Picking or Tricking Your Brain? The Extent of Neuromarketing Awareness and the Perception of This Marketing Field

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Abstract

Since the development of neuromarketing, there has been a wealth of research conducted aimed at defining the practice, analyzing its potential, and testing the effectiveness of its methods. This research explores the common consumer awareness of the fast-growing field of neuromarketing and perceptions of this practice in terms of comfortability, ethics, and future implications. This was accomplished through a quantitative survey, including several open-ended responses. The results found that a majority of the respondents were unaware of neuromarketing. Once made aware, the results were mixed regarding the perception and level of comfort with the practice. While the highest number of respondents maintained that they were comfortable, there were a notable number of respondents who were neutral or uncomfortable. The research suggested that although neuromarketing was perceived as an impediment on one's free will, the practice was still deemed ethical to the majority of respondents.

I. Introduction

Human emotions, thoughts, and actions are the direct products of neural activity in the brain. For marketers, neurobiology can reduce the uncertainty of marketing efforts that intend to understand consumer behavior. The field of neuromarketing, sometimes referred to as consumer neuroscience, studies the brain to predict and potentially even manipulate consumer behavior and decision-making. More specifically in this research, neuromarketing is defined as the scientific study of a consumer's neurological and physiological responses to advertisements, products, and/or branding. These responses allow researchers to gain insight into consumer motivations, preferences, and decisions which can help marketers formulate more effective advertisements and product development to inspire an unconscious "buy button" in a consumer's brain.

The neurological methods of neuromarketing research are most often done through functional Magnetic Resonance Imaging (fMRI) and electroencephalogram (EEG). Researchers use fMRI to measure changes in brain activity to learn why consumers make certain decisions and which part of the brain is telling them to do so. An EEG is also used to measure changes in brain activity, however, due to the less extensive (and less expensive) technology used to administer an EEG, it is difficult to determine the exact locations

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that this activity occurs. While this is a clear hindrance to marketers, an EEG is sometimes favored due to the dramatic difference in price of these methods.

The physiological methods of neuromarketing research consist of eye tracking, facial-expression coding, heart rate, and several other physiological responses a consumer has when making decisions. Eye tracking can measure attention (via fixation points) and arousal (via pupil dilation). Facial-expression coding (movement of muscles in the face) can measure emotional responses. Heart rate can measure arousal (Harrell, 2019). These are often favored as the tools for measuring the physiological responses based on brain activity as they tend to be more affordable and easier to use.

Perhaps one of the most famous brands known to have implemented neuromarketing research into product development is Campbell Soup Company. For several years, Campbell's researchers studied changes in skin moisture, heart rate, breathing, and posture to learn how consumers react to images from soup bowls to logo design (Brat, 2010). The researchers found that warmth and other positive attributes people associated with Campbell's soup at home evaporated when they faced store shelves (Brat, 2010). They found that Campbell's large logo at the top of shelf displays in stores drew more attention than necessary – the logo's bright red background made all varieties of soup seem to blend together. In interviews, participants also said the soup pictured on the can and shelf labels did not appear warm, resulting in an addition of steam rising from the bowl of soup (Brat, 2010). Shown below is a final comparison of the updated cans and the reasoning behind each change Campbell Soup Company made, which were all inspired by neuromarketing research.

Figure 1. Campbell Soup Company changes

Many researchers have explored the birth of neuromarketing, dissected the methods, and even conducted ethical debates regarding the invasiveness of this practice. Others have studied the effectiveness of this marketing practice through both explorative and implemented research. This research explores the common consumer awareness around neuromarketing and the perception of the comfort, ethics, and implications of this marketing research practice.

II. Literature Review

Since the original development of neuromarketing in 2007, there has been a wealth of research conducted aimed at defining the practice, analyzing its potential, and testing the effectiveness of its methods. Research has also been a space for fostering ethical debates. While there has been a considerable amount

of research done in the realm of neuromarketing, there have been no researchers who have looked at consumers' general perceptions of the practice.

The Birth of Neuromarketing

In 2007, one of the first academic papers to mention the term "neuromarketing" was published and defined this new marketing communication field as the "application of neuroscientific methods to analyze and understand human behaviour in relation to markets and marketing exchanges" (Lee et al., 2007, p. 200). Since then, there has been an explosion of neuromarketing research conducted, ranging from simply defining the concept, employing different methods of neuromarketing, and reviewing the ethical implications of employing a technique that attempts to remove free will from the human decision-making process. In 2017, two members of the aforementioned author team reflected on the last decade of research in the field of neuromarketing and how it is no longer unusual to see individual studies appearing in the marketing literature that use neuroscientific methods (Lee et al., 2017). While the core definition remained relatively the same, the research into this field grew immensely over a decade.

Common Methods and Practice

A 2008 study recorded electrodermal activity (EDA), a psychophysiological response that is used as a measurement to detect differences in a brand's "emotional selling proposition" (Gakhal & Senior, 2008, p. 331). The EDA measurements were recorded from participants who were shown four different advertisements containing the same target product with different models (famous/non-famous and attractive/average looking). The results of this research were a surprise, showing that average-looking famous models produced higher EDA than attractive famous models (Gakhal & Senior, 2008).

Shortly after, perhaps the most famous neuromarketing study was conducted, using a simple blog post. The "You Look Where They Look" post by James Breeze showed the positive effect that a strategically positioned face image can have on the way that a person consumes content. Breeze conducted the experiment using eye-tracking technology, another method that falls under the umbrella of neuromarketing, to determine if faces can be used to guide a person's attention to key content (Breeze, 2014). The below images show the results from this study, presenting the success that developed from his hypothesis of using strategically positioned imagery.

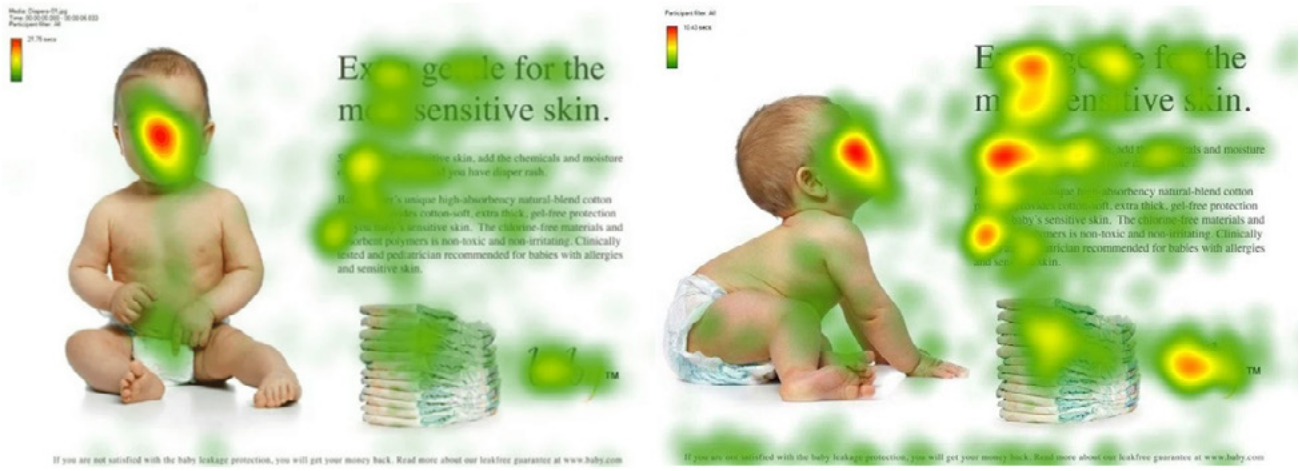

Figure 2. "You Look Where They Look" post

Subliminal advertising is also an effective method of neuromarketing research. As A/B testing conducted by Hsu and Chen (2020) has shown, subliminal advertising is significantly influential to a consumer's selection of a hotel, even if just a smiling face emoji is added to what is otherwise the same video.

EEGs are another popular, and the most common, method of neuromarketing research, informing marketers of typical consumer preferences based on brain activity. Golnar-Nik et al. (2019) looked into the power of using EEG data for finding brain regions that distinguish between preferences. The researchers were able to determine that adding a background color to an advertisement had a negative impact on the interest of

liking (Golnar-Nik et al., 2019). The researchers concluded that EEGs could predict consumer decision-making with relatively high accuracy, which begged the question of the ethicality of implementing these results in order to insert what many call a "subconscious buy button" in the minds of common consumers.

Ethical Debates

The most commonly perceived ethical issue is, "the fear that neuromarketing may render consumers' choices completely predictable" (Stanton et al., 2017, p. 803). This is due to the specific neuroscientific methods of fMRI and EEG, as they have been most successful in predicting individuals' choices and final purchase decisions. For example, Knutson et al. (2007) demonstrated that brain activity could predict a consumer's choice (for food goods) above and beyond self-reported information regarding preferences. Therefore, if neuroscientific methods can look into consumers' minds and extract information that the consumers themselves do not consciously know, it is argued that neuromarketing provides a tool that can identify consumer choices even before they make them.

Another ethical concern is that although the participants of past neuromarketing studies have consented to research participation, most of these consumers have not consented to having a subconscious "buy button" that can manipulate their free will. From a scientific standpoint, as noted by Madan (2010), neuromarketing is nowhere near being able to allow researchers to design a marketing campaign so addictive that it completely overrides an individual's free will. However, concern remains over even just a small degree of potential consumer manipulation.

Automatic Conceptual Channel

Introduced by James Potter in *On Media Violence*, the automatic perceptual channel relates to elements which are perceived and processed in an unconscious manner – a concept directly related to the purpose of using neuromarketing research. This channel resides above the threshold of human sensory perception but below the threshold of conscious awareness (Potter, 1999). In this channel, perceptual flow continues until an interruption stops the exposure or "bumps" the person's perceptual processing into the next higher channel of attention (Potter, 1999). Neuromarketing research aims to target the automatic perceptual channel, leading consumers into making unconscious decisions without being "bumped" into the threshold of conscious awareness.

While there has been a great deal of research done regarding the field of neuromarketing, there have been no studies that directly ask consumers about the essential premise of neuromarketing, which is to subconsciously make decisions for consumers, thus impeding on free will. This research will provide insight on the average consumers' stance on being marketed to on a neuro-level.

Research Questions

This study focused on the following questions in order to determine the general awareness of neuromarketing, the comfortability consumers feel regarding the implementation of this research, and the perceived ethicality behind inspiring a "buy button" in the unconscious minds of nonconsenting individuals.

RQ1: To what extent are consumers aware of neuromarketing?

RQ2: Once aware of the practice, how do consumers perceive neuromarketing?

RQ3: Is it perceived as ethical to employ what was learned from consenting individuals on nonconsenting individuals?

This research will provide information to both consumers and marketers regarding the use of more advanced market research. While past research has proven beneficial to marketing goals, consumer awareness may actually have the opposite effect, driving consumers away from brands that implement these strategies. Furthermore, the results of this study may have implications for future marketing policy and advanced market research implementation.

III. Methods

The researcher conducted survey research, which included multiple-choice questions and several open-ended responses. The questions were developed by the researcher based on knowledge gained from previous studies. To encourage completion, the survey was brief, asking only the most meaningful questions to provide answers to the research questions. The survey was created using Survey Monkey, distributed through social media, and was classified as a convenience sample. Prior to beginning the survey, participants were notified that their answers were confidential and anonymous and that they may back out of the survey at any point. Participants then consented to the survey electronically and filled it out. Prior to the survey's distribution, the researcher obtained Institutional Review Board approval.

The survey was available for five days and yielded 30 responses. The only identifying information gathered from participants was age, selected from the following ranges: 18-22, 23-30, 31-39, 40+. This was to determine if there was any deviation in response themes among different age groups for any of the questions. Participants were asked questions related to their awareness of neuromarketing, their comfort with this market research practice, and their perceptions of the ethics and free will regarding the implementation of neuromarketing research results. Participants who were not aware of what the term "neuromarketing" meant were informed prior to completing the remainder of the survey. These questions each were initially framed as yes/no, with either an additional open-ended explanation of their answer, or a follow-up question on a 7-point Likert Scale. The scale related to one's comfort with this market research practice ranged from *extremely uncomfortable* to *extremely comfortable*, with a *neutral* option also provided.

Quantitative data was analyzed with Survey Monkey and converted to percentages for discussion purposes. Open-ended answers were analyzed qualitatively for positive, negative, or neutral tone about the practice of neuromarketing. They were also analyzed for sentiments related to the motives behind polar answers.

IV. Findings

Of the 30 respondents, 70% did not know the meaning of neuromarketing. More specifically, 80% of college students and 66.67% of 40+ year old adults did not know the meaning of the term. This result was not unexpected, as participants may not have studied the concept or do not work in the field of marketing or communications. To account for this, a brief explanation of neuromarketing practices was provided next so participants were still able to complete the survey.

The question regarding one's comfortability with neuromarketing was measured on a 7-point Likert Scale. ranging from extremely uncomfortable to extremely comfortable. Of the 30 participants, 40% responded that they are comfortable with the practice, 33.33% felt neutral, and 26.67% felt uncomfortable. Notably, no participants felt extremely comfortable or extremely uncomfortable.

Impediment on Free Will

Participants were asked whether they felt that the practice and implementation of neuromarketing research influenced "a degree" of their free will. Just over half of respondents (56.67%) answered that they do believe neuromarketing influences a degree of their free will.

The question regarding free will also included an open-ended response asking participants to elaborate on their polar answer. Some of the responses deeming that their free will is not influenced to a degree cited that, "marketers are simply doing their jobs," and, "the final decision to purchase a service or product sits with the consumer." Other respondents were even more insistent in their free will stating, "I don't believe any form of targeting or marketing actually influences free will," and, "I make decisions on purchases or services based off need and desire, not just because it is presented to me."

Some of those that who did believe that neuromarketing influenced their free will included comments such as, "if the neuromarketing is effective, I believe that the point of this is to influence the given audience to make a certain product more appealing," and, "by understanding what makes the brain want to buy something, marketers can create advertisements that will almost guarantee that response of buying something." Again, there were more insistent answers in this firm belief such as one respondent stating, "it is unjust to use someone's subconscious behavior and influence them to make a purchase or do something."

Ethics

The final question of the survey inquired regarding the ethicality of neuromarketing according to one's own personal definition of ethics. Most respondents (66.67%) deemed it was an ethical practice while 33.33% did not believe so.

This question also included an open-ended response asking participants to elaborate. Some of those that claimed the practice was unethical included comments stating, "I think it can be unethical depending on how intensely it is used and to what end," and, "it should be clear that data is being collected by the company for privacy reasons." These and several other responses highlighted issues with invasiveness and subconscious targeting, even when the actual research is done on consenting individuals.

Some of those that claimed the practice was ethical referred to the actual research being done on consenting participants and that neuromarketing is just another advancement in marketing strategies. Others responded a bit more in-depth explaining, "we live in a consumer world and a degree of influence over what we buy is to be expected," and, "I feel as though I still have freedom and choice in my product selections - even if the advertising around it has been thoroughly researched and intends to 'push' me to buy." The additional responses that deemed the practice ethical emphasized that they still felt that decision-making was still ultimately up to the consumer, no matter how much the marketing practice might entice them.

V. Discussion & Conclusion

It was expected that neuromarketing would not be a well-known concept among participants. Based on responses, it could be assumed that those familiar with the term were those who were well-versed in the marketing and communications field. The open-ended responses from those that who were familiar with the term contained information taken from a marketing standpoint, alluding to the fact that those participants work or study in the field. Those who work in the marketing realm are likely to be less susceptible to marketing tactics, being able to easily identify when they are being targeted and knowing the research that is done for optimized marketing. Those who do not work in the industry are often more uncomfortable with knowing how much time, research, and targeting goes into marketing and advertising, as shown through the mentioned responses that came from respondents that were unaware of neuromarketing.

In terms of comfortability, those older than age 22 were more insistent that they are not influenced by this type of marketing. This is possibly due to their brand loyalty that has resulted from years of purchasing. Of those that are 40-plus years old, none of the respondents were uncomfortable with neuromarketing. The comments these respondents left were more insistent that they are insusceptible to marketing, with one specifically stating that they are, "old enough to know that you can't always believe what you read and can also tell if I'm being manipulated." With these responses, they ignored the fact that neuromarketing studies and targets subconscious brain activity and physiological responses in order to go around the barriers that consumers have consciously put up to defend against traditional marketing.

When analyzing the influence of one's free will, there was a wider range of responses than just *yes* or *no.* For example, several respondents that chose *no* explained that they are still swayed or persuaded more than they would have been to certain products that are marketed effectively. This collective sentiment is summed up by a respondent that stated, "I still feel as though I have free will. My choices may be swayed based on imagery, but this seems subjective to me - everything influences something else. I still have the choice to buy or not buy." The same idea of there being a wider range of responses than just *yes* or *no* was also apparent in the responses that decided that neuromarketing does influence a degree of free will. Some respondents held the same view that they are being swayed or persuaded but did see this as an influence on their degree of free will. Of those that held this sentiment, one respondent's explanation generally sums up their responses:

> To a certain degree, yes. I think that neuromarketing is a different approach to advertising, and an effective one at that, but I think all advertisements are meant to help you make a decision. Marketing in itself is used to influence the choices that non-brand loyal consumers make in order to get new customers. In my opinion, the purpose of marketing in general is to influence a person's free will and make them more likely to purchase a certain product, and I think neuromarketing is a more effective way of doing so.

The most thought-provoking differences in responses came from the question of ethics. Of the respondents that admitted that neuromarketing made them uncomfortable, 25% still claimed that it was ethical. More in-depth, 15% also said that their free will was influenced to a degree, but still agreed that the practice was ethical. These respondents claimed that an impediment on free will was still deemed as an ethical practice. One of the respondents made note-worthy comments, highlighting other marketing tactics that are, in their eyes, less ethical than neuromarketing:

> Neuromarketing, while uncomfortable, is ethical in the way that it does not stray too far from what companies are already doing to inspire that "buy button." Corporations think of different ways to appeal to different markets all the time, and to me, the practice of neuromarketing is more or less a company doing research in order to gain a potential customer. This practice seems more ethical than companies using an individual's search history or listening to conversations in order to formulate the types of advertisements that are shown to them. That "big brother" method of marketing, while uncomfortable to most, is still widely accepted as the status quo.

The mention of other more seemingly invasive and often debated marketing tactics provided an interesting viewpoint. Instead of simply addressing ethics in terms of neuromarketing itself, this respondent used a comparison in their judgment.

Another noteworthy comment made by a respondent stressed a bigger issue with neuromarketing – that companies will not refrain from doing so if it benefits their success. This respondent commented, "It's not ethical, but I don't believe that will deter any company from using it. Without neuromarketing being general knowledge, it is taking advantage of the subconscious and its impact on a person's spending." This was an insightful point to be brought up, especially given that companies have pushed the limits of ethicality in the past with incidents such as Facebook's sharing of data with Cambridge Analytica and third parties which put users on high alert for privacy in 2018. While this dealt with social-networking privacy, the privacy of one's mind is a whole other, and more personal, matter.

Limitations and Future Research

A limitation to this research was allowing respondents to gauge ethics based on their own personal definition of ethics. One's own definition of ethics is subjective, resulting for some variability in responses. While this was considered when constructing the survey, it was difficult to set a general definition of ethics since the topic is one that has been heavily debated.

Finally, the number of participants was a limitation for this research. A larger sample size would have yielded a more even distribution of age ranges allowing the research to be better generalized to a population.

One future research possibility could include examining the dangers of growth within the neuromarketing field, such as nanomarketing, and the repercussions this might have on brands from consumers that are aware of these practices. Mileti et al. (2016) reported that nanotechnologies have succeeded in miniaturizing complex tools into nanodevices in order to obtain results in real time as opposed to a laboratory setting. This presents huge potential for growth in the field of marketing, allowing researchers to conduct noninvasive and nonintrusive experiments, monitor consumer mental processes in real time, and avoid several other limitations to neuromarketing research.

Another option for further research is to conduct a survey of exclusively college students. As previously mentioned, most of those that were older age 22 were more insistent on the fact that they are not influenced by this type of marketing, which is perhaps due to their brand loyalty that has resulted from years of purchasing. While college students are likely to purchase the same brands they find at home, they are also more receptive to new products than the older age groups, allowing for more objective results.

Most respondents to this survey were unaware of neuromarketing. Once made aware, there were mixed results regarding the perception and comfort with the practice. While the highest number of respondents maintained that they were comfortable, there were a notable number of respondents that were neutral or uncomfortable. The most interesting outcome of this research was learning that although neuromarketing is generally perceived as an impediment on a degree of one's free will, the practice was still deemed ethical to most respondents.

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