagement Score™ (NES) of overall activity levels of attention, interest and brain resources activated. A creatively engaging ad spikes and sustains a high plateau throughout its duration (see VW's 'The Force' ad). Simultaneously, Sands measures emotional activation on a scene-by-scene basis via its Emotional Valence Score™ (EVS).

Analysis of such metrics against databases not only rates and ranks response to stimulus, but guides creative teams to adapt and enhance scenes, branding sequences and messaging to optimise response patterns. By combining EEG and self-report data, the client obtains a more comprehensive understanding of consumer response to marketing material and the ability to strengthen effectiveness.

CASE STUDY: VOLKSWAGEN'S AWARD WINNING 'THE FORCE'

In Sands Research's 2011 annual Super Bowl ad-ranking study, one of the 70 ads tested created a sensation. The Deutsch LA spot features a little boy, dressed as Darth Vader. Using 'The Force' to compel household items to move, he fails until magically starting the new 2012 VW Passat (with Dad's remote-start assistance). Sands' neuromarketing results for this ad were unprecedented.

It hit the highest EEG rating of any ad Sands had ever tested. The engaging and emotional storyline delivered a strong positive response, with viewers emotionally engaged and strongly recalling the ad, and, more importantly, accurately recalling the specific VW brand. Online, it became one of the top ten viral ads ever (over 50 million views), increased traffic to the VW website by half, and contributed significantly to North American sales that year. One estimate reported 6.8 billion impressions worldwide and more than \$100 million in earned media related to an ad, which the advertiser may have not run without the neuromarketing study.

EEG specialist Nielsen NeuroFocus has developed its own suite of proprietary tools aimed at generating significant RoI gains for clients. Among these is an 'ad compression' technique; the outputs include creatively optimised cut-downs of longer-form TV ads, ready-repurposed and tailored to suit specific web and short-form environments. Wear-out scores provide an indication of whether an ad's media strategy is better suited to a coverage or frequency plan.

Another tool is Nielsen's TCE (Total Consumer Experience), which involves a second-by-second analysis of the emotional journey through a specific brand experience or ritual, e.g. unwrapping a





chocolate bar or undergoing your daily shave. The outputs help identify the most potent and emotionally evocative moments (Neurological Iconic Signatures), which in turn provide the creative focal points for brand communication and activation work. The intent here is to trigger, in a laser-like fashion, the most powerful brand associations related to the moment of enjoyment or consumption.

Nielsen NeuroFocus' neuroscientists have developed another proprietary tool from EEG data: Deep Subconscious Response. This identifies the degree of resonance or association between pre-defined attributes or values with the stimulus. This is typically used to evaluate, label and map specific emotions, sensory cues or messaging, evoked by alternative concepts, materials or experiences. As such, it is deployed to answer all kinds of optimisation questions, ranging from positioning and proposition development, to innovation, comms and shopper studies.

POPAl, Point of Purchase Advertising International, the leading retail marketing organisation, recently conducted one of its most comprehensive shopper engagement studies, testing in 17 regions within 13 leading US supermarket retailers.

Rather than labs and virtual settings, they chose to measure emotional, cognitive and biometric reactions to marketing stimuli in-store on real shopping excursions. POPAl included EEG and eye-tracking with attitudinal findings and interviews, via intercept participation. The research team consisted of Sands Research (EEG and eye-tracking), Smart Revenue

(ethnography) and Shopper Sense (project management). A pre- and post- interview format, along with a detailed review of the participant's purchase receipt, was combined with neuroscience to overcome such issues as recall and denial.

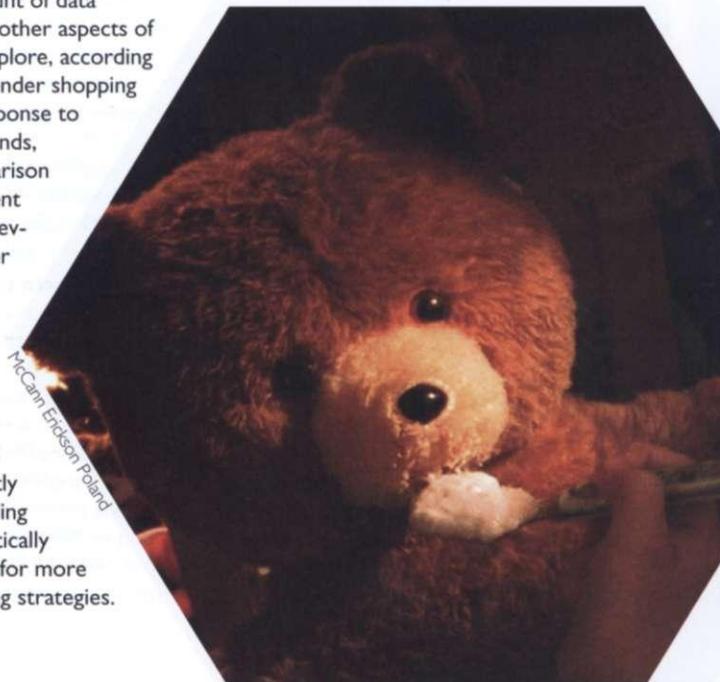
The study opens up whole new areas of understanding of *in situ* shopper behaviour. It confirmed an earlier identified trend of purchase decisions being made right there in-store: 76%, according to the data. Eye-tracking supported this finding by demonstrating that over 80% of significant eye-fixations were on non-purchased items. And in one of the more fascinating findings, the Sands team discovered that the brain produces a large positive emotional response (EEG spike) upon the first observation in-store of a 'to-be-purchased' product. Subsequent eye fixations to the purchased item diminish quickly, suggesting to Sands that the biggest reward is early on in the discovery process. Sands believes this first impression becomes 'a predictor of purchase' and, as such, pack designers need to ensure they fully understand opportunities to incorporate priming decision-cues for distance-viewing further down the aisle, rather than just at the fixture or shelf itself.

With the massive amount of data collected, there are many other aspects of the blended outputs to explore, according to Sands. These include gender shopping differences, emotional response to various categories and brands, cognitive response, comparison and optimisation to different store environments. Lily Lev-Glick, president of Shopper Sense and lead consultant for this POPAl Shopper Engagement Study, has stated that the insights provided by triangulating neuroscience data with attitudinal information and display presence significantly enhances their understanding of the shopper and dramatically improves the opportunity for more effective in-store marketing strategies.

Walnut, a new UK-based neuromarketing consultancy, blends different outputs depending on the business question being addressed. With creative development studies, Walnut favours a combination of neurometric + biometric with follow-up qualitative. This approach can be used in many phases of the creative process, but is particularly powerful at the earliest, where it can uncover additional insight into emotional drivers and help clients save money in downstream production or media investment. Typically, Walnut's neuro + biometric phase has a minimum of 40 participants tested via EEG (brainwaves), GSR (arousal levels) and eye-tracking to trace emotional, non-conscious response. This is followed by qualitative depth interviews (10 to 20), allowing deeper delving into key elements and swings in the emotional responses.

CASE STUDY: CHILDHOOD WITHOUT VIOLENCE 'TEDDY BEAR'

Walnut feels its approach is ideally suited to categories in which the prime focus is on changing behaviour/attitudes and, therefore, measurement of emotional reactions can be a useful proxy of effectiveness. They tested a McCann Erickson Poland charity campaign



'Childhood without Violence' from the National Agency for Solving Alcohol-Related Problems.

The TV ad featured a young girl feeding her teddy bear. "Come on, eat it," she encourages tenderly. But when some food spills, the mood snaps; she begins to tear the toy violently apart, shouting: "See what you've done? Don't you stare like this! Are you deaf or what? Answer me, you damn idiot!" Towards the end the voiceover appeals: "Thousands of Polish children fall victim to domestic violence. Support the 'Childhood without Violence' campaign."

Facial EMG (Electromyography), a highly sensitive and specialist form of facial-decoding, was used to help interpret emotional response, and depicted marked sadness throughout the ad. Respondents in the qualitative phase had declared the commercial 'too sad'.

However, EEG depicted high and positive emotional responses. The anger was also evoking an appealing 'approach' behaviour. This was a key finding in predicting the ad's effectiveness and seeing how high relevance and involvement could be triggered by a negative emotion; sadness was generating exactly the motivational response intended.

Without the benefit of measuring non-conscious emotional responses, via EEG, it would not have been possible to faithfully assess the net emotional appeal and potential of the ads.

CASE STUDY: SONY BRAVIA 'BALLS'

The unique 2005 television ad for Sony Bravia 'Balls' won a gold Lion at Cannes. What was the secret of its success? Walnut recruited 45 Warsaw target consumers to test it with EEG.

Moment-by-moment analysis of the response trace highlighted an unexpected crescendo of emotion after 17 seconds; a scene depicting a frog leaping from a drainpipe. Some speculate this scene was unscripted, but the creative team's instinct had been to retain it in the final cut. Whatever its origins, this small executional detail turned out to be a surprisingly powerful cue, triggering a strong positive reaction sustained throughout the ad. In fact, further copy-testing revealed that, without the frog, response to both ad and product were relatively less favourable.

Follow-up depth interviews probed response patterns and why specifically the frog had such an impact on overall performance – even among those who neither spontaneously nor consciously recalled it. Walnut's explanation lies in part with it being the only lively element in the ad (empty and deserted streets) but there was also something metaphorical cued by the inclusion of the word 'pixel'.

To respondents, pixel means colour as portrayed by colourful rubber balls, but also it conveys elasticity, an attribute associated with the frog. The brain triggered this mental association and the product benefit was noticeably enhanced. Two other executions in the campaign were deemed less successful; neither featured the frog. These examples illustrate how

incorporating and blending neuroscience with qual data allows planners and researchers to better connect the dots and improve understanding of consumer response, glean insights and clues to improve creativity.

EEG practitioners tend to position their approach as highly quantitative, yet some of the scepticism from detractors emanates from the tendency among vendors to over-reach in declarations of data robustness and related significance levels. Interestingly, there are clients and strategists, especially among those with cognitive psychology backgrounds, who regard EEG data and its interpretation as far more a qualitative tool; viewing the peaks and troughs in response patterns as less statistically definitive, but nonetheless extremely valuable in highlighting important pre-cognitive swings and trigger points to investigate and interpret further, using their own growing knowledge of neuro-psychology.

Perhaps the biggest criticism levelled at EEG practitioners is their temptation to present data interpretation as hard fact. While, this is not a problem unique to EEG (fMRI is similarly criticised, as are certain implicit tools and, of course, focus groups), it is critical to understand the limitations of what EEG data directly does and doesn't indicate. Informed interpretation, hypotheses and insights drawn by experienced practitioners from countless studies can be exceptionally valuable, but it is important to be clear about the grounding of the inferences.

EEG technology has seen some exciting recent innovations with the development of new types of headsets and interfaces. Nielsen NeuroFocus' new Mynd headset is designed to accelerate data collection and analysis; being wireless and quick-fit, it facilitates mobile, in-situ and shopper studies. The Emotiv EPOC headset, already available for a number of years is, like Mynd, a cradle-like device. It provides a real-time dashboard with graphical interface depicting EEG output traces and a capability for bespoke metrics. It sells at a greatly reduced price (\$2,000) versus EEG high-density equipment (\$20,000) which is used for key clinical work in neuroscience labs around



fMRI

HOW IT WORKS

The fMRI technique, introduced in the early 1990s, measures changes in oxygenated blood flow in the brain which is triggered by neuron activity. fMRI tests are usually conducted in clinics or academic institutes (not consumer research facilities). Respondents lay still on a gurney while their head is immersed in the fMRI brain scanner.

PROS

Powerful, rich, hard-core neuromarketing tool.
Excellent spatial 3D mapping of brain activity versus EEG.
Analysis possible deep into the primal emotional centres of the brain.
Simultaneous multiple measures.

CONS

Highly specialist expertise required.
Lab or clinic-based and typically very costly versus EEG.
Difficult to scale.
Provides five to 10-second snapshot averages of response.
Scepticism regarding over-reaching of cause-and-effect inferences from data.
Limited number of commercial studies versus EEG.
Noisy, unnatural consumer experience.

USAGE

Reserved for technical projects e.g. more complex or academic R&D studies.
Studies for which moment-by-moment responses and triggers are not required.

COSTS

Basic studies from \$150k; \$50k (syndicated)

the world. However, because its design lacks some of the highest threshold levels of sophistication demanded by advanced practitioners and academics, inevitably there are lively forum discussions about the robustness of its data-outputs and its core, built-in metrics.

There is an increasing client demand for faster data turnaround, and we can expect to see more advanced hi-tech interfaces launching in the near future. The significance of these developments is that it is opening up the capability for greater scalability from EEG studies as well as increased usage for ambulatory testing and studies in all kinds of environments. Perhaps most strikingly of all, it paves the way for in-home EEG studies.

fMRI

fMRI identifies which parts of the brain are involved in a particular task and measures the amount of activity under different scenarios. For example, it is often used in commercial studies to compare the amount of activity in memory encoding, liking, recognition and sensory brain areas during exposure to different brands, products, media platforms, choices and purchasing scenarios.

The data is typically used to refine and complement consumers' explicit responses about the same stimuli in order to better understand both the conscious and unconscious factors influencing behaviour.

Validation studies across the world have shown that it is possible to derive principles about human brain function based on the study of a relatively small number of individuals (typically between 20 to 30, assuming a homogenous group).

Advocates claim that its capability to measure activity across the whole brain can lead to differentiation of a wide range of functions (e.g. emotions, memory encoding, attention, decision-making, and many other human traits). fMRI practitioners claim it is well suited to address marketing questions that require multiple measurement answers (i.e. not just whether perceptions are positive or negative, but what type of emotion is elicited, what range of emotions and factors

are impacting choices and what product features e.g. taste/texture/colour/shape/smell - are responsible for delivering the reward.

Sceptics, on the other hand, feel that the interpretation of data is at times being over-reached and cause-effect inferences over-stretched; that activity noted in specific parts of the brain do not necessarily identify the nature of the response.

Neurosense, founded in 1999, was an early pioneer, working with the R&D division of Unilever UK, Viacom and PHD Media. Neurosense's fMRI studies investigated how subtle, often non-conscious cues (e.g. images, sounds, fragrances, suggestions) and contextual scenarios (in-store environment, media platform and advertising campaigns) exert their influence on consumer behaviour and purchasing choice.

Research by PHD in the late 1990s, used fMRI to measure the effectiveness of advertising messages across different formats (TV, radio, print) and category sectors. Neurosense measured the extent to which ads placed on different platforms impacted brain areas involved in memory encoding, understanding and liking. The results were used to develop the neuro-planning software, 'Etna', to provide an objective approach to client media planning. The results influenced the allocation of many millions of advertising dollars each year.

Currently, R&D departments use fMRI to understand the drivers of a rewarding product experience to evaluate the relative emotional impact of different marketing communications and to address fundamental questions about the nature of consumer decision-making.

However, compared to EEG, fMRI studies are less frequently deployed in day-to-day marketing research studies, due to the current cost, complexity, difficulty in scaling and the unusual nature of the respondent testing experience. Moreover, much of the mainstream requirement from clients is to better understand the ebbs and flows of emotional response patterns and diagnostic triggers in stimulus that can then be optimised and re-tested. This capability sits within EEG. The tendency, therefore, is to use fMRI for more academic and in-depth specialist R&D related projects.

EYE-TRACKING

HOW IT WORKS

Eye-tracking is a specialist approach that can be very sensitive and valuable in analysing stimulus over time.

Tracking and categorising eye movements can provide a granular index of what particular areas of a display are capturing the most visual attention.

Technology is enabling more sophistication of ET equipment and more specialisation for different types of stimulus

and environments e.g. fixed eye-tracker for screen-based work and mobile versions for ambulatory studies e.g. in-store shopper testing.

Very latest advances provide downloadable ET software, for automated, in-home, webcam studies.

PROS

Easy to use.

Portable.

Web-cam interface possible.

Rapid, often real-time responses.

Highly scaleable.

Inexpensive.

Can give indications of key interest or problem elements in stimulus material.

CONS

Purely visual.

Doesn't provide nature of brain response to the eye-movement.

USAGE

Simple testing of digital or print ads, packaging and shopper studies.

Increasing webcam usage in-home.

Complement to EEG studies to highlight time-synched cause-and-effect triggers.

COSTS

Five x print ad omnibus webcam test \$10k

BIOMETRICS

Measures of physiology (heart rate, respiration rate, sweat, etc), often referred to as 'biometrics', can be measured with fairly simple and inexpensive equipment, and provide robust measures of level of arousal. This data tends to be less specific (vs neurometrics) as to the nature of the arousal. They are 'downstream' from the brain activity that governs them, and relatively more variable, and less sensitive than measurements of the brain responses themselves. However, they are relatively easier to execute, faster to report and lower in cost.

Eye-tracking is a distinct and frequently used biometric tool that is valuable in its own right but especially useful in time-synching with other tools, especially EEG and other biometrics, since it helps pinpoint specific shifts in response patterns in stimulus.

EYE-TRACKING

Though not new in itself, eye-tracking technology for measuring visual effectiveness, has rapidly grown in usage in recent years with the advances in automated calibration, granularity of visual recording and real-time dashboard reporting. Nowadays, eye-tracking devices are becoming available for specialist applications and environments. The two key types of trackers are 'fixed', usually for screen-based studies, and 'mobile' for ambulatory or multi-site projects.

Automated calibration means that the set-up process for each respondent now takes just a few minutes. Typical outputs from eye-trackers include: time to first fixation; scan patterns and fixation points; ranking of dwell times; and repeat fixations.

Analysis is often in the form of heat maps, which provide an immediate impression of which elements of the stimulus were most viewed. Other related devices track and report pupil dilation to provide measures of attraction.

The benefits of eye-tracking are its ease of testing and a relative simplicity in reporting and understanding of data outputs. Eye-

tracking is commonly synched together with EEG or other biometrics, to give not just an evaluation of visual effectiveness, but of non-conscious and emotional response. It is also increasingly being deployed to trace eye movements when testing with newer hi-tech forms of stimulus material, e.g. virtual reality, 3D stimulus, shopper studies.

Very latest technology advances have enabled specialist companies to test material through the use of webcams. EyeTrackShop, a practitioner, believes that, while webcam eye-tracking is relatively new to the world, interest in it is growing very quickly through rapid, low-cost evaluations, especially for ads and packaging. Its proprietary system, developed in partnership with leading ET technology partner Tobii, provides software downloadable by respondents on their home laptop. This is claimed to be an accurate, cost-efficient and time-saving alternative to traditional eye-tracking. EyeTrackShop has identified a growth in standardised omnibus studies combining ET and traditional questionnaires e.g. for print or digital ads and increasing demand for enhanced evaluation of digital campaigns.

Served impressions and/or click-through rates are the prevailing primary metrics used to buy and sell online advertising. More recently, in-screen metrics have been added to ensure that impressions served actually have an opportunity to be seen. All these measures are technically logged through cookie-based systems and all suffer the same inherent problem - they do not measure actual viewings of the ad. What's more, according to EyeTrackShop, research typically indicates a substantial discrepancy between served versus seen impressions, but there is no appropriate technology to systematically measure it on a large scale.

RealCPM is EyeTrackShop's proprietary solution to measure campaign effectiveness. In partnership with a multinational FMCG company, its webcam eye-tracking software recorded responses across specific sites/ ad placements over time. Gaze patterns were tracked and saved in a cloud database. The results showed averages for each ad placement on each site, the percentage seeing the ad(s), the average time spent on the ad, time to first fixation, fixation

order etc. These results, combined with a traditional questionnaire, guided decisions on the optimal placement of ads and garnered valuable insights about how the brand is being received.

Highly adaptable, well automated and easily paired with other research techniques, eye-tracking studies can help reveal actual visual areas of interest and also highlight discrepancies, with articulated feedback to pinpoint topics for further probing.

FACIAL DECODING

Automated Facial Decoding is another method gaining traction. Manual decoding of expressions has been a niche tool for years, but suffers from an intensive and laborious process for analysis, especially for longer form material. Applications today enable real-time recording and, in certain cases, streamed dashboard reporting of a range of standard emotional states. According to specialist Realeyes, most facial decoding studies test video content, e.g. TV ads, movie trailers or online content, although other stimulus material can be tested.

Not dissimilar to online surveys, respondents click on the invitation email link and watch videos while their expressions are recorded and coded into emotional classifications. Tests are geared to several short, usually sub-two minute clips. Recommended sample size is 300 and standard turnaround is 48 hours (within 24 hours in the UK and the US).

Realeyes says its rapid turnaround means clients use it for 'in-flight' testing of live TV/digital campaigns to act fast in re-weighting copy selections. It is also useful for guiding edits: to optimise moment-by-moment scenes, characters, storylines and music. Realeyes uses the technique for assessing the relative 'virility' of different product concepts. Large quantitative studies are now easy to run with online facial decoding and are often used for predictive analytics and reference norms projects.

Goviral, a viral agency, turned to Realeyes to get a fix on how important emotional engagement is in driving social performance metrics. With online viral reach growing in importance, a more scientific approach was

needed to assess and optimise potential. Goviral is now offering emotion testing, via facial decoding, as an integrated service to help clients maximise viral performance.

The accuracy of existing facial tracking technologies can still improve. Currently, Realeyes' system provides overall intensity levels for cognitive or emotional engagement as well as the six basic Ekman emotions (sadness, anger, surprise, fear, disgust and contempt). There's an industry view that it is essential to quickly move beyond Ekman's core emotions, not least since these are unlikely to be markedly evoked in response to regular FMCG packs, concepts, ads and comms. Insiders contend that software and spatio-temporal analysis will, in the near future, allow assessment of more states such as boredom, confusion, alertness, and attraction, which they see as critical determinants of marketplace success.

So, how sensitive are existing automated techniques to accurately detect micro-variations of expression for relatively low-level interest stimulus material, as opposed to say high-energy movie trailers? Realeyes contends that, with sufficiently large sample sizes, it is possible to detect enough signal even for response to everyday 'still' media. MMR, a specialist in sensory research, ameliorates this concern by including, where relevant, sequences of more sensitive manual, rather than automated, decoding of facial responses.

Academic literature on the universality of facial expressions has been debated for decades yet, according to Realeyes, it seems the Ekman classification has thus far stood the test of time, and claims to have seen it work in over 25 countries. Inevitably, discussions around universality and the need for cultural calibrations are resurfacing as facial decoding technology grows in scale and reach.

As with eye-tracking, latest developments in web standards and browsers are gradually enabling the recording of studies to be client-side via software downloads on

FACIAL DECODING

HOW IT WORKS

Manual methods of analysing momentary and micro changes in facial expressions can provide a valuable index of the type of transient emotional responses being elicited. Yet they are exceptionally time-consuming.

Technological advances are now seeing the emergence of software with real-time, automatic, facial decoding capabilities and categorisation into specific emotional classifications.

Webcam software is now available to provide in-home study capability.

Further innovations will see more comprehensive emotional categorisation to augment the present six core Ekman notations.

EMG is a specialist R&D technique using face-attached sensors. Though providing greater sensitivity, the nature of the respondent testing experience precludes it as a mainstream marketing research tool.

PROS

- Ease and speed of reporting.
- Moment-by-moment responses.
- Relatively inexpensive.
- Highly scalable.
- Valuable complement to other techniques.

CONS

- Faces reveal only a partial and indeterminate signal of response.
- Limited current array of pre-defined emotions.
- Debate over technique's sensitivity for outputs of everyday marketing material.
- Debate over universal cultural applicability.

USAGE

- TV ads, video, concepts, experiential

COSTS

- Two x TV ad webcam test \$5k

OTHER BIOMETRIC TECHNIQUES

HOW IT WORKS

Other common measures include blood pressure, heartbeat, respiration patterns and skin perspiration (GSR).

GSR (Galvanic Skin Resistance) indicates levels of arousal through the micro-variations in skin conductivity relating to perspiration levels. Recorded by a simple finger monitor, it is frequently used alongside other methods such as EEG and eye-tracking.

in-home webcams. Additionally, the potential will exist for continuous monitoring, not just per project; thus enabling better understanding of our everyday behavioural interactions with the digital and social media landscape.

OTHER BIOMETRIC TECHNIQUES

Other biometrics commonly used to better understand non-articulated consumer response include blood pressure, heartbeat, respiration patterns and skin perspiration; they share some common characteristics by being proxies for stimulation or relaxation levels.

The data tends to be less specific than neurometrics as to the exact trigger of the arousal. Being downstream from the brain activity that governs them, these 'delayed indicators' are more variable in nature, and less sensitive than measurements of the brain responses. However, they can provide valuable, sound and robust measures of emotional and non-articulated responses to overall experiences or to many forms of marketing stimulus.

GSR (Galvanic Skin Response), in particular, is commonly used alongside EEG and eye-tracking tools. A simple sensor is attached to the finger and records the

changing level of perspiration in the skin. This data provides an indication of the respondent's state of arousal and commonly provides metrics tracking stimulation or relaxation levels.

Innerscope, a US-based specialist in biometrics, provides a comprehensive array of indicators integrated into its proprietary methodology. Biometric research typically uses unobtrusive monitoring devices. For Innerscope, it is the biometric monitoring belt, which is easy for participants to put on and forget about during the test. As a result, research can mirror a more natural media exposure in any environment, including offering the freedom to move between platforms without interrupting the experience.

A study on new media with CNN highlights the approach. With TV viewing habits changing rapidly, particularly in relation to second screens, CNN recognised the need for a deep understanding of how this behaviour affects attention and the emotional experience of content and advertising

In a first-of-its-kind project, on the night of the recent US Presidential election, 60 American voters took part in a live biometric Innerscope study. Each participant wore a biometric belt that collected moment-to-moment changes in their heart rate,

PROS

- Ease and speed of use.
- Low cost.
- Scaleable.
- Wide-ranging study potential.
- Valuable complement to other techniques.
- Combining biometrics together provides more robust outputs.

CONS

- Relatively less sensitive.
- More variable and less able to identify granularity of cause and effect versus brain measures.

USAGE

- Innovation, concept, ads, packaging, shopper studies, experiential, multisensory studies.

COSTS

- Three x TV ad test \$15k



respiration, skin conductance, and motion as they experienced the election results in real-time during a 90-minute live CNN broadcast.

Half the participants simply watched the news coverage and advertising as it aired on TV, while 30 used the CNN Election app on their iPads in combination with the TV for a two-screen experience. Results showed that when respondents coupled CNN TV viewing with CNN iPad app usage, the TV ads experienced a 30% lift in engagement. Additionally, when compared to the Innerscope database, levels of engagement of the coverage itself were similar to engagement with Super Bowl content. Levels of heightened engagement also extended to the TV ads; within the two-screen experience, levels during the TV ads were stronger than 90% of the ads in Innerscope's ad database. CNN uses the information from biometric results to inform its content strategy across programming and sales, creating new opportunities to surround content and interact with consumers in a much more circular experience.

PSYCHOMETRIC (IMPLICIT) TESTING

An array of often proprietary software tools continue to be developed that allow the capture of non-conscious, 'gut' instinct responses via screen-based psychological-derived testing protocols. This approach is frequently centred on identifying the degree to which stimulus material triggers pre-defined brand, category or sensory associations.

While the last five years has witnessed a rapid expansion in the use of neuromarketing worldwide, in order to integrate seamlessly into mainstream market research, neuromarketers are having to address questions of scaleability, timescale and cost-effectiveness. In response, a number of science-led practitioners are developing proprietary tests based on implicit measures.

Neurosense has been able to leverage years of neuropsychological research using hi-tech fMRI into a range of online software tools, which allows the capture of consumers' non-conscious, 'gut' instinct responses. These tests are administered online in any

country and any language. The tests work by capturing respondents' reaction times to marketing materials in timeframes known to be too brief for conscious brain processing to interfere with the instinctive response. Importantly, these implicit measures have been shown in the academic literature to be more accurate predictors of how people will behave than their explicit (verbal or behavioural) responses at the time of testing.

Neurosense claims that by running online behavioural tests alongside its in-depth fMRI studies, it has been able to validate its online tools against the fMRI results. Neurosense says its neuroscientists, psychologists and programmers have developed Brainlink, a wide and highly flexible range of online implicit tools for use around the world. These tests are designed, programmed, hosted and managed on its own servers in-house for clients. Applications span category attribute ranking, innovation, concept and positioning evaluation, comms pre-testing, and even matching brand personalities with spokespeople.

Companies typically approach Neurosense for help to better understand how consumers differentiate at an emotional, non-conscious level between closely positioned brands. As the insight director of a global media company put it: "We have a vast amount of data about our customers through years of traditional research, but we still don't really know how they feel emotionally about us, or how to find this out." Neurosense conducted a 10-country implicit online study for the client and was able, not only to show them the level of emotional engagement with their brand on a country-by-country basis, but also how that emotional engagement was affected by the number of platforms on which the customer interacted with the client. This research won a European brand marketing award in 2012.

In another example, one of the UK's best-known brands had problems identifying a compelling creative platform. Consistently, in focus groups and questionnaires, its brand attributes fared poorly relative to competitors, yet it still attracted a disproportionately larger customer base. So

PSYCHOMETRIC METHODS

HOW IT WORKS

Often variations of the classic IAT (Implicit Association Test), these methods work by capturing rapid 'instinctive' response reactions to attributes and stimulus. Academic literature supports the contention that these response patterns are more faithful predictors of behaviour than articulated or explicit responses.

PROS

- Readily adaptable to specific study types.
- Ease of use with rapid, often real-time results.
- Highly scaleable.
- Web-interface possible.
- Inexpensive.

CONS

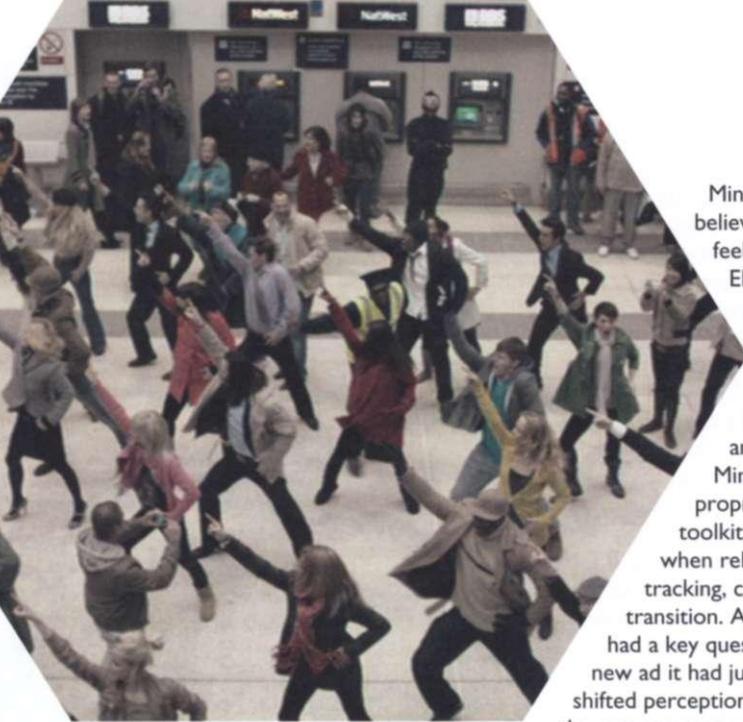
- Less rich, versatile and direct than neurometrics.
- Reaction-time testing has to be calibrated to overcome variability in 'motor' response.
- A good degree of expertise required in tailoring study design and data interpretation.

USAGE

Wide-ranging across many different study areas including innovation, brand drivers, brand essence, positioning, packaging, advertising, experiential and multisensory.

COSTS

Three x TV ad test
\$15k



MindLab International believes that, while clients feel harder-core tools like EEG and fMRI can offer exceptional insight, there is often still a 'leap of faith' required to jump from surveys and interviews to wiring-up and scanning brainwaves. MindLab believes that its proprietary implicit testing toolkit (Tootsuite), integrated when relevant, with EEG + eye-tracking, can help clients in this transition. Aveleda Wines in Portugal had a key question for MindLab: had its new ad it had just neuro-tested with EEG, shifted perceptions of the brand itself or the category as a whole? MindLab conducted before-and-after implicit 'resonance' tests of the ad against the brand and then against competitors. Perceptual shifts were evaluated for specific, pre-selected attributes and associations.

Phil Barden of Decode takes the view that these implicit or psychometric tools are most valuable in marketing when integrated in an overall process and linked to a conceptual framework. Decode's approach is based on 'decision science' [i.e. neuroscience, cognitive, social psychology and behavioural economics] and attempts to translate and apply the latest learnings from science to marketing.

Back in 2008, T-Mobile had been struggling in terms of commercial performance, differentiation and brand proposition. Decode was commissioned to unlock the drivers and barriers for a winning strategy for the brand, guiding concept and communication development and testing. The approach involved uncovering the explicit and implicit purchase drivers of the mobile category and its brands before deriving a new strategy for the brand, testing of communication regarding impact and strategic fit and supporting the roll-out of new strategy across countries and touchpoints.

Decode's technique is based on Kahneman's two-system framework of human decision-making. According to Barden, brands are a means to an end of goal

achievement: the stronger the association between the brand and the relevant, implicit goals, the higher the perceived goal value and, thus, the higher the chance of being purchased.

To tap into the implicit system, a standard 'priming paradigm' technique measured the strength of automatic association between objects in memory, e.g. a brand and an attribute. There are two outputs: speed of response and fit/no fit. The faster the response, the more the two objects are associated (or not) in the brain (in layman's terms 'what fires together, wires together').

T-Mobile's brand profile showed relatively weaker implicit associations with the drivers relevant for mobile internet. Statistical analyses also determined which goals were drivers of T-Mobile's customer satisfaction and loyalty KPIs. The combined results produced a set of goals with which the brand needed to associate itself. This led to the new brand claim - 'life is for sharing'.

To steer implementation of the new brand strategy, a brand-fit test was set up to show which brand values were triggered on an implicit level by exposure to a particular touchpoint. This approach identified and helped optimise the brand attribute contribution and cues for each touchpoint, and was incorporated into a brand code book.

The new thinking spawned the 'Dance' ad at London's Liverpool Street railway station, the most commercially successful in the company's history (sales +49%, share +6%, tripled brand consideration, average customer acquisition cost halved, 146% RoI and over 36 million YouTube views).

Three years on from the relaunch, the same approach has been applied to guide implementation across other brand touchpoints, such as proposition development, store design/layout and customer service interactions. T-Mobile claims the study and insight arrived at transformed the business. It gave marketers a deeper level and distinctive insight to develop a creative idea around, it gave a scientific understanding and meaning to the brand that allowed it to measure a tangible performance against. Most importantly, it meant the execution just connected with consumers in a way that had never been imagined.

traditional research was failing to provide the full story. By deploying online implicit tests across a panel of 3,000, Neurosense identified feelings and emotions, rather than articulated response. The results demonstrated a range of positive attributes that both surprised the client and did not conflict with competitors. These are now being used to guide creative as part of a long-term transformation programme.

Because both implicit (non-conscious), and explicit (conscious) thought exists in the brain, the best approach is to ensure both types of response are measured. Neurosense adds that: "respondents can't image-manage an implicit, can't fake it or rush through it, the task is simple so there is no ambiguity in the task or questions, and it doesn't matter that people cannot verbalise how they feel since we can infer this from their behaviour and responses."

MMR Research believes that implicit techniques can be highly valuable, but can only achieve validity and the highest commercial gains if they are blended with more traditional explicit questioning. MMR's own suite of implicit techniques includes its conceptual emotional and functional profiling tool, Brandphonics®, and it is currently developing an extension of multi-dimensional IAT to better understand the linkages between products and brands with conceptualisations drawn from MMR's 'emotional lexicon'.

APPLICATION, LEARNINGS AND GUIDELINES

Some in the industry question whether traditional research methods have gone as far as they can in addressing the fundamental research needs of clients. Despite the frequent introductions of new tools over the past 20 years, have we seen any really significant step-change in our ability to accurately predict behaviour and our understanding of what's driving it?

It is hardly surprising that dissatisfaction with mainstream traditional techniques is palpable among the more erudite marketers, as is the frustration felt in the capacity of conventional tools to unearth fresher, profound and inspirational insights. Decades ago, the need was recognised that if marketers were to achieve a seismic leap forward, we would have to dig deeper and get a firmer grip on how emotion and the sub-conscious helps shape our perceptions and motivations.

More recent attempts to augment traditional methods by crafting emotionally-based questioning into surveys and questionnaires, may have helped to a degree. But, of course, by not directly tapping into the non-conscious, there's still the age-old reliance on post-cognitive, rationalised interpretations.

With marketers under ever more intense economic pressure to justify spend levels and deliver RoI, the quest for new answers from the sub-conscious and emotionally-driven insights has never been so energised. And that interest is further fuelled by the neuroscience revelations now frequently being broadcast in mainstream media. At the same time, technological advances are facilitating neural and bio-sensory measurement, reducing entry-level costs for marketing applications, compressing timelines and accelerating global scalability.

These developments have spawned an increasing number of new vendors in neurometric, biometric and psychometric (implicit) evaluation. It has reached the

Top 5 Benefits of New Techniques

Quantifying Emotional and Non-Conscious response

Responses are not just deeper than qual; resulting data can also be compared and contrasted against norms

Attention and Viewing patterns

The ability to understand whether or not and to what degree, elements of the stimulus are seen or registered

Moment by Moment response

Powerful capability to evaluate unfolding response patterns not just averages

Cause-and-Effect triggers

Pinpointing of specific triggers of response swings and granular diagnostics

Multi-Sensory and Experiential response

The capability to evaluate emotively potent elements difficult or impossible to test through traditional techniques

point where the majority of leading FMCG companies, carmakers and media businesses have at the very least dipped their corporate toes into the pool. The past 12 to 18 months have seen the major MR groups seal trading alliances and acquisitions with leading specialist practitioners. Most self-respecting marketing VPs or directors have acquainted themselves with, at very least, a cursory understanding of the area. As a consequence, globally, interest in these tools has noticeably accelerated, especially in Asia and developing markets – insiders feel we are on the cusp of the next wave of development.

So, in aggregate, what can these new techniques actually deliver and what contribution can they make to more effective marketing, more engaging entertainment and more rewarding experiences?

When used judiciously, these new non-articulated techniques can potentially be transformational in revealing new insights to better understand consumer response. As we have seen above, their application covers a rich array of multi-sensory study areas, including creative ideas and proposition refinement, NPD and innovation optimisation, packaging, advertising and comms evaluation, shopper testing, online usability assessment and experiential/ touchpoint analysis.

These tools can at last measure certain key aspects of how we think and feel that have proven elusive to marketing researchers until now. In a sense, casting more light on how we think and feel helps provide the missing link; since what people do and what people say are already measurable through traditional techniques. Integrating both pre- and post-cognitive measures provides a more holistic, more meaningful picture.

Perhaps their most powerful and exciting contribution lies in their potential to unravel insights into some of the most important, yet most exasperating, areas confronting marketers, i.e. those areas in which the biggest gulf exists between what traditional research suggests and what we, as marketers, instinctively feel... the areas in which confidence in prevailing research data is at its lowest and where the prediction-performance linkage is at its most flimsy. Top of my list would sit assessment of creativity

5 Obstacles in Adopting New Techniques

Confusion, Misinformation and Jargon

Scientific Underpinning + Data Quality

Data Interpretation + Insight Extraction

Common Standards

Open Validation

4 Key Value-Add Study Areas

Creative

The capability to more meaningfully assess Ideas, Creativity and Design

Multi-Sensory and Experiential

The capability to evaluate either in isolation or overall sensory related cues

Perceptual Drivers

The capability to analyse not just the key drivers of a brand, attitude or experience but the relative strength of each component

Unlocking Cultural Difference

The capability to better understand responses in cultures where articulated / explicit methods particularly struggle to unearth meaningful feedback

and ideas, evaluation of perceptual drivers and the ability to measure multi-sensory and experiential responses. And to be able to do this on a moment-by-moment basis, not simply as an average. The potential benefits from these areas alone are game-changing in terms of both competitive advantage and Rol.

In my view, the creative industry in particular has been a long-suffering victim of rationalised research findings which inevitably will have led to the ditching or emasculation of potent, emotionally-charged and highly promising campaigns. I have a feeling that, in time, these newer, non-conscious techniques, have the ability to liberate creativity and embolden clients to back ideas that would otherwise have been consigned to the studio bin.

As with any new research methods, adoption and growth are not without challenges. Not least among the hurdles for clients is the struggle to make sense of the wide range of different techniques and capabilities on offer, the differing sometimes contradictory opinions of scientific advisors, the lack of openly public validation studies, the variable quality of data and vendor expertise evident in its interpretation, and then the spread of bewildering, sometimes incomprehensible, jargon. Understanding the landscape, benefits and limitations is critical for clients if they are to get the most out of this new territory.

One particular issue which I repeatedly hear clients bemoaning is how suppliers have left them dazed and confused; too much energy has been wasted on 'my-tool-is-better-than-yours' sniping. Spokespeople, sometimes with little scientific or practical experience on the subject, talk effusively about the promise and the Holy Grail, while others just as readily pour ice-cold water on almost everything with neuro in the title.

Three camps have emerged on the application of neurometric and biometric techniques; the NeuroPhiles who are upbeat, open and welcoming, NeuroPhobes who reject many of the assertions and NeuroSceptics who are intrigued but progress only with utmost caution.

Are these divisions really any different from what we customarily see for the introduction of any new science-based

technique? On the face of it, no. However, the difference here is that historic science-based innovations have largely been founded on well-established and academically familiar and peer-reviewed psychology and psychological hypotheses. Latest Cognitive Neuroscience is, in contrast, very new and evolving at a mind-boggling pace. Indeed, one of the biggest challenges for practitioners is in keeping abreast of the latest findings and their significance. As the Consumer NeuroScience industry emerges, the leading practitioners (especially those in harder-core neurometrics e.g. fMRI and EEG) each have their hand-picked teams of academic neuroscience advisors. These teams help devise proprietary metrics, stipulate study design paradigms and data-collection protocols and create algorithms and parameters for the meaning and interpretation of results.

With neuromarketing studies being conducted around the world on a daily basis, across many industry sectors, answering many kinds of research questions, these enterprises are accumulating enormous amounts of data and intelligence on consumer response patterns. Naturally, given these are commercial businesses, there is a strong disinclination for them to share their findings via open academic peer-review. Instead, their learnings hypotheses and validations remain internal

and proprietary and thereby help boost the IP of the company. Those with longer-term strategic client partnerships do, of course, share more with the clients' own scientific advisors. Nonetheless, perhaps this disparity in degree of daily exposure to applied neuroscience helps to explain some of the disconnects and diverging opinion between those neuroscientists actively involved in the commercial field and those not.

However, there is no question that the black-box nature of neuromarketing techniques and lack of definitive, large-scale, high-profile public validation work, is holding back the industry. Addressing this fundamental has now to be an industry priority. For various reasons, earlier attempts to orchestrate open validations have failed. The time is right to try again.

But keep all this in context; whatever the chosen field, even the most eminent academics do not always agree with one another. After all, this is science and scientists, by their very nature, need to continually challenge prevailing thinking in order for science itself to advance. Of course this is nothing new; current conventional marketing research and insight tools have until now been largely founded on psychological hypotheses. Now neuroscience, some argue, is playing a key role in validating or reframing some of these working psychological models. The latest thinking is just that... and the most respected new research tool is only the latest 'best working model'.

There are some fundamental neurological principles and robust techniques that are very widely accepted in scientific literature for measuring certain key response patterns. These include non-conscious or physiological degrees of Attention, Emotional Arousal or Engagement, and various implicit Associative correlations. Yet, even these measures need to be tested by specialists under stricter conditions than mainstream marketing research.

The most progressive clients began with the basics in neuro techniques, but have now been engaged for well over 10 years in investing and collaborating with leading suppliers to help shape and refine their suite of non-conscious methodologies. *Ad*

BRAIN INSIGHTS

Boomer Brain:

Beyond 50, the brain becomes less able to screen-out distractions, thus presenting huge implications and opportunities for marketers.

Another key difference between the older and the younger brain involves the amygdala, the area devoted to primal emotions; in the young, it responds to both positive and negative stimuli, but in the older, more strongly to positive. 'Preferential processing' reflects this tendency to overlook the negative. Studies suggest that, when presented with a negative message, older brains can, over time, 'delete' the NOT and recall it as a DO. As a real-world example of how this neuroscience insight might be best applied to a simple Boomer marketing message; "Remember the milk", is likely to be more effective than "Don't forget the milk".

Female Brain:

Despite the growing economic power wielded by females, it has only been in the last decade that the female brain has been studied in any depth and detail. Marketers are waking up to the fact that the female brain has four times as many neurons connecting the right and left hemispheres, greatly enhancing its ability to rapidly process information through both rational and emotional filters – a fact which smarter marketers are already using to better tailor content and tonality of gender-specific messaging.

Millennial Brain:

Millennials tend to rely more heavily on each other for validation of their brand and product choices. The pre-frontal cortex is still developing as late as our mid-twenties. Until that time, the brain tends to rely more heavily on social groups in decision-making. Younger Millennials are still defining themselves in a fundamental, neurological way.



Pregnancy and motherhood presents women with the most significant changes their brains will experience in their adult lives. Importantly, those changes will last their lifetime. The highly-evolved Mummy Brain boasts, for example, heightened sensitivity of each of our core senses and a more potent emotional memory system. This in turn presents opportunities to devise increased multi-sensory cues and incorporate emotional triggers in marketing activation material.

Mummy Brain:

Top Tips on Pre-Cognitive Techniques

Be Open

There's surely more to be gained from being open; to embrace and to learn from the fresh, non-conscious perspective they provide

Take Expert Advice

Tread carefully, take expert advice – from both specialist neuroscientists and experienced practitioners in application

Select Vendors and Techniques Carefully

Ask the right questions in selecting the most appropriate methodology for your business question and in vetting credible vendors

Interpretations

Be wary of vendors who over-stretch interpretations from the data. Be clear on what the data directly says and what is informed speculation and hypothesis

Allow Extra Time

Digest and understand which tools are most appropriate for blending with your existing research techniques

Keep it Simple

Pick a simple first project and, if possible, run it in parallel with your existing methodology to validate and assess the unique added value to your business. If harder-core Neurometrics are too big a leap, then consider if Biometrics or Psychometric (Implicit testing) would be a pragmatic next step

hoc projects e.g. on copy-testing led swiftly to larger scale projects perhaps on, say, ideation before migration to neurolabs; more dedicated capabilities to run many types of study and stimulus on a more iterative and regular basis. These clients see the adoption of new techniques as journeys of discovery; reflecting the view that advances in both science and technology are continuously evolving their capabilities to improve intelligence-gathering.

For those taking their first steps into the territory, naturally, as with any new set of tools, one is best advised to read the instruction manual carefully before using. Following some simple guidelines is likely to lead new entrants more quickly and rewardingly through engagement. There are minefields to steer through, myths to blow-up, obstacles to negotiate and FAQs to adsorb, in order to get the biggest bang for your buck.

These new tools differ from their purely clinical lab-based studies: they are a compromise... at least to some degree. The more reputable specialists have very stringent protocols, but hard, practical reality and commercial constraints preclude 100% adoption of clinical nth-degree rigour. In this sense, the same can be said for traditional science-based market research methods.

Researchers have adapted clinical lab-based protocols to retain acceptable levels of integrity, get closer – when feasible – to the real experience, and deliver faster, more affordable solutions. The trade-off is in stretching the link between cause and effect hypotheses and therefore the reliability of results and predictions. When it comes to neurometric methods in particular, they will certainly improve significantly over the coming years with science and technology advances as well as the collective wisdom that comes with the experience of implementation. The key is to understand the relative strengths and weaknesses of what's on offer and match them to your business needs.

As we have seen, there are varying degrees of sophistication ranging from harder-core fMRI to facial decoding and implicit testing. Some tools are almost universal plug 'n' play in terms of their

simplicity, while others are bespoke and require highly specialist operators and interpretation. Nevertheless, there are minimum thresholds that each method needs to meet to ensure the outputs are reliable and meaningful. These thresholds are more complex and stringent for neuroscience-based techniques such as EEG and fMRI, than typical psychometric or implicit tests; but nonetheless are important for each tool.

In these early days, the industry has yet to evolve global standards against which to evaluate these new techniques and competencies. Nonetheless, in assessing

vendors in this area, it is generally accepted that there are three key criteria to be evaluated: the calibre and integrity of science teams underpinning study design algorithms and metrics; the sophistication of technology and processes for data collection; and the degree of experience in interpretation and application to marketing activity.

Esomar has published a useful starter guide on neuromarketing vendor selection to help steer clients into asking the right questions; however, to avoid pitfalls, there's rarely a substitute for having at hand an informed advisor with a good deal of neuromarketing experience under their belt.

Of course, the highest calibre scientific plus technological expertise doesn't guarantee informed, unique added-value in the form of interpretation, insights or recommendations. So, again, experience counts for much here. This is certainly an area in which clients are demanding more guidance. Arguably, the first wave of pioneering vendors have been stronger on the science and technical front than in market research or marketing literacy.

In essence, there are two strata of outputs: standard evaluation tools that provide spreadsheet-style and dashboard outputs from formatted stimulus, and automated guidance to clients on whether to run ad A or B or C; and consultancy that goes further in gleaning insights on what drives the response and on how to optimise the strategy, creativity or execution.

Of course, there is value to be yielded from both approaches. The standardisation approach can be fast and scaleable. We are already beginning to see a wider range of such tools at some highly affordable price-points. Automated in-home eye-tracking and web-based implicit testing tools are examples that offer simple, actionable outputs from automated reporting with a 24-hour turnaround almost anywhere in the world.

Then, when it comes to neuro-insight generation and its commercial implementation, there is a great deal of potential to add further significant value in the form of neuro-driven brand planning and brand consultancy. The smarter clients are already following this pathway to intensified emotional and multi-sensory engagement;

delivering more compelling propositions, enhanced creative impact and, ultimately, more effective activity and experiences. We are already seeing the emergence of so-called 'neuro-planners' and 'neuro-brand consultants' and can expect to see this accelerate as more clients experience the benefits of applied neuroscience, and agencies see the opportunity in re-orienting themselves as 'neuro-powered'.

Clients with most exposure to these new techniques claim to 'feel' more intuitive. They think differently about their consumers, think differently about their shoppers, think differently about how they write briefs and how they critique creative solutions and activation plans. Such clients remark they have developed a new language, a new perspective and a fresh set of reference points with which to engage in strategic and executional discussions, e.g. how to plant priming triggers, detect push versus pull emotional response patterns, and evoke the extra impact of synched-up sensory cues.

One common theme with clients migrating from *ad hoc* projects to dedicated facilities or ongoing (day to day), iterative programmes, is the integration of non-articulated techniques into revised research frameworks i.e. blending newer tools with old. It may take a good number of studies across many different test areas, for a client to fully figure how best to optimise and blend tools together. And, of course, each client is different; there is no common prescription.

Another discernible trend among repeat customers is an increase in R&D and upstream early-stage innovation projects; the rationale being that better understanding early on in the NPD cycle can, of course, limit costly downstream mistakes. The auto industry would be a prime example here, and one in which design technology now readily lends itself to neuro-testing of embryonic ideas and concepts.

Those with experience of multiple studies are adding to a growing body of neurological insights and best practice: principles about how the brain perceives and encodes the world around us. There are now many such best practices promoted into the public domain and, with them, ways in which

.....
"It's almost as if
within each of
us are two
people; and up
until now, market
researchers have
been listening to
only one of them;
and, as we now
know, the less
influential one"
.....

neuroscience can help enhance activity and execution without always the need for fresh fieldwork. Familiarity with the marketplace application of these best practices is the domain of the emerging breed of neuro-brand consultants.

Longer term, clients are finding more efficient ways of leveraging insights across their business. Client neurolabs, for example, can rapidly accumulate a wealth of learnings, insights and hypotheses, many of which will be applicable across portfolios, categories and markets. It is an ideal environment in which to collate these insights and create new ways of working for critical activities: e.g. 'blueprints' or 'golden rules' for point-of-sale design, on-shelf packaging or mobile advertising development.

Neuro-literate clients now request consultants to immerse their agencies and support teams in workshops, in order to ensure that 'neuro-led' thinking becomes all-pervasive, the new language commonly understood, and best practices firmly embedded. Implemented well, this approach delivers more effective and 'right first time' solutions.

In summary then, the debate has moved on from if to how these new science-led tools can add value. A wide range of techniques provide different ways to glean insights from the non-conscious - the root of perception and motivation. None of these new approaches is perfect. But neither are traditional tools. As the techniques evolve and improve, so too will formalised standards and open validations. The need for blending results with traditional methods is now widely acknowledged; a more holistic picture helps us in our quest to better understand behaviour and better predict performance.

As an indication of what's to come, the most progressive clients have already migrated from *ad hoc* studies to running dedicated neurolabs, and the largest market research groups are offering a growing range of pre-cognitive techniques through vendor partnerships.



.....
 more on neuroscience
in practice at
www.warc.com