

THE IMPACT OF NEUROMARKETING ON CONSUMER BEHAVIOUR

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Dissertation Supervisor: **Michael Bosonnet**

Student Name: Emanuela Marra

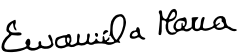
May 2020

CANDIDATE DECLARATION

Candidate Name: **Emanuela Marra**

I certify that the dissertation entitled: **The impact of Neuromarketing on Consumer Behaviour**

submitted for the degree of: **MSc in International Business Management** is the result of the my own work and that where reference is made to the work of others, due acknowledgment is given.

Candidate signature: 

Date: **May 21, 2020**

Supervisor Name: **Michael Bosonnet**

Supervisor signature: 

Date: **May 21, 2020**

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ABSTRACT**THE IMPACT OF NEUROMARKETING ON CONSUMER BEHAVIOUR***Emanuela Marra*

In this study, it was shown that the innovative field of neuromarketing is able to impact the mind of consumers and their behaviour.

The main objectives of this study were to understand if neuromarketing has a real and (especially) measurable influence on consumer behaviour and to understand if the better performances obtained by the products could be due to the insights produced by neuromarketing tests.

In order to reach these objectives, the researcher designed a qualitative study starting from an existing case study. Under the influence of critical realism as research philosophy, the researcher adopted a deductive approach. The best suitable strategy was identified to be the single case study, in which data were collected through interviews.

These non-standardised, semi-structured interviews were conducted with a sample of fifteen people, divided respectively in three homogeneous groups, through videoconference apps. The participants were Italians aged between 25 and 60 years old, nationally representatives.

The conduction of the interviews was supported by the vision of three different versions of a video, one per each group, that included the main object of the analysis: an humanitarian commercial in its two versions; when aired, the first obtained poor results while the second version, aired after neuromarketing tests, performed greatly.

The results obtained from this research have confirmed the researcher's main hypothesis and therefore the relationship between the new insights produced by neuromarketing and the unquestionable better performance of advertising, especially in terms of awareness, emotions aroused and response to call to action.

Another important issue was raised by this research, concerning the influence that each type of content, when interrupted by the commercial, have on the perception of the commercial itself; further investigation is required on this particular issue.

In conclusion, this study was seen positively by the researcher who, on the basis of the results obtained, considers neuromarketing an extremely useful and reliable tool for the success of a marketing campaign and for businesses, with the issues related to the real context of use of the product and the market in which it is consumed to be always taken into account.

*“Don't find costumers for your products,
find products for your customers”*

- Seth Godin

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1. INTRODUCTION

1.1 FROM CONSUMER BEHAVIOR TO NEUROMARKETING

Marketing has always been strictly related to consumer behaviour: in fact, understanding the mind of the customer, what he needs and feels is a fundamental step for the development of a winning marketing strategy. Especially into this consumer-centric era, the understanding of the “buy-button” makes easier to build strategies and features able to influence consumers.

With the premise stated above, it is necessary to briefly explain the concept of **consumer behaviour**: “*activities people undertake when obtaining, consuming, and disposing of products and services*” (Blackwell et al., 2006).

As deeply explained by Blackwell, Miniard and Engel (2006), the process of consumer behaviour is affected by many variables that have two natures: consumer influences, related to aspects such as culture, personality, ethnicity, etc., and organizational influences, which concerns brand, advertising, product features, etc.

Considering the objectives of the research, which will be largely explained later in this chapter, through this dissertation I will mainly refer to the second type.

Into a hypercompetitive market, in order to obtain information about the consumer, marketers embraced behavioural sciences, developing many methods to “*get into the minds of consumers*” (Blackwell et al., 2006). The authors continue explaining that there are three major traditional methodological approaches for studying consumer behaviour: observation, interviews and surveys, and experimentation.

Unfortunately, these traditional methods suffer of limitations, such as the imperfections in the memory of respondents of surveys or the misinterpretation of the researcher. For this reason, marketers started to search for new brain-based approaches which could have overcome such limitations. That lead, in the last twenty years, to the union of marketing and neuroscience, revolutionizing the scientific understanding of fundamental aspects of human cognition and neural mechanisms. Thus, neuroscientists soon investigated how the brain responds to marketing stimuli which clearly have an effect on consumer behaviour, realizing that the effects produced by marketing stimuli can be interpreted (Hsu, 2017). Consequently, at the same time of the development of the new measuring methods there was a grown interest of marketers towards this new field, which soon brought to the foundation of companies who use it as primary offer; “*these include using brain-based methods to capture, among other things, consumers' emotional responses*

to product design and advertisements, purchasing likelihood, and brand loyalty" (Hsu, 2017).

This path led to the birth of **neuromarketing**, which "studies the brain to predict and potentially even manipulate consumer behavior and decision making" (Harrell, 2019, p.64).

"Businessmen will eventually realize that customers are merely bundles of mental states and that the mind is a mechanism that we can affect with the same exactitude with which we control a machine in a factory".

—Hugo Münsterberg (1913)

1.2 TOOLS AND TECHNIQUES

Neuromarketing is directly related to a series of new noninvasively measuring tools and techniques able to track neural activity, developed thanks to the progress of biomedical imaging technology. These are responsible for the deeper understanding of perception, attention and memory in human cognition (Hsu, 2017).

This field is characterized by many tools (effectively summarized in Figure 1), but the most common methods of measurement are **brain scanning** and **physiological tracking**, for studying respectively neural activity (fMRI, EEG) and physiological activities (eye tracking, facial-expression coding, heart rate, respiration rate and skin conductivity) (Harrell, 2019).

For reasons of clarity and consistency, in this work the researcher deeply explained only the tools relevant for this research, coherent with those directly used in the case study analysed and therefore related to BrainSigns, that is introduced later in this work. Considering this as an introduction, the tools are explained in depth within the literature review.

	fMRI (functional magnetic resonance imaging)	EEG (electro-encephalogram)	Eye tracking: gaze	Eye tracking: pupilometry	Biometrics	Facial coding
How it works	detects blood flow in the brain associated with increased neural activity	records electrical signals on the scalp from neurons inside the brain	detects exactly where subjects direct their gaze	measures whether subjects' pupils are dilated	measures skin conductance, heart rate, and respiration	identifies facial expressions
What it reveals about consumers	<ul style="list-style-type: none"> detailed emotional responses level of engagement recall 	<ul style="list-style-type: none"> level of engagement recall 	<ul style="list-style-type: none"> what grabs their attention what confuses them speed of recognition 	<ul style="list-style-type: none"> level of engagement 	<ul style="list-style-type: none"> level of engagement whether their response is positive or negative 	<ul style="list-style-type: none"> general emotional response: happiness, surprise, fear, and so on
Uses	<ul style="list-style-type: none"> set pricing improve branding 	<ul style="list-style-type: none"> improve ads and branding 	<ul style="list-style-type: none"> improve website design, ads, and packaging 	<ul style="list-style-type: none"> improve ad content 		
Pros and cons	<ul style="list-style-type: none"> most expensive and invasive method less detailed than EEG but considered the gold standard for measuring specific emotions must be performed in a lab 	<ul style="list-style-type: none"> more expensive and invasive than many other methods not as precise as fMRI, but can measure changes over smaller increments of time 	<ul style="list-style-type: none"> relatively inexpensive and easy to administer best used in conjunction with biometrics does not measure emotions 	<ul style="list-style-type: none"> best used in conjunction with other methods, such as eye tracking 	<ul style="list-style-type: none"> relatively inexpensive 	

Note: Prepared with assistance from Moran Cerf, of Northwestern University; Carl Marci, chief neuroscientist at Nielsen; and the Advertising Research Foundation

Figure 1. Neuromarketing techniques (Harrell, 2019, p.67)

1.2.1 BRAIN SCANNING

The most relevant tool for this study is **EEG** (Electroencephalogram), which track changes in brain-cell activity recording electrical signals through the use of sensors positioned on the patient's scalp (Harrell, 2019). EEG is also the most popular instrument for brain scanning, especially in marketing, mostly because it is least expensive than fMRI.

1.2.2 PHYSIOLOGICAL TRACKING

For what concerns physiological activities, this study mainly refers to:

- **eye tracking**, which measures attention using eyes' fixation points and pupil dilation;
- **heart rate, respiration rate and skin conductivity** to measure arousal.

1.2.3 COMBINING METHODS

As stated by many authors, first of all Hsu (2017), the best way to use the aforementioned tools and instruments is to combine them: the use of brain-based methods tends to produce better and more accurate results when combined with physiological tracking instruments. The author also suggests different frameworks for using them in the marketing field, in order to generate or validate customer insights (Figure 2).

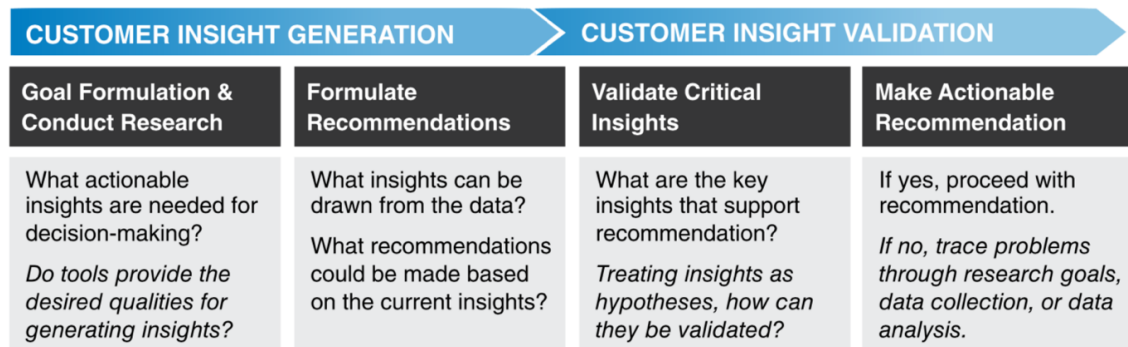


Figure 2. Framework for using brain-based approaches in marketing. (Hsu, 2017, p. 21)

1.3 THE MAIN ISSUES BEHIND NEUROMARKETING

Into this customer-centric and competitive era, understanding the consumer deeply means gaining a huge competitive advantage and acquiring market power, therefore becoming fundamental when talking of return on investments (ROI).

Considering that managers invest huge capitals on marketing strategies and that on them depend the features of their offer, it is not unexpected that they may be sceptical on marketing research's results, often considering them untrustworthy and data poor. According to many authors, this scepticism is exactly the biggest issue behind neuromarketing (e.g. Lee *et al.*, (2017), Hsu (2017) and others).

Basically, there are three main issues which causes scepticism: the interpretability/representativity of results, the environment of the research and the availability of data.

1.3.1 INTERPRETATION OF RESULTS AND REPRESENTATIVITY

The basic issue behind marketing research is that its results need to be interpreted by marketers. Even when talking about neuromarketing and therefore measuring brain

activity, understanding the results means to interpret the behavioural response of consumer's brain to some stimulus (Lee *et al.*, 2017).

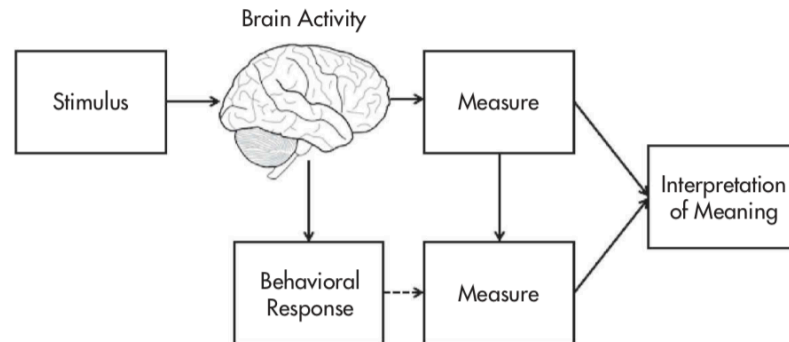


Figure 3. Conceptual schematic of neuromarketing research. (Lee *et al.*,2017)

In addition to that, some authors concerns about the representativity of results, considering that very often the majority of participants in psychological research come from western and industrialized societies (Spence, 2019), that therefore have a completely different cultural background and are distant in the market.

1.3.2 THE ENVIRONMENT

What happens when the consumer goes out of the laboratory? Are the results still valid? These questions represent the second fundamental issue: the **ecological validity** of the research in which people are typically tested in a non-natural environment, such as laboratory. The reactions of a consumer observed in a laboratory, for instance about the packaging of a food product, could be very different when happening into a real life situation, with lots more variables involved (Spence, 2019).

Spence (2019) also suggests that, on the one hand, online testing platform could represent a good instrument to delete the 'pressure' and the hypercontrolled atmosphere of the laboratory but, on the other hand, even the comfort of their homes affects the validity of results.

1.3.3 THE AVAILABILITY OF DATA

In comparison with few decades ago, today the data about neuromarketing are growing continuously. Unfortunately, even if researches are increasing and there are more and more companies which take advantage of these tools, while the theoretical literature is prolific empirical data are still rare (or difficult to access), mostly because companies that conducts research are legally bound by privacy agreements.

On the other hand, the companies that buy neuromarketing services are reluctant to share research and their results. Even if it would be really helpful for the academic community, the reasons for keeping them secret are understandable: as already explained above, these results can provide to companies such important insights which, if well implemented, could help to build their competitive advantage and let them win over their competitors.

1.4 PURPOSE AND CONTEXT OF THE RESEARCH

After this overall description of the field of neuromarketing, including its instruments and the main issue it is surrounded by, this paragraph is intended to clarify the purpose and the context of this research.

Due to the issues discussed above, the fundamental idea of this research is to understand and verify the effectiveness of neuromarketing results, analysing the real utility of its tools and the reliability of the insights it produces through traditional tools. Therefore, the aim of this research is answering the following questions:

Is there a real and measurable influence on consumer behaviour? Are the insights and suggestion produced by neuromarketing studies able to produce new features, products or strategies which performs better than the previous ones?

The first step was the selection of a real (and possibly recent) case study; one of the main obstacles when studying this field, as discussed above, is the poor availability of data.

Thanks to the kind cooperation of BrainSigns (see next chapter), the researcher had the chance to analyse a complete case study, even if partially limited due to the privacy agreements. The case demonstrates how neuromarketing research's suggestions improved an advertising campaign of UNHCR, incredibly improving its performance.

Considering the scepticism and the issue of ecological validity, the purpose of this research will be to demonstrate, throughout a cross-check made with different methods, that the results are valid and repeatable in time. In fact, through the use of traditional methods from qualitative analysis, such as non-standardized interviews, the research will analyse the reactions of samples to the two different advertising versions, both before and after the improvements. Naturally, all the details of the study are largely discussed in the following chapters.

Therefore, this work will proceed with a deep critical literature review, followed by few chapters about the research itself, analysing all the steps for designing it and its finding and discussions.

The study, if positive, could represent a step toward the scientific validation of this new neuromarketing tools, allowing managers to trust this new field and invest in them for shaping their strategies, moving marketing away from the idea that it is just a 'fairy tale'.

2. LITERATURE REVIEW

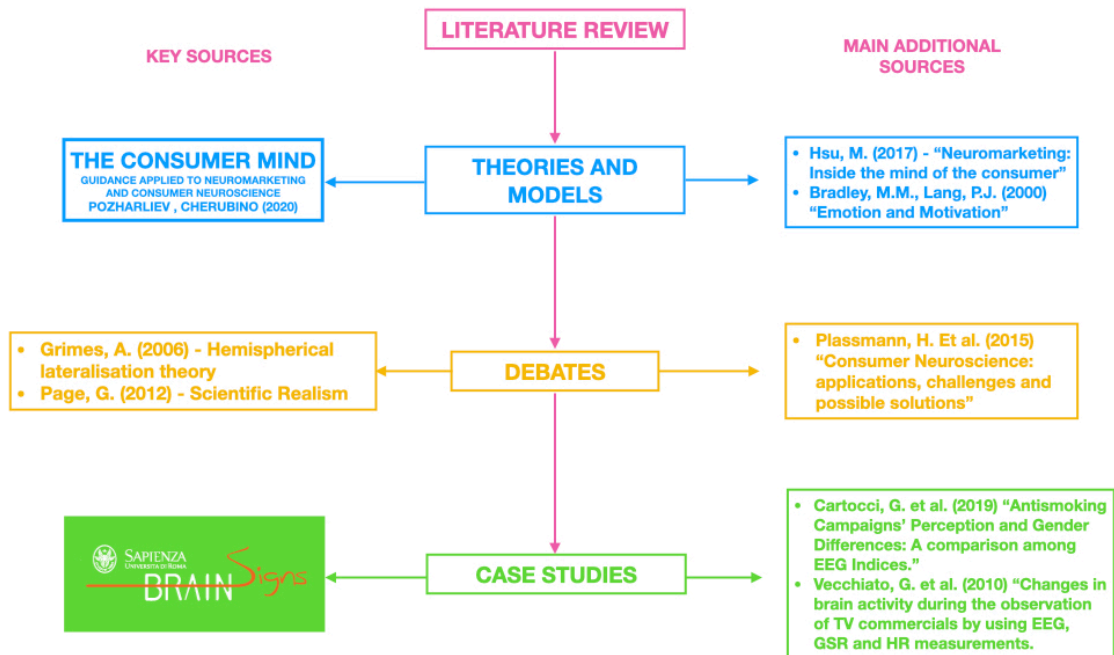


Figure 4. Map of the main literature sources.

This work is based on three fundamental concepts: **marketing**, **consumer behaviour** and **neuroscience**. Therefore, it is very important to understand the relevant theories and models behind these concepts, with a focus on the functions of brain, essential to understand the functionality of neuromarketing itself and its fundamental theories. Due to its affirmed position in this field and its regard for the academic world, part of this chapter is guided from the knowledge and theoretical position of BrainSigns, introduced later in the chapter.

Considering the aim of this work, it was also necessary to explore the debates within the literature, taking into account every doubt and position and, hopefully, build a bridge between them.

In addition to that, in order to remain coherent with the objective and to give as much credit as possible to the field analysed, the researcher thought it was appropriate to report few case studies, the most relevant and clear within those publicly available, which clearly represent practical examples of what was deeply explained theoretically.

In conclusion, this chapter ends with a detailed explanation of BrainSigns, particularly of its Neuromarketing Lab, and the UNHCR study, which represents a starting point for this research; in fact, the entire research was designed to confirm the data from this case, using it to understand if its results can actually be repeated.

2.1 OBSTACLES ENCOUNTERED

During the writing of this work, particularly while searching for the literature, few obstacles were encountered.

First of all, the relatively young age of neuromarketing field could represent a first issue; in fact, it was not easy to find many academic publications, especially about its use from businesses. In addition, the college's library was not really helpful in this case, providing only few peer reviewed articles for the topic.

Furthermore, the most recent and adequate literature was not available for free and this was, for instance, the case of the main theoretical source for this work ¹ that needed to be bought.

For these reasons, in order to overcome these difficulties, the researcher also decided to interview the head of BrainSigns neuromarketing lab, who explained the main concepts behind the application of this field to marketing and how it works. Thanks to his kind cooperation, the researcher was able to delve deeper into the topic and few fundamental aspects of it. Although this interview was very useful, when asked about certain things (i.e. interviews, other companies involved or contacts) he was unable to answer due to privacy agreements, which confirms it to be one of the main issues in finding data about neuromarketing studies.

Therefore, the solution adopted was to compare the available and reliable literature about neuromarketing and its applications, selecting them on their coherency and consistency with the main structure of this work. The following is a review of the topic, as much coherent and in-depth as possible.

2.2 THEORIES AND AUTHORS IN THE LITERATURE

This paragraph explores the topic from neuromarketing's main neuro-metrics, useful also for the understanding of the case study analysed later, to the most important reference theories and authors who made the difference in the field.

¹ (Cherubino and Pozharliev, 2020)

2.2.1. TWO FUNDAMENTAL NEURO-METRICS

Two important neuro-metrics in neuromarketing, especially when it is applied to advertising, are **interest** and **emotion**. It was appropriate to deepen the knowledge about both of them.

2.2.1.1 EMOTIONS

Emotions are still fundamental in the decision-making; for this reason, it is very important for marketers to understand them (Cherubino and Pozharliev, 2020). The recent models about them assumes that there are two dimensions, **valence** and **arousal**, "*a state of emotional activation which represents the emotional intensity regardless of the direction, i.e. whether it is a positive or negative emotion*" (Mancini, 2020).

The idea of Bradley and Lang (2000), used as source from Cherubino and Pozharliev (2020), is that valence should be seen as a measure of a stimulus' evaluation, positive or negative.

For what concerns the concept of emotion, we refer to the **Emotional Index**, developed from HR and GSR signals. This index uses these two methods to assess both the arousal and the valence of emotion in relation to an advertising or marketing content (Cherubino and Pozharliev, 2020; Mancini, 2020).

2.2.2. INTEREST

Then there is the construct of **interest**, once called **approach withdrawal** (or approach and avoidance), which is the most important EEG indicator, and refers to the theories of R.J. Davidson (2004) and C.E. Schaffer (1983): "*an activity in the Alpha band (which is one of the frequency bands of the EEG signal) in the left frontal hemisphere greater than the right could indicate a more positive approach to stimuli, or at least it helped us to understand a positive perception of stimuli versus the case of a greater activity in the Alpha band in the right hemisphere which, compared to the left hemisphere, indicated (in Davidson's time) a negative perception of stimuli*" (Interview to Dr. Mancini, 2020).

According to Dr. Mancini, a significant change happened with Harmon Jones in 2010, when he modified the theory of approach withdrawal, moving away from the concept of "**valence**" (negative/positive stimuli), towards the introduction of **motivation and interest** concepts, showing that people approach also negative emotions and can be motivated by them.

2.3 HOW THE BRAIN WORKS

In the literature there are various models about the structure and functions of the brain. The work published from Cherubino and Pozharliev (2020) provides few explanations of the structure of the brain, exhausting because explains the brain from various point of view, differentiating themselves from other authors (i.e. Grimes (2006) or Hsu (2017)) who usually adopts only one perspective.

Firstly, they adopt the “Triune Brain” theory of Paul Donald MacLean (1990), an American neuroscientist who thought that it is possible to identify three different brains, based on the evolutionary phases (Figure 5):

- the **reptilian brain**, responsible for the instinct; it is important for purchasing decisions.
- the **mammal brain (emotional brain or limbic system)**, fundamental for decision-making because concerns the emotions.
- the **neocortex**, the rational brain, associated to perception and planning, therefore responsible for new behaviours.

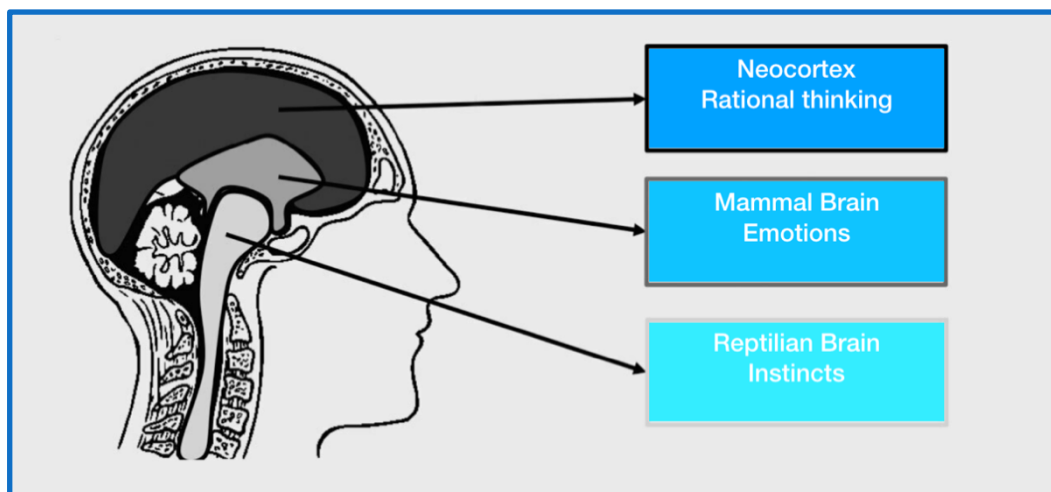


Figure 5. The human brain and its trinitarian structure (Cherubino and Pozharliev, 2020). Translated and adapted to English.

Depending on the stimulus and the context, one brain could prevail on the others.

Continuing their analysis, they explain the four main areas of the brain, shown in Figure 6. As well as other authors in the literature (i.e. Grimes, 2006), they take into account that the brain is divided into two hemispheres, left and right, respectively rational and emotional (creative), and it is implicit that each of the four areas is divided too. Each area has specific functions and a precise role in consumer behaviour, which will be the focus of the following text (Cherubino and Pozharliev, 2020).

1. The **occipital lobe** processes the vision and is responsible for bottom-up (automatic) attention and some basic functions of brand and product recognition.
2. The **temporal lobe** is involved in auditory perception, our ability to remember events and instinctive reactions. The left and right parts are respectively involved in the comprehension of spoken language and sounds sequences. The most important functions are the recognition, learning and awareness of brands, products and events, the understanding of marketing communication, and the process of selective influence on consumer perception (framing effects).
3. The **parietal lobe** is related to movement and the position of bodies and objects in the environment. The most important functions include top-down attention, the ability to navigate real or virtual stores and web pages, and the ability to use a product like a tablet.
4. The **frontal lobe** is the biggest part of human brain, site of the motor cortex and premotor cortex. The most important functions in this area related to consumer behaviour include volitional attention, hedonistic experiences of products, brands, events, long-term purchase planning, and manual handling of objects and products.

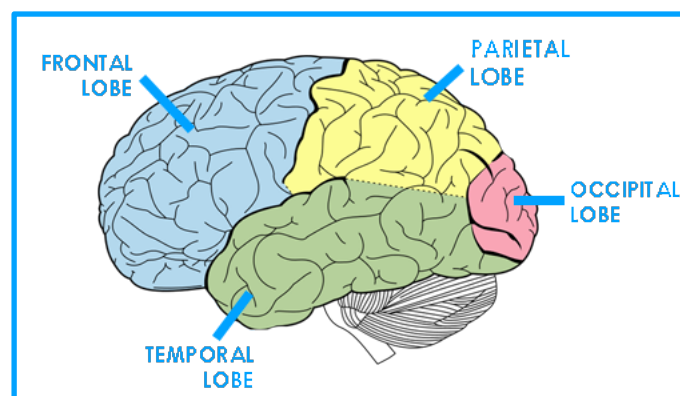


Figure 6. The four main areas of the brain.

According to the literature, Cherubino and Pozharliev (2020) state that the cortex is not the only one to play an important role: it is in fact flanked by subcortical (deeper) structures such as the amygdala, hippocampus, insula and nucleus accumbens. From this perspective, their explanation can be associated with that of Hsu (2017), who uses the same brain areas to "shape" circuits, divided according to their function. In order to

be as much efficient as possible, the following Figure tries to resume the fundamental functions that each circuit has on behavioural processes theorized from Hsu (2017).

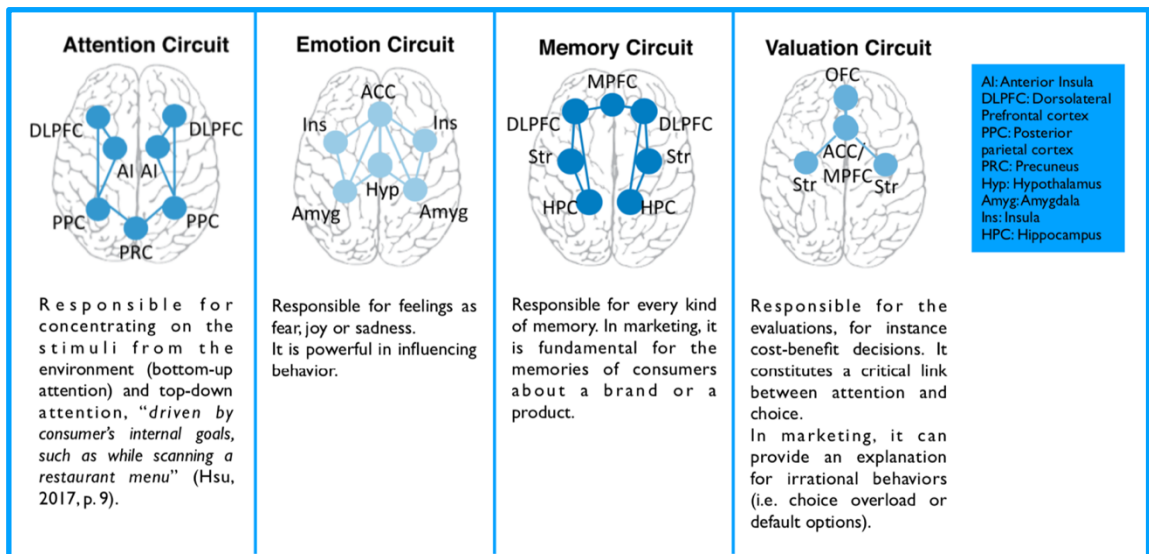


Figure 7. Functional neuroanatomy of cognitive and behavioral processes. Adapted from Hsu (2017).

Understanding how these circuits interact between each other is a fundamental step for marketers to know how to influence consumer choice and to optimize brands' marketing mix.

The literature discussed above constitutes a useful and exhausting explanation of brain's structure and its functions, each of which has a certain influence on the behaviour of consumers. Obviously, the understanding of these concepts is not enough to demonstrate what neuroscience, when applied to the marketing field, can or cannot reveal about consumers; this could be considered as one of the main arguments for debates within the literature.

2.4 DEBATES WITHIN THE LITERATURE

On the one hand, part of the neuroscientific and psychological literature states that the consumers behave on instincts; on the other hand, it is not possible to declare that consumers are totally unconscious during the buying process.

Considering these partially unconscious processes, it is not possible to use only traditional tools, which would not be able to detect them; for the same reason - that "most decisions do involve both automatic, instinctive reactions, as well as elements of control and

consideration"(Page, 2012, p.288) – using only neuroscience tools could result insufficient too.

About that, an interesting theory in the literature is the **scientific realism** adopted by Page (2012). In fact, the author sustain that marketers should measure both the kind of processes (instinctive and not), using the (neuro)science to find new dimensions of consumers' insights.

Even though they not belong to the same current of thought, the basic idea of Cherubino and Pozharliev (2020) could be associated to Page's theory. In fact, they sustain the importance of using traditional and neuroscience tools in a complementary way.

Apart from those who strongly doubt on their effectiveness, a huge part of the literature results coherent with this opinion of complementarity. For instance, Plassmann *et al.* (2015) explain as well how "*neuroscientific methods provide additional tools and theories that complement more traditional research techniques in marketing and consumer behavior*" (Plassmann *et al.*, 2015, p.428).

Into their work, Plassmann *et al.* (2015) resume perfectly the main debates about the topic and, for this reason, they will be taken as reference for their explanation.

According to them, there are three main 'positions' in the literature: firstly, those who believe that "*consumer neuroscience research informs the understanding of consumers' brains, not consumer behavior*" (Plassmann *et al.*, 2015, p.429), sustaining that there is no causality; secondly, those who believe that "*consumer neuroscience relies Primarily on backward inference to identify psychological mechanisms*" (Plassmann *et al.*, 2015, p.430); last but not least, those who believe that "*neuroimaging studies are less reliable and generalizable than traditional marketing studies*" (Plassmann *et al.*, 2015, p.431), due to the smaller samples and therefore its findings' reliability and generalizability.

For these reasons, it is fundamental to report few case studies, adding empirical data to the theory.

2.5 EMPIRICAL DATA: CASE STUDIES

The following case studies were chosen due to their coherency with the main objective of this work and for their affinity with the most important case study analysed and used as starting point for the research; they are all produced by BrainSigns.

2.5.1 CHANGES IN BRAIN ACTIVITY DURING THE OBSERVATION OF TV COMMERCIALS BY USING EEG, GSR AND HR MEASUREMENTS

This case study is used here as an introduction to the type of study on TV commercials, fundamental for the following studies cited in this work. Due to its extremely specific language and the huge amount of space it would require a good explanation of it, the one that follows is an extremely summarized version, whose objective is to illustrate how the brain reacts to stimuli and what neuroscience tools can tell us about these reactions.

This study was conducted to analyse the brain activity during the vision of commercial ads shown within a documentary. They measured the brain activity and the emotional engagement of 15 subjects, using various tools: EEG, GSR, HR.

Through them, the objective was *“to link significant variation of EEG, GSR, HR and Heart Rate Variability (HRV) measurements with the memory and pleasantness of the stimuli presented, as resulted successively from the subjects' verbal interviews”* (Vecchiato et al., 2010, p.165).

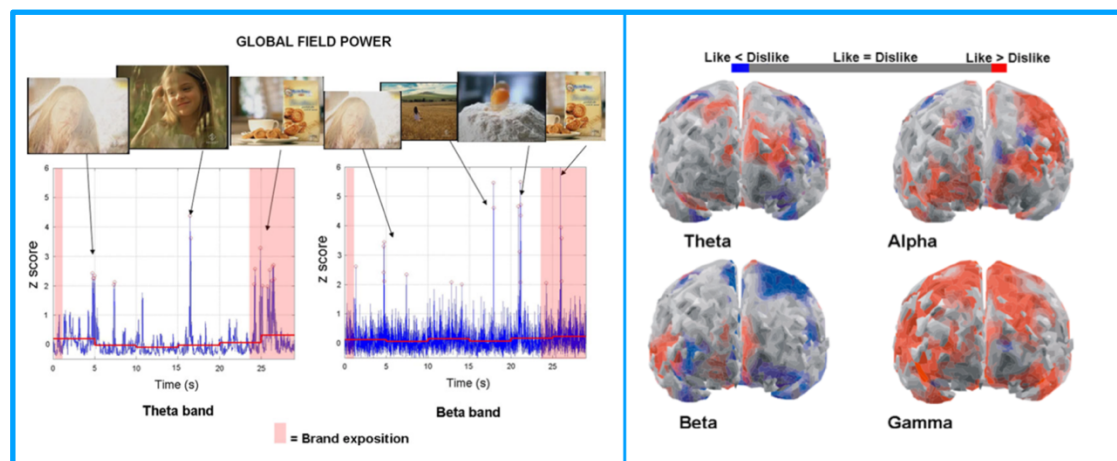


Figure 8. Analysis of GFP values and four cortical maps. Adapted from (Vecchiato et al. (2010), pp. 170;173)

The 30-seconds commercials were from international brands of commercial products and public services. Subjects were then asked about the clips they remembered during the interview.

The results confirmed the questions of the study: the commercials shown to the sample increased the HR values and their cerebral activity in the left hemisphere, when they were memorized and judged pleasant, such as the one from a famous Italian brand for biscuits.

2.5.2 ANTISMOKING CAMPAIGNS' PERCEPTION AND GENDER DIFFERENCES: A COMPARISON AMONG EEG INDICES

This article was selected due to its affinity to the UNHCR case study, for the tools used and the product tested, which is advertising.

In this case, the advertisements' nature is public service announcements (PSAs), precisely antismoking campaigns, one of the main tools of the government to fight against this deadly dependence.

They were studied with the application of two EEG indices: the frontal alpha band EEG asymmetry (the Approach Withdrawal (AW) index) and the frontal theta (effort index). The Emotional Index (EI) was calculated through the measurement of GSR and HR.

As stated from the authors (Cartocci, Modica, Rossi, *et al.*, 2019), it has been proven that, especially when talking about antismoking campaigns, there are different responses to advertising depending on the gender (i.e. Cartocci *et al.* (2016), Yom-Tov *et al.*, (2016)). All the indices were developed also on the base of previous studies, cited on Cartocci *et al.* (2019).

The sample used was made of 46 participants, exactly 23 women and 23 men, both smokers and non-smokers, between 25 and 55 years old. They watched a random sequence of ten antismoking PSAs, for a total of nine minutes, preceded and followed by a neutral documentary (about constellation, same of UNHCR study) used as baseline.

Structure of the protocol employed in the study. Each of the target stimuli could randomly appear in one of the ten possible PSA positions. Distractor stimuli were randomly placed in the remaining positions. At the beginning and at the end of the PSA train, there was the 1-minute baseline video.

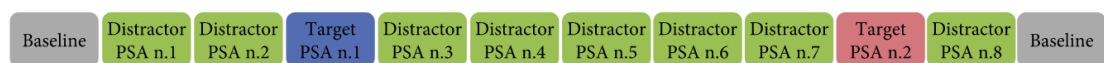


Figure 9. Structure of the protocol employed in the study. Cartocci *et al.* (2019), p.4.

The target stimuli were two of the ten PSAs:

1. One male character antismoking PSA: CDC Roosevelt (USA, 2012–2015). The video displays a young man telling how he got a heart attack when he was just 45 years old and all the consequences of that event, beginning from the scar on his chest to the limitations in his everyday life, for instance, in climbing the stairs or playing with his son.

2. One female character antismoking PSA: Baby Love (Finland, 2013). The video displays a young pregnant woman at first apparently preparing the room for the baby she is waiting, but as long as the video develops, it turns out that she actually does horrible actions, like hanging knives instead of toys in the carillon over the cradle, or putting a snake into it. The video ends with the young woman lighting a cigarette and smoking with an ashtray placed on her pregnant belly.

The results, therefore the higher Mental Engagement (ME) values and the higher frontal (theta) activity by women demonstrated that women are more influenced by PSAs showing the negative effects of smoking on health. There was also *“a significant correlation between the high number of cigarettes per week smoked by participants and the ME values stated that as long as the number of cigarettes increased, the relative ME values also increased”* (Cartocci et al., 2019, p.9).

The non-smokers showed a tendency of approach explained by a higher effectiveness on them by PSAs with a strongly negative emotion connotation.

Thanks to the EEG indices, this study *“showed the sensitivity of the ME and the frontal theta index in evidencing gender influences on the neurophysiological response”* (Cartocci et al., 2019, p.9), also noticing a difference based on the smoking habits of the sample.

In conclusion, *“this study supports the usefulness of the ME and frontal theta for purposes of PSAs targeting on the basis of gender issues and of the ME and the AW and for purposes of PSAs targeting on the basis of smoking habits”* (Cartocci et al., 2019, p.9).

Last but not least, the case study of the next paragraph is the most deeply explained and most relevant for this study.

2.6 BRAINSIGNS AND THE UNHCR STUDY

“A brand, a product or an advertisement generates emotions in a consumer – whose decisions, choices and motivations always have a strong emotional component. The study of emotions, generated and controlled by an area of the brain called the limbic system, and the knowledge of how they work, is crucial to understand their value within the marketing and communication processes”.

- © BrainSigns

BrainSigns is a spin-off company in University of Rome "Sapienza" whose core expertise, as stated on their website, is *"to record and analyze the **signals** produced by **brain functions and other bio signals**"* (BrainSigns [Online]). Their value proposition is to generate value for a company through monitoring the reactions of people. It is a team of almost twenty people, made by a research & development section, that represents the "academic" part, and the neuromarketing Lab managed from Dr. Marco Mancini, while Dr. Patrizia Cherubino is in charge of research. Therefore, everything that BrainSigns does in the business field regards issues already published and discussed in scientific articles.

Thanks to the **High-Resolution EEG Lab**, they use their expertise into various fields, including Neuromarketing and Consumer Behaviour, the only relevant for this work.

This company not only maintains a certain expertise and experience in the main topic of this work, but its methodology, thanks to the link with the university, is also really consistent with it; in fact, BrainSigns mixes up the traditional research methods of marketing, such as surveys or focus groups, with their innovative instruments, such as EEG, ECG, GSR, Eye tracking and psychometric tests. These methods allow them to find insightful data, on which evaluating advertising, communication, packaging and pricing, etc.

In addition, they measure the responses to market stimuli in different contexts, both in laboratories and real contexts, which makes them more 'liable' for those who argue about the ecological validity of these researches.

These measurements of implicit reactions (which affect 95% of the results of decision-making processes) can lead to *"greatly improving the ability to fully understand the target of any commercial offer, in order to sell products more successfully (neuroselling) and reduce the risk of bad investments"* (BrainSigns [Online]).

The advanced instruments employed by BrainSigns also allow them to derive emotion, interest, attention and also the level of persuasion, among many other indicators, with reference to a specific concept. This ability, as stated on BrainSigns website, constitutes a real innovation in various fields of study (e.g. evaluation of advertising efficacy, determination of the optimal product positioning and communication in retail stores, evaluation of Packaging quality).

2.6.1 A DEEPER LOOK AT THE TOOLS USED BY BRAINSIGNS

2.6.1.1 EEG

“Electroencephalography is a neuroimaging technique that records the electrical activity generated by the brain through electrodes placed on the scalp. Following the international 10/20 system, the electrodes are mounted in fixed positions on a special headset, ensuring consistency of scalp positions between all subjects regardless of head size” (Cherubino and Pozharliev, 2020).



Figure 10. Standard EEG headset with 32 or 64 electrodes (BrainSigns, IN: Cherubino and Pozharliev, 2020)

The EEG measures the electrical activity generated by thousands of neurons. The data is then sent to a bio signal amplifier to be displayed as a sequence of voltage values.

There are two main types of activity in the EEG:

1. Spontaneous activity (brain waves) indicates that our brain is operating
2. Evoked potentials (EP), behaviour in response to an internal (thinking) or external (e.g. visual) stimulus.

Then are distinguished different EEG rhythms, analysed according to various frequency bands (delta, theta, alpha, beta and gamma). the Alpha frequency (7-12 Hz) is the most used in consumer neuroscience.

The new EEG mobile allows to solve some issues already discussed in this work, such as ecological validity (through experimentation in real environments) and lower prices of the instruments (due to technological progress).

One of the limitations of this instrument is its low spatial resolution, i.e. the difficulty in understanding where the electrical activity in the brain comes from; moreover, it takes quite a long time due to the preparation of the subject and the instrument. Often, in fact, fewer electrodes are used for marketing and advertising studies, allowing the study to be carried out in less time.

2.6.1.2 EYE TRACKING

The importance of this instrument is understandable from the fact that the 90% of information transmitted to the brain is visual; moreover, people remember only a 20% of things they have read but the 80% of things they have seen.

The observation of an area, product or advertisement is linked to foveal vision; the consumer's eyes scan the field of vision with rapid movements (saccadic) alternating with fixations. As this is an irregular process, the fixations are not equally distributed. For example, there are some elements that generate more interest and therefore are more 'fixed' (each fixation of the participants is represented with a dot on the image area and the more people will look at the same area, the darker the colour of this area will be). It is only during fixation that the central nervous system acquires information. The fixation generally varies between 200 milliseconds when we read a text and 350 milliseconds when we see an image (see Figure 11).

"Our deep understanding of how vision works made it possible to construct models and statistical algorithms that allow us to study how the different elements of an image, such as colors, shapes and shades affect human visual behavior" (Cherubino and Pozharliev, 2020).

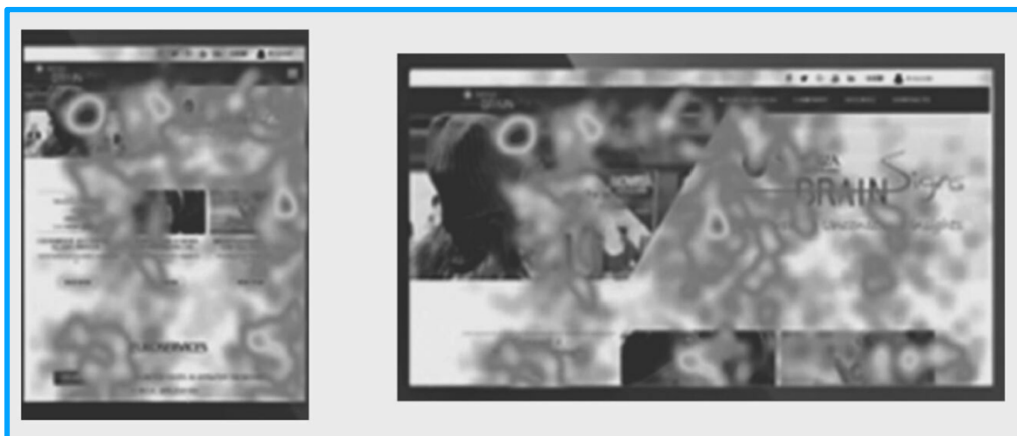


Figure 11. Example of heatmap on BrainSigns website on different devices. Cherubino and Pozharliev (2020).

According to the authors just mentioned, Edmund Huey first built an eye tracker in 1908, which was extremely invasive. A change occurred in 1937, when Guy Thomas Busweel built a non-invasive model, using beams of light reflected off the eyes and recorded on film.

“Specifically, therefore, eye tracking refers to the process of measuring the eye fixation point or the motion of an eye in relation to the head. These measurements are made by an eye tracker, a sensory technology that allows a device to record the exact position of the eyes and their movements” (Cherubino and Pozharliev, 2020).

Today, an eye tracker directs infrared light towards the pupil, creating detectable reflections that are tracked by an infrared camera (Figure 12).



Figure 12. Example of eye trackers, fixed (left) and mobile (glasses, on the right). (www.brainsigns.com)

There are different metrics derived from the use of eye tracking, such as gaze plot or scan path (fixation sequence), heat map, areas of interest (AOI), pupil dilation and body posture (Figure 13).

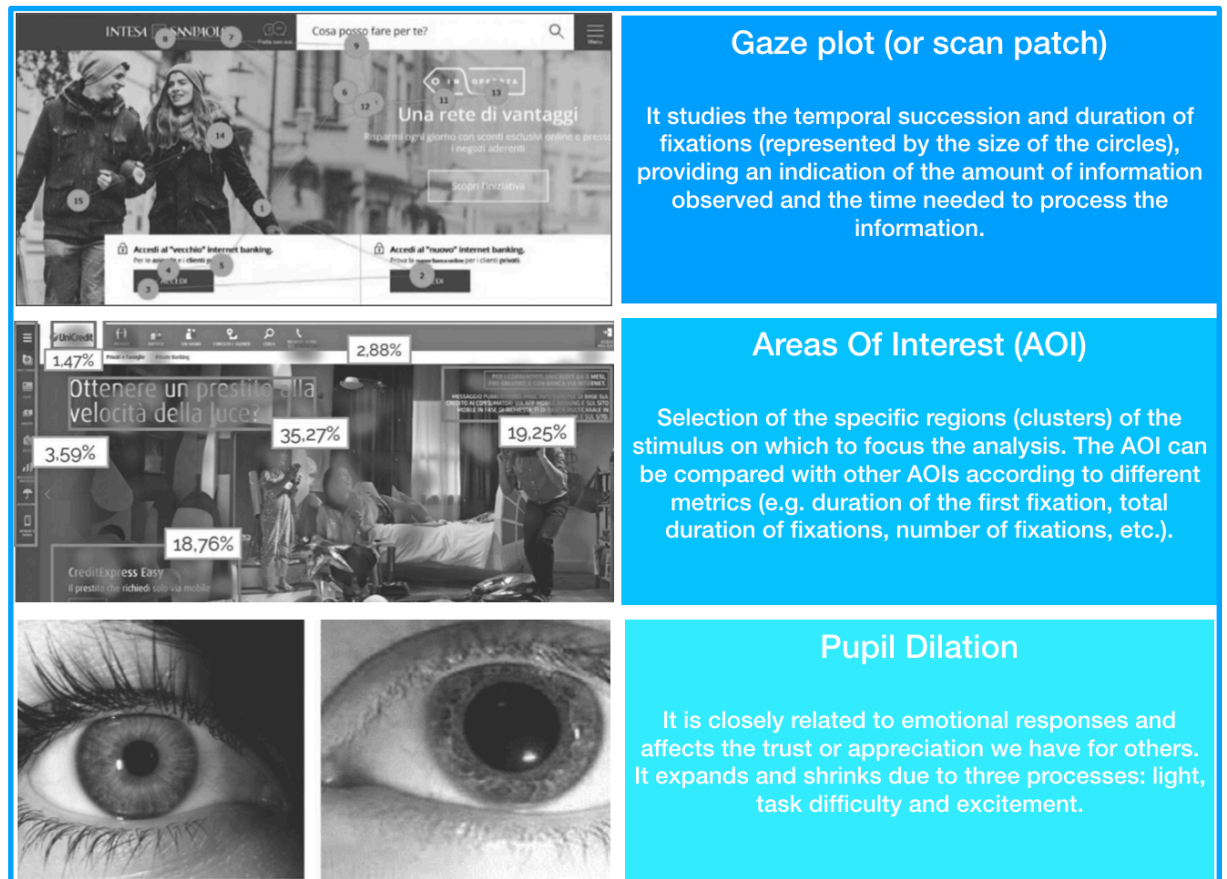


Figure 13. Explanation of few eye-tracking metrics. Adapted from Cherubino and Pozharliev (2020).

In addition to being non-invasive and extremely detailed, a great advantage of this tool is that it allows to quantify the visual behaviour in an objective and accurate way. It is also easy to interpret and comprehend and can be easily combined with other methods (e.g. EEG, GSR, HR).

On the other hand, among the limits there are: the type of attention (positive/negative), the fact that results depend on the characteristics of the stimulus (e.g. size of the object), the absence of measurement of peripheral vision and the value of emotions, memory and purchase intention (Cherubino and Pozharliev, 2020).

2.6.1.3 GALVANIC SKIN RESPONSE (GSR) AND HEART RATE (HR)

"The galvanic skin response (GSR) refers to changes in the activity of the sweat glands that reflect the intensity of our emotional state, namely emotional excitement" (Cherubino and Pozharliev, 2020).

Skin conductance is regulated by autonomic nervous system and can provide a reliable measure of excitation.

One of its main advantages is that it is very easy to record, in fact, two electrodes applied to two fingers of the hand are required.

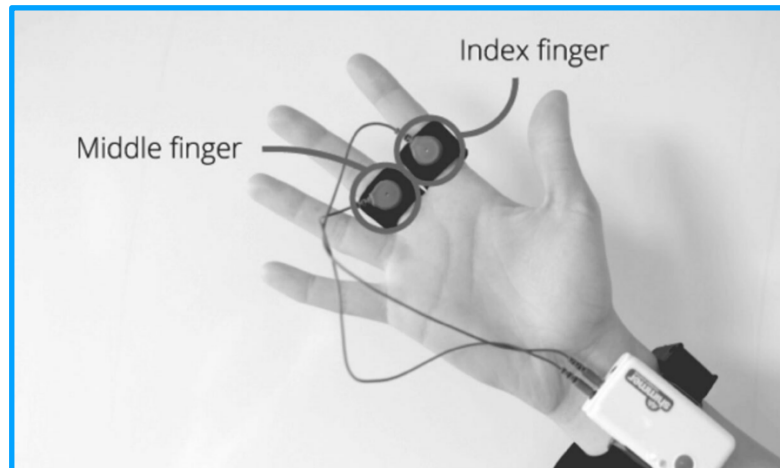


Figure 14. Example of GSR instrument. Cherubino and Pozharliev (2020)

As well as for GSR, there's a relationship between HR variations and emotional responses. HR increases with positive emotions and decreases with negative ones. HR is measured by the electrocardiography (ECG) method, easily using two electrodes to be applied to the chest or wrists. Even less invasive is the use of infrared optical sensors, using new technologies (e.g. watches).



Figure 15. Example of HR measurement. BrainSigns.

2.6.2 FROM THE HEART TO THE WALLET: A NEUROMARKETING CASE STUDY WITH UNHCR

The case study proposed here has the aim to measure the effectiveness of a TV commercial from UNHCR, the UN Refugee Agency, “a *global organization dedicated to saving lives, protecting rights and building a better future for refugees, forcibly displaced communities and stateless people*” (UNHCR.org [Online]), who works in 127 countries all over the world.

2.6.2.1 THE RESEARCH

This neuromarketing research was made in Rome and Milan on the 18th and 19th October 2017, in open client mode.

The open client mode is a way of testing advertising which is “open” to more clients. Companies have chance to put their commercials inside an advertising break in order to analyse them very basically, gaining a lot of useful insights about the values of interest and emotion at a reasonable price. Through this “cheap” testing, companies are able to understand the most/least exciting or interesting moments of their commercials, supported also by a video of visual attention's distribution.

BrainSigns conducted this research on UNHCR's request after the bad results obtained from its first advertising's airing, which did not generate lots of requests for information about testamentary legacy, objective of the Ad². There were three main objectives for the study (Mancini, 2017):

- *Provide a general assessment of the instinctive perception of the ADv*
- *Identify the strengths and weaknesses of the ADv*
- *Suggest interventions in order to improve the instinctive perception of the ADv*

The sample was made by 36 people, respectively 18 men and 18 women, between 25 and 54 years, which is the generalist sample adopted by BrainSigns for the open client mode; considering that this mode involves more companies, it would not be possible to select a sample representative for all of them. The experiment run while they were watching an extremely relaxing “non-spoken” documentary about stars, which was interrupted by twenty commercials, including the one from UNHCR. When at the research centre, each participant was asked to sign the informed consent for the

² Ad or ADv: intended as advertisement, commercial.

recording of neurophysiological signals and warned about every aspect of the experiment, except for the type of stimuli or the goal of the research.

The technologies used to test the sample during the projection, which functions were largely explained to each participant, were the following (Mancini, 2017):

- **EEG:** *to measure the cognitive response in term of interest and cognitive effort.*
- **Eye tracking:** *to detect visual attention.*
- **Heart rating (PPG) and GSR:** *to measure emotional response.*

Before starting the experiment, there was a short phase of tools' setup; each participant was asked to close his eyes during the EEG setup, because in this way it was possible to extract the Individual Alpha Frequency (IAF), with which they recalculated the EEG frequency bands on the subject itself. Then, the recording started.

This is a fundamental phase and distinguishes BrainSigns from lots of other neuromarketing companies because it starts with a moment of baseline, made by the documentary vision itself, during which they measure the neuro-metric variations in a state of calm.

Once the experiment ended, each subject (free from the EEG, PPG and GSR instrumentation) answered to a short interview, in order to explore the memories and the level of pleasantness, integrating neuro-scientific technologies with traditional tools.

The insights identified by BrainSigns were mostly two: a positive emotional response of participants and a "Call to Action" which did not caught attention.

EMOTIONAL RESPONSE

Figure 16 shows which scenes generated strongly emotions (such as the ones with the girl, the grandmother and refugees) or a low involvement.

The positive emotional response of participants dominated the scene; even if it could seem a good insight, actually a charity AD should not generate such positive emotions.

It is also very important to notice the low attention generated by the logo of UNHCR. For this reason, the suggestion was to increase the use of images that could have generate negative emotions. Figures 16 and 17 shows the emotional index related to the UNHCR Tv Commercial.

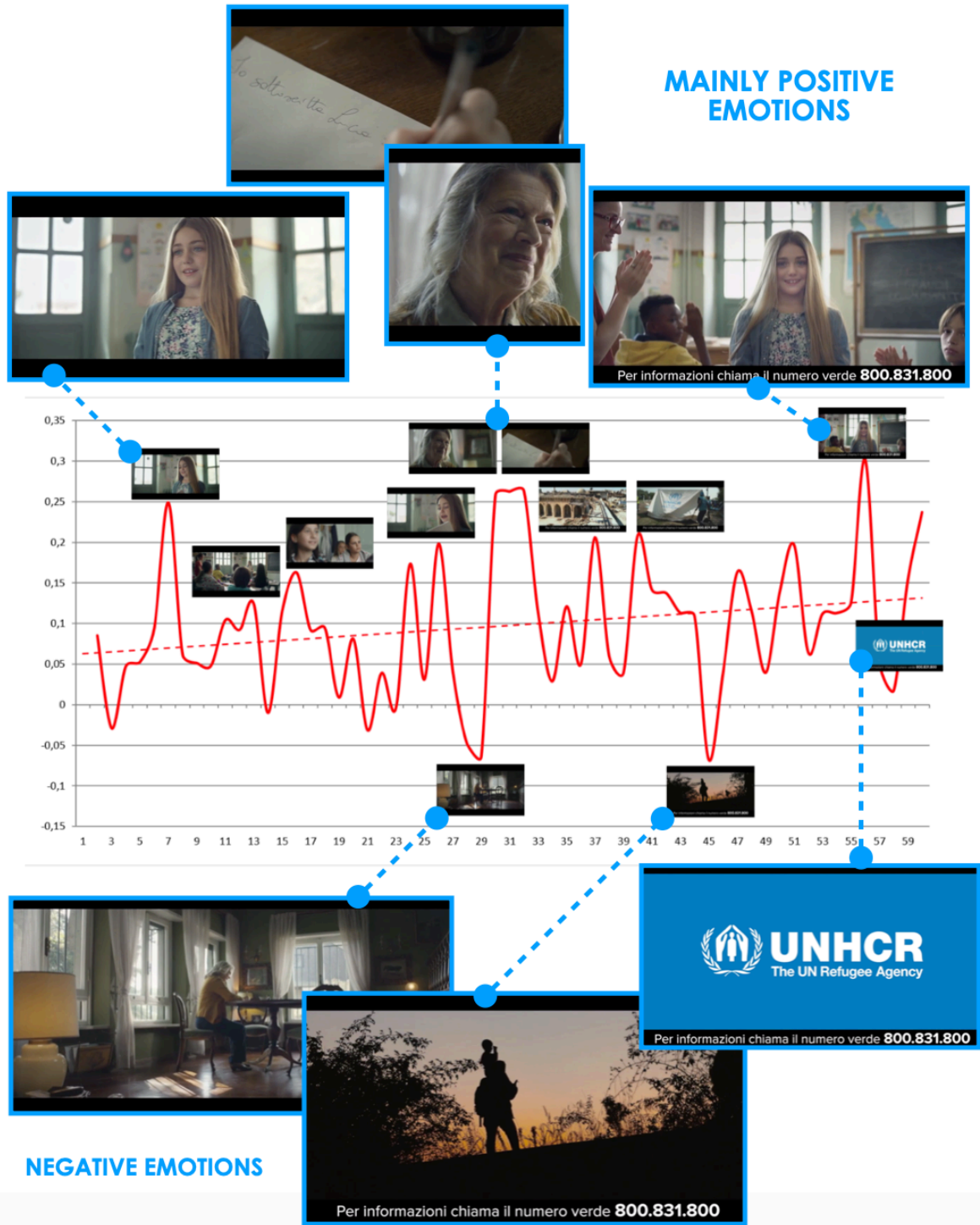


Figure 16. Emotional index of UNHCR commercial, focus on the emotional peaks. Adapted from Mancini (2018)

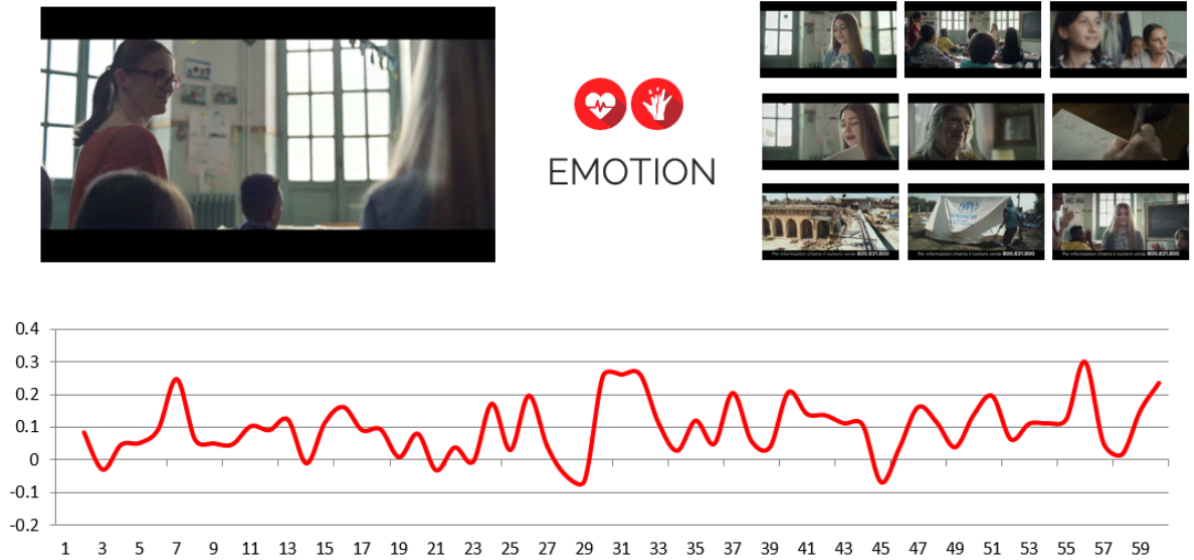


Figure 17. Emotional Index related to the UNHCR TV Commercial. (Mancini, 2017 [Online])

CALL TO ACTION

Before describing the findings of BrainSigns, it was considered necessary to explain what marketers mean when talking of Call to Action (CTA).

The call to action, as its name suggests, is a real message that encourages people to take an action. In marketing campaigns, it is a fundamental element which must be clear and direct for consumers. Its visual part is very important because it aims to attract the attention of customers and for this reason it is often strategically positioned (Inside Marketing, n.d.).

Using eye tracking, BrainSigns found out that CTA recorded a very low percentage of attention (6,6% of the total), that it was almost not noticed during the spot, even during the voiceover that recalled the attention, remaining on the actress on the screen.

BrainSigns provides the video of the entire commercial with the heat map, in order to show the visual attention of all participants. In the image below, red areas show a higher visual attention, while green areas a lower visual attention.



Figure 18. Visual attention - Eye Tracking / UNHCR TV Commercial (Mancini, 2017 [Online])

2.6.2.3 SOLUTIONS AND IMPLICATIONS

As suggested by BrainSigns, UNHCR produced a new version of the commercial, increasing the number of dramatic scenes about refugees and war for increasing the negative emotions, and changed the way of displaying the call to action, using synchro with the voiceover and increasing its size.

The results from the new version's release were incredible, with an increase of **“+237% in sellable calls (people that actually subscribe for the testamentary legacy) and +553% in legacy calls (for getting more information about the testamentary legacy)”** (Mancini, 2017), showing how neuromarketing can really generate value for companies, increasing the real subscription for leaving a will to the organisation and the number of calls received from consumers who wanted to obtain more information about the will.

The following chapter discusses the qualitative research that aimed to verify and cross-checking these results.

2.6.2.4 CHARITY ADS

This short paragraph aimed to explain few peculiarities linked to the charity advertisement, which should be considered separately from other types of ad.

In fact, various authors in the literature explains its differences and the special role played by emotions. As affirmed by Bennett (2015), charity fundraisers are obviously aware of the importance of emotions aroused and sustains the fundamental role of mixed emotions, both positive and negative; they raise negative emotions through strong images (i.e. suffering people) followed by positive emotions based on the help that the Charity gives (through the donor's support). On this behalf, this statement was considered very interesting:

“Merchant et al. (2010) argued that positive emotions (such as joy, fulfilment, or relief) arising after negative emotions (e.g. sadness, fear, guilt, or shame) help dissipate the recipient's feelings of discomfort, thus encouraging the person to respond more favourably to the positive elements of a message” (Bennett, 2015, p.157).

In addition to that, very interesting is the opinion of part of the literature, for which donors seem to be more inclined to donate (money) if their help in terms of individual time is involved (Kim, 2014), even if there are a lot of different opinion about donors' perception and behaviour. Particularly important for this work is the distinction between the “normal” advertisement and charity ads, which are characterised by few specific dimensions belonging exclusively to this type of commercial: appeal types, image of the beneficiaries and description of the victims are the three dimension that guide the advertising strategy of charity ads, respectively about what appeals, what to show and how to show it (Kim, 2014).

2.7 CONCEPTUAL FRAMEWORK

This paragraph provides the conceptual framework that frames the path behind this work. It starts from the critical analysis of the literature available on the concept of neuromarketing, proceeding to the formation of the main hypothesis and ends, after the data collection and analysis, with the confirmation or confutation of it.

The six steps shown in Figure 19 are described as follows:

1. The first step of the research was to identify an objective, which, in this case, was to understand the impact of neuromarketing on consumer behaviour. Naturally, in order to define a precise objective and hypothesis to guide this work, the researcher analysed the literature related to the topic of neuro-marketing and consumer behaviour. The main concepts came up from this analysis are those situated at the left of the Figure, comprehended in a box and marked by number 1, and include those concepts considered fundamental for understanding the main case study analysed (Mancini, 2017) and for formulating the research hypothesis and its analysis. For this reason, on the one hand they include the tools for measuring brain activity and models on the brain itself, referring mostly to neuromarketing knowledge; on the other hand, it was necessary to link the brain's responses and structure to consumer behaviour: for this reason, the useful literature described the processes of interpretation of these responses, producing new insights used to improve the final product. In this specific case the final product improved was the advertising. It is implied that all these mechanisms are subject to criticism by different authors and are the core of the debate in the literature related to the topic, arguing about the use of neuromarketing tools as a replacement of traditional research methods.

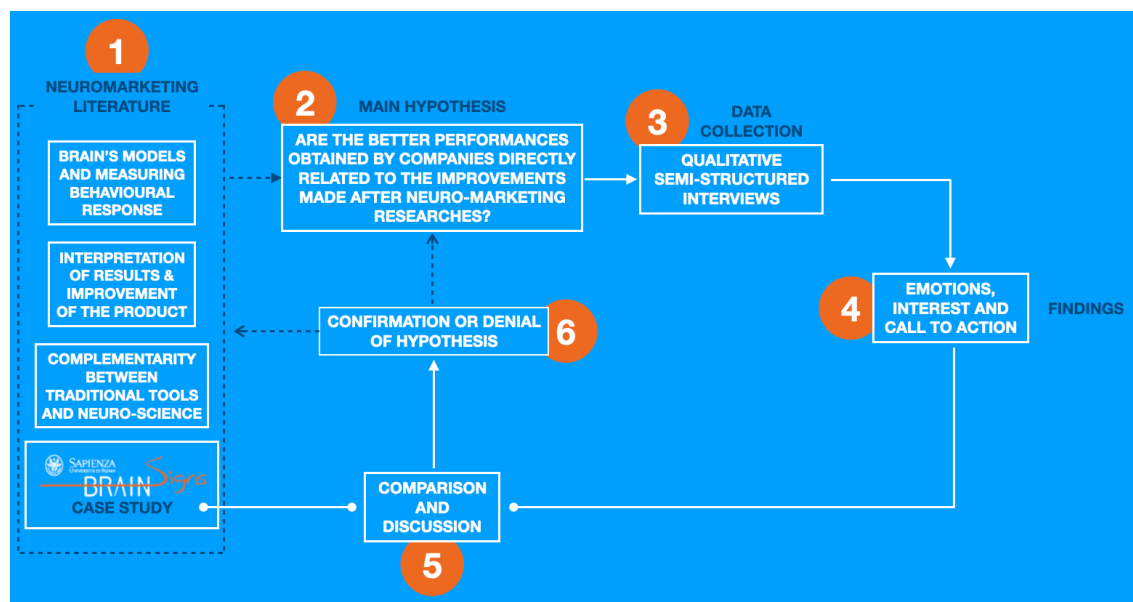


Figure 19. Conceptual Framework

2. Once concluded the critical analysis of literature, including the main case study analysed, the researcher proceeded to the second phase and hence the definition of its main hypothesis.

3. In order to prove it (or deny it), the third step consisted in the design of the research and its methodology, also using the above-mentioned case study (UNHCR by BrainSigns) as a reference. Clearly this phase led to the collection of data and their subsequent analysis, inevitably ending in the fourth step.
4. During this fourth step, the findings from all the interviews conducted are brought to the reader's attention and analysed. According to the literature and the hypothesis formulated, three main concepts were reported as fundamental in the framework: the type of emotions aroused, the interest of participants and few aspects related to the call to action.
5. By making prior considerations exclusively on primary data, the researcher suggests new insights and considerations related to the research. At this point, in order to confirm or refute her hypothesis, the researcher compares her findings with the results of the BrainSigns study.
6. This phase of comparison and discussion naturally leads to the last step of the research, i.e. the confirmation or refutation of the main hypothesis. In fact, through the assumptions made, the researcher establishes the meaning of these results with the support of the literature critical analysis. Finally, depending on the results obtained, this hypothesis could bring to modify the objectives and hypothesis for future studies and/or to the improvement of the available literature on the topic.

3. RESEARCH STRATEGY AND DESIGN

Chapter 3 was entirely dedicated to the description of the methodology chose to conduct the primary research for this work. The analysis starts from an explanation of the philosophy behind it, the approach that was adopted, the strategy used and its time horizon, concluding with the data collection method selected. Research onion summarizing the choices made is shown in Figure 20.

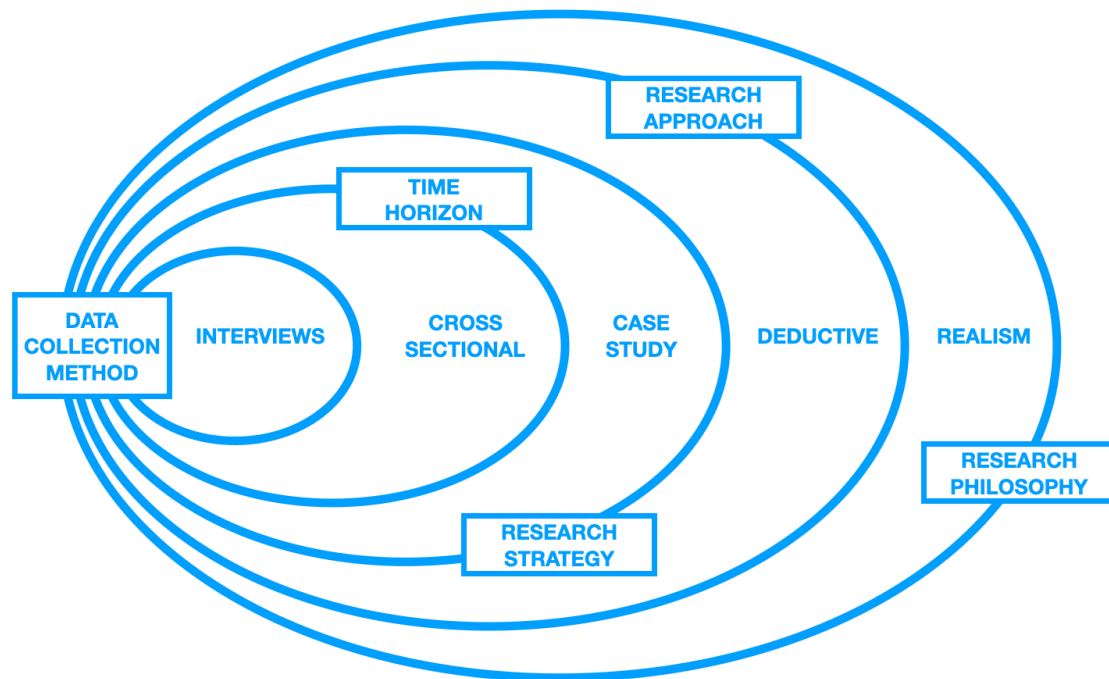


Figure 20. Research Onion. Adapted from Saunders et al. (2007).

Firstly, given that this research has the objective to verify if neuromarketing has an impact on consumer behaviour, one of its main aims is to ensure that its results are repeatable. For this reason, the decision made was to design a study able to reproduce (as close as possible) the neuromarketing study of BrainSigns for UNHCR. Naturally, it is not intended that their study has been copied or reproduced in this work, but rather it was used as a reference point to build a research that could relatively confirm (or deny) its results.

RESEARCH PHILOSOPHY

During the attempt to identify the philosophy surrounding this research, a sudden dilemma appeared; in fact, there was a continuous consideration of two basic philosophies: positivism and interpretivism.

Naturally, due to its characteristics, it was not possible for this research to be framed into a pure positivist philosophy; although that, as specified many times before, it is designed

to confirm or deny scientific (secondary) data gathered from neuro-science tools, used to generalize theories. Obviously, those scientific data were not obtained from the primary research and therefore are not a sufficient reason to adopt a positivist philosophy for this study.

In addition, the qualitative nature of this study does not allow the author to use a highly structured methodology (typical of positivism) or to ensure data replication (Gill, and Johnson, 2002). However, as stated from Saunders *et al.* (2007), "*it is perfectly possible to adopt some of the characteristics of positivism in your research, for example hypothesis testing, and use largely qualitative data*".

Consequently, the idea of interpretivism about the complexity of social world of business and management, which is not suitable to be generalized, is highly appreciated in this context. Here is adopted the idea that the social and cultural context in which the research is carried out can influence the psychology of the participants, moreover if belonging to those WEIRD societies described by Spence (2019), that is Western, Industrialized, Rich and Democratic. It has necessarily to be taken into account that markets are different from one society to one another.

Taking this into account, considering both the adoption of few characteristics of positivism and the agreement with the general concept of interpretivism, the philosophy considered mostly recognisable in the point of view of this work's author is the **realistic philosophy**.

Particularly, **critical realism** seems to be the most suitable current of thought, which is perfectly positioned in the middle among scientific propositions and interpretivist view. In fact, it assumes that our senses show us the reality, the truth; although that, the reality as we know it "*is a result of social conditioning and cannot be understood independently of the social actors involved in the knowledge derivation process*" (Saunders *et al.*, 2007).

With concern to that, the researcher considered it appropriate to take into account the concept of symbolic interactionism, for which people act according to the meaning that something has for them, constructed during the interaction with it or another person. This meaning is social (not personal) and it is precisely the totality of all these meanings that shapes the culture of a society (Blumer, 1986; Griswold, 2005).

RESEARCH APPROACH

As specified in the objectives of this research, this study was designed to prove the effectiveness of neuromarketing.

Therefore, starting from a clear hypothesis about how neuromarketing affects consumer behaviour toward a confirmation or a denial of it, the research approach was surely **deductive**.

Considering the stages explained by Robson (2002), the first phase was to deduce an hypothesis from the theory. The main hypothesis was deduced both from the literature and the empirical data analysed in the literature chapter, particularly concerning UNHCR.

Therefore, are the better performances obtained by companies directly related to the improvements made after neuro-marketing research?

The research was then designed to investigate the aforementioned hypothesis in the specific case of UNHCR advertising, previously tested by BrainSigns. The aim was trying to understand if the new (very positive) insights gained by the humanitarian organization are directly related to the suggestions made by the neuromarketing laboratory.

The hypothesis was then tested through the use of the Case Study strategy, deepened in the following section. Proceeding with the stages of deductive research, the outcome of the research was examined, in order to confirm or deny the hypothesis, producing the findings located in Chapter 4.

A BRAND-NEW HYPOTHESIS

As the reader will notice in the Findings and Discussion chapter, a second hypothesis for this research resulted from the interview with the head of BrainSigns neuromarketing Lab:

Could the consumer's perception of the commercial be influenced by the content broadcast before the advertising break? Particularly, is the UNHCR commercial perception increased if used as interruption of a dramatic movie?

For this new hypothesis was adopted the same methodology of the main one, discussed above.

RESEARCH PURPOSE AND STRATEGY

It may be stated that this research has an **explanatory purpose**. In fact, its final aim is not to explore a new phenomenon or describing one, but to establish a relationship between variables through a qualitative study. In this case, the variables were the insights produced by neuromarketing and the better performances of the advertisement.

For this reason, the best strategy to be adopted was the **Case Study**, for its ability to understand the processes being enacted in the context of the research and for its suitability to explanatory studies.

Taking into account the distinction of four different strategies formulated by Yin (2009), the one adopted in this research was the **single case study**. The justification for this choice is related to the strict amount of time available for the development of this study and, also, to the singularity of each case study in this field. It would have been difficult to adopt a multiple case study strategy, verifying if the same findings occurred in all of them, in such a short period.

One characteristic of this strategy, which was significant for its selection, is that it "*can enable to challenge an existing theory and also provide a source of new research questions*" (Saunders *et al.*, 2007).

TIME HORIZON AND DATA COLLECTION METHOD

Unsurprisingly, the research's time horizon was **cross-sectional**. As well known by the reader, the collection of data and their analysis were time constrained. Like happens in many case studies (Saunders *et al.*, 2007), this research is based on interviews conducted over a short period of time.

Based on the various type of interviews and on the intrinsic characteristics of this research, the kind of interview selected for collecting data was non-standardised, precisely **semi-structured interviews**. This choice was guided by the necessity of covering different aspects of the topic; the interviews were one-to-one, in order to obtain as much sincerity as possible and to reduce the risk of social desirability-based answers³.

The researcher had a list of themes and question to analyse, same for each interview. of course, since they are non-standardised, the questions have been adapted to specific situations, both in their order and in the formulation of new questions. The type of interview can be identified in this case as a focused interview, particularly useful to investigate aspects related to an experience common to several subjects, in this case exposure to advertising commercials (Merton and Kendall, 2012).

All the choices made are summarized in Figure 21.

³ Social desirability of answers is the common judgement that a certain culture attributes to an attitude. On the basis of this judgement, the respondent may not want to reveal his or her opinion sincerely but to provide answers that give the best possible image of himself or herself, even unintentionally (Corbetta, 2014).



Figure 21. Form of interview.

Once selected the sample and scheduled them (see Paragraph 3.1), the researcher compiled a list of themes and questions to ask once the collection would have started. In order to conduct the interviews and verify the hypothesis, it was necessary the production of the material to be shown before the interviews.

The logic before the design of the interviewing phase has to be specified: as explained in literature chapter (see Paragraph 2.6.2), UNHCR brought to the attention of BrainSigns its commercial, due to its very poor performances; through its neuromarketing experiment, BrainSigns furnished the organisation of a detailed analysis and few key insights for the improvement of the commercial. Basing on them, UNHCR produced a second version of the commercial, which produced significant results when aired.

Considering that, the aim of this research was to demonstrate the relationship between the success of the second version of the commercial and the improvements based on BrainSigns' findings. Therefore, the idea was to create two versions of a 10 minutes video, made by a non-spoken documentary about the Solar System and five commercials, as similar as possible to the documentary movie shown during the experiment of BrainSigns. The commercials were selected by the researcher based on their length (within 30" and 60") and their brands, belonging to five different sectors (automotive, food, energy, charity and telecoms).

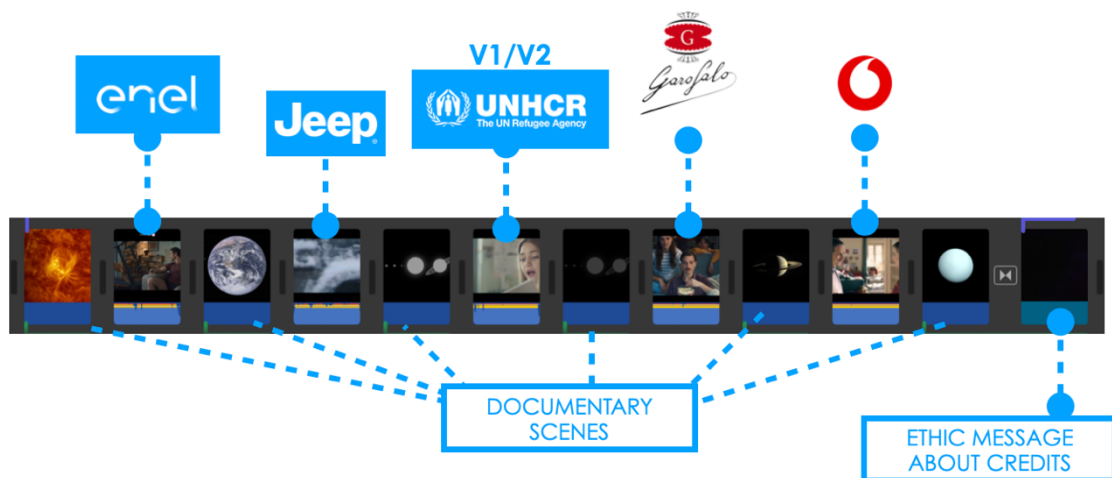


Figure 22. V1 and V2 video structure.

The first version of the video contained the first UNHCR commercial (the one that obtained poor performances), while the second version shown the second (improved) commercial. The sample was therefore divided into two groups with the same characteristics (same number of women/men, same number of participants for each age range).

For what concerns the second hypothesis, a third version of the video was created, a ten minutes video made by few scenes from "Life is Beautiful – Roberto Benigni" were interrupted by 4 commercials, the same of the other two videos (without the energy commercial). Naturally, the UNHCR commercial's version was the second "improved" one. It contained only 4 commercials because of narrative reasons, considering that a dramatic movie cannot be interrupted too many times in a short time in order to keep its pathos.

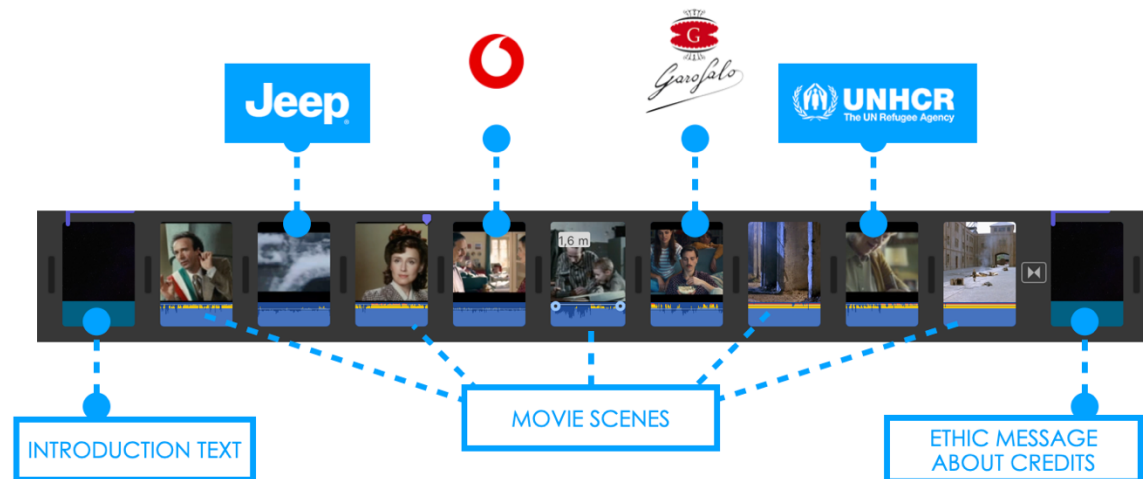


Figure 23. V3 video structure.

Once the interview started, the interviewee was informed that, after answering to few general questions about their lifestyle, he would have seen a 10 minutes-documentary interrupted by few commercials, about which, at the end of the vision, the researcher would have asked him questions. Obviously, in order to not compromise the validity of the answers, the interviewee was not informed about the aim of the research.

The first interview was considered as pilot and used to make the last adjustments to the questions and to understand if there was any gap in the methodology adopted. Fortunately, apart from few questions that had to be clarified, the research's questions seemed to cover all the fundamental themes.

Various open questions were asked to every interviewee but, depending on the interview development, participants were asked to deepen some themes (see Appendix A). The questions were constructed in order to gain information about the television consume habits of the participants, their attitude toward advertising and the engagement produced by their vision. The fundamental questions concerned the emotions felt by participants and their memory about the call to action of UNHCR commercial, due to their importance for proving the hypothesis.

In conclusion, through the use of videoconference apps (Skype, Zoom, WhatsApp), every participant was watched for the entire interview's duration. As above, the aim was to establish a closer connection with them and especially observing them during the vision of the video, in order to capture their expressions and non-verbal language.

The entire process was noted in the researcher's notebook, which also contained the list of themes to follow during the interviews, that lasted no more than 30 minutes and were alternate between one on Group 1 and one from Group 2.

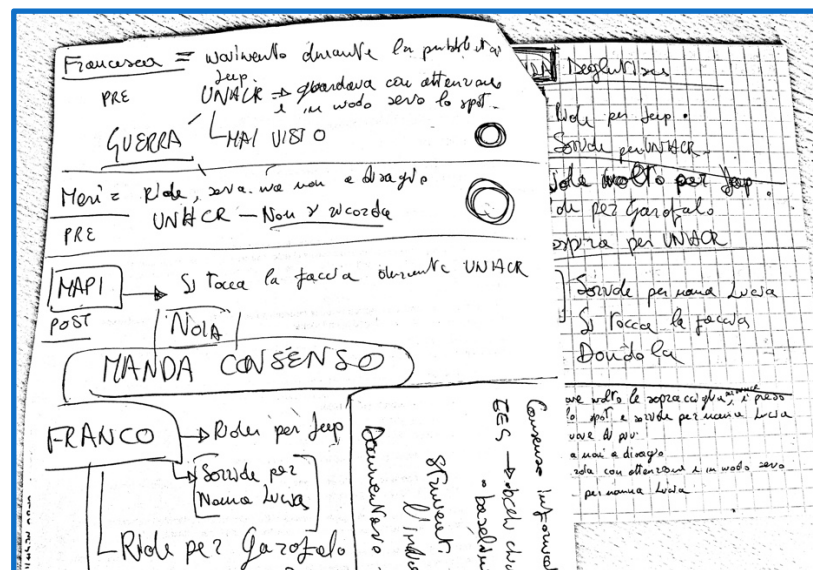


Figure 24. Screenshot from the researcher's notebook.

3.1 SAMPLE SELECTION, RESEARCH ETHICS AND ACCESS TO DATA

This research was conducted using a sample of **10 Italian people**, aged between **25 and 60 years old**, in order to "reproduce" the sample used from BrainSigns and therefore testing the repeatability of their results. It was formed by five women and five men, divided as follows:

- One female and one male of the 20-30 age range;
- One female and one male of the 30-40 age range;
- One female and one male of the 40-50 age range;
- Two females and two males of the 50-60 age range.

Participants were equally distributed within the Country; precisely three lived in the South, four in the Centre and four in the North of Italy. This choice was made in order to expand the sample of BrainSigns, made by people living only in Rome (Centre) and Milan (North), also because the good performances of the UNHCR commercial were generated from a national airing. For this reason, it is assumed that the validity of research was not compromised by this choice.

When divided into the two different groups, their characteristics were equally distributed.

All these characteristics were reproduced for the creation of the third group of interviewees, used to test the second hypothesis of the research. Even in this case, **5 Italian people** aged **between 25 and 60 years old** from the three main areas of the Country were selected and interviewed.

Even if its characteristics were precisely defined, this is a **non-probability sample**. The technique used to select it was the **self-selection**: based on the desired characteristics, each person was asked to take part to the interview, obviously on a voluntary basis.

In relation to ethics, each participant who accepted to take part to the research was informed about all the content of the Plain Language Statement and provided of a Consent Form to be signed. They all agreed to be watched through their devices and audio recorded. The transcribed interviews were made available to them on the Cloud of the researcher, only for assure them that the researcher did not modify anything or lie about it.

3.2 ADJUSTMENTS AND ISSUES ENCOUNTERED

It has to be specified that COVID-19 had a huge impact on the research. Firstly, the original idea of the researcher was to conduct both semi-structured interviews and a focus group, in order to gather different kinds of data. Obviously, the social distancing imposed along with the other measures to contain the spreading made impossible the creation of a group.

In addition to that, the availability of participants and the timeframe of the research were slightly affected, slowing down the progresses of the entire process.

Through the re-scheduling of the interviews and the adoption of a positive attitude, the available time was used as efficiently as possible.

3.3 ANALYSIS OF DATA: THE APPROACH ADOPTED

3.3.1 SOFTWARE USED AND FORMATTING

Firstly, every interview conducted for this research was literally transcribed into a Word document (see the appendices).

It is known that there are many Computer-assisted qualitative data analysis software (CAQDAS) available on the web, not always free, that are affirmed through the academic and professional world. These software are very sophisticated or difficult to use, but represent the best option for analysing an enormous quantity of data.

Considering the number of interviews conducted for this research (a total of 15) and their length, an easier method, as shown by several researchers (Ose, 2016), was chosen for this analysis. In fact, the interviews were coded and structured through the use of the popular Microsoft Office software Excel.

First of all, the researcher created a single sheet for each interview, named "interview 1; interview 2" and so on; on every sheet, the entire transcribed interview was pasted and formatted in the clearest way possible, in order to immediately identify the researcher's words (identified by **R**) and the interviewee's words (identified by **I**). The use of colours was also reputed useful to deeply differentiate the two interlocutors. The results are shown in Figure 25.

E	F
R	How old are you?
I	25 years old.
R	Where do you live?
I	Rome.
R	Do you study or work? In which field/sector?
I	I study, Organization and Marketing for business communication.
R	So we belong to the same field of study! Do you usually watch television?

Figure 25. Example of a formatted interview on Excel.

3.3.2 CODING THE INTERVIEWEES

The second step was to create a coding framework and a code for each interviewee, whose names will remain anonymous. For the creation of the codes, it was decided to use as main parameters the fundamental characteristics of the sample, i.e. age, gender, area of origin and version of the video shown. Therefore, each of these parameters were coded themselves:

- The age was indicated as "**A**", followed by the age of the interviewee;
- The gender was easily indicated by Female "**F**" or Male "**M**";
- For what concerns the area from which each respondent originated, three main regions were identified by the researcher and named as follows:
 - o **R1**: includes the North of Italy;
 - o **R2**: includes the Centre of Italy;
 - o **R3**: includes the South of Italy.
- In conclusion, as already specified above in this chapter, three different versions of the video were shown to participants and coded as follows:
 - o **V1**: the documentary containing the first version of UNHCR advertising;
 - o **V2**: the documentary containing the second version of UNHCR advertising;
 - o **V3**: the video containing few movie scenes and the second version of UNHCR advertising.

The aforementioned coding system was then applied to each participant, as shown in Figure 26, and positioned at the left side of the interview in its correspondent sheet.

AGE	GENDER	REGION	VIDEO VERSION
A28	F	R3	V1

Figure 26. Example of an interviewee's coding table.

3.3.3. CHARTING DATA BEFORE THE (FRAMEWORK) ANALYSIS

The type of analysis conducted is without any doubt framework. It provides few phases (Pope *et al.*, 2000), starting from the familiarization with data, occurred during the transcription of interviews; then, there is the identification of a thematic framework based on issues already known and additional (emergent) themes, followed by the coding, the

thematic charting and the final mapping phase, in which were identified the patterns and associations through data (presented in the findings chapter).

Therefore, after assigning a code to each participant, the next step was identifying the relevant themes for the analysis; they were mostly identified prior to the interviews, which were also designed on those themes, while few others emerged from the interviews themselves.

All the themes were listed on the right side of the Excel sheet for each interview, in the shape of a Table which was filled out with the information deduced from the interview (Figure 27).

USE OF TV	
ATTITUDE TOWARD ADVERTISING	
SPONTANEOUS MEMORY OF BRANDS	
MOST REMEMBERED ADV CONTENT	
UNHCR AWARENESS	
INTEREST IN THE ORGANISATION	
UNHCR ADV MEMORY OF SUBJECTS	
UNHCR MEMORY OF OBJECTIVE	
UNHCR MOST IMPRESSED SCENE	
UNHCR MEMORY OF CTA	
UNHCR EMOTIONS GENERATED	
DESIRE TO SKIP THE ADV	
INTENTION TO DONATE	
HABITS TO DONATE	
EMOTIONAL INVOLVEMENT IN PRECISE CONTEXT	
CONTENTS DESIRED ON CHARITY ADS	

Figure 27. Example of the Themes Chart.

Once the fifteen charts were created with the data taken from the interviews, it was necessary to create a new sheet for the analysis, called "Comparison".

This sheet was created with the goal of comparing the answers from the three different groups of respondents, identified through the version of the video seen and therefore divided into three charts: "**Version 1**", "**Version 2**" and "**Version 3**".

Each chart was made through the union of the five columns with the identified themes explained above. These charts had the aim of directly identifying the differences between the groups' answers.

The charts below show the shape and the structure of both the singular chart per version (Figure 28) and the final result (Figure 29).

THEMES ANALYSED	VERSION 2					INTERVIEWEES CODES
	A25MR2V2	A35FR3V2	A49MR1V2	A57FR2V2	A59FR1V2	
USE OF TV	Only streaming platforms due to the choice of contents and the absence of advertising	Less than 3 hours per day. No streaming platforms.	Usually not a lot. Also uses streaming platforms, particularly Netflix and YouTube, due to the available choice of contents.	Maybe 3 hours per week, national TV but also streaming platforms such as Netflix, due to the availability of content and the absence of ads.	Yes, around 3hrs per day, also streaming platforms for specific contents.	A25MR2V2 A35FR3V2 A49MR1V2 A57FR2V2 A59FR1V2
ATTITUDE TOWARD ADVERTISING	avoiding	usually skip it (zapping).	Definitely skip it.	avoids it	Sometimes watches it and sometimes avoids them.	
SPONTANEOUS MEMORY OF BRANDS	Remembers spontaneously every spot seen in the video.	Remembers all the brands apart from Jeep. Doesn't remember the entire name of UNHCR.	Remembers all the ads apart from Jeep.	Remembers every brand.	Doesn't remember very well the brands, only 2 names, one content and nothing about UNHCR.	
MOST REMEMBERED ADV CONTENT	Jeep	UNHCR	Remembers almost all the adv content.	UNHCR	pasta Garofalo	
UNHCR AWARENESS	Heard about it.	Knows well about the brand.	Didn't know it. Always associated it with the UN and UNICEF	Yes.	Doesn't know it.	
INTEREST IN THE ORGANISATION	Yes.	Yes	No, doesn't trust this kind of organisations.	Yes. Considered reliable.	Yes.	
UNHCR ADV MEMORY OF SUBJECTS	Remembers spontaneously every subject seen in the video.	Remembers perfectly the subjects	Perfectly remembers the subjects.	Perfectly remembers the subjects.	Initially didn't remember anything, only after I reminded her about a girl telling a story she remembered everything, including the name of the grandma.	
UNHCR MEMORY OF OBJECTIVE	Perfectly remembers about the testamentary bequest.	Remembers the request for leaving a will.	Perfectly remembers the objective and the tool.	Perfectly remembers the goal and the testamentary bequest.	Doesn't remember about the testamentary bequest.	
UNHCR MOST IMPRESSED SCENE	One about refugees, with the taller child behind the small one	The little girl at the end smiling; in the last scene, after they raise the curtain, there's a little blonde girl smiling.	The connection between the child's story and the images of war, so the image of the grandmother who writes	the look of the children while they are in class and the little girl talking about the important characters. Then the smile when she says "but the most important person for me is my grandmother"	Well, the scene of the war, the little girl who was in class telling her grandmother to her classmates about her grandmother, and then the ending where she finished talking and went back to her desk.	
UNHCR MEMORY OF CTA	Remembers the toll-free number	Remembers the toll-free number and 800.	Remembers the toll-free number and 800.	Remembers the toll-free number	Remembers the entire number, 800.831.800	
UNHCR EMOTIONS GENERATED	Sadness, anxiety, negative emotions	strong and bad emotions for the scenes of children suffering. Good emotions when thinking about the smile that you can give them back.	Neutral emotions.	Positive for the purity and curiosity of children at school. Then strong feelings for the contrast with refugees.	Negative emotions, sadness.	
DESIRE TO SKIP THE ADV	usually doesn't avoid scenes of suffering people. Probably wouldn't have skipped this one.			Usually disturbed by the ads interruptions.		
INTENTION TO DONATE	Yes.	Doesn't have the chance to donate right now but would have called for more info.	NO, doesn't trust this kind of organisations.	Maybe yes for this kind of organisation.	Maybe after several times.	
HABITS TO DONATE	Donor to different kinds of charities	Donor.	Only if involved by friends	Donor for many kind of charities	Donor to different kinds of charities	
EMOTIONAL INVOLVEMENT IN PRECISE CONTEXT	Emotionally involved	Depends on the mood. She's usually very involved so prefers to avoid strong emotional contents.	Gets very sensitive but not on this kind of ads.	Gets very involved.	Always moved.	
CONTENTS DESIRED ON CHARITY ADS	More contrasts that make you realize what you have and the others don't have.	Concrete results of the donations.	doesn't like any kind of ads about donating money. Does not trust this kind of organisations. Would like to be invited to actively participate.	I think it's very balanced, maybe I'd put some parallel scenes about what the refugee school is like.		

Figure 28. Example of chart for the comparison.

THEME	VERSION 1	VERSION 2	VERSION 3
USE OF TV	The TV shows the advertisement, usually made 2 or 3 times per day from streaming platforms, such as Netflix and YouTube, due to the available choice of contents and the absence of ads.	streaming, made 2 or 3 times per day from streaming platforms, such as Netflix and YouTube, due to the choice of contents.	streaming, made 2 or 3 times per day from streaming platforms, such as Netflix and YouTube, due to the available choice of contents and the absence of ads.
ATTITUDE TOWARD ADVERTISING	avoiding	avoiding	avoiding
SPONTANEOUS MEMORY OF BRANDS	Remembers spontaneously every spot seen in the video.	Remembers all the brands apart from Jeep. Doesn't remember the entire name of UNHCR.	Remembers all the ads apart from Jeep.
MOST REMEMBERED ADV CONTENT	Jeep	UNHCR	UNHCR
UNHCR AWARENESS	Heard about it.	Knows well about the brand.	Didn't know it. Always associated it with the UN and UNICEF
INTEREST IN THE ORGANISATION	Yes.	Yes	No, doesn't trust this kind of organisations.
UNHCR ADV MEMORY OF SUBJECTS	Remembers spontaneously every subject seen in the video.	Remembers perfectly the subjects	Perfectly remembers the subjects.
UNHCR MEMORY OF OBJECTIVE	Perfectly remembers about the testamentary bequest.	Remembers the request for leaving a will.	Perfectly remembers the objective and the tool.
UNHCR MOST IMPRESSED SCENE	One about refugees, with the taller child behind the small one	The little girl at the end smiling; in the last scene, after they raise the curtain, there's a little blonde girl smiling.	The connection between the child's story and the images of war, so the image of the grandmother who writes
UNHCR MEMORY OF CTA	Remembers the toll-free number	Remembers the toll-free number and 800.	Remembers the toll-free number and 800.
UNHCR EMOTIONS GENERATED	Sadness, anxiety, negative emotions	strong and bad emotions for the scenes of children suffering. Good emotions when thinking about the smile that you can give them back.	Neutral emotions.
DESIRE TO SKIP THE ADV	usually doesn't avoid scenes of suffering people. Probably wouldn't have skipped this one.		
INTENTION TO DONATE	Yes.	Doesn't have the chance to donate right now but would have called for more info.	NO, doesn't trust this kind of organisations.
HABITS TO DONATE	Donor to different kinds of charities	Donor.	Only if involved by friends
EMOTIONAL INVOLVEMENT IN PRECISE CONTEXT	Emotionally involved	Depends on the mood. She's usually very involved so prefers to avoid strong emotional contents.	Gets very sensitive but not on this kind of ads.
CONTENTS DESIRED ON CHARITY ADS	More contrasts that make you realize what you have and the others don't have.	Concrete results of the donations.	doesn't like any kind of ads about donating money. Does not trust this kind of organisations. Would like to be invited to actively participate.

Figure 29. Excel's "comparison" sheet. From the left to the right: Version 1, Version 2 and Version 3

4. FINDINGS AND DISCUSSION

This last fundamental chapter has the aim of illustrating to the reader the results of this research, explaining the main issues discovered during the interviews and their analysis, discussing them in a critical way in order to find new relevant insights for improving the overall work and filling the gaps in literature.

4.1 FINDINGS OF THE RESEARCH

The findings will be analysed in three different sections, based on the respective three versions of the video shown during the interviews, to be finally compared in the end.

Before analysing the findings related to the fifteen interviews carried out on the sample, it is appropriate here to mention some interesting contributions by Dr. Mancini⁴, taken from the interview that the researcher carried out before defining the details of the research aimed to obtain more information about the case study analysed.

Firstly, for what concerns the issues and debates in neuromarketing, I found the opinion of Dr. Mancini to be very interesting because seemed to adopt an unusual and different point of view from the authors cited in the literature chapter. In fact, he stated that, while several years ago there was a general scepticism due to the fact that nobody published about neuromarketing methods or results, today the situation is very different, because large companies use these tools and publish about them. On the other hand, he supposes that nowadays the biggest barrier is communicative, not with the academic community but with the corporate world, because it is not easy to explain them the complex data and concepts of the academic language. With these thoughts, he goes beyond the scepticism of the authors themselves, moving it to the level of business.

Concerning the business, another problem arisen from the interview but this time, rather than their scepticism, it concerned the wrong timing and vision that companies have of neuromarketing:

"very often companies come to us when they realize that there is a problem, maybe they have already gone out on the market with that advertising (with negative results) and they want to understand why. However, you understand what it means to go to pre-test before the stimulus is released, imagine how many contributions you could make and how much savings it would bring to the company" (Interview to Dr. Mancini, 2020).

⁴ It is here mentioned the interview to the Head of BrainSigns neuromarketing lab, carried out by the researcher the 9th March 2020, from now on indicated as "Interview to Dr. Mancini, 2020".

This statement brought to the light the wrong idea of companies, which should take advantage of neuromarketing studies a priori, rather than use it as a remedy; in fact, using it in this (wrong) way generates less valuable insights than those who could be potentially obtained, possibly causing a decrease of trust for this field.

Moving to the groups interviewed, it has to be specified that the questions asked to the participants were structured in order to obtain specific information about three main concepts:

- **Their use of media and attitude toward advertising**, that helped in finding interesting insights.
- **Their spontaneous memory about UNHCR commercial and its content among other commercials**, in order to understand how much the brand catches the attention of customers in a multiple-stimuli type of environment.
- **The effectiveness of UNHCR commercial in terms of Call to Action, storytelling, and emotions**, in order to verify the main results of BrainSigns' research.

Considering these three points, the following paragraphs contains all the data gathered about two of them. For what concerns the first point, it will be analysed only once, considering the three different groups together, because it does not affect the single version analysis' results.

Before proceeding with the analysis, a recap of the exposition to stimuli was considered useful: for each version of the video, participants watched 10' of video, during which they were exposed to five different commercials (V1 and V2) or to four different commercial (V3). The exposition to UNHCR stimulus lasted one minute.

4.1.1 FIRST VERSION OF THE VIDEO (V1)

As explained many times until this point, the first version of the video contained the first commercial aired by UNHCR, intended as the one not tested in BrainSigns' neuromarketing laboratory, and was shown to a first group of 5 people.

Immediately after the end of the video, the first question asked to the participants was:

"Do you remember the brands from the commercials you saw? Could you tell me their names?"

On the one hand, **4 participants out of 5 spontaneously remembered the commercial from UNHCR**, but 4 of them associated a **different name** to it (mostly UNICEF), as this interviewee:

“So, Jeep Renegade, one from the Garofalo spaghetti, one from Vodafone and one from UNICEF?” (Interview 5, A46FR2V1).

For what concerns the most remembered content, **no participant declared to better remember the charity Ad**⁵; in addition, even if the majority of them found this kind of organization interesting, only one of them remembered to have heard of it in the past or to know it.

Predictably, as far as advertising storytelling is concerned, **all participants spontaneously remembered the main subjects of the commercial**, “Grandma Lucia” and her granddaughter, even if 2 participants out of 3 wrongly interpreted the story.

The answers, on the other hand, changed radically when it came to understanding the final purpose of advertising; it should be specified that the commercial asks participants to consider a donation through a testamentary bequest, and it is precisely on this instrument that the whole story is focused. Despite that, **none of the interviewees remembered that the commercial was about a testamentary bequest**, while 2 out of 5 participants also confused the beneficiaries.

Coherently with their memory about the subjects, only one interviewee chose a scene from the refugees' images, while the others were impressed by the scenes focused on the Grandma or on the young girl telling the story.

One fundamental question concerned the Call to Action:

“Do you remember if a contact (e.g. phone number) was provided in the commercial?”

In this case, **3 participants out of 5 did not remember that a toll-free number appeared on the screen.**

Another fundamental issue was analyzed in the immediately following question, which investigated about the emotions generated by the vision of this specific commercial. While a charity ad should generate negative emotions, due to its sensitive themes and often its raw images, **4 participants out of 5 expressed mostly positive emotions**, happily remembering the story narrated by the young girl.

The interview continued by asking if they were **willing to donate** or to call for having more information after the vision of the UNHCR commercial, but **all the participants gave a negative answer.**

⁵ Advertising.

4.1.2 SECOND VERSION OF THE VIDEO (V2)

For what concerns the second version of the video, the 5 people remaining in the original sample were asked to watch exactly the same contents of the first video, except from the UNHCR commercial, which was in its second version and therefore the one tested from a neuro-marketing point of view and improved by BrainSigns' suggestions.

In this occasion, **4 participants out of 5 spontaneously remembered UNHCR commercial** and only one of those 4 spelled it wrong (without confusing it with any other organisation indeed).

The **content** of the advertising, in this case, **was the most remembered by 3 out of 5 participants**. The participant who did not remember the spot was one of the two people who declared to not know the organisation.

Moreover, concerning the memory of the subjects, **every participant had memories about the subjects of the commercial**, even if one of them needed to be slightly helped:

"R: The subject of the video was a little girl telling a story about her grandmother.

I: Yes, it's true! [she seems to remember] there were people helping in the war, it showed the war. Grandma Lucia, who helped to feed other people as well. Now I remember." (Interview 10, A59FR1V2)

Surprisingly, this version obtained a totally different awareness in terms of the tool suggested in the commercial: **4 participants out of 5 spontaneously and perfectly remember about the testamentary bequest**.

Another totally different result came from the scenes which most impressed the interviewees; in fact, while in the V1 only one person was mostly impressed by a scene from the refugees' images, in V2 **4 participants out of 5 were mostly impressed by refugees or war scenes**. According to that, the same number of people also felt **negative emotions**.

When asked about the call to action, the result was impressive: **all the participants spontaneously remembered the toll-free number; two of them also remembered the first three digits "800"** while, incredibly, **the interviewee** who did not remember about UNHCR at the beginning of the interview **was capable to remember the entire number** without any suggestion.

In addition to that, when asked about their intention to donate, **4 respondents out of 5** declared that maybe they **would have called for more information or to donate** after the vision of the commercial.

4.1.3 THIRD VERSION OF THE VIDEO (V3)

This paragraph concerns the findings for the second hypothesis of this research, for which was created a third version of the video, completely different from the previous two.

Moreover, its analysis was preceded by a short investigation inside the V1 and V2 groups of interviews. In fact, every participant was asked about his emotional involvement while watching a content:

“After watching a movie with stronger content, for example dramatic, do you feel emotionally more willing to reflect on more sensitive issues?”

Due to the strong positive response to this question, for which **9 participants out of 10 declared to get emotionally involved and more sensitive to certain themes**, it was considered interesting to deepen the research about this topic. As explained in the Methodology Chapter, a third group of 5 interviewees was subjected to the same interview (with the same questions), after watching a third version of the video (**V3**), this time consisting of a dramatic film and four commercial breaks.

Expectations for this group were high and ideally positive. What turned out to be the outcome, however, completely disrupted those expectations.

In fact, only **2 participants out of 5 spontaneously remembered about UNHCR** and one of these two also confused it with another humanitarian agency, even if 3 out of 5 were already aware of its existence. In addition to that, **only one of them well remembered the content of UNHCR commercial**.

Surprisingly, **only 2 participants out of 5 remembered both the subjects of the commercial and the testamentary bequest**, while 3 out of 5 did not remember anything about the commercial and only guessed that it asked for some kind of donation.

For what concerns the most impressed scenes' question, **2 participants out of 5 did not remember any scene at all**, while other three remembered something.

Oddly enough, considering the poor results obtained up to this point of the interview, **the Call to Action was perfectly remembered by all the interviewees**, who said they mentioned a toll-free number (3 out of 5 remembered the first three digits).

The overall emotions felt by the interviewees, as much as they could remember, were negative in three cases, positive in one and unknown for the participant who did not remember anything from the commercial.

In conclusion, **4 participants out of 4 stated that they would not have donated** to UNHCR after the vision of the commercial.

4.1.4 NON-VERBAL LANGUAGE

As explained above, the researcher observed the participants throughout the video, with the aim of capturing the facial expressions and, therefore, the non-verbal language of each interview. The support used during this process was the researcher's notebook, on which the signals manifested were noted. For example, during one of the interviews, about a participant it can be read:

"during the UNHCR commercial, the interviewee smiles when story about Grandma Lucia is told, but starts touching his face and swinging in his chair while watching the scenes about the refugees".

Even if the focus was on the UNHCR spot, obviously notes were taken during the entire vision of the video, in order to identify the differences between the vision of the documentary (or movie) and the commercials. Also, the researcher was searching for the different reactions to the commercials themselves.

For what concerns V1 and V2, the main findings in these contexts were a common unexpressive face, sometimes almost bored; in fact, for example, for one interviewee (A25MR2V2) it is noted:

"the interviewee yawns while watching the documentary about the constellations."

Only two participants, who successively declared to be very interested in this kind of contents (referring to constellations) were pleasantly concentrated on the documentary.

For what concerns the other kinds of reactions, a clear strong difference was noticed between the expression during the documentary vision and the appearance of commercials. A common behavior noticed, for instance, was the strongly positive reaction to the Jeep Renegade advertising, during the vision of which most participants were laughing. The same happened with the other commercials, apart from UNHCR, to which all the participants reacted positively.

What happened during the vision of UNHCR spot was different:

- **V1:** during the vision of this first version of the commercial, less refugees focused,
 - o **2 participants out of 5 smiled during the commercial;**
 - o **3 participants out of 5 were serious but not uncomfortable;**
 - o **2 participants out of 5 started to move more than the usual.**
- **V2:** during the vision of the second version of the commercial, characterized by the focus on refugees and a quicker storytelling, **4 participants out of 5 became much more expressive** during its vision, particularly:
 - o One interviewee started to **blink** more than usual;
 - o One interviewee started to continuously **move** her **lips** and raised her **eyebrows;**
 - o One interviewee started to **touch** her **face;**
 - o One interviewee took on a **conscious expression** and **nodded.**

Even if not in the expected way, the reactions to the vision of the third version (**V3**) of the video were different. In fact, the participants were strongly involved in the vision of the movie scenes, showing a lower reaction to the commercials. Although that, even in this context they reacted positively to the commercials, apart from UNHCR. In relation to this version, they seriously watched at it. Few specifics reactions were noticed:

- One started to swallow more;
- One smiled for the Grandma Lucia's story;
- Two sighed during the commercial;
- One also touched his face and started to swing on his chair.

All the notes taken regarding participants non-verbal expressions were then included in the analysis, supporting the findings the verbal answers.

4.2 DISCUSSION

This paragraph's aim is to illustrate the interpretation of the research findings, the new insights obtained and, finally, their conclusions.

Firstly, it starts from the critical analysis of the findings from the first two versions of the video (V1 and V2); in other words, it verifies the first hypothesis of this research.

Secondly, it critically analyses the results from the third groups of interviews, which investigated about the second hypothesis of this research.

Lastly, before its conclusions, it also contains a list of new potential insights that could enrich the available knowledge about this topic.

4.2.1 V1 AND V2: A COMPARISON

One of the main objectives of this work was to demonstrate that the results obtained from BrainSigns' neuromarketing test were actually repeatable, highlighting a relationship between the improvements made after the test and the positive insights obtained. For this reason, V1 and V2 were different only for what concerns the UNHCR commercial, used in its two versions.

By looking at the findings, there is a clear difference between the data found. In order to simplify the reading of data, the researcher graphically represented them (Figure 30 and following).

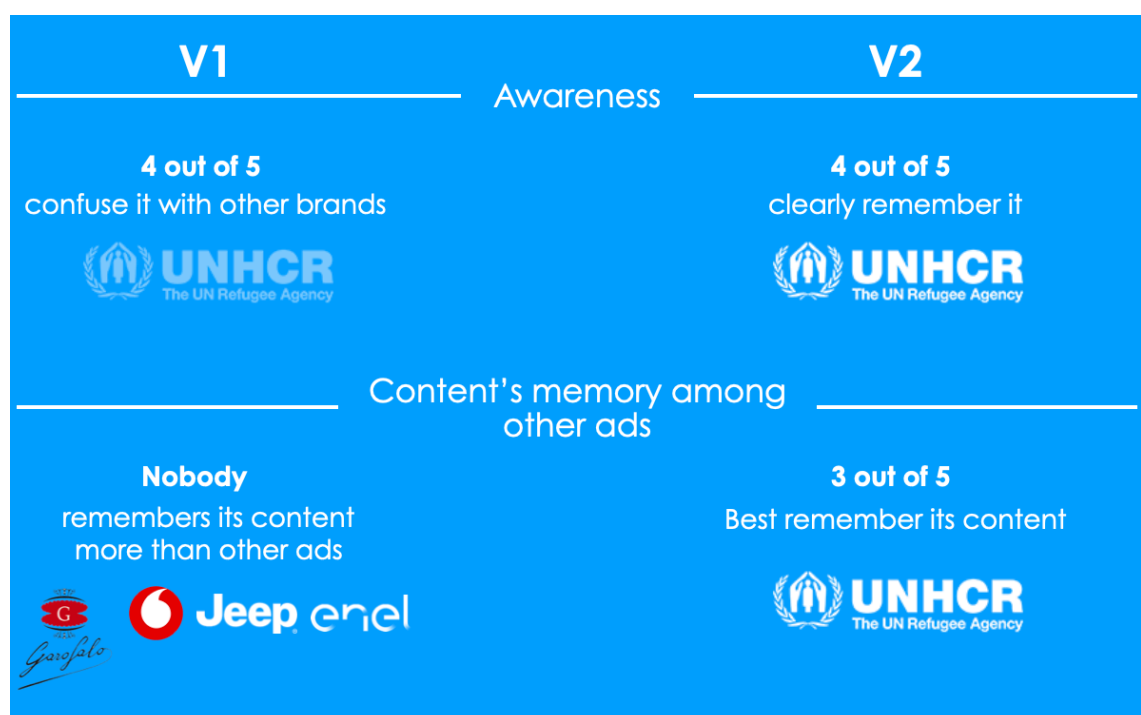


Figure 30. Comparison with other brands.

For what concerns the first the memory of UNHCR among the other brands, both for its presence in the videos and its content, a clear difference emerges between the two versions: starting from the left, Figure 30 shows how in the first version of the video UNHCR did not catch the attention of participants, at least not enough to impress its name in interviewees' memory; on the other hand, the second version of the video (and therefore of UNHCR commercial) generated much more awareness between participants, which remembered the exact name of the organisation.

Even more clear was the analysis of the answers about the best remembered content, where was evident that the other brands gained much more awareness than the humanitarian organisation through the vision of V1; surprisingly, the second version of the

video generated a huge awareness in favour of UNHCR, which was chosen as best-remembered by the majority of participants.

Considering these results, it is affirmed here that the second version of UNHCR commercial was actually more engaging and efficient in creating awareness, evidently remaining more imprinted in the mind of the viewer.

For what concerns exclusively the UNHCR commercial, the following scheme (Figure 31) resumes the main findings compared.

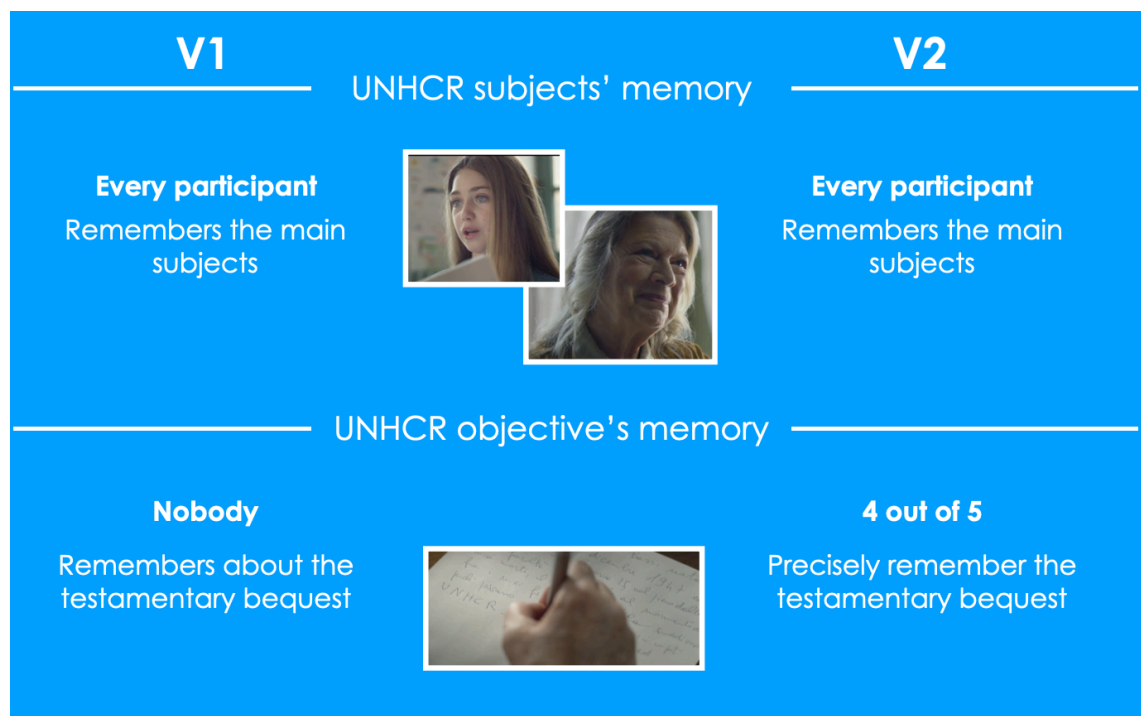


Figure 31. Comparison about UNHCR subjects and objective's memory.

When analysing the findings concerning the sole UNHCR commercial, it is immediately clear that the use of the two subjects, respectively "Grandma Lucia" and her granddaughter, represented a good choice. In fact, the strongly "familiar" storytelling catches the attention of every participant, who remembers both of them, often even by name.

On the contrary, when dealing with the final objective of advertising, hence collecting donations through a testamentary bequest, the position taken by the two groups is extremely different. It is in fact evident that there is a difference in the storytelling and in the structure of the two spots, because unlike the first one where nobody remembered

the form of the testamentary bequest, after having seen the second spot almost all the participants were aware of it. This could be the result of the additional scenes of war, which give a strongest idea of the context, and of the narrator who, in the second edition, reiterates the concept of legacy several times more than the first version.

This completely inexistent memory of the testamentary bequest could also be read as a failure of the Call to Action and, consequently, of the entire commercial. In fact, the final aim of CTA is to subscribe a will, through the call to the organisation; they should be both clear in order to be really effective.

An enormous difference between the versions is visible also when analysing the scenes most impressed in the mind of the participants and the emotions aroused from the commercial (Figure 32).

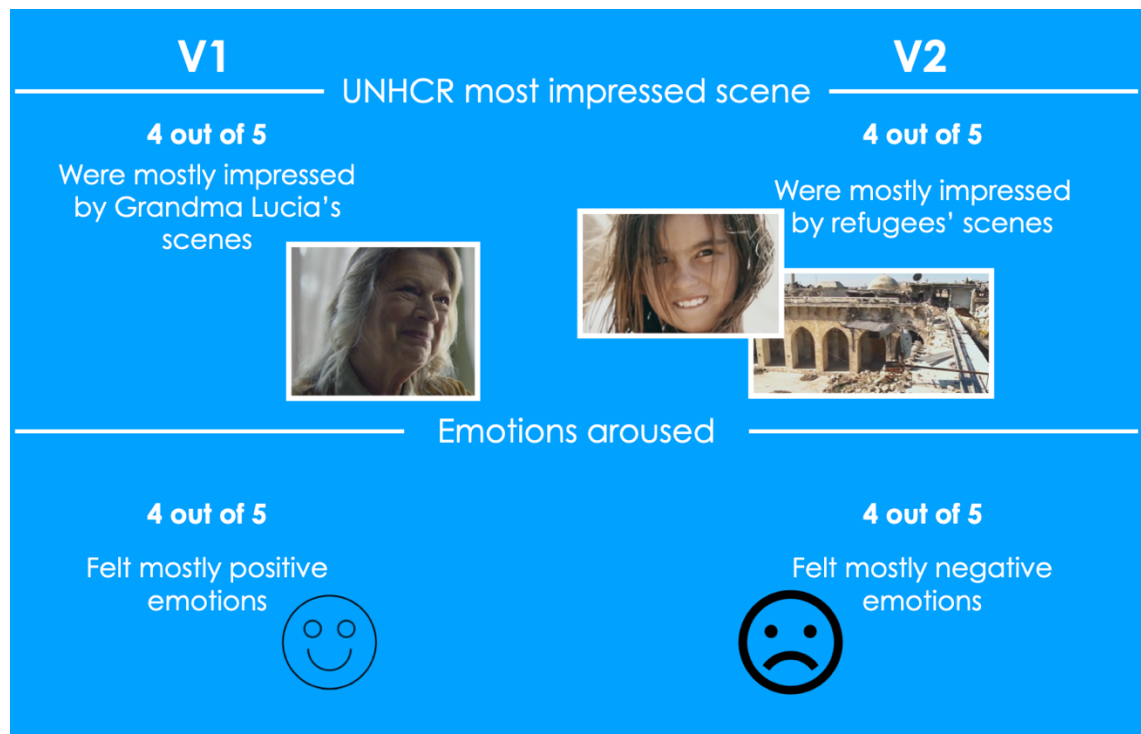


Figure 32. Most impressed scenes and emotions aroused from the commercial.

Looking at the scenes' results, coherently with the narration and the structure of the first video, the focus is on the Grandma's scenes, with a clear opposite position with the second version, in which the majority of participants most remembered war and refugees' scenes.

Considering that and the changes made in the second version, it is not surprising that this version (V2) generated mainly negative emotions, obviously due to the higher number of sensitive scenes. It has to be remembered that, in this kind of advertisement, the presence of negative emotions is fundamental for obtaining more sells. In addition, the non-verbal language observed by the researcher during the interviews, particularly referring to the UNHCR commercial's vision, seemed to confirm this perspective. In fact, during V1 they were smiling or serious, but appeared always comfortable; only two people seemed to be a little more restless. On the other hand, when observing them during the vision of V2, almost every participant (4 out of 5) became much more expressive when watching the humanitarian commercial. For instance, few interviewees blinked more or raised their eyebrows.

These expressions could be explained with the theories of Messinger (2018); excluding in this context their anatomical function, the movement of eyelashes and eyebrows may indicate a change in a subject's mood. When the mood changes, the position of the eyebrows changes; in particular, raising the eyebrows (i.e. moving them from bottom to top) could represent an attitude of withdrawal or stupor of the subject. Eyelashes, on the other hand, could be a sign of compassion, holding back tears and humidifying the subject's gaze; moreover, Messinger (2018) sustains that a high frequency blinking reveals a more compassionate subject. Lastly, the gesture of the interviewee who touched her face could be interpreted, as suggested by Messinger (2018) could be interpreted as an attempt to strengthen the capacity for concentration or evaluation.

These attitudes, manifested in correspondence with the vision of the UNHCR commercial and in particular of its second version (V2), could support the hypothesis that the storytelling that gives more prominence to refugees has a real impact on consumers' emotions. Therefore, even during the analysis of non-verbal language, the emotions aroused from V2 were confirmed to be mostly negative.

The following (and last) scheme shows exactly the results expected from these conditions.

Exactly how expected at this point of the analysis, the changes made on UNHCR commercial brought to an impressive increase of the CTA memory (Figure 33), going from a majority who did not remember seeing a contact to the entire number of participants who remember its nature as a toll-free number and even some digits.

Lastly, all these conditions brought the version to convince almost all the participants from the second group to donate or ask for information.

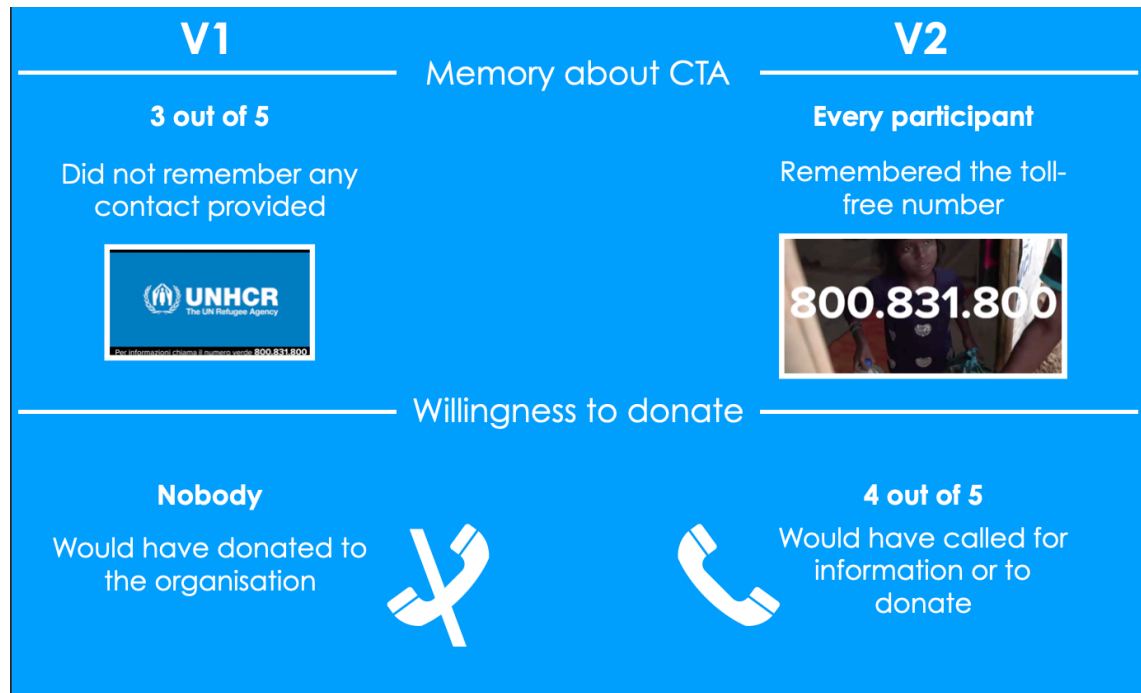


Figure 33. CTA and willingness to donate.

In conclusion, it seems evident that the changes suggested by BrainSigns created the conditions that modified the consumer behaviour related to the commercial; in fact, the two different groups had the same characteristics, were analysed in the same period and watched exactly the same video. For this reason, it was hard to believe that any kind of influence deviated the results.

4.2.2 CONFUTING AN HYPOTHESIS

Considering the results of the comparison made above, before concluding the interviews the researcher expected positive results also for the third hypothesis. As already said in the findings, totally unexpected results came out of them; a summary is shown in Figure 34.

While the researcher expected to find a strong similarity between the answers of the second and third version, actually what was similar were the results of the first version and the third, even if this last version (V3) contained the same commercial as V2.

Apparently, even if the conscious answers of group 1 and group 2 participants predicted an emotional involvement that would have made the UNHCR commercial more perceived, in reality the effect obtained represents exactly the opposite. In fact, these

results show that, with the same conditions and characteristics of the sample, evidently the interviewees of the third group were so involved in the dramatic movie that they did not perceive the contrast with the commercial.

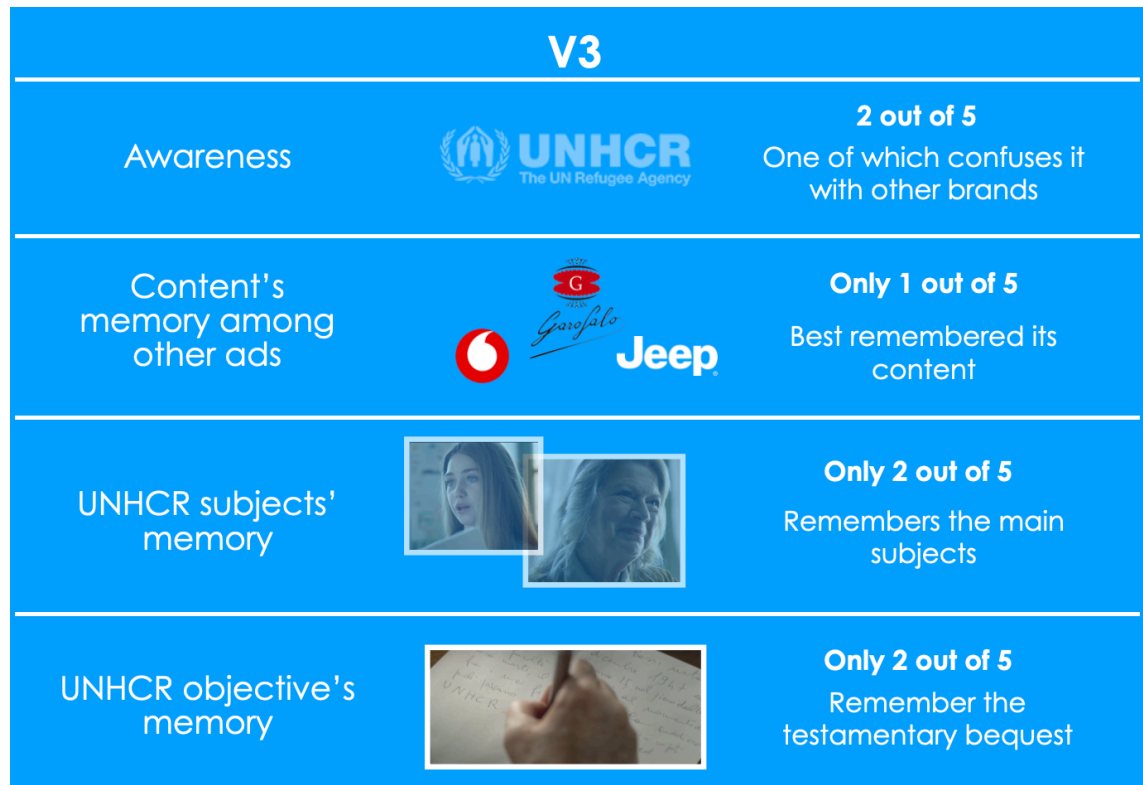


Figure 34. Summary of V3 findings.

The awareness generated by this commercial inserted within this new type of content, which actually represents the only “possible” and real context in which advertising could be aired, resulted to be very low and ineffective in imprinting a memory of the commercial into the minds of the observers.

Naturally, that ineffectiveness brought to very poor performances of the entire commercial, which did not convince the third group of participants to donate or to ask for more information (Figure 35).

The only impressive result came from the Call to Action memory, remembered by every participant, even by those who did not remember not even one scene from the commercial. This could be recognised as a proof that the changings made on CTA were really effective and critical.

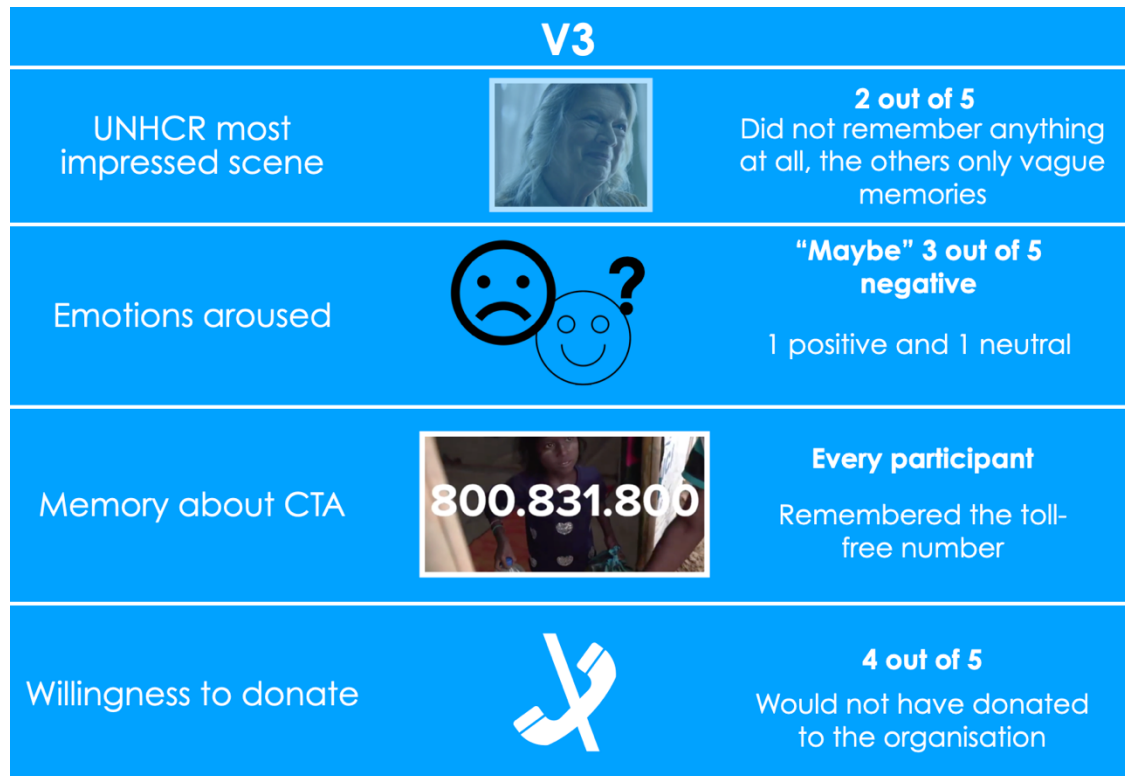


Figure 35. Summary of V3 findings, pt.2.

With regard to the emotions felt by the subjects, even if in contrast with what they consciously remembered and perceived, during the vision of the commercial their body manifested particular expressions. For example, the gesture of swallowing more often than usual by a subject; as explained by Messinger (2018), for neurobiologists the throat represents the centre of anxiety and can be associated with sadness and melancholy. Again, the author argues how swinging in the chair can indicate a sense of dissatisfaction or, maybe more suitable in this situation, frustration. If the two interviewees sighing while watching the video are also considered, the viewing of the third video seems to confirm the previous analysis about the emotions aroused by the second version of the UNHCR commercial, unconsciously expressed as negative.

The original second hypothesis has been, without any doubt, confuted by the third group results. The analysis addressed in this paragraph assumes instead that, contrarily to what was thought, airing a commercial of this kind during the viewing of a similar content (i.e. of the equivalent genre) could alter the perception of the consumer who, not seeing a contrast with the main content, will not perceive content and/or call to action. In fact, the results of the interviews showed how in reality the other spots, of a completely different genre (often with a comic nature), created a strong contrast and attracted the attention of the participants, who remembered their content.

Considering that, an interesting point could be inverting the original hypothesis, assuming that:

the more the content of the advertising is opposed to the main content of the broadcast programme, the more the consumer's perception of it increases.

Naturally, due to the tight time frame in which this work has been developed, a further verification of this hypothesis would need to repeat the test in the opposite way and therefore relies on future (and wider) studies, hoping that this perspective may be interesting for a part of the academic community. The researcher, in order to not produce superficial hypothesis, preferred to not test a possible fourth small group.

4.2.3 THE ORIGINALITY ISSUE

Going through this work and its analysis, considering the high consideration that it has toward BrainSigns, could lead to the wrong idea that it is just a "repetition" in scale of what they studied and tested first. In fact, this study does not correspond to a copy of the one conducted by the neuromarketing laboratory. A comparison between the characteristics of the two studies is presented below (Figure 36).

As shown by the table, the two studies differ from various point of view, mostly for the sample used, the video shown and the data collection methods adopted. Of course, due to the shorter time and the fact that it was conducted by a single researcher (rather than a team), the primary research of this work used a smaller sample than the study conducted in 2017. In addition, the same sample was divided into 3 groups, while no group was created in BrainSigns' research. Since the number of groups is equal to three, there is a minimal gap between men and women, while the same number of the two genders was adopted by the laboratory. With regard to the other characteristics of the sample, the researcher decided in this case to extend both the age, increased to 60 years old, and the geographical origin, extended to the entire nation. All the characteristics were then equally distributed among the three groups, in order not to affect the reliability of the results.


A COMPARISON		
RESEARCHER		THE STUDENT
SAMPLE	<ul style="list-style-type: none"> • 36 PEOPLE • 18 WOMEN / 18 MEN • 25-54 YEARS OLD • FROM ROME AND MILAN 	<ul style="list-style-type: none"> • 15 PEOPLE (IN 3 GROUPS) • 7 WOMEN / 8 MEN • 25-60 YEARS OLD (EQUALLY DISTRIBUTED) • NATIONALLY REPRESENTATIVE (EQUALLY DISTRIBUTED)
VIDEO	<ul style="list-style-type: none"> • ONE VERSION • LASTS 30' • NON-SPOKEN DOCUMENTARY ABOUT STARS • 20 COMMERCIALS 	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>THREE DIFFERENT VERSIONS</p> <p>V1/V2</p> </div> <div style="text-align: center;"> <p>V3</p> </div> </div> <ul style="list-style-type: none"> • LAST 10' EACH • NON-SPOKEN DOCUMENTARY ABOUT STARS • 5 COMMERCIALS <ul style="list-style-type: none"> • LASTS 10' • DRAMATIC MOVIE • 4 COMMERCIALS
DATA COLLECTION METHODS	<ul style="list-style-type: none"> • NEURO-MARKETING TOOLS (MAINLY) + SHORT INTERVIEWS 	<ul style="list-style-type: none"> • QUALITATIVE SEMI-STRUCTURED INTERVIEWS • OBSERVATION OF NON-VERBAL LANGUAGE

Figure 36. Comparison between BrainSigns' study and the primary research of this work.

In addition to the differences in the type of sample and its management, this research has also adopted a different approach in its execution. In fact, in order to verify that the results of the UNHCR advertising exclusively depended on the commercial itself rather than on other variables, the researcher created two versions of the same video, containing respectively the first version of the commercial and the second one. In addition, due to the particular conditions caused by the COVID-19 emergency, the videos submitted to the sample did not exceed the duration of 10 minutes, which is very different from the 30' of BrainSigns. For reasons of consistency and verifiability of the results, V1 and V2 were created following the video proposed by the neuromarketing laboratory, including 5 commercials instead of 20 (for reasons of time, particularly for respondents' availability). Another difference can be represented by the choice of advertisements, since in the open client mode used by BrainSigns were the brands to propose themselves while, in this research, it was the researcher who chose which ads to use.

Clearly, due to the different nature of the two studies and especially the lack of adequate tools, the data collection method used by BrainSigns is extremely different

from the one used in this study, which involved semi-structured qualitative interviews and observation of the participants' non-verbal language.

Finally, it should be stated that the **two biggest differences** are the following:

1. **BrainSigns never tested the second version of the UNHCR commercial**, which was aired directly; on the contrary, this study directly compared the two versions, at the same time and in groups with the same characteristics.

2. **The third version of the video**, submitted to the third group of this research, **is part of a totally original hypothesis that has never been tested by the neuromarketing laboratory**.

In this regard, it is relevant here to specify that during the interview with Dr. Mancini (Interview to Dr. Mancini, 2020), the researcher directly addressed this topic, arousing the interest of the interviewee who recognized it as a possible (interesting) point of view for a future study.

4.3 FINAL CONSIDERATIONS

Considering all the observations made through the previous paragraphs of this analysis, few considerations were then included in this one, hoping to provide a clearer opinion to the reader.

Firstly, one issue could be found in the video shown to participants and represented by the strong contrast between the documentary and the commercials. It needs to be specified that, as explained by Mancini (Interview to Dr. Mancini, 2020), the non-spoken documentary is used on purpose as a baseline, in order to measure the response of the brain to new stimuli. On the other hand, even if needed for setting the tools, could be hypothesised that this sudden contrast between contents generates an augmented reaction in the viewer? If so, this could mean that the attention actually aroused in the consumer, in a natural context (intended as the normal use of television), could be different, or even lower, when viewing non "flat" contents. Indeed, the results obtained from the interviews on the third group of interviewees suggest that there may be this kind of process, according to which the basic content viewed (which is then interrupted by the commercial) may have a strong influence on the perception of advertising.

Still considering variables that could have influenced the perception of advertising, it seems appropriate to refer here to a possible (and perhaps probable) influence of the situation caused by the global emergency of COVID-19. In this regard, all the interviews were submitted to Italian participants, currently resident in Italy, under an ongoing

lockdown at the time of the study. Even if human beings are always subjected to emotions, it cannot be excluded that they were particularly influenced by that delicate situation, both in positive and in negative ways: on the one hand, they could have been more sensitive and moved from the humanitarian commercial; on the other hand, they could have been that focused on the issues caused by the spreading of Coronavirus to "ignore" the conception of more far, even if not less important, realities, giving some kind of mental priority to the current situation.

What emerges from this last consideration is the importance of the context and its influence on perception. In fact, it should not be forgotten that the UNHCR commercial was created and aired in 2017, therefore it was not thought to ask for donations during a difficult time like this, in which lives and economy are seriously harmed. On the contrary, it was aired during a "quite" period for Italy, whose citizens could have seen a contrast with the ethnic, civil and religious wars happening in countries like Libya, Syria, Afghanistan or Iraq, only to cite few of them.

Moreover, it has to be specified that humanitarian commercials, as part of charity ads, represent a particular case of study because of their nature. In fact, these kinds of commercial cannot be considered on the same level of "consumption" products' commercials. In this case, in fact, the consumer is not directly included in the "offer", because he is not paying for buying a product/service for himself, he is instead persuaded by a charity organization "*to donate their resources*" (Kim, 2014, p. 718).

Exactly for this reason, if when buying another product or service the consumer has a direct feedback from his investment, represented by the product/service bought, in the case of charity donations the "consumer", if he can still be defined such, does not see a direct result for it, because nothing is given back to him. Coherently with these considerations, a clear "trust issue" emerged from the interviews: in fact, the majority of the interviewees declared that they could never know who would really benefit from those donations. Because of that, an interesting insight could be deduced from the interviews, i.e. trying to show more concrete actions within the commercial, showing less images of different contexts and situations (often confusing) and more images of what is actually obtained thanks to the "consumer", which could be defined as "final product".

Therefore, concerning the selection of the sample, in this context personally knowing the participants was considered from the researcher as an advantage. Due to the sensitive issue, national emergency and, last but not least, social desirability, the mutual respect and sincere relationship with participants made them feel more comfortable and free to tell the truth about their opinion, without the fear of being judged on their ideas.

If considering the findings resulted and their analysis, the main (and first) hypothesis of this work has been confirmed by the research, from which a clear difference between the two versions of the commercial emerged. The comparison between V1 and V2 provided a vivid picture of how the second version, thanks to the improvements made, has achieved very positive results on consumers. Therefore, already this first analysis seems to confirm the main hypothesis of this study. As stated at the beginning of this work, however, it is also necessary to link the results of the research with the literature, comparing them to the results obtained by BrainSigns. Even if conducted with different tools and a completely different approach (on the one hand Neuromarketing, on the other hand Qualitative research), the main results were similar and associable between each other.

In fact, the same insights about the call to action and emotion aroused were found in both the case studies, producing the same final results about the calls (sellable and legacy); it has to be specified that, when referring to the results of BrainSigns, the results are related to real calls and subscriptions to UHNCR, while when referring to the primary research of this study the results are related to the intentions manifested from the interviewees during the interviews. Of course, these intentions have been affirmed in a conscious manner and therefore cannot be considered 100% a real representation of what would happen in a context of real consumption of the advertising, always taking into account the issue of social desirability.

To conclude this chapter, the researcher addressed here the problem of the quality of the study, analysing different criteria. The researcher approached the analysis in the most objective and sincere way possible, keeping track of the entire research process, including the audio and transcripts of the interviews, thus arguing that the work is credible, objective and reliable. Furthermore, in this study it is assumed that the sample has been selected and divided into the three groups in the most coherent and fair way possible, in order to respect these criteria, in particular that of generalisability. It is recalled that, in this context, obviously, the concept of generalisability is not intended as a statistical criteria (due to the small size of the sample) but it is assumed that it could be justifiable to extend the explanations to the population, precisely because of its fair distribution of characteristics.

5. CONCLUSIONS

In the introduction of this work the concept of consumer behaviour has been explained and argued. What motivates a consumer, what pushes him to press the popular "buy button" and the variables that influence him. It is in fact the opinion of the researcher, as well as the business and academic community, is that nowadays understanding how to influence the consumer has become one of the keys to the success of one brand over another, and this argument has been reiterated several times during this paper.

For this reason, the innovative ways to gain these new insights were described, introducing the concept of neuromarketing as a more precise technique capable to find them in a scientific way, analysing neurophysiological processes on which designing new features for products. In order to explain this topic, its tools, with their related pros and cons, were carefully described and analysed, together with the main issues recognised in the literature and the possible solutions. The main idea, deduced from various authors cited, is that the scepticism and the doubts about the effectiveness and the reliability of neuromarketing could be addressed with the combined use of traditional and neurophysiological methods.

Considering these concepts, this study aimed to verify the results of neuromarketing studies, trying to understand if there is a direct relationship between the insights produced by its tests and the improved performances obtained. The methodology adopted, which consisted in a qualitative research that collected data through semi-structured interviews, finally lead to the comparison of the primary research's results with those of a case study analysed in the literature, specifically UNHCR case study from BrainSigns.

Already during the analysis of findings, when comparing the results from the two different versions of the video used in the primary research, the researcher was enthused to discover that the results seemed to confirm her hypothesis, finding the weaknesses of the first version, for instance the unremembered call to action and the generation of mainly positive emotions, completely reversed in the second version, which, with the same conditions and characteristics of the sample, obtained opposite and extremely positive results. In addition to that, very interesting was the analysis of the third version administrated to participants, which had both the aims of confirming the main hypothesis (and therefore the effectiveness of the insights found by neuromarketing tests) and of testing a second different hypothesis, concerning the contents most effective to influence the perception of certain types of advertising by consumers.

As a reminder of the main findings for the reader, the following Figure has been created.


 UNHCR The UN Refugee Agency	V1	V2	V3
Awareness	4 out of 5 confuse it	4 out of 5 clearly remember it	Only 2 out of 5 vaguely remember it
Content's memory among other ads	Nobody best remembers its content	3 out of 5 best remembers its content	Only 1 out of 5 best remembers its content
UNHCR subjects' memory	Every participant Remembers the main subjects	Every participant Remembers the main subjects	Only 2 out of 5 Remembers the main subjects
UNHCR objective's memory	Nobody Remembers the testamentary bequest	4 out of 5 Precisely remember the testamentary bequest	Only 2 out of 5 Remember the testamentary bequest
UNHCR most impressed scene	4 out of 5 Grandma Lucia's scenes	4 out of 5 refugees' scenes	2 out of 5 No scenes at all
Emotions aroused	4 out of 5 mostly positive	4 out of 5 mostly negative	3 out of 5 negative 1 positive and 1 neutral
Memory about CTA	3 out of 5 Did not remember it	Every participant Remembered the toll-free number	Every participant Remembered the toll-free number
Willingness to donate	Nobody Would have donated	4 out of 5 Would have called	4 out of 5 Would not have donated

Figure 37. Summary of findings.

The findings seemed to be compatible with the literature analysed, confirming the strong importance of the concepts discussed, particularly of emotions and interest. According to the literature and several authors, the researcher reiterates his support for the theory of scientific realism adopted by Page (2012) and the combined use of traditional and neuromarketing tools in order to analyse a problem from different points of view.

With regard to different points of view, with this work the researcher affirmed the importance of reading this study from the perspective of critical realism and symbolic interactionism, fundamental for understanding that, even if the models and theories of brain sustains scientific and "absolute" truth about neurophysiology, the interpretation of these signals are considered by the researcher to be susceptible to the society on which they are tested. It is absolutely not affirmed here that neuromarketing "lies" or is not

reliable, but the process of interpreting data and adapting the insights found to marketing products must take into account the society that will consume them. Probably, this consideration is linked to the concept of marketing itself, according to which each market has different characteristics. In fact, the same authors of neuromarketing tests declared the importance of the social context in which the advertising is "consumed"; Cherubino and Pozharliev (2020), for example, sustain that the context has a huge impact on the consumers' involvement. Really interesting for this work was one of the examples used by these authors, particularly the one from Moorman *et al.* (2012), who said that watching sports event with other people increase the attention given to the commercials shown during the break; it was interesting to see that this theory was unconsciously stated by an interviewee, who claimed:

"Well, assuming that I normally avoid advertising [...] maybe I can tell you that if I am in a context where I am not at home but at someone else's and there is the possibility and we are all silent then either we talk or I watch it" (A57FR2V2, answer 22).

On this theme there is a debate in the literature, which takes opposite positions (for example Bellman *et al.* (2012) on opposition to Csikszentmihalyi and Kubey (1981)) or that brilliantly links the issue of social desirability to the collective fruition of advertising (Puntoni and Tavassoli, 2007).

For what concerns the methodology adopted during this study, the researcher considered the choices made satisfactory, taking into account the limitations of the time available and the difficult situation of the historical period at the time of the research. Perhaps, having had more time available would have allowed the researcher to enlarge her sample, strengthening the credibility of her study, and to conduct the interviews in person, with a consequent strong impact on the execution of the study; in this regard, conducting the interviews through videoconferencing software has inevitably created some minor barriers due, for example, to the participant's unstable connection problems (therefore, also an obstacle for video uploading) or to the lack of digital skills of some interviewees. It is also obvious how conducting the interviews in person, also thanks to eye contact, would have helped to establish a relationship of trust and greater empathy. On the other hand, the choice of interviewing people who were acquaintances helped to avoid as much as possible the formation of such barriers, with a lower impact on the embarrassment of the interviewees and on the trust in the researcher, who was able to receive sincere answers (obviously only considering conscious processes) from the respondents.

In conclusion, the results of this study were considered positive by the researcher. For what concerns the first hypothesis, it confirmed the results obtained by BrainSigns and therefore the main hypothesis of this work. As far as the second hypothesis is concerned, this has been disproved in its initial assumption but it also produced compelling insights that could, through new studies, confirm its originality and truthfulness. It means that, even if the insights produced by the neuromarketing laboratory were small verified by this study, they were considered reliable and repeatable in the same conditions of the test, which means through the vision of the commercial between the documentary scenes.

The second hypothesis raises an important issue about the effectiveness in a real context, i.e. in daily television consumption. Even if the results reported by BrainSigns were obtained in a real context, it might be interesting to further investigate which types of content are best suited to be interrupted by the various kinds of commercials, influencing the perception that the consumer have about them. This further and deeper research is left to future studies, with the idea that discovering how this process works could bring various benefits to both the academic field, that would gain new knowledge and prestige, and the business world, which would invest their money in a (probably) much more effective way.

With this study, the researcher aimed to show the importance of adopting the right marketing strategies for the success of advertising campaigns and, generally, for businesses. It is hoped that this work helped to add new knowledge about this topic and to increase the reliability and trust on neuromarketing research, considered here to be an innovative and very useful field, able to find new relevant insights that will have an impact on the brain of the viewer and therefore on consumer behaviour.

GLOSSARY

This glossary has been deliberately drafted in a simplified manner, briefly explaining the meaning of the concepts listed. The following definitions are taken from various authors (Askarian *et al.*, 2019; Cartocci, Modica and Rossi, 2019; Cherubino and Pozharliev, 2020; Davidson *et al.*, 1990; Harrell, 2019; Mancini, 2017; Spielberg *et al.*, 2008)

AW - APPROACH WITHDRAWAL: refers to the concepts of interest and motivation, it one of the most important EEG indicators. Also called Approach and Avoidance, it is the core of Davidson's theory, which distinguished from the left and the right Pre Frontal Cortex (PFC); the left side is part of a system that facilitates the approach behavior to positive stimuli, on the contrary the right side facilitates withdrawal from negative stimuli.

ECG – ELECTROCARDIOGRAPHY: instrument that allows to record the electrical activity related to heart contractions. Involves the use of electrodes, usually applied to the chest or both wrists.

EEG - ELECTROENCEPHALOGRAM: Tool that tracks changes in brain-cell activity recording electrical signals through the use of sensors positioned on the patient's scalp, through the use of a headset. It is one of the most common methods of measuring brain activity.

EI – EMOTIONAL INDEX: Index developed from HR and GSR signals, with which assesses both the arousal and the valence of emotion in relation to an advertising or marketing content.

FMRI - FUNCTIONAL MAGNETIC RESONANCE IMAGING: detects the increasing neural activity through the increased level of blood flow in the brain.

GSR – GALVANIC SKIN RESPONSE: refers to changes in sweat gland activity that are reflective of the intensity of our emotional state, otherwise known as emotional arousal.

HR – HEART RATE: most important measure of ECG signals, measured in beats per minute. (bpm). It can be measured through the use of electrodes (applied to chest or wrists) or through infrared optical sensors.

HRV – HEART RATE VARIABILITY: measures the variations of Heart Rate; it can be used to measure the value related to the processing of advertising content.

ME – MENTAL ENGAGEMENT: It is an EEG index used for assessing the emotional influence.

PPG – PHOTOPLETHYSMOGRAPHY: signal that reflects changes in blood volume, commonly used for measuring heart rate and peripheral oxygen saturation (SpO2).

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APPENDIX A – INTERVIEWS POSSIBLE QUESTIONS

This appendix aims to give the reader an idea of how the interviews were conducted. Even if they were semi-structured interviews, the researcher had a list of themes to investigate and drafted few possible questions to ask. These questions were divided in “before” and “after” the vision of the video, because the researcher firstly wanted to ask few personal information, in order to find insights about the participants' fruition of television. After these basic questions, the interviewees were asked to watch the video. At the end of it, the researcher could investigate about the perception that the interviewees had about the commercials shown. The investigation was finally focused on UNHCR respondents' perception. Naturally, the researcher decided the order of questions and which of them needed to be asked, modifying them basing on the flow of the conversation.

BEFORE WATCHING THE VIDEO – PERSONAL INFORMATION

1. How old are you?
2. Where do you live?
3. Do you study or work? In which field/sector?
4. Do you usually watch television?
 - a. If yes, for how many hours a day (on average)?
5. Do you use streaming platforms? Which ones (e.g. Netflix, YouTube, InfinityTv, etc.)?
 - a. If yes, do you use them more than traditional (digital terrestrial) TV?
 - b. If yes, what are the main reasons for this choice? Could advertising be one of them?
6. When you watch something and there are commercial breaks, what do you do? Do you avoid them (e.g. zapping, "skip advertising", etc.) or do you watch them?

The interviewee is then asked to see the video, the content of which is anticipated: "the video you are about to see is composed of an unspoken documentary about the constellations and some commercial breaks. At the end of the viewing the interview will continue and will cover the video itself. Have a good viewing".

AFTER WATCHING THE VIDEO – INFORMATION ABOUT COMMERCIALS' PERCEPTION

7. Do you remember the brands from the commercials you saw? Could you tell me their names?
8. How many ads did you see in the video?
9. Which commercials do you prefer among the ones you saw in the video? Why?
10. Is there a commercial whose content you particularly remember?
11. Did you already know the commercials in the video? Have you seen them all before?

QUESTIONS RELATED TO UNHCR COMMERCIAL

12. Did you know UNHCR? Did you know what it does?

- a. If not, could you tell from the commercial what it does?
- 13. Are you interested in this organization?
- 14. After seeing their commercial, could you tell me what they were talking about or what they were asking for?
- 15. Could you tell me what the testamentary bequest is?
- 16. Do you remember the subject of the video?
- 17. Which scene in the UNHCR commercial impressed you the most? Why is that?
- 18. What emotions did you feel when you watched this commercial in particular?
Do you think they are positive or negative?
- 19. Do you remember if a contact (e.g. phone number) was provided in the video?
- 20. If you had the chance to skip this commercial, would you have done so?
- 21. Would you make a donation after watching this commercial?
- 22. Have you ever donated?
 - a. If so, for what kind of institution?
- 23. Have you ever been a member of any charity?
 - a. If yes, for what purpose?
- 24. Just to get a cultural picture, are you a believer?

QUESTION RELATED TO THE SECOND HYPOTESIS

- 25. After watching a movie with stronger content, for example dramatic, do you feel emotionally more willing to reflect on more sensitive issues?

APPENDIX B – PLAIN LANGUAGE STATEMENT**Griffith College GBS****Plain Language Statement****I. Introduction to the Research Study**

Research Study Title: The impact of Neuromarketing on consumer behavior and firms' strategies. University: Griffith College, Graduate Business School

The principal investigator: Dr. Garrett Ryan, Griffith College Research Ethics Committee.

II. Details of what involvement in the Research Study will require

This project may involve taking part in interviews and or completion of a survey.

These interviews may be audio taped.

It is estimated that these interviews may take no longer than 60 minutes to complete.

Participants will be offered a copy of their interview transcripts for validation purposes.

III. Potential risks to participants from involvement in the Research Study (if greater than that encountered in everyday life)

I do not anticipate any risk to participants as a result of involvement in this Research Study.

IV. Benefits (direct or indirect) to participants from involvement in the Research Study

The objective of this Research Study is to gain new knowledge that will enable firms to develop new strategies that are more effective and efficient. This Study may therefore be of benefit to you by providing you with the opportunity to contribute to the development of this field.

V. Advice as to arrangements to be made to protect confidentiality of data, including that confidentiality of information provided is subject to legal limitations

Every effort will be made to ensure confidentiality of participants. Participant names will not be recorded, as all participants will be assigned a code. The taped interviews will be downloaded to a password controlled computer, and typed transcripts will be held within password controlled documents. Audio tapes and hard copies of transcripts will be held in a locked filing cabinet. Biographical details and mentions will be omitted in the final report to protect participant's identity. Confidentiality of information provided is subject to legal limitations.

VI. Advice as to whether or not data is to be destroyed after a minimum period

Audio tapes will be destroyed on the successful completion of the Master in International Business Management.

VII. Statement that involvement in the Research Study is voluntary

Involvement in this Research Study is voluntary.

Participants who decide to take part may withdraw from the Research Study at any point.

There will be no penalty for withdrawing before all stages of the Research Study have been completed.

If participants have concerns about this study and wish to contact an independent person.

Please contact:

Dr Garrett Ryan,

Griffith College Research Ethics Committee

South Circular Road, Dublin 8, Ireland

Mail: garrett.ryan@griffith.ie

Tel: +353 1 4163324

APPENDIX C – INFORMED CONSENT FORM



Griffith College GBS

Informed Consent Form

I. Research Study Title

Research Study Title: The impact of Neuromarketing on consumer behavior and firms' strategies. University: Griffith College, Graduate Business School

The principal investigator: Dr. Garrett Ryan, Griffith College Research Ethics Committee.

II. Clarification of the purpose of the research

The aim of this research is to understand the current operation of Neuromarketing and how it impacts on consumer behaviour. In addition, through a combination of the latest research into this field, the research aim may be to understand its impact on a real firm's strategy.

III. Confirmation of particular requirements as highlighted in the Plain Language Statement

This project may involve taking part in interviews and or completion of a survey.

These interviews may be audio taped.

It is estimated that these interviews may take no longer than 60 minutes to complete. Participants will be offered a copy of their interview transcripts for validation purposes.

Participant – please complete the following (Circle Yes or No for each question)

<i>I have read the Plain Language Statement (or had it read to me)</i>	Yes/No
<i>I understand the information provided</i>	Yes/No
<i>I have had an opportunity to ask questions and discuss this study</i>	Yes/No
<i>I have received satisfactory answers to all my questions</i>	Yes/No
<i>I am aware that my interview will be audiotaped</i>	Yes/No

IV. Confirmation that involvement in the Research Study is voluntary

I may withdraw from the Research Study at any point.

V. Advice as to arrangements to be made to protect confidentiality of data, including that confidentiality of information provided is subject to legal limitations

I understand that all information I provide for this study will be treated confidentially.

I understand that in any report on the results of this research my identity will remain anonymous. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.

VI. Signature:

I have read and understood the information in this form. My questions and concerns have been answered by the researchers, and I have a copy of this consent form. Therefore, I consent to take part in this research project

Participants Signature: _____

Name in Block Capitals: _____

Witness: _____

Date: _____

Emanuela Marra, Postgraduate diploma

International Business Management, Graduate Business School, Griffith College, Dublin

For any further information, please do not hesitate to contact the researcher at this e-mail:
emanuela.marra@student.griffith.ie