

Impact of emotional appeal on non-profit advertising: A neurophysiological analysis

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Funding information

Community of Madrid, Spain under the Multiannual Agreement with the Complutense University of Madrid in the line Excellence Programme for university teaching staff, within the framework of the V PRICIT (V Regional Plan for Scientific Research and Technological Innovation); grant RTC-2016-4718-7 from the Spanish Ministry of Economy, Industry and Competitiveness.; Marketing Department of the Complutense University of Madrid

Abstract

The number of Non-Profit Organisations (NPOs) has increased in the past years, and they rely on advertising to communicate their causes. Although the effectiveness of NPO advertising has been studied previously, there is still no consensus about which appeal (emotionally positive or negative) increases its effectiveness. On the other hand, the most prevalent research approaches to NPO advertising are traditional research methodologies based on declarative techniques. So, the purpose of this study is to identify which appeal (positive or negative) in NPO advertising is more effective at the three levels of effectiveness (perceptual or communicational effectiveness, psychological or attitudinal effectiveness and behavioural effectiveness), providing a new approach based on the analysis of consumers' unconscious responses to advertising. We conducted an experiment with 113 participants whose neurophysiological responses were evaluated through electroencephalogram (EEG) and eye tracking (ET) while they watched NPO advertisements with a randomly assigned emotional appeal (positive or negative). In addition, a survey revealed behavioural responses. The results showed that considering the psychological or attitudinal effectiveness, positively framed ads are more effective, as there is a positive effect on attitudes towards the ad and a higher positive emotional valence. On the other hand, in perceptual effectiveness, where attention is considered an important variable, the negatively framed ads showed more significant time in the area of interest (AOI) of the image area of the ad, and longer time in the AOI text was observed for positively framed ads. Furthermore, regarding behavioural effectiveness, negatively framed ads seem more effective in eliciting actual donations. The results suggest that a positive appeal is more effective in generating a more positive attitude and a positive emotional valence towards the advertisement, which could benefit the NPO in the long term. But a negative appeal is more effective if the goal is to achieve immediate donations.

1 | INTRODUCTION

Advertising is a key tool to inform and/or persuade the audience about products, services, organisations or ideas. Non-profit organisations (NPOs) seeking to promote social welfare and help with

humanitarian activities for the less fortunate (Chang & Lee, 2009) have used advertising to communicate their causes and persuade the audience to donate. But nowadays, the amount of competition between NPOs has increased (Chapman et al., 2022; Small & Verrochi, 2009), and these organisations must find effective ways to

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communicate their causes because individual donors are the largest source of donations (Chang & Lee, 2009; Choi et al., 2020; Gugenishvili, 2022).

Advertising is a powerful tool of persuasion because it creates or changes attitudes towards products, services, ideas or institutions (Sabre, 2011). According to O'Shaughnessy and O'Shaughnessy (2003), persuasion attempts to change or modify the values, beliefs, attitudes and behaviour of others.

When measuring advertising effectiveness, the authors have considered different variables and have investigated them from a behavioural or field perspective. Field research considers the effect of advertising on the entire market. However, behavioural research is usually conducted in a laboratory setting that addresses the effects of advertising on participants' mental responses, such as awareness, attitudes and intentions (Tellis, 2009; Wells, 2014). Considering this last perspective, some hierarchical models assume that for an advertisement to be effective, the consumer's response must pass through three levels (Fennis & Stroebe, 2015):

- Perceptual or communicational effectiveness, which considers that consumers must pay conscious attention and comprehend the message.
- Psychological or attitudinal effectiveness, which reveals the emotional response and attitude formation
- Behavioural effectiveness, which encourages a desired behaviour such as the intention to (re)purchase.

In advertising, this hierarchy of effects model aims to move the audience through these stages (cognition, affect and conation) and change attitudes towards the advertiser's goal. However, this model alone cannot support advertising effectiveness because it does not consider other variables that might affect the response to the advertisement.

It is essential to consider that each NPO seeks to promote different prosocial behaviours, including other problems and concerns (Goenka & Van Osselaer, 2019). Various contexts of NPOs advocate different social causes, and the request for monetary donations is the dominant form (Randle et al., 2016; Xu & Huang, 2020). The most common aims of NPOs are humanitarian relief and welfare causes (Goenka & Van Osselaer, 2019), that is, helping people in need. On the other hand, there is a growing concern about climate change and environmental problems (Chang, 2012; Gómez-Carmona et al., 2022). Thus, there are also environmental NPOs whose main objective is to protect, preserve and improve the environment. According to Chapman et al. (2022), people donate according to their personal preferences and values and to reflect their identities. Thus they give to different causes. In this research, we investigate how these two types of NPOs (humanitarian and environmental) can increase willingness to donate through the appropriate emotional appeal in their advertisements.

Previous research on NPO advertising has discussed the effectiveness of advertising strategies in increasing donations (Dahl, 2018; Lindauer et al., 2020; Nguyen & Faulkner, 2020; Zemack-Rugar & Klucarova-Travani, 2018). These investigations have examined the effectiveness of different appeals, such as positive and negative

emotional appeals (Albouy, 2017; Chang & Lee, 2009; Erlandsson et al., 2018; Septianto & Tjiptono, 2019; Wu et al., 2022), altruistic and egoistic (Chang, 2014; White & Pelozo, 2009), and abstract and concrete appeals (Macdonnell & White, 2015). In addition, they have also considered donor characteristics and situational contexts. Therefore, this research will focus on emotional appeal (positive and negative) and how previous involvement with the cause (considering two causes, humanitarian and environmental) influences willingness to donate.

As emotional appeal has been proven to effectively persuade the audience, increase awareness and raise funds (Erlandsson et al., 2018; Lim et al., 2021), many NPOs commonly promote their cause through emotional appeals in their advertising. According to the Prospect Theory, how a message is framed affects decisions and judgments. Thus, a message can be framed in positive terms, emphasising potential gains, or in negative terms, emphasising potential losses (Kahneman & Tversky, 1979). Based on that premise, NPOs can use similar framing possibilities (Genevsky et al., 2016; Yousef et al., 2022) with positive versus negative images (e.g. smiling vs. sad) as well as the text (e.g. opportunity vs. threat). However, there is still no consensus on which emotional appeals increase the effectiveness of advertising and, consequently, improves willingness to donate.

According to various studies, using negative emotions through images or text contributes to more donations because they elicit sympathy or emotional concern (Choi (David) et al., 2016; Homer, 2021). Small and Verrochi (2009) showed that using sad facial expressions influences empathy and giving. Chang and Lee (2009) demonstrated that congruence between the valence of negative messages and negative images in a short time frame was more effective in eliciting donations. Baberini et al. (2015) suggested that sad images of victims induced greater feelings of sadness and motivated willingness to donate. In a study conducted by Yousef et al. (2022), the findings suggest that it is more effective to use shame appeals framed as losses than hope messages to drive engagement.

But studies also argue that using negative appeals and constant exposure to these images can make them lose effectiveness because they may create reactance (Choi (David) et al., 2016). Also, recent works argued that the use of images of happy victims could be more beneficial (Septianto & Paramita, 2021). A study by Li and Atkinson (2020) indicated that consumers are more willing to donate when presented with ads of happy children than sad children. Randle et al. (2016) concluded that stronger reactions could be achieved using positive emotions. Moran and Bagchi (2019) found that when NPOs used positive emotional appeals focused on the benefits of providing hope, joy or excitement, willingness to donate increased. So, it seems important for NPOs to find the appropriate emotion or combination of emotions to create more effective advertisements.

These contradictory findings of previous studies may be due to how advertising effectiveness has been measured, as they examined different outcome variables, operationalising advertising effectiveness in different ways. Some studies have measured advertising effectiveness through attitudes; others have measured the intention to donate, and still others the actual donation behaviour or the amount of the

donations. So, in this study, we measure effectiveness considering the different outcomes.

The most frequent research approaches to NPO advertising are based on traditional research methodologies that use declarative techniques, such as surveys, focus groups or interviews (Cao & Jia, 2017; Septianto & Paramita, 2021; Xu, 2021; Zhang et al., 2019). However, these techniques can be subjective because they rely on self-reports, making interpretation difficult or biased (Gountas et al., 2019). Therefore, recent studies use neuroscientific methodologies, applying multiple neurophysiological tools such as Electroencephalogram (EEG), Galvanic Skin Response (GSR), Heart Rate, and Eye Tracking (ET), among others. They also combine them with traditional methods to address these concerns and analyse the impact of advertising more objectively (Alonso Dos Santos et al., 2017; Martinez-Levy et al., 2021; Venkatraman et al., 2015). The application of neuroscientific techniques such as brain-imaging techniques has grown because it could help better understand the unconscious responses of consumer behaviour. Therefore, this research aims to contribute to the existing literature by providing a new approach to how emotional appeals of NPO advertising impact willingness to donate, considering the analysis of unconscious responses, using EEG and ET synchronously.

Although there has been significant development in neuroscience in the last decade, there are some ethical considerations to consider. On the one hand, there is a suspicion that some neuromarketing studies carried out to date misuse the methods and metrics of neuromarketing and misinterpret their findings (Moya et al., 2020). Market researchers and marketing professionals sometimes lack the experience to correctly design neuroscientific protocols to address neuromarketing, generating design errors that directly affect the results. According to Spence (2019), some neuromarketing companies go beyond the conclusions that can legitimately be drawn from the data, making questionable claims without evidence-based citations (Fisher et al., 2010). Hensel et al. (2017) highlighted that claims and findings extrapolated from neuromarketing studies are not always based on valid scientific methodologies. According to Cherubino et al. (2019), some companies and academics publish reports and articles that are like magic remedies (snake oil) that include disappointing promises and results. This is a source of problems for the industry, as they use technologies and metrics that are not validated or transparent or do not follow scientifically rigorous protocols and procedures.

This study seeks to analyse the dynamic relationship between the emotional valence of images and the type of NPO, and their influence on donation decisions. Previous studies revealed that some variables which could prevent or favour the persuasion process have received little attention (Albouy, 2017). Thus, we consider prior involvement with the cause as a moderating variable that could interact with emotions during the persuasion process (Petty & Cacioppo, 1981). This study provides the participants' unconscious responses of visual attention and emotion to NPO advertisements by applying neurophysiological techniques at the moment of the visualisation of the stimuli.

2 | LITERATURE REVIEW

2.1 | Emotion in NPO advertising

Research has shown that using emotional appeals is an effective tool for persuasion (Burt & Strongman, 2005; Martinez-Levy et al., 2021; Moore, 2010; Randle et al., 2016; Septianto & Paramita, 2021). The use of emotional appeals can generate creative impact, enhancing persuasion (Bebko et al., 2014). In addition, emotions can capture the audience's attention, affecting attitudes, impact the ad's recall and significantly influence consumer behaviour and decision-making (Missaglia et al., 2017; Septianto & Tjiptono, 2019).

Previous studies have investigated the influence of the emotions triggered by NPO advertisements (Homer, 2021; Li & Atkinson, 2020; Septianto & Tjiptono, 2019; Yousef et al., 2022). These studies usually included brand attitude, attitudes towards the ad (A_{ad}), and donation intention as dependent variables. Dimensional theories of emotions posit that emotions can be defined by two dimensions, valence and arousal (Bestelmeyer et al., 2017; Lane et al., 1999). Valence is associated with an emotion's negative or positive nature; that is, the intrinsic attractiveness or aversion of a situation, event or object. Arousal is the intensity of the emotional activation, which can range from drowsiness to excitement (Kensinger, 2004).

The results of emotions to advertising can be represented as more or less preference, more or less attention, and better or worse recall, among others. These outcomes can be measured by declarative (self-reported) and/or neurophysiological techniques. Both types of emotional appeals have been researched in the past (Albouy, 2017; Borawska et al., 2020; Dahl et al., 2003).

In the advertising context of NPOs, there seems to be a preference for using negative emotional appeals to capture the audience's attention and motivate donations. The use of sad images of victims induces greater feelings related to sadness, motivating willingness to donate (Baberini et al., 2015). But the repetition of negative appeals can lead to negative attitudes towards the organisation. On the other hand, Sciulli et al. (2012) suggested that the use of positive emotions enhances participation in the social cause.

Therefore, further research is needed to understand the efficiency of these appeals in NPO advertising. These inconsistencies may be related to the type of solicitation researched, the outcome analysed or differences in study participants because individual differences, such as NPO participation and donor status, may also affect the results.

Emotions elicited by an advertisement have been shown to affect the development of attitudes (Bebko et al., 2014). A_{ad} is defined as a "predisposition to respond favourably or unfavourably to a particular advertising stimulus during a particular exposure occasion" (MacKenzie et al., 1986, pp. 130–131). It is essential to generate favourable A_{ad} in customers' minds. A_{ad} captures the liking, enjoyment and valence of people's feelings towards the commercial (Lewinski et al., 2014). Erlandsson et al. (2018) found that people liked an ad with a positive appeal more than an ad with a negative appeal. When the appeal was framed negatively, people felt more anger (towards the organisation).

Therefore, we propose the following hypotheses:

H1a. The positive appeal of both types of NPO ads (environmental and humanitarian) will positively affect A_{ad} .

H1b. The positive appeal of both types of NPO ads (environmental and humanitarian) will evoke a higher positive valence.

2.2 | Attention in NPO advertising

In advertising, it is very important to capture the audience's attention, considering that the audience needs to pay attention to the advertising message to be affected by it. According to Hsieh and Chen (2011), attention is the limited effort or mental capacity needed to focus on a task. In other words, it is “the ability to focus on certain aspects of the environment while ignoring others” (Venkatraman et al., 2015, p. 438).

Ads must capture consumers' attention for the ad to be selected, and so consumers can pay more attention to them than to other ads. Therefore, an appropriate approach is measuring visual attention achieved with methods such as ET technology. This technology indicates the individual's visual attention by tracking eye movements. The information obtained allows assessing where, when, and what a person is looking at, using metrics such as fixations, which identify a period in which the gaze pauses at a specific object.

The use of ET allows exploring the viewer's level of interest. ET can measure the time spent in a specific area of interest (AOI), which is the subregion of a display stimulus defined by the researcher. The time spent in an AOI often indicates motivation and conscious attention. A long time spent in a particular area suggests a high level of interest, whereas a shorter time implies less interest, indicating that other areas on the screen are more attractive (Bebko et al., 2014).

NPOs usually use printed advertising, which requires the audience to view the graphic display and perform reading tasks. Printed ads typically consist of three elements: text, image and logo (Pieters & Wedel, 2004). Research has studied the attentional effect of these elements to maximise attention capture (Alonso Dos Santos et al., 2017). Studies have revealed a difference in attending to text and image, depending on the type of data processing and their connection (Bebko et al., 2014).

According to Bebko et al. (2014), NPO ads should encourage subjects to look at the face in the ad. Donors who spend more time observing the face will be more likely to recommend others to donate. Their results showed that the time spent looking at the face decreases when the emotions become more positive. Alonso Dos Santos et al. (2017) concluded that text elements with positive images capture more attention, and attention to the image area was higher for negative images.

Based on the results of these previous studies, we expect that:

H2a. Subjects will spend more time exploring the image area if the ad has negative appeal for both types of NPOs (humanitarian and environmental).

H2b. Subjects will spend more time exploring the text area if the ad has positive appeal for both kinds of NPOs (humanitarian and environmental).

2.3 | Involvement with the cause

Many scholars and practitioners affirm that involvement is an essential variable influencing consumer behaviour (Gugenishvili, 2022; Strazzeri & Hajdukowicz-Brisson, 1995). Zaichkowsky (1986) defined involvement as a person's level of association towards a particular object based on their needs, values and interests. Petty and Cacioppo (1981) argued that the different definitions of involvement could be encompassed in what they called issue involvement, defined as “the degree of personal importance that the attitude object has for the subject” (p. 20). Involvement is often conceptualised as personal relevance, defined as the extent to which a person considers a cause to be personally relevant to them (Grau & Folse, 2007).

People who are more involved with a cause should feel more encouraged to participate and donate to campaigns than those who are less involved. Involvement with a cause can be a result of past experiences or part of their self-concept (Grau & Folse, 2007). Other reasons may be altruism or a selfish desire to feel better (Cao & Jia, 2017). But regardless of the reasons, highly involved persons are more likely to consider the cause important and contribute. For example, a person who is more environmentally aware is more likely to help an organisation that helps such causes.

In advertising persuasion, prior involvement with the message's subject can affect the direction and intensity with which information is processed (Dhanesh & Nekmat, 2019; Petty & Cacioppo, 1981). Meyers-Levy and Maheswaran (2004) concluded that the effectiveness of framing is closely related to people's level of involvement when processing the message. Their involvement with the cause will manifest as a feeling that the cause and organisation deserve their attention, time and financial resources (Lee & Cho, 2022; Sciuilli et al., 2012).

Considering differences in the persuasive effects of graphic advertising messages of NPOs aimed at raising money according to participants' degree of involvement with the cause, the following hypothesis was proposed:

H3. Negatively framed advertising is more likely to increase donation behaviour among people with a higher level of involvement with the cause than positively framed advertising.

2.4 | Donation behaviour

NPOs rely on individual donors to achieve their goal of helping those in need, so donation behaviour is a crucial element to research when analysing the effectiveness of NPO advertising campaigns. Understanding what motivates people to donate helps NPOs create more targeted and effective campaigns that generate donations. Various

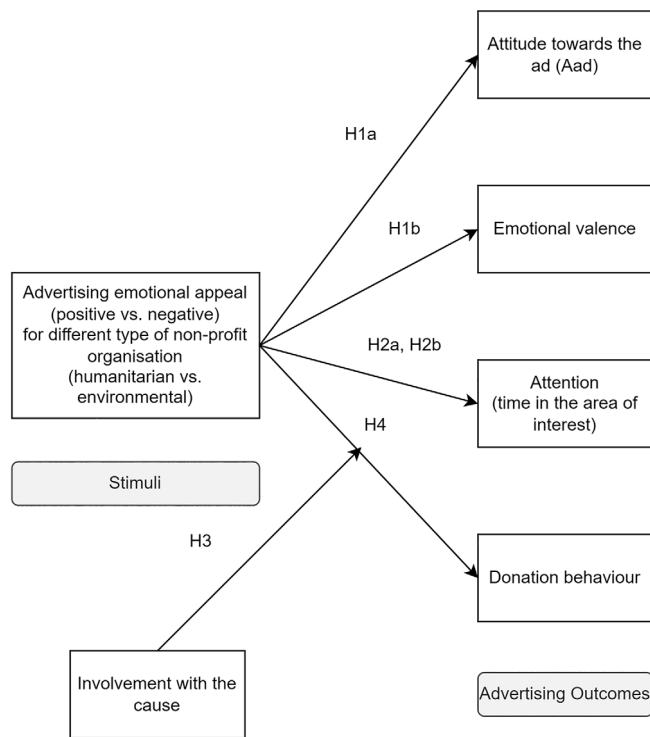


FIGURE 1 Theoretical model.

studies analyse how to increase donation intention or behaviour (Cao & Jia, 2017; Chang & Lee, 2009; Martinez-Levy et al., 2021; Septianto & Paramita, 2021). Many factors have been explored, such as sympathy (Choi (David) et al., 2016; Homer, 2021), guilt (Chen & Moosmayer, 2020; Randle et al., 2016; Xu, 2021) and/or message framing (Cao, 2016; Jacobson et al., 2019; Xu & Huang, 2020).

Many studies have highlighted the importance of advertising in determining behavioural intentions (Ranganathan & Henley, 2008). Erlandsson et al. (2018) conducted a study to analyse whether positive or negative appeals were more effective in increasing donation behaviour. They concluded that a negative appeal elicited more donations than a positive appeal. Considering this, the fourth hypothesis is:

H4. A negative appeal in an NPO advertisement will increase the willingness to donate for both types of NPOs.

Figure 1 summarises our hypotheses and presents the theoretical model.

3 | MATERIALS AND METHODS

3.1 | Participants

A sample of 113 participants (60 were exposed to UNICEF and 53 to Greenpeace) participated voluntarily in the study ($M_{age} = 29.56$, $SD_{age} = 5.1$).

The participants were healthy people, right-handed and with normal vision. According to the local legislation, approval and ethical review were not required. The research was conducted following the principles of the Declaration of Helsinki of 1975. The participants were asked to sign an informed consent before participating in the study. Also, participants received retribution of 20€.

3.2 | Data collection

3.2.1 | Neurophysiological techniques

EEG measures the electrical activity of the brain (Wang & Minor, 2008). This tool is very useful for rapidly changing stimuli because it has a high temporal resolution (Ohme et al., 2009). The EEG recording was made with a Bitbrain Versatile with 16 channels at a sampling rate of 256 Hz.

ET uses an optical camera with near-infrared light to identify the reflection of the light source on the cornea and the position of the pupil. It has a high temporal resolution (60–120 Hz) and has been used to measure visual attention. It is also used to measure the percentage of valid fixations, providing an index of engagement with the ad and overall attention (Venkatraman et al., 2015). The ET device used in the study was a screen-based ET, Tobii X2-30 ET Compact Edition, which captures gaze data at 60 Hz.

3.3 | Measurements

3.3.1 | Neurophysiological measurements

Previous studies have shown that the EEG signal is appropriate for measuring emotional valence. It analyses asymmetric frontal brain activity (Golnar-Nik et al., 2019; Hyun et al., 2018; Lin et al., 2017; Ohme et al., 2009), where differences in right and left frontal areas within the alpha band (8–12 Hz) show reactions such as approach or withdrawal motivations. Based on the EEG frontal asymmetry theory (Davidson, 2004), higher right activity reflects withdrawal motivation, and higher left activity reflects approach motivation (Huffmeijer et al., 2012).

Visual Attention (Time in AOI) measured with the ET technique allows the analysis of the subject's attention, motivation, interest level and behaviour (Sciulli et al., 2012). The ET identifies the position of the pupil and eye movements that indicate a subject's visual attention (Bebko et al., 2014). It also analyses the time spent viewing each area and the number of fixations on specific areas (García-Madariaga et al., 2020). The fixations detect the particular areas of interest (AOI) where the eye pauses.

Studies have shown that using emotional appeals (positive/negative) impacts visualisation patterns (Berger et al., 2012). The time spent in the AOI shows the subject's engagement and interest. According to Bebko et al. (2014), the less time to the first AOI fixation, the greater impact of the AOI. We selected the AOI for each

TABLE 1 Declarative measures.

Variable	Item	Source
Involvement with the cause $\alpha = 0.889$	5-point Agreement Likert scale It means a lot to me I feel it is particularly important It is an area that interest me I feel particularly concerned by the fight... (environmental or humanitarian) I often inform myself about the problems relating to... (environmental aid or humanitarian aid) It is an area I am involved in	Strazzieri and Hajdukowicz-Brisson (1995)
Attitudes towards the cause $\alpha = 0.843$	7-point semantic differential scale Important-Redundant Priority-Secondary Importance Necessary-Unnecessary Urgent-Not urgent Useful-Not useful	Batra and Ray (1986); Keller (1991)
Assisted brand awareness	You see several nonprofit brands below. Please tick all nonprofit brands that you are already familiar with.	Keller (1993)
Previous donation behaviour	5-point Frequency Likert scale "How often do you donate to charity?"	
Evaluation of the ad	7-point scale Indexing the valence of the image 1 negative-7 positive	Genevsky et al. (2016)
A_{ad} $\alpha =$ all values above .9	7-point semantic differential scale I dislike the ad-I like the ad I react favorably to the ad-I react unfavorably to the ad I feel positive toward the ad-I feel negative towards the ad The ad is bad-the ad is good	Holbrook and Batra (1987)
Preference decision task	Willingness to donate task Participants made a real decision to donate their own money. After visualising the stimuli, the subjects were asked if they wish to donate part of their retribution for participating in the study.	

Abbreviation: Aad, Attitude towards the ad.

advertisement to obtain the time spent on each AOI, considering text and image as the main areas of interest.

3.3.2 | Declarative questionnaire

Before the stimuli presentation, a computer-based questionnaire was applied to obtain declarative variables such as sociodemographic variables, involvement with the cause, attitudes towards the cause, brand awareness, and previous donation behaviour. Questions about A_{ad} , attitude towards the organisation and a donation task (described in the following text) were presented at the end of the experiment (see Table 1).

3.4 | Procedure

This study was conducted in four phases: (1) a pre-test for the selection of the stimuli; (2) a pre-test to measure the attitude towards the cause, previous donation behaviour, brand awareness, involvement with the cause and sociodemographic variables; (3) an experiment to measure the neurophysiological reactions to stimuli presentation; (4) a

post-test to validate the valence of the advertisements and measure the subjects' A_{ad} and donation behaviour.

3.4.1 | Pre-test-stimuli selection

Before the experiment, a pre-test was run to select the name of the most well-known NPOs (humanitarian and environmental) and the images and texts for each NPO, manipulating the research variables (image and text valence). The stimuli were manipulated to be either negative or positive to analyse the interaction between the advertisements' valence and the study variables. To ensure that the stimuli were homogeneous, we used printed advertisements, as this allows for better control of the study variables. Also, printed advertisements are used vastly in real-world requests for aid, providing a general application in the real world (Genevsky et al., 2016).

For the humanitarian NPO, images of children were chosen, as they are powerful in generating an emotional response (Burt & Strongman, 2005). The positively framed ads showed smiling children and a message of gratitude about how donators, thanks to their donations, positively impact the children's lives. Negatively framed ads presented sad children with health or poverty issues and a threatening

message, stating that without donors' aid, the children's lives were in danger. For the environmental NPO, images of animals and the environment were chosen considering the advertisements used by these NPOs. The positively framed ads showed images of beautiful and healthy animals or landscapes with a message that they were fine due to donors' actions. On the other hand, negatively framed ads featured damaged landscapes and dead or suffering animals and messages that depicted people's responsibility for their situation.

The pre-test was applied to 273 subjects between 25 and 60 years ($M = 33.4$, $SD = 7.1$). Existing organisations were chosen, regardless of Voss et al.'s (2008) recommendation that unknown brands should be used to avoid familiarity bias affecting the experiment results. We considered that a fictitious name could lead to mistrust towards the organisation.

The stimuli corresponded to printed advertisements like those used in magazines, online or in posters. It is important to analyse printed media because charities and other commercial organisations have used it for many years in newspapers and magazines as the predominant way of advertising (Sciulli et al., 2012).

A between-subject research with online questionnaires was conducted to assess consumer responses to printed advertisements of NPOs (humanitarian aid and environmental aid). An initial corpus of 19 pairs of images (positive and negative appeal) and 14 pairs of messages (positive and negative) for each NPO was defined for the design of the advertisements. The first group of 64 participants evaluated the humanitarian NPO ads, and 51 participants evaluated the environmental NPO ads. Subjects rated the photographic stimuli on a 7-point scale, indexing the valence of the person's facial expression from 1 (*negative*) to 7 (*positive*) (Genevsky et al., 2016), and evaluated the positive and negative message framing conditions on a 7-point semantic-differential scale ranging from 1 (*mostly negative*) to 7 (*mostly positive*) (Chang & Lee, 2009).

As a result, we selected the images and texts that scored highest for positive and the lowest for negative. Then, we created the advertisements with images and text. Also, we selected the most well-known NPO for each type of context (humanitarian and environmental). UNICEF was known by 92.2% of the sample, and Greenpeace was known by 74.5%. After selecting the stimuli according to the highest and lowest means of images and messages, we applied a second pre-test with a different sample to evaluate the 10 ads designed based on the above-mentioned results (image + message / positive and negative). The sample included 108 subjects aged between 25 and 60 ($M = 32.6$, $SD = 6.3$). To analyse the valence of the ads, participants were asked to evaluate each advertisement on a 7-point scale ranging from 1 (*very negative*) to 7 (*very positive*). A paired-sample t-test was conducted to compare the valence of positive and negative images. There was a significant difference in the scores of all the pairs, $p < .000$. The 10 definitive stimuli for each NPO were selected according to the results of the second pre-test, which represented the extreme values of emotional valence.

3.4.2 | Experimental phase

To reduce participants' response bias (social desirability) to the questionnaire, we applied an alternative methodology based on neuroscientific techniques, providing new insights into how consumers respond to stimuli through neurophysiological reactions. Participants maintained their privacy and anonymity to prevent such bias (van de Mortel, 2008).

The experimental phase was conducted in three blocks (see Figure 2): (1) a computer-based pre-test questionnaire was applied; (2) setting up the neurophysiological techniques and the acquisition of the neurophysiological data; and (3) a declarative post-test questionnaire.

All subjects were informed of the procedure and signed an informed consent before participating in the study. After signing the consent form, the participants filled out the first questionnaire.

Next, we set up the neuromarketing techniques (EEG, ET). After placing the devices with good signal quality, we ran the experiment, recording the data with SennsLab software developed by Bitbrain.

A between-subject experiment was conducted in which 60 participants were asked to view the UNICEF advertisements—one half viewed the negative appeal, and one half viewed the positive appeal. Likewise, 53 participants viewed the Greenpeace advertisements—30 viewed the negative appeal, and 23 viewed the positive appeal. The stimuli were presented randomly and individually. Immediately afterwards, during the third block, participants were asked to complete another questionnaire evaluating the ad as positive or negative, their A_{ad} , attitude towards the organisation, and the donation task. A preference-based decision task measured the participants' willingness to donate. The subjective values used in preference-based decision-making are internally generated and intrinsically private and entail self-reflection (Azzalini et al., 2021). In other words, the preference-based task requires reflecting on the personal impact of supporting a social cause. At the beginning of the experiment, we gave each subject €20 for participating in the study. After viewing the stimuli, the subjects were asked if they wanted to donate money to the NPO used in the experiment. If they chose to donate, they wrote the amount they wished to donate. Their decision reflected their real willingness to donate.

4 | RESULTS

4.1 | Data analysis

We used a band-pass filter between 1 and 25 Hz with a four-order Butterworth filter to analyse the EEG data. Then, a filtering pipeline was applied: first, we used an Artifact Subspace Reconstruction filter to remove large amplitude artefacts. Then, an Independent Component Analysis (ICA) was performed to classify the EEG data into independent components and apply the Multiple Artifact Rejection Algorithm to automatically classify ICA components (García-Madariaga et al., 2020; Moya et al., 2020). Once the data were clean,

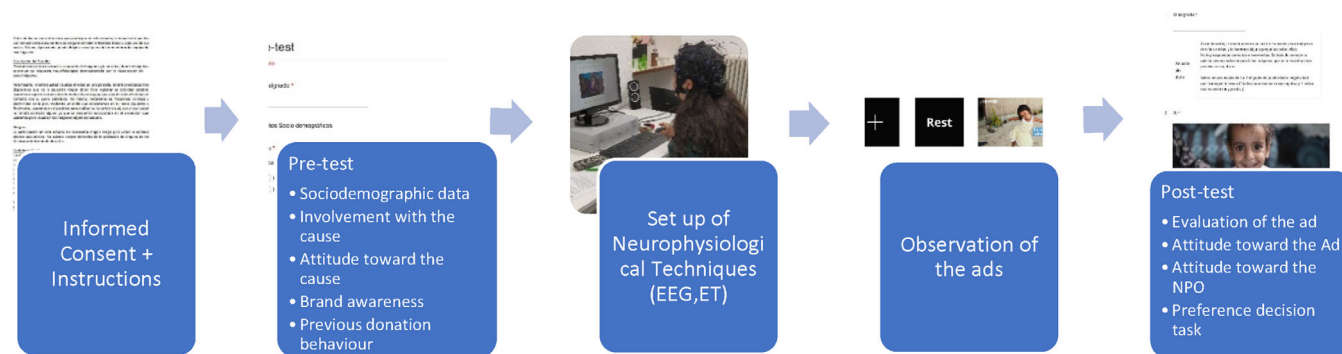


FIGURE 2 Procedure of the experiment.

emotional valence was measured using alpha-asymmetry. The post-processed EEG and ET data of time in AOI and declarative data were analysed using SPSS software.

4.2 | Manipulation check

Although the manipulations were pre-tested, a manipulation check was carried out. After showing participants the ad, they rated the images of the humanitarian NPO on a 7-point scale indexing the valence of the person's facial expression from 1 (*negative*) to 7 (*positive*) (Genevsky et al., 2016). The participants who viewed the environmental images evaluated the message framing conditions on a 7-point semantic-differential scale ranging from 1 (*mostly negative*) to 7 (*mostly positive*) (Chang & Lee, 2009). In coincidence with the pre-test, participants reported higher scores for positive images and lower scores for negative images for both NPOs. For UNICEF negative images, they reported $M = 2.09$, and for positive images, $M = 5.74$ ($t = -14.43$, $p < .000$) and for Greenpeace negative images, they reported $M = 2.6$, and for positive images, $M = 4.7$ ($t = -3.23$, $p < .002$).

At the pre-test, participants were asked if they knew of a list of NPOs, including the ones in the study: 100% of the participants knew about UNICEF for humanitarian aid, and 86.8% of the participants knew about Greenpeace for environmental aid. The results indicated that the selection of the NPOs was appropriate.

4.3 | Main findings

To test the first hypothesis, an independent-sample t-test was conducted to compare the A_{ad} for positive and negative images of NPOs. The results showed a significant difference in A_{ad} for positive and negative images for both NPOs: UNICEF positive images ($M = 5.25$, $SD = 0.78$) and negative images ($M = 3.32$, $SD = 1.76$); $t(58) = -5.503$, $p < .000$, and Greenpeace positive images ($M = 6.03$, $SD = 1.02$) and negative images ($M = 4.05$, $SD = 1.69$); $t(51) = -5.298$, $p < .000$. Therefore, **H1a** was supported.

Also, we conducted an independent-sample t-test to compare the valence measured with EEG for positive and negative images of the

TABLE 2 Mean scores and standard deviation of time in the areas of interest.

NPO	AOI	Frame	Mean	Standard deviation
UNICEF	Text	Negative ($n = 30$)	1.72	.48
		Positive ($n = 30$)	1.90	.52
	Image	Negative ($n = 30$)	3.76	.59
		Positive ($n = 30$)	3.46	.62
Greenpeace	Text	Negative ($n = 30$)	1.37	.39
		Positive ($n = 23$)	1.62	.40
	Image	Negative ($n = 30$)	4.10	.39
		Positive ($n = 23$)	3.43	.74

NPOs, finding significant differences for both NPOs: UNICEF positive images ($M = 33.78$, $SD = 41.68$) and negative images ($M = -26.5$, $SD = 38.15$); $t(58) = -5.844$, $p < .000$, and Greenpeace positive images ($M = 50.03$, $SD = 38.20$) and negative images ($M = -50.88$, $SD = 47.24$); $t(51) = -8.356$, $p < .000$. Thus, **H1b** was supported.

To test **H2a**, we carried out an independent-sample t-test to compare the time in the AOI of an image, using ET for positive and negative ads for each NPO. The results for UNICEF showed no statistically significant differences, $t(58) = 1.968$, $p = .054$. However, for Greenpeace, the results did show a statistically significant difference, $t(51) = 4.294$, $p < .000$, with more time spent on the negative image (see Table 2). Hence, **H2a** was partially supported.

In the AOI text, a significant difference was detected in the time spent on positive and negative ads of Greenpeace, $t(51) = -2.352$, $p = .024$, with more time on the text for the positive ads (see Table 2). On the other hand, UNICEF showed no significant difference in the text area for positive or negative ads, $t(58) = -1.405$, $p = .165$. Therefore, **H2b** was partially supported.

To test H3, we used logistic regression analysis to conduct a moderation analysis with PROCESS Model 1 (Hayes, 2013) and 5000 bootstrap resamples. The variable involvement with the cause was mean-centred before analysis. Specifically, we examined the interaction effect of the advertising frame (positive or negative) and involvement with the cause on donation behaviour. The results showed that frame had a significant negative effect on donation behaviour ($b = -0.869$; $p = .02$), but we found no significant effect of involvement with the cause ($b = 0.137$; $p = .71$), which was inconsistent with our hypothesis. There was no statistically significant interaction effect between the advertising frame and involvement with the organisation's cause on donation behaviour ($b = 0.708$; $p = .21$) (see Figure 3).

We examined whether the advertisement's emotional framing affected both the propensity to donate and the donation amount. We conducted a chi-square for independent tests (with Yates Continuity Correction) to measure the difference in donation behaviour

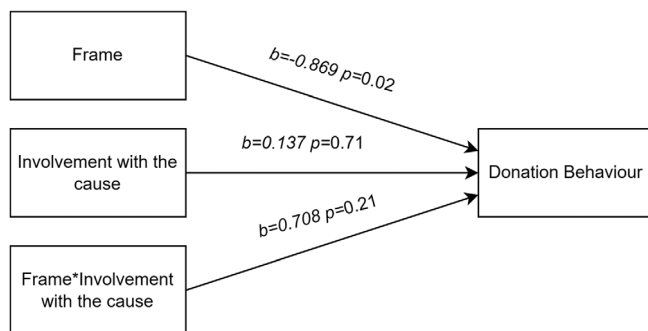


FIGURE 3 Statistical diagram of the moderation model. Frame (X), Involvement with the cause (M), donation behaviour (Y).

considering willingness to donate according to the advertisement's emotional appeal. The results showed a significant association between the number of donors and the framing (positive or negative), $\chi^2(1, n = 113) = 5.38$, $p = .02$, where 63.3% of the participants who received the negative framing donated.

When donations were examined separately for each NPO, χ^2 for independent tests (with Yates Continuity Correction) was carried out to measure the difference in donation behaviour according to the type of emotional appeal of the advertisements. The result yielded no significant association between the number of donors and framing (positive or negative) for either of the NPOs: UNICEF, $\chi^2(1, n = 60) = 1.67$, $p = .19$, $\phi = -0.20$, or Greenpeace, $\chi^2(1, n = 53) = 2.16$, $p = .14$, $\phi = -0.24$.

The results of a t-test for independent samples for donation behaviour considering the amount of the donation yielded no significant difference for either of the NPOs: UNICEF, positive images ($M = 8.44$, $SD = 7.63$) and negative images ($M = 9.74$, $SD = 7.66$); $t(33) = 0.501$, $p = .620$, or Greenpeace, positive images ($M = 7.33$, $SD = 8.17$) and negative images ($M = 8.91$, $SD = 7.17$); $t(33) = 0.590$, $p = .559$. Therefore, H4 was partially supported. Thus, as shown in Figure 4, people presented with negative advertising are more likely to donate. In contrast, Figure 5 indicates that the sum of the amounts of donations is higher for negatively framed advertising for both NPOs. Here, it is interesting to note the difference in the sum of the donations considering the type of NPO because the difference between positive and negative UNICEF ads was marginally higher for the negative appeal (€185) than for the positive appeal (€135). In contrast, for Greenpeace, there was a more pronounced difference favouring the negative appeal (€205) than the positive one (€88).

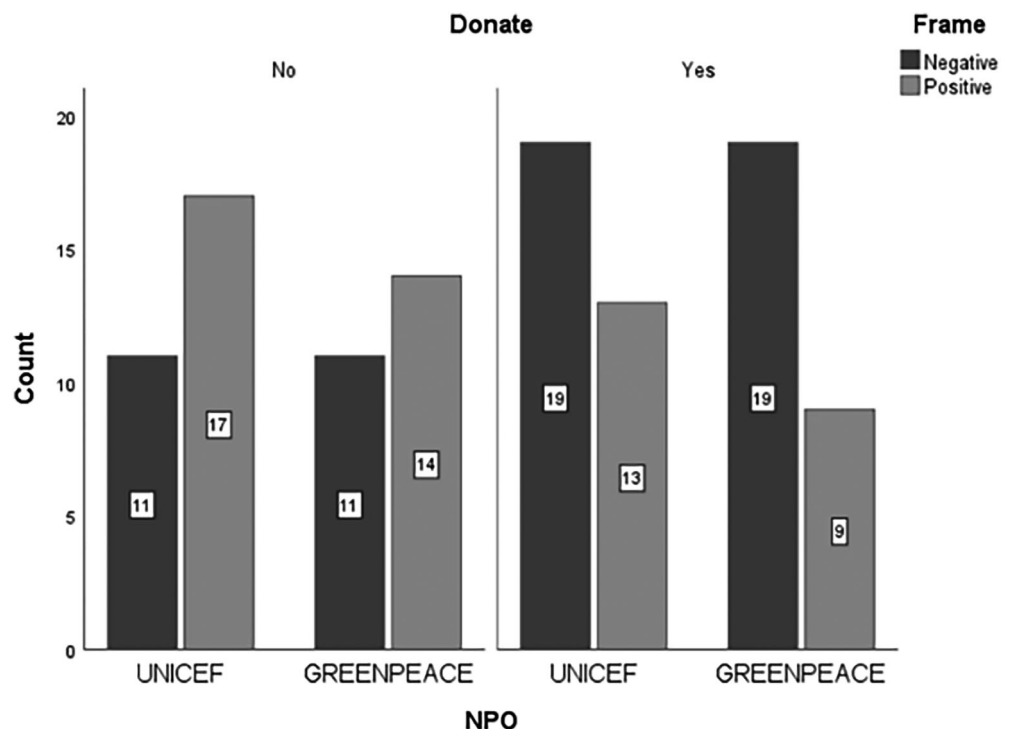


FIGURE 4 Donation behaviour.

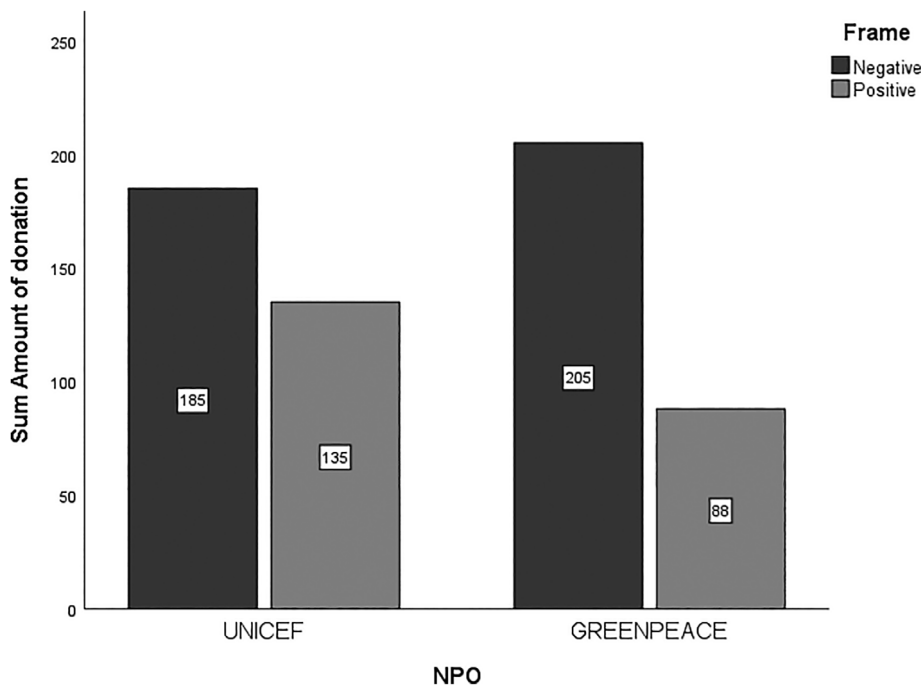


FIGURE 5 Sum of Amount of donation by advertising framing for each NPO.

5 | DISCUSSION

NPOs do a great job of helping those in need, but they face fierce competition because the number of NPOs has increased, and they all ask for individual donations to achieve their goals (Cao, 2016). Thus, they need to find effective ways of communicating their causes. To this end, this research examined the three levels of effectiveness (perceptual or communicational, psychological or attitudinal, and behavioural), providing a new approach considering consumers' unconscious responses to advertising and testing how involvement with the cause (humanitarian and environmental aid) moderates the effectiveness of advertising framing on donation behaviour.

Previous research on the advertising effectiveness of NPOs has revealed conflicting results of the effects of positive and negative appeals on prosocial behaviour. The results of this study suggest that these discrepant findings may be due to the different outcomes analysed in previous investigations. The current research contributes more to existing work, as it provides a variety of outcome variables, as suggested by Wymer and Gross (2021), and also objective results. In addition, it has considered other variables such as the type of NPO (humanitarian and environmental) and participants' involvement with the cause.

When considering the psychological or attitudinal effectiveness, the results showed the actual response and impact of the perceived message on A_{ad} , which includes emotion, like or dislike of the advertising. It seems that positive framing, or ads framed in potential gain, are more effective, considering the A_{ad} and positive emotional valence for both types of NPOs. These findings coincide with Erlandsson et al. (2018) because, in all studies, positively framed appeals were liked more than negatively framed ones. This paper contributes to the existing literature by including unconscious responses to NPO

advertising, revealing a more positive valence when the appeal was framed positively for both types of NPOs (humanitarian and environmental). Hence, NPOs that aim for people to have a more positive A_{ad} should preferably use positive appeals.

On the other hand, considering perceptual or communicational effectiveness, which includes attention, the results revealed that the image, measured with ET, catches the most visual attention. This is particularly significant for environmental NPOs where negative images that focus on the potential loss of not helping attract more attention, based on the time spent in the image area of the ad. A possible explanation for the lack of differences between positive and negative ads of the humanitarian NPO is that, as indicated in previous studies (Bebko et al., 2014; Schindler & Bublatzky, 2020), by nature, humans pay more attention to faces, because they provide a lot of information in a short period of time. Moreover, the fact that UNICEF uses human faces is equally striking. In the study by Bebko et al. (2014), they found differences between animal and human faces in the time spent in the face area. Also, we note that the text area receives more attention when the ad is framed positively based on the potential gain of helping, but this is significant only for environmental NPOs. These results are consistent with previous studies (Alonso Dos Santos et al., 2017; Bebko et al., 2014). However, an interesting contribution of this study is that for humanitarian NPOs, no significant differences between negatively and positively framed advertisements were observed in the text area. Therefore, negative valence images are recommended to draw attention to the ad more generally, but if the NPO's goal is for viewers to pay more attention to the text, then positive valence ads are more effective.

Regarding behavioural effectiveness, the results show statistically significant differences in donation behaviour between the participants who viewed the negative and the positive ad. In negatively framed

ads focused on the potential loss or consequences of not helping, 63.3% of the participants donated. But when analysing the NPOs separately, no significant differences in donation behaviour were found either for the donation amount or the propensity to donate. This may be due to the sample size, as each group only had 30 participants. Nonetheless, it appears that the people who viewed the negative ads were more likely to donate, and the sum of the donation amounts was higher for negatively framed advertising for both NPOs. This result could be explained by the negative-state relief (NSR) model, which postulates that people want to reduce negative emotions, so when exposed to negative content, they seek behaviour that helps reduce their discomfort (Bae, 2021; Cao & Jia, 2017). In the study carried out by Cao and Jia (2017), this happened when the participants' levels of psychological involvement were lower. However, we did not find this result in our study because we did not observe the expected interaction effect between the advertising frame and involvement with the cause on donation behaviour. A possible explanation for this absence of interaction effects may derive from the small difference in the rate of involvement reported in both groups, as found in the research of Sabre (2011).

6 | CONCLUSIONS

Previous research has analysed the impact of emotional appeals in NPO advertising (Bebko et al., 2014; Martinez-Levy et al., 2021; Randle et al., 2016; Septianto & Paramita, 2021; Septianto & Tjiptono, 2019). However, there is still no consensus about which emotional appeal (positive or negative) increases the effectiveness of advertising in NPOs. The application of neuromarketing techniques in this study provided evidence of their effectiveness in improving ads and enhancing NPO communications.

6.1 | Theoretical implications

The results of this study contribute to the existing literature, answering the question of which framing (positive or negative) is more effective for NPO advertising, considering the type of effectiveness (perceptual or communicational, psychological or attitudinal and behavioural) the organisation wants to achieve. Given that previous studies' results are conflicting (Randle et al., 2016; Septianto & Paramita, 2021; Small & Verrochi, 2009), this study provides further evidence of the impact of emotional appeals in NPO advertisements. Thus, this study investigates the dynamics between cause involvement, donation behaviour, A_{ad} , valence, and visual attention.

Furthermore, this study analyses the impact of advertisement effectiveness of NPOs for different types of NPOs by measuring advertising effectiveness considering different outcomes and also the unconscious response of the audience. According to the hierarchy-of-effects model, consumers go through a set of stages in response to advertising, so a positive attitude should produce positive affect and approach behaviour. But our results indicate that attitude and behaviour do not always go hand-in-hand (Erlandsson et al., 2018).

Therefore, these steps do not have to be uniform for the message to be effective or persuasive. Although a negative appeal may increase willingness to donate, if the subjects' A_{ad} is negative, this could reduce its effectiveness in the long term. Therefore, the main conclusion of this research is that although an advertisement may be liked and elicit positive emotions, this does not mean that it will increase willingness to donate. On the contrary, although a negatively framed advertisement may have a negative effect on the person's A_{ad} and elicit negative emotions, people may be more willing to donate after seeing the ad. This could occur because negative emotions trigger feelings of empathy and, thus, increase social aid (Bagozzi & Moore, 1994).

Taking these results into account, it seems that no framework is more effective at all three levels of effectiveness (perceptual or communicational, psychological or attitudinal and behavioural). Therefore, in future research, it could be interesting to consider the interaction between image valence and message framing; that is, a positive image with a negative message framing and a negative image with a positive message framing.

6.2 | Practical implications

This research has important practical implications for NPOs, which should consider these results for future decision-making when designing an advertisement. Based on the neurophysiological responses, the results indicate which frame to use depending on the organisation's goal. If the aim is to increase donations at a specific time (short term), then the negative appeal seems more effective because people will try to alleviate their negative feelings by donating. However, if the aim is to enhance the A_{ad} and evoke a positive emotional response, then the positive appeal is more effective, producing a long-term positive result for other types of donation, such as programs of monthly giving.

Another practical implication of these findings is that for humanitarian NPOs, both positive and negative appeals can attract the audience's attention in both the image and the text area. However, for environmental NPOs, the negative appeal draws more attention to the image area and the positive appeal to the text area. These findings will allow practitioners to design their advertisements better.

The results also showed the advantages of applying neuromarketing techniques to investigate the effectiveness of advertising and enhance NPO communications, as they measure the participants' implicit responses, providing valuable information.

The application of neuroscientific techniques has important practical implications. According to a recent Marketo report (2018), there is a huge increase in the number of marketers who say they will need neuromarketing skills and knowledge by 2025, going from a niche of 8% to more than half of the respondents (52%).

7 | LIMITATIONS

Despite its contributions, this research has some limitations that should be acknowledged. First of all, the ads were presented to the

participants, and they were obligated to watch them, so it would be especially interesting to analyse attention in a non-forced environment. Furthermore, as the study applies neurophysiological techniques in a laboratory setting, the sample size for each NPO and appeal (positive/negative) is quite small, so the results should not be extrapolated to the entire population. Given that humanitarian aid has been used specifically for children, future research may consider asking the participants if they are parents, as after people become parents, they are more inclined to engage in social causes (Chang & Lee, 2009). The sample age includes millennials and gen Xers, which represent an important part of the population, but generational differences between donors may have a considerable impact on their behaviour and attitudes.

ACKNOWLEDGMENTS

The authors would like to thank Bit-Brain S.L. for their technological assistance and support.

FUNDING INFORMATION

This work was funded by grant RTC-2016-4718-7 from the Spanish Ministry of Economy, Industry and Competitiveness. Also, by Community of Madrid, Spain under the Multiannual Agreement with the Complutense University of Madrid in the line Excellence Programme for university teaching staff, within the framework of the V PRICIT (V Regional Plan for Scientific Research and Technological Innovation). And the Marketing Department of the Complutense University of Madrid.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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How to cite this article: Sandoval, P. S., & García-Madariaga, J. (2024). Impact of emotional appeal on non-profit advertising: A neurophysiological analysis. *Journal of Consumer Behaviour*, 23(1), 203–217. <https://doi.org/10.1002/cb.2168>