

ARE WE BUYING RATIONALLY OR IMPULSIVELY?

WHAT ACTUALLY HAPPENS IN THE CONSUMER'S MIND AND WHAT DOES NEUROTECHNOLOGY REVEAL?

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Abstract: *Neuromarketing is complementary to traditional methods which are based on verbal reports - it presents an approach that sheds light on new aspects of psychological phenomena, basically - consumer behaviour of an individual. Proponents believe that neuromarketing techniques such as EEG and eye tracking shed light on the unconscious, emotional processes which are the main aspect of consumer behaviour. On the other hand, we know that conscious, cognitive processes play an important role in the control of emotions. Therefore, the main research question is - how does consumer behaviour (under the influence of conscious or unconscious processes) impact cognitive and emotional factors. Analysis of existing research have led to the conclusion that consumer behaviour is always, to some extent, influenced by both the conscious and unconscious processes as well as emotional and cognitive factors. For this reason, so as to make a full analysis of the tested phenomena, the multimedia aspect is a must. The Theoretical standpoint of MASMI research agency , based on the use of the Brainster EEG based Neuromarketing platform represent a combination of traditional methods and neuromarketing, which provide answers to various issues on the attitude of consumers towards advertising.*

Keywords: *neuromarketing, conscious processes, unconscious processes, emotional factors, cognitive factors, EEG, eye tracking*

1. INTRODUCTION

Neuromarketing is an emerging field that bridges the study of consumer behaviour with neuroscience. It was controversial when started in 2002. Advertising and marketing professionals have been showing growing reliability in neuromarketing lately by implementing more pre test case studies. Each year, over 400 billion dollars is invested in advertising campaigns. Conventional methods for testing and predicting the effectiveness of those investments have generally failed because they depend on consumers' willingness and competency to describe how they feel when they are exposed to an advertisement. Neuromarketing offers cutting edge methods for directly probing minds without requiring demanding cognitive or conscious participation. [10] According to the results of the conducted research, it may be observed that the percentage of usage of the internet and social networks is larger in younger millennials (respondents aged 18 - 24). They are also more likely to get their information via the internet and on-line publications. Having in mind that they are, as a generation, open for new technologies, this provides space for implementation of various forms of interactive materials through use of digital channels. [7]

Social media and digital advertising will still rein king in marketing strategies. But whereas millennials used three screens, Gen Zers use five: a smartphone, TV, laptop, desktop and iPod. "If millennials were in part sort of digital natives, then Gen Z (born 2000-2010) is pure-play digital natives," Jeff Fromm, president of FutureCast, a millennial marketing consultancy in Kansas City, Missouri, and co-author of "Marketing to Millennials," said. [16] Reserch results show that Y and Z generations as new generations would embrace new technologies and digital approaches in different industries in more easier and natural way.

Neuromarketing comes into play as a new approach to the limitations of traditional methods, especially those that are based on the verbal report of individuals such as focus groups, in depth interviewers and the like. [1]

Besides the possibility of manipulating the responses as well as giving socially desirable ansewers, it is particularly interesting (but also problematic) when the respondent is actually trying to give honest answers, yet they are not the reason of the phenomenon that is the subject of the research. The tendency to perform certain

actions, attributed to conscious cognitive processes, can be considered an intuitive feature in humans. [9]

In terms of consumer behavior; if we ask the consumer why he bought a particular item of clothing, he would probably say that he was thinking that he liked it, that the price was acceptable, that it was good quality. A similar situation occurs when we ask a respondent if they like a certain advert. Their response would often be based on conscious cognitive processes that are not an inadequate source of information, however, they are insufficient.

2. COGNITIVE VS EMOTIONAL PROCESSES

With the help of neurotechniques, researchers have pointed out that the decisions and behavior of humans is often under the influence of emotions of which they are not aware. The reason for this is the unconscious emotional states which may be the dominant charge of emotions stored in the evolutionarily older part of the brain structures - subcortex. Although the scientific world is in conflict of opinion in terms of the parts of the brain that are responsible for conscious emotional experiences - the idea of the author of the paper is that the so-called "cognitive" neuroscience streams [13] are behind our awareness of emotions. To become aware of emotions - to be able to attach meaning to an emotional state as well as to be understood, is a subcortical structure activity, an activity that is a part of the evolutionary function of the youngest part of the brain – the neocortical. [13]

As noted, when making a decision influenced by unconscious processes, people tend to argue their decision on conscious cognitive processes that in turn tend to unconsciously rationalize decisions. Having said that, "impulsive behavior" is something that common sense usually associates to a purchase. Consumers as well as researchers are fully aware of impulsive purchases - these decisions are often the subject of scrutiny and discussion. [12] In the terminology of chaos that characterizes more recent scientific directions, it is difficult to make a clear differentiation between the conscious and unconscious psychological processes that underline consumer behavior. However, based on everything said so far, consumer behavior basically can be divided into impulsive and rational buying or, emotional and rational mannerism. [13]

The authors of this paper have attempted to answer two questions:

1. How is consumer behavior influenced by conscious or unconscious processes?
2. What is the impact of cognitive and emotional factors that precede and influence consumer behavior?

3. INFLUENCE OF ADVERTISING APPEAL ON ADVERTISING EFFECTIVENESS

If we were to try and answer to the questions posed, it would be needed to narrow the research to the consumer

mind - which is the subject of the research. In line with the questions posed, we considered the conditions which foster rational and impulsive behavior. More specifically, what would be the elements of an advertisement which encourage rational or impulsive consumption. [4]

In respect of the above distinction when it comes to shopping styles, there are two theoretical models that explain consumer reaction to advertising. The first model is the cognitive information model, according to which the likelihood of purchasing a product is based on the rational reaction of consumers. According to this model, advertisements should contain information relating to the practical, functional aspects of the product. [2] [5] It is believed that the effective elements of the content for advertising goods purchased for longer periods such as cars, appliances and the like. [12] On the other hand, based on the affective theoretical model, the probability of purchasing a product is the emotional response of consumers. Accordingly, the advertisement should contain emotional elements that will cause positive or negative emotional reactions and motivate consumers to buy the product (Keshari & Jain, 2014). [2] [5] It is believed that cognitive elements of an advertisement are more effective when purchasing items for a longer period such as a car or appliances. [13]

On the other hand, according to the affective theoretical model, the probability of purchasing a product is based on the emotional state of consumers. Accordingly, the advertisement should contain emotional elements that will cause positive or negative emotional reaction and motivate consumers to buy the product (Keshari & Jain, 2014). Also, affective elements of an advertisement are useful in situations where the product brand is not significantly different from competing brands. [3]

To understand what is more effective in the intent of buying, is it ads with rational or emotional elements, Grigaliunaite and Pileliene [4] showed respondents advertisements for two completely new brands. The first group watched five adverts which contained emotional elements, while the second group watched five adverts with cognitive elements. The instruments they used were eye tracking to record eye movements, test of implicit association for examining implicit attitudes and a questionnaire for testing explicit attitudes. Among other analysis, two SEM¹ models were tested, one for the affective and one for cognitive model.

¹ SEM is an attempt to model causal relations between variables by including all variables that are known to have some involvement in the process of interest. By explicitly modeling measurement error, SEM users seek to derive unbiased estimates for the relations between latent constructs. A structural equation model implies a structure of the covariance matrix of the measures. Once the model's parameters have been estimated, the resulting model-implied covariance matrix can then be compared to an empirical or data-based covariance matrix. If the two matrices are consistent with one another, then the structural equation model can be considered a plausible explanation for relations between the measures.

The goal was to determine how the setting of the attitude towards the advertisement with emotional or cognitive elements contributes to explaining the intention to buy. According to the SEM analysis model, the cognitive approach proved more successful. More specifically, while the affective model's response to the advertisement caused a direct positive influence on the intention of the consumer to buy the advertised product, the cognitive model to advertising did not only have a more direct positive influence on the intention of buying in relation to the affective model, but also indirectly contributed positively on the intent of buying through the formation of a positive attitude toward the brand (Image 1).

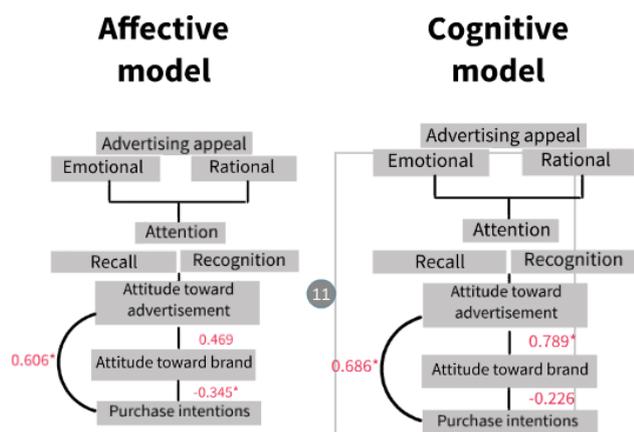


Image 1: SEM model for Affective and Cognitive model

Therefore, in the mentioned research cognitive elements of an advert proved to be successful. Grigaliunaite and Pileliene [4] these are interpreted by the fact that cognitive elements of the content which provide clear information relating to the product in relation to the emotional elements. Also, rational elements reduce doubt and uncertainty in the consumer relating to the product they consider buying. However, these researchers point out that the answer is never completely emotional or rational, an opinion we also agree with.

Namely, the need to classify people in categories is a characteristic of all humans, including researchers. Categorizing people and phenomenon is not necessarily a negative thing. It often allows us to organize existing knowledge and better understand the world around us. However, it is important to be aware that categories are the artificial creations of a man and that the reality of the phenomenon is more complex. We believe that the analog situation with the dichotomy of "rational" and "impulsive" consumers. Zurawicki [13] provides an interesting example of a man who buys a car under the influence of an advertisement entwined with cognitive elements. Although the man will buy a car because it has good brakes, the question is whether in the decision purchase there are deeper reasons than these pragmatic ones. So, good brakes provide man a sense of security and personal control that could actually be the main driver behind the decision to purchase.

4. MULTIMETHOD APPROACH FOR EXPAINING CONSUMER BEHAVIOR

Cognitive and emotional states are intertwined. Rarely do we act with just coldly rational, or are guided exclusively by emotions. After all, said extreme values are indicators of an abnormal mental state of the individual. Consumer behavior is always influenced by the conscious and unconscious, cognitive and emotional processes. What style of purchase will be dominant depends on many factors such as individual differences, situational factors, consumer sentiment, the target group to which consumers belong to and whether this ad consists of cognitive and emotional states. [13]

What can be done in these circumstances? We think that the multimethod approach is the best way to testing such a complex phenomenon. Neuroscience is one side of us, but in order to obtain a more reliable and objective picture of phenomena it is necessary to look at it from different angles, perspectives or methods. Also, to make the data as verifiable as reality, it is important to keep in mind that neurotransmitters are tools that enable data collection, but the task of the researcher is to adequately interpret this data so that the client can gain most benefits.

Finally, we are of the opinion that it is important to monitor existing research findings and base ones analysis on the existing theoretical models. Although we are aware that speedy and efficient delivery of finding to clients is the essence of a successful business, at the same time we emphasize the importance of linking theory and practice for the sake of better quality, and therefore more useful data.

The multimedia approach and relating theory and practice are the stand of MASMI [14] research agency, based on the use of the Brainster EEG based Neuromarketing platform. Maintaining traditional methods, we also refer to methods in the field of neuromarketing, which we provide answers to various aspects related to advertising.

Some of the issues to which neuromarketing provides answer are:

1. What are the strengths and weaknesses of advertising?
2. How is this ad countered in relation to the advertisement of the competitor?
3. How can advertising be shortened for the sake of the best return on investment?
4. Do consumers understand the message behind the advertisements?

The research conduction is based on Brainster's Technological Platform [15]. It is cloud based platform, powered by machine learning algorithms, that delivers almost in real-time second by second proprietary EEG indices and Eye-tracking heat map to a user friendly dashboard. Data is collected using eyetracker² i EEG-a³.

² Eye tracking is a useful procedure for the analysis of behavior and cognition. It measures either where the subject is looking (the point of gaze), the motion of an eye relative to the head and the pupil dilation. Eye movements fall into two categories: fixations and saccades. When the eye movement pauses in a certain position there is a fixation; saccade is a switch to another position. The resulting series of fixations and saccades is called

In addition to the known characteristics of the EEG device, it comes as a portable device that allows the measurement of brain activity in the natural environment, which supports ecological validity of research. According to Posner Circumplex affect model by which all the emotions can be determined based on two dimensions - activity or intensity and valence (pleasant-unpleasant), EEG provides data related to two dimensions of the affective state of subjects. [11] [6] These two dimensions are called emotional involvement of the consumer. In addition, the EEG gives us an insight into another measure that is called interest. It is a test of attention of the respondents while watching commercials, so that a high intensity of this measure indicates that the attention is focused on the consumer stimulus in relation to the tested advert.

Although eye tracker is not a neurotechnique in the true sense of the word, it is often used in neuromarketing as it gives relevant information based on the analysis of eye movements of consumers. Another specificity of our findings is reflected in the fact that the analysis is separated into two aspects: the analysis of the slogan - which tells us how much the consumer is associated with the brand and analysis of narrative - whether the content of the advertisement causes the target emotion of a particular intensity and whether it caused interest in the advert. In continuation of this document we will present research conducted to test commercials and show how the above methods and approaches look like in practice

6. “LA CRAMERIA” CASE STUDY

This case study is based on an internal study (i.e not a project financed by Nestle/La Cremeria). We have obtained the approval of Nestle/ La Cremeria to use its commercial.

Study Background

La Cremeria’ is a new ice cream brand manufactured by Nestle in Israel. Nestle is interested in gaining high in-market visibility by associating the La Cremeria brand with values such as hedonism, playfulness, child friendly and family oriented. Nestle is also interested in introducing the variation of flavor and package size within the La Cremeria ice cream line.

a scan path. Fixation varies from about 200 ms during reading a text to 350 ms during viewing of a scene and a saccade towards new goal takes about 200 ms.

³ Electroencephalography (EEG) is a technique that can show the brain activity in certain psychological states. The method consists of observation of the brain waves whose different amplitudes correspond with different mental states, such as wakefulness (beta waves), relaxation (alpha waves), calmness (theta waves), light and deep sleep (delta waves). To assist in the task of measuring the brain activity, numerous electrodes (up to 256) are placed in various locations on the scalp. Each electrode, also referred to as “lead”, makes a recording of its own. In order to draw the meaningful conclusions, the electrical potential measured needs to be compared to the baseline level. The dimensions of such a potential are: the particular voltage and a particular frequency which vary with a person’s state.

Main research

Questions were as follows:

1. Is the storyline successful in creating associations of pleasure?
2. Are there any pitfalls in the storyline buildup?
3. What are the strength and weakness points of the ad and how can the ad be re-edited to maximize return of investment (ROI)?
4. What are the mental responses elicited by the product’s visual appearance?
5. How do women in particular (primary targeted audience) respond to the storyline?
6. Are the effects created by the ad sustained over repeated viewings?

Methodology & Materials

There were 38 participants who took part in neuromarketing research, while main methodology was EEG recording of brain activity and eye tracking for recording eye movement. Among 38 participants, 27 were women and 11 were men. Age range of participants was between 20-55 years.

Ad was presented within a cluster of 3 other ads (by different brands) in randomized order. Also, ad was presented in two additional consecutive viewings examining how repeated views effect on levels of Interest and Emotional Engagement over time.

Data was collected during January, 2017 in Israel. In storyline of the ad, a group of kids become aware of the fact that ‘La Cremeria’ ice cream is within reach. The kids gather around from all around the house to the dining table and moments of childish enjoyment and fun arise from eating the ice cream while experiencing feelings of togetherness. Towards the ending it becomes clear that the kids are actually adults that lost control over the irresistible ice-cream.

Main Research Findings

Overall scores⁴ showed that satisfactory Interest and Emotional Engagement scores are achieved by the ad, mainly driven by its storyline.

Emotional Engagement gains strength at the tagline, indicating strong association of positive emotion and marketing message.

On the other hand, interest loses some of its power during tagline. Overall scores are presented in Image 2.

⁴Scores are benchmarked against the Brainster database and are reported in percentiles.

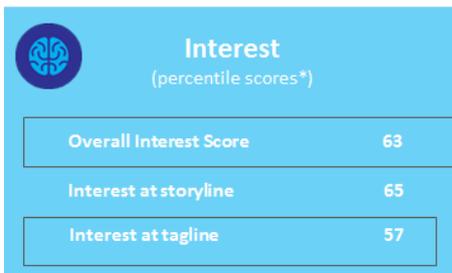


Image 2: Overall scores within top 1/3

The image 3 shows that the sequence of frames displaying the ‘pseudo family drama’ (mom’s arrival, irritated by the kids behavior and immediately lets go and joins in) creates elevation in emotional levels solely among females⁵. This might be due to the stronger identification process women experience with the scene.



Image 3: Gender discrepancies in emotional responses to the advertising content

Repeated views analysis indicates an expected decline in Interest levels due to a habituation the ad generates in repeated views. The ad still succeeds in generating positive emotional responses throughout viewings and sustains a positive emotional momentum across viewings. Negative Emotional responses are sustained in repeated views displaying the young kids running around the house with no adult in sight. Even though, viewers are already aware that the stressful scene is resolved.

This is an important indicator of the problematic nature of these images. Image 4 shows repeated views analysis with Interest and Emotional Engagement scores.

⁵ The male subgroup size (n=11) is too small for independent statistical analysis; accordingly, gender discrepancies should be viewed as mere potential trend indicators.

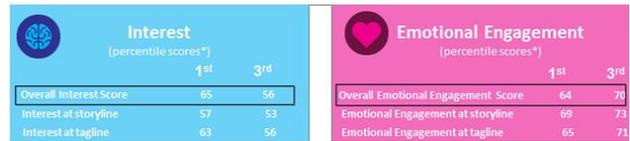


Image 4: Sustainability over Repeated Viewings

Zooming in on the smiling girl opening the ice-cream box sets a lively and playful atmosphere, that is congruent with an elevation in both Interest and Emotional Engagement levels. Importantly, the highest Interest score (6.2) (Image 5) of the entire ad appears on these opening scenes. These robust opening stages with regard to Interest and Emotional Engagement levels are a positive indicator as to viewer’s openness to the marketing message.

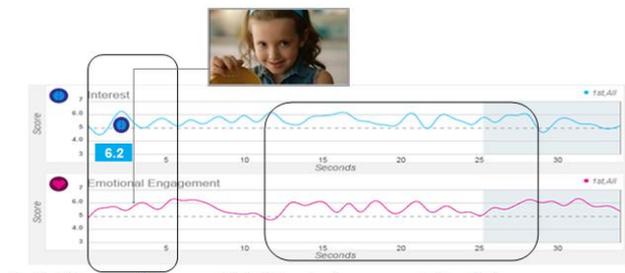


Image 5: Storyline Effectiveness

Images of the kids eating, laughing and enjoying the ice-cream elicit fluctuations in emotional levels, while maintaining steady Interest levels. The drama of “getting caught by mom” is not perceived by viewers as a real drama but rather is just a “pause” and therefore elicits a small decline in interest and in emotion levels.

There appear to be three peak moments in the ad representing an elevation in positive feelings such as joy and excitement. These moments serve the purpose of fun and indulgence the product stands for. The first moment is a playful moment of kids gathering together, representing a childish notion of “let’s make this our little secret” (Emotional Engagement 6.3).

The second moment is hedonistic enjoyment of the ice-cream eating, amplified by the sound of cheerful children’s laughter (Emotional engagement 6.1), and the third refers to the moment after ‘pseudo drama’ of getting caught, where the mom is angry, she softens up quickly and joins in with the family (Emotional engagement 6.2).

The Tagline stating "La Cremeria transforms you back into being a child" stated in a child’s voice might be a good booster for the increase in positive emotions. The advertiser’s message appears to be well adopted by viewers, as indicated by the elevation in levels of Interest and Emotional Engagement.

Zooming-in frames focusing on the product elicit an increase in levels of Interest and Emotional Engagement.

Also, product enlargement produces an expected and desired increase in Interest levels due to the introduction of new information regarding the product.

The scenes presenting the kids gathering around the dining table create a decline in Emotional Engagement levels. This might be due to strong negative emotions such as tension and anxiety arising with regard to witnessing young kids running around the house and climbing with no adult in sight (5-12 sec.). Interestingly, this decline is accompanied by an elevation in Interest levels resulting from the tension viewers experience as a result of the storyline.

Furthermore, the scene displaying the kids running around the house with no adult in sight elicits a strong negative emotional peak specifically among females. Tagline scenes presenting multiple 'La Cremeria' products are accompanied by a decrease in levels of both indexes. Eye tracking heat maps indicate a pattern of scattered visual attention on the different elements displayed (e.g. product name, 3 product packages and 1.4 liter symbol).

Finally, the company logo ('Nestle') receives visual recognition only 3.5 sec. after its' initial appearance. Importantly, it's worth mentioning that 'La Cremeria' is actually marketed "independently" as 'La Cremeria' with Nestle only at the back.

Summary and Recommendations

The ad is successful in eliciting favorable responses in viewers on both Interest and Emotional Engagement measures. These effects are sustainable over repeated views. Interestingly, there is even an increase in Emotional Engagement levels over exposures to the ad content which is a strong indicator for the ad's effectiveness and durability.

Ad is effective in bringing out the brand message asserting the ice-cream's irresistible nature, transforming self-controlled adults back to being kids. The Storyline is successful in creating associations of pleasure, joy and playfulness associated with eating the ice-cream.

Generally, produces an increase in levels of interest emotional responses. Product Enlargement (new information provided by the ad) produces a desired elevation in Interest levels.

On the other hand, strong Negative Emotions such as anxiety and tension arise with regard to the scenes displaying young kids running around the house with no adult in sight. These effects are even stronger among females' viewers (primary targeted audience). Importantly, there is some moderation in these emotional responses in repeated views. Viewer Confusion in Tagline originating from overcrowded frames, displaying multiple products elicits a pattern of scattered visual attention. 'Nestle' brand receives negligible recognition in Tagline visual.

6. CONCLUSION

The purpose of this study is to search more deeply into the realistic attitude of the consumer mind, as well as to understand the connection of the cognitive and emotional processes which lie at the root of consumer behaviour. We have concluded that consumer behaviour is almost never completely impulsive or rational, thereby the division between impulsive and rational buyers is made easier to analysts but basically artificial in foundation. It is therefore needed to analyse this complex phenomena from various angles so as to come to a wholesome conclusion.

This analysis can be conducted only through the multimedial approach, careful interpretation and a high level of critical analysis, as well as a constant comparison of theory versus practice. This is a short resume of the manner in which theoretical analysis of research agencies are put in practice.

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