RICHTMANN
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Research Article

Memes in Marketing: Impact on Advertising Literacy and Emotional Experience Among Adolescents

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Abstract

Declining digital marketing metrics often point to a trend of lower interest in advertising and sponsored content. Therefore, creators are finding other ways to spread the advertising message, particularly through native advertising, one option being the use of memes. Memes are an effective and very popular tool for reaching adolescents, but their use requires caution and an understanding of their dynamic and often unpredictable nature. The aim of this study is to investigate the impact of memes on social networking sites that have advertising content on adolescents' levels of advertising literacy. The study was conducted through a qualitative neuromarketing study and follow-up personal interviews with a sample of 24 respondents. The results indicate lower levels of advertising literacy among adolescents who, while recognizing the sales intent of the meme image, were unable to identify the sponsor. The results also confirmed that memes can evoke different emotions in adolescents, such as joy, but also anger and frustration. The research findings raise the concern that adolescents are not sufficiently able to navigate safely in the online environment, which is exploited by many companies in their sales techniques. Such adolescents can easily be deceived, misled. This has triggered the need for more intensive media literacy education on the one hand, and the introduction of consistent ethical principles on the other, i.e. on the advertisers' side.

Keywords: memes, advertising and sponsored content, advertising literacy, meme literacy, emotions, social networks

1. Introduction

The decrease in click-through rates (CTRs) and conversions in digital advertising, and overall less interest in digital advertising points to a trend of consumers rejecting advertising and promotional content in the digital environment (Chaffey, 2021). In his study, Sagin (2020) points out that the decline in engagement and interest may also be due to the existence of user-generated content, which takes the form of "memes" placed on corporate websites, for example. Internet memes have recently become one of the most effective marketing communication tools and are considered one of the easiest ways to reach target groups. Internet memes, broadly defined as a *"group of digital items*

created with awareness of each other and circulated, imitated and/or transformed via the Internet by many users" (Shifman, 2014, p. 41), can take the form of images, videos, texts, GIFs or hashtags (Wiggins, 2019) and are characterized by their speed of dissemination and their ability to attract attention. According to Brubaker *et al.* (2018), they are steeped in humour, irony and satire, effectively spreading different ideas or messages.

Digital advertising often relies on memes because they are an effective way to attract consumers' attention while creating new content. Intertextuality is a key factor in the success of memes in advertising. Memes often draw on existing cultural material such as films, TV shows, music, and transform it into new forms such as parodies, remixes or mashups. These memes are then disseminated over the internet, often with different interpretations and added meanings from different users.

However, as Murray, Manrai, and Manrai (2014) state, meme-based digital campaigns are also associated with major risks because it is difficult to ensure message control. This is because memes are inherently uncontrollable and can be interpreted in many ways, which can be a problem for brands trying to maintain a consistent and positive image. Overall, memes are extremely important in advertising, but their use requires caution and an understanding of their dynamic and often unpredictable nature (Sharma, 2018).

Following and spreading memes on social networks have become a popular form of entertainment among adolescents and young people. For marketers, memes are an effective tool to reach this young target group. However, the recognition of advertising content in memes can be problematic for young users, which also raises the debate about the ethicality, transparency and effectiveness of such marketing practices. If children and adolescents do not perceive the commercial intent of advertising integrated into memes, they are unlikely to activate their advertising literacy skills, which could serve as a means of critical thinking and evaluation. The authors of this paper conducted research to determine whether sponsorship declaration stimulates adolescents aged 13 to 17 to activate advertising literacy skills when confronted with embedded advertising in memes.

With the rapid increase in the use of memes in digital communication, there is a growing need to improve advertising literacy, as memes are becoming one of the most important tools in online advertising and social communication for Generation Z. According to Malodia et al. (2022), meme advertising can be effective because it is entertaining, easy to remember, and spreads quickly among users. However, it can also contain hidden commercial and manipulative elements that can be difficult for users to identify, especially if they lack advertising literacy. One of the main reasons for the need for advertising literacy is the hybrid nature of memes, which blurs the boundaries between entertainment and advertising content (Pilavcioglu, *et al., 2023*). Memes are often used for entertainment, irony, or satire, which can make users less wary of their advertising nature. According to research by Wojdynski *et al.* (2018), it can be concluded that when advertisements are disguised as entertainment or cultural content, consumers' cognitive defenses against manipulative techniques are reduced. As a result, consumers are less aware that they are exposed to advertisements, leading to uncritical acceptance of commercial messages. Advertising literacy is therefore important to ensure that consumers can identify these hybrid forms of content and are able to critically evaluate them (Čábyová, Hudáková, 2022).

2. Theoretical Background

2.1 Advertising literacy, meme literacy

In defining advertising literacy, we can draw on the scholarly work of Boush et al (1994), who explain the concept of advertising literacy as the totality of individual abilities and skills necessary to effectively navigate and critically engage with advertising stimuli. This definition encompasses not only the ability to recognize and identify an advertisement, but also to understand its intrinsic persuasive intent and its sales and commercial function. Such recognition is essential when using this

knowledge to analytically evaluate advertising content (De Jans *et al.,* 2017a).

Elaborating on this theory, Rozendaal *et al.* (2011) stated that advertising literacy can be divided into three main dimensions: firstly, the conceptual dimension, involves recognizing advertising, understanding its selling and persuasive intent as well as identifying the strategic techniques used in advertising. The second, attitudinal dimension, is linked to the development of a critical attitude toward advertising messages. Thus, advertising literacy embodies not only an awareness of advertising and its diverse tactics, but also the ability to decode and interpret the persuasive goals embedded in it (Daems *et al.,* 2017). The third dimension, according to Rozendaal *et al.* (2011) can be called advertising literacy performance. We believe that this concept puts the understanding of advertising literacy into a dynamic context. By advertising literacy performance we mean the active and effective use of conceptual advertising knowledge when an individual is confronted with an advertisement. That is, knowledge about advertising and its techniques is not passively stored, but is actively mobilized and applied in real time, thereby increasing cognitive defenses against manipulative advertising tactics. This provides a more holistic view of advertising literacy, where it is not only what an individual knows about advertising that is important, but also how he or she uses this information to interpret and evaluate advertising messages. Thus, it allows for an assessment of how individuals integrate their prior knowledge and attitudes into their interaction with advertising content and how these elements influence their decision making and behaviour in the context of consumption.

The need to distinguish between the content and the source of an advertising message becomes particularly important in the context of social networks, where adolescents devote a significant amount of their time. However, this can become problematic in the context of newer advertising practices such as influencer marketing and advergames, vlogs and memes, where advertising content can be seamlessly woven into editorial content that is interactive, entertaining and engaging (Hudders *et al.,* 2017). Vanwesenbeeck *et al.* (2020) highlight a growing issue in advertising literacy on social media, where the boundaries between commercial and entertainment content are becoming increasingly blurred, which may pose a risk for adolescents as this age group is often exposed to integrated and innovative formats that can lead to "misdirection" (De Veirman and Hudders, 2019).

In this digital space, young people follow influencers heavily, who often present lifestyles associated with different brands and products. Many adolescents have a very positive relationship with these influencers and often consider them as their true friends (Hudders *et. al.* 2017, Van Dam and Van Reijmersdal, 2019). Their recommendations are authentic, and are often perceived as sincere and truthful (De Veirman, Cauberghe and Hudders 2017). Young people find it harder to identify whether the content that influencers create is an intentional (sponsored) or unintentional advertising tool. As a result, there may be an unconscious acceptance of commercial messages as authentic views on life, lifestyles that influencers present. It is therefore essential that underage users are equipped with the necessary advertising literacy to critically evaluate such content. The integrated nature of advertising messages in influencer content makes it difficult to clearly recognise them and requires well-developed media and advertising literacy. Young people should not only be able to recognise the advertising intent behind certain posts, but also understand how these messages are constructed and what techniques and strategies are used to influence their opinions and behaviour. The importance of the transparency and labelling of paid content should be emphasised to make it clear when followers are being exposed to hidden marketing.

Another effective tool in relation to adolescents is the commercialisation of popular memes as a means of embedding advertising messages. This tactic exploits the meme's inherent potential for viral popularity and its ability to convey complex ideas and sentiments through simple visual content (Miles, 2014; Taecharungroj, V. and Nueangjamnong, P., 2015). Memes, originally seen as spontaneous and organic forms of internet humour, are gradually becoming a tool for brands to promote their products or services. This trend raises the need to explore how young people and adolescents perceive and interpret these commercial elements within their everyday online interactions.

The first use of the term was by Richard Dawkins (1976) in the field of evolutionary biology,

likening it to genes. Memes, like genes, spread, mutate and undergo selection processes. Memes have a special position in advertising and marketing. They are important for the dissemination of ideas and brands because people add their own interpretations to them and create new meanings (Denisova, 2019). Later, internet memes established themselves as a key part of participatory internet culture (Vasquez and Aslan, 2021).

In terms of use in advertising, memes bring several advantages. In particular, as Bury (2016) and Williams (2000) state, meme-based advertising is more financially efficient than traditional forms of advertising. Such advertising uses popular memes, which makes it easy for the target audience to identify with the context of the advertisement. Also, thanks to the popularity of memes, marketers can organically create a connection with their audience. In addition, memes are relatively easy to create, as they are often based on adaptations of existing templates.

Memes are an important part of online culture nowadays, and brands and advertisers take advantage of this when targeting young people. They are particularly attractive to adolescents because they are fun, easy to share and young people can identify with them (Casey, 2018). Brands often take advantage of their popularity and ability to spread virally. This approach can create a positive association with the brand among adolescents. Research by Hsin-Hui *et al.* (2019) suggests that memes can influence young people's attitudes and behaviours, including their purchase decisions. The relatability and funniness of memes can subtly promote products or services. They can also increase brand engagement among young people, who are more likely to interact with a brand that uses humour and cultural messages they understand.

On the other hand, it is important to be aware of the potential risks. Content that is poorly chosen can backfire and damage brand reputation (Shifman, 2013; Tuten and Salomon, 2018). In addition, the effectiveness of memes can be short-lived due to their transient nature. There are also ethical considerations when using memes for advertising, especially when targeting adolescents. The covert nature of such advertising raises questions about consumer awareness and consent. This trend highlights the importance of digital literacy among young people. It is important that they understand the compelling intent behind meme-based advertising so that they can make informed decisions.

There are quite a number of studies looking at paid product placement on social media (Boerman, 2017; Eisend *et al.,* 2020; Evans *et al.,* 2019; Janssen andFransen, 2019; van Reijmersdal *et al.,* 2013, De Veirman, M. and Hudders, 2019), however, only a few studies have focused on teenage audiences (De Jans *et al.,* 2020; Zarouali *et al.,* 2018).

3. Methodology

One of the general goals of advertising communication is to achieve high levels of attention and engagement through emotions in advertising, as emotions are highly correlated with decision making and memory (Le Blanc et *al., 2014*). Thus, memes, as a vehicle for humour, can influence decision making and memory. High levels of emotion-induced involvement in advertising also affect long-term memory and increase consumer purchase (Loewenstein, 1966; Kiehl *et al.,* 2001; Öhman and Mineka, 2001; Algom *et al.,* 2004 ; Estes and Verges, 2008 ; Milosavlejevic and Cerf, 2008; Ramsøy *et al.,* 2012; Le Blanc *et al.,* 2014). Previous research suggests that adolescents who have learned to recognize the intentions of advertisements often show more scepticism towards them (De Jans, Hudders, and Cauberghe, 2018). Other studies examine their ability to cope with persuasive advertisements, their understanding of the concept of paid content, and their scepticism towards advertisements (Boerman, Helberger *et al,* 2018), and the importance of sponsorship transparency (Campbell and Evans, 2018; Wojdynski *et al., 2018*) for young users.

By considering cognitive, performative, and attitudinal aspects of advertising literacy (Rozendaal *et al., 2011),* this study aims to further this issue and contribute to existing knowledge on advertising literacy in adolescents. To this end, an experiment was designed to determine whether adolescents are able to identify an advertisement in a meme image and also provide information

about what emotions and opinions they have when interacting with a humourous meme.

To this end, hypotheses were established:

- H1: The majority of the adolescents surveyed are aware that the meme image under study has advertising content.
- H2: Most of the adolescents surveyed will also direct their gaze at the label of the paid partnership when looking at the picture.
- H3: The age of respondents has an impact on the distribution of views towards the label of paid partnership.
- H4: The age of respondents has an impact on emotional experience.

The experiment-based research combines various methods such as questionnaire surveys and data collection and analysis through consumer neuroscience, capturing the conscious and unconscious responses of the research participants. The experiment was conducted in Q4 2023 under laboratory conditions with controlled temperature, noise and lighting conditions.

The subject was an image representing a meme image with a humourous connotation, placed in the interface of the social network Facebook. This content included graphical elements, descriptions and authentic comments. The meme image in question represented a real post on a humourous page called EMEFKA (emefka_official), which at the time of the research had approximately 450,000 followers. The aforementioned site is known primarily for its focus on younger audiences and frequent involvement in paid partnerships.

The test subject (specifically, a meme image indicating a paid partnership) was selected through a combination of random selection and purposive selection based on specific characteristics. The initiation of the selection process was done by randomly selecting multiple ads from an existing set that met predefined criteria related to language, humour, and other relevant factors. The definitive deciding criterion for the final selection was the paid partnership factor.

The research was conducted in two phases:

1. qualitative phase using consumer neuroscience methods
2. individual interviews.

Twenty-five individuals between the ages of 13 and 17 participated in the study (15 female and 10 male). The sample size was determined with consideration of time and financial constraints, but with an emphasis on the quality and validity of the data collection according to Lawton and Wilson (2010). This was based on the observation that even a sample size of 15 to 30 participants can generate statistically significant results, provided that consistency and sample characteristics are maintained, as reported by Mikalef *et al.* (2017), Brumberger (2022, 2023) and Li (2018). A bibliometric analysis in the field by Salleh (2021) also points out that the average number of participants in neuromarketing studies is often less than 20.

The sample of respondents belongs to Generation Z, we can generally argue that they are digital natives, they were born into a digital environment. (Prensky, 2012). The generation has already grown up with the internet and technologies such as mobile phones, tablets and social networking, which has greatly influenced their way of communicating and getting information. This generation tends to be more oriented towards quick and visual communication, often preferring formats such as short videos or memes over long text forms. The age range of 13 to 17 was chosen deliberately, mainly because these are students in 8 year high school so that differences between younger and older adolescents could be compared.

Each participant viewed a study image in a designated room, and their implicit responses were captured using eye-tracking technology, skin conductance measurements, and facial micro-emotion monitoring. Using these techniques, later analysis was able to determine what the participants were paying attention to with their eyes, what emotions it evoked in them, and how "strong" those emotions were. After the implicit responses were measured, each participant was asked to share their conscious thoughts as well.

Upon entering the room, respondents sat down at a monitor, which was running a series of

images and videos. Various meme images, "Reels" videos, and other broader research objects were displayed in a random order, which was intended to reduce the effects of first-choice preference, better remembering the beginning and ending, and possibly participant fatigue during the research. The meme that is the subject of this article was shown to each respondent for 25 seconds. A Logitech camera designed for recording was placed on top of the monitor that the participants were viewing. Respondents were simultaneously monitored using a SmartEye device for gaze tracking and a Shimmer device for measuring skin conductance. Using all of these devices, a 25-second recording was made that captured various physiological and neural responses.

In a closed room on a computer monitor, each respondent watched randomly arranged memes and videos. The meme that is the subject of this study was shown for 25 seconds. Respondents' reactions were recorded using a camera, gaze tracking device, and skin conductance measurement device.

The biometric measurement platform (iMotions version 9.2), which uses methods such as eye tracking, facial expression analysis, and biometric sensors, was used to measure implicit responses (Taggart *et al.,* 2016). Measurements by multiple methods were implemented:

- **Emotional Arousal Analysis (EDA)** Electrodermal activity (EDA) is a powerful indicator of baseline emotional arousal (arousal) in human behaviour research. EDA reflects the activity of the sympathetic nervous system (SNS), whose activity is dependent on the physiological and emotional activation that takes place in our subconscious (Kołodziej, 2019).
- **Emotional valence analysis** - valence or hedonic tone is an affective quality related to intrinsic attraction/"goodness" (positive valence) or aversion/"badness" (negative valence) of an event, object, or situation. The term characterizes and categorizes specific emotions; for example, emotions that are commonly thought of as "negative", such as anger and fear, have a negative valence; joy has a positive valence. Positively valued emotions are triggered by positively valued events, objects or situations. Valence is indicative of the participant's positive, neutral, or negative disposition while viewing the stimulus under investigation. In our measurements, it can range from -100 to 100. Factors that increase the likelihood of positive valence include smiling or raising the cheeks. Factors that increase the likelihood of negative valence include raising the eyebrows, wrinkling the nose, lifting the upper lip, lifting the corner of the lips, lifting the chin, and pressing or sucking the lips. By recording small movements on the face, we can analyse these reactions. (Rasmussen, 2009)
- **eye trajectory analysis** - **gaze** mapping is the recording and analysis of dynamic gaze data, that is, eye tracking data recorded in a dynamic environment. Based on this, the gaze trajectory can be detected and heat maps can be created to point out exposed locations in the image, or static AOIs can be used to derive object-related eye-tracking statistics (Darázs, 2021). Various methods of data visualization have been used in the context of eye trajectory analysis:
- o Temperature maps are visualizations that show the general distribution of viewpoints. The red, yellow, and green colours represent, in descending order, the number of viewpoints that were directed towards parts of the image. Using a heat map is a straightforward method to quickly visualize which elements attract more attention than others.
- o Emotional heat maps show the distribution of emotions attached to certain points. The principle is based on the assumption that certain areas of the image, or specific elements, may evoke stronger emotional reactions. The colours on the heatmaps are used to represent the strength of these reactions, with warmer colours (e.g. red and orange) indicating higher emotional activity, while cooler colours (e.g. blue) indicate lower activity.
- o AOI (Area of interest) metrics. This is a procedure in which a specific area of the stimulus being displayed is selected, obtaining metrics specifically for those areas. While it is not strictly a metric per se, it defines an area by which other metrics are calculated. These metrics are useful when evaluating the performance of two or more areas in the same video, image, website, or program interface.

Pearson's chi-square test was also used to further understand the context of the data obtained through the tracking of the eye trajectory. The aim was to identify any statistically significant differences between groups of participants, or in the distribution and nature of their gaze. To achieve this, we collected data on two groups of participants. We chose the Pearson chi-square test because we were working with categorical data and wanted to examine whether there was a significant relationship between the two variables. This test allows us to compare the actual and expected values in a table and provides a p-value to evaluate statistical significance. Pearson chi-square test is suitable for analyzing statistical independence between two categorical variables. In our study, we worked with two categorical variables - Gaze fixation and Saccady metric.

Immediately after the interviewee finished watching the images and videos under study, an individual interview followed. As part of the interview, participants were invited to provide evaluations and interpretations of individual images, advertisements and videos. In the context of our research study, we focus on questions related to the meme image. The goal of the interview was to gain a deeper understanding of participants' aesthetic perceptions of the image, their ability to identify the primary purpose and intent of the meme image, as well as to recognize the potential sponsored nature of the content and identify the sponsor.

4. Results

Before analyzing a particular meme image, we determined the KPIs: the number of Galvanic Skin Response (GSR) peaks, the valence score, and the gaze distribution.

The analysis of the agglomerated data from all participants suggests that adolescents initially showed only short-term efforts to process a given meme image holistically (compare Nischal and Behrmann, 2023). However, in a relatively short time they moved on to analyzing the individual components of the image, focusing mainly on the face depicted in the meme image. These results also contribute to the discussion on the role of faces in marketing communication opened by Pereira and Ristic (2022).

The research participants' secondary focus was on the text to the upper right of the figure, and progressively continued to the right and downward, which corresponds to the typical reading direction in Western culture. After reading the text at the top of the picture, their attention was drawn to the text in the centre of the picture, which represented the core humour of the picture with which participants interacted. At the time of interaction with this text, we observed an increased emotional response (increased GSR spikes) in participants compared to when they focused on other parts of the meme.

At the same time that participants directed their gaze at the punchline of the joke and an intense emotional response was noted, the emotion of laughter was displayed on participants' faces, which subsequently led to positive emotional valence.

An interesting finding appears to be that when participants focused their gaze on the underlying point of the meme image while showing positive emotions on their faces, relatively high engagement values were also continuously recorded. Thus, these findings provide new insights into the topic of the impact of positive emotions on advertising effectiveness (Compare Randle *et al.,* 2016; Kujur and Singh, 2018; Jindal *et al.,* 2023).

As respondents began to read the picture description, we noticed negative emotions on their faces and an overall decrease in positive emotional response. At the same time, the participants' overall level of arousal, as measured by the skin galvanometer, also decreased. Since these changes occurred before the interaction with the company name mentioned in the description, we can conclude that these changes were not directly related to the interaction with the company name.

Based on the neuromarketing testing data, it is not possible to determine exactly what caused the decline in emotion positivity. However, given the nature of the image description, we can attribute this phenomenon to increased cognitive load (see DeFraine, 2016) or unmet expectations when the consumer realizes that it is an advertisement and not just humour, which may affect their

perception of humour, as reported by Chang (2014).

After reading the description of the picture, participants focused on the comments that were part of the picture and simulated real discussions. These comments, emphasizing humour at the expense of the product being promoted, elicited strong expressions of laughter from participants, which were evident throughout the interaction with the meme image. Although the IMotions system recorded high engagement during the reading of the comments, no significant emotional arousal was detected according to the Binned Peaks GSR. These results suggest that the comments elicited short-term positive emotions but did not elicit a significant emotional response. At the same time, emotions of contempt were also noted, which may be related to the content of the comments.

From the analyzed meme image, we created a visualization in the form of a heatmap (Figure 1). The heatmap shows the greatest concentration of attention in the area of the character's face and the text in the centre of the image, indicating that these areas attracted the most attention. Further, attention is also focused on the text on the right side, i.e. the area where the comments and partnership labels are located, on the text on the top left and on the page title at the bottom.
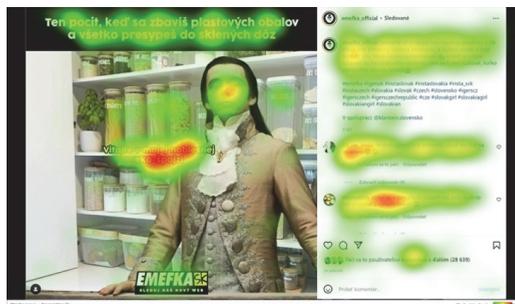

Figure 1: Heatmap of view distrbution

When analysing the gaze distribution data in more detail using the AOI method, it was found that only 36% of participants fixed their gaze on the partnership sign, whereas based on saccade-based gaze metrics we know that only 20% of participants also read the text that was written there (See e.g. Stuart *et al.*, 2019).

We were also interested in whether we could identify differences between groups of respondents categorised by their age. In terms of the focus on text in the meme, younger respondents in the 13-15 age group spent more time on textual content compared to older respondents in the 16-17 age group, as can be seen in Figure 2.
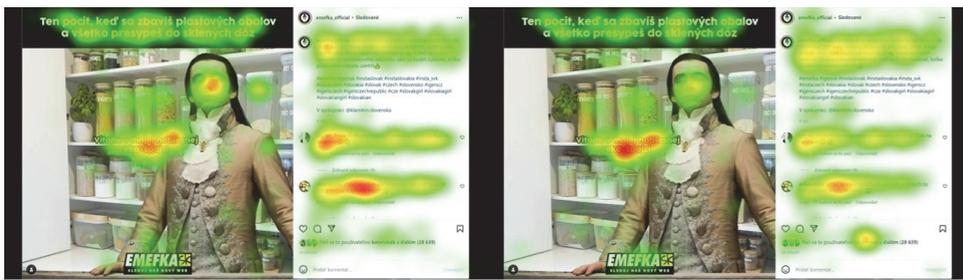

Figure 2 : Heatmaps of view distribution based on age group membership (13-15 on the left, 16-17 on the right)

In contrast, research participants aged 16 and 17 spent more time interacting with the image comments, in contrast to younger research participants.

Differences were found when analyzing the microemotions expressions on the participants' faces. By analyzing them with the IMotions system, we can say that the younger research participants showed the most positive emotions on their faces while interacting with the meme, and also these emotions were represented more intensely on their faces when looking at the meme than when looking at the comments. The younger participants also seemed to show negative emotions when interacting with the meme description (dislike, confusion), in which they differed significantly from the older adolescents. The absence of positive emotions when interacting with the meme description as well as the lower level of positivity when interacting with the meme can be seen in Figure 3, which shows the emotional heatmaps.
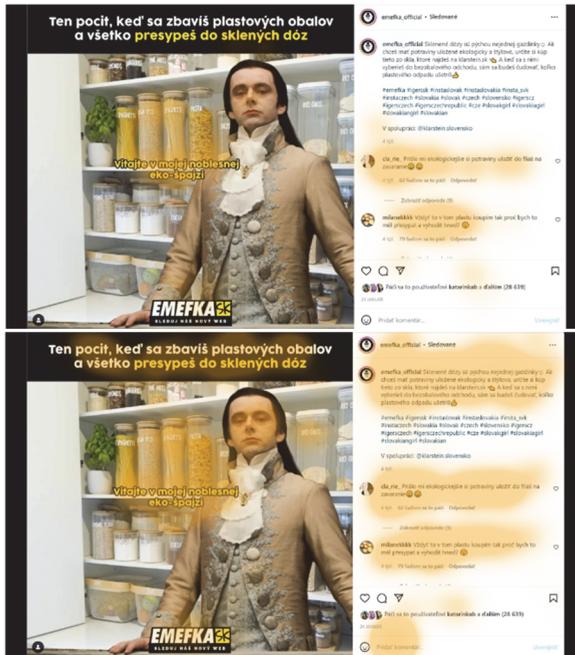

Figure 3: Emotional heatmaps of the distribution of positive emotions when viewed by age group membership (13-15 on the left, 16-17 on the right)

Older research participants had similar levels of positive cheer and facial laughter representation than their younger counterparts when interacting with the meme, but the positive cheer and facial laughter were doubled when interacting with the comments compared to the time they interacted with the meme. We can read a similar pattern from the engagement metric, which doubled during the time they interacted with the comments compared to the time the older research participants viewed the meme. It is interesting to see that on the faces of the older participants, in contrast to their younger counterparts, emotions of disdain and sentimentality were noted at the time of interaction with the comments, indicating some empathy with the content of the comments.

The data obtained by skin galvanometer highlight the different perception of the meme between groups based on age. While viewing the textual content of the meme image, the groups showed different numbers of recorded GSR peaks per minute. The number of recorded GSR peaks per minute was 30% higher in the older research participants than in the younger research participants.

This suggests 30% more pronounced emotional activation. We also noted a difference in that while younger participants showed a decreasing trend in emotional activation after interacting with the point of the image, older research participants showed an increase after interacting with the meme image comments. We consider these findings to be very important, opening up a discussion not only about adolescents' advertising literacy, but also about the influence of age on the grounds wave effect, which is a very lively issue today (see e.g., Cabyova, 2021).

When analysing the designation of paid partnership, we found no significant differences, unlike the previous criteria. In this study, we also focused on analyzing the difference between the distribution of the view and its nature between the two age groups of participants. The aim was to identify any differences between the groups of participants who looked at the label paid partnership and fixed their view, and those who also read the label. The results obtained are presented in Table 1. Based on it, it can be said that 33.33% of the younger participants looked at the partnership label and 22.22% of them also read it. Among the older research participants, 37.5% of the participants looked at the label of paid partnership while 18.75% of them read the label. To make any differences between the groups more explicit, statistical analysis was conducted using Pearson's chi-square test. The results showed that the chi-square test at the 0.05% significance level reached a value of 0.945 with a p-value of 0.3327. It should be noted that this statistical testing was only intended to shed more light on the differences of this small group.

Table 1: Between-group characteristics in the analysis of the paid partnership label

Group	Gaze Fixation	Reading Label	Total Count in Group
Group 16-17	6	3	16
Group 13-15	3	2	9

As part of this study, the conscious opinions of the participants in the experiment were collected through a questionnaire. Table 2 shows the responses from each interview where participants rated whether they liked the picture. In addition, they answered questions about the advertising text next to the images and photographs, determined the purpose of the image, recognized whether the image was sponsored, and attempted to identify the sponsor.

Table 2: Results of the personal interview

	Positive answer	Negative response
Relationship to the image	12	13
Reading the text under photographs and pictures	5	20
	Correct answer	Incorrect answer
The aim of the picture	8	17
Existence of a sponsor	14	11
Sponsor designation	2	23

Based on the inter-comparison of conscious opinions and unconscious responses obtained through consumer neuroscience methods, we can identify a number of significant differences that have been the subject of further elaboration. We find it interesting that a larger proportion of adolescents expressed that they had a rather negative attitude towards the meme image, but the reactions captured on their faces told the opposite.

5. Discussion

This study is designed as part of broader research that contributes to the debate on adolescents' advertising literacy through a series of experiments examining multiple ways of communicating

through meme images. From the results obtained from the multi-object analysis, we can say that the participants demonstrated varying levels of advertising literacy. The majority of the respondents showed the ability to read and perceive the social media descriptions under photographs and meme images, indicating their basic understanding of advertising content. However, only a small proportion were able to identify that some images were sponsored, and an even smaller number were able to identify a specific sponsor. This finding indicates a lack of awareness of sponsored advertising, which may affect their ability to critically evaluate and interpret advertising content. Another interesting fact is that only a small proportion of respondents were able to correctly interpret the main business objective of meme images, indicating a limited ability to recognize and understand advertising content.

The aim of this study was to analyze the meme image with partnership tagging as a means of paid promotion and the nature of adolescents' interaction with such content. The results of those who incorrectly leaned towards the goal of the image being educational and persuasive, again confirming their lack of understanding of the commercial nature and marketing goals of the meme. Based on the above results, the stated hypothesis H1 can be accepted: **the majority of adolescents surveyed are aware that the meme image under study has commercial content,** but at the same time, it must be added that although they are aware of the commercial content, they cannot identify the advertiser (or sponsor). It is very important for influencers to disclose the details of their sponsors on social media to enable viewers to distinguish between advertising (paid) and editorial (unpaid) content (Cornish, 2014). This step, according to Hoy and Adrews (2004), promotes informed consumer decision-making and prevents potential deception and misleading. Research by several authors has shown that sponsorship awareness improves people's ability to critically evaluate advertisements (Boerman and Van Reijmersdal 2019; De Jans, Cauberghe and Hudders 2018). More specifically, the presentation of sponsorship information on social media positively influences two main areas of cognitive advertising literacy in children and adolescents: the identification of advertisements and the understanding of its sales and persuasion goals, and this is true if respondents register the information (Boerman and Van Reijmersdal 2019). However, the results from our gaze path analysis suggest that the majority of participants have a limited ability to identify and understand the sponsored advertisement, as only a small proportion of them (36%) directed their gaze at the sponsor's label, and even fewer (20%) read the label and read the advertisement. Based on the above results, it can be concluded that H2: **the majority of adolescents surveyed will also direct their gaze at the label of the paid partnership when looking at the image cannot be accepted.** The respondents were more interested in the content of the meme image itself, especially the humourous part of the image and the face of the character. It was this that elicited positive emotions and increased engagement, supporting the claim that young people are more sensitive to the humourous elements of advertising and are more motivated to interact if they like the content (Eisend, 2012; Yoon, 2013). In the case of paid native advertising, the positive emotions evoked by a humourous meme can have a negative effect on message recognition as it detracts from the original sales target (Eisend, 2012; Krishnan and Chakravarti, 2003; Spielmann, 2014). From the results of these studies and our research, it can be concluded that children and adolescents often overlook advertising techniques that are less direct and more embedded in entertaining content, as is also the case with this meme image. This may be a result of their attention being preferentially focused on the humour or visual aspect of the meme, rather than being alert to possible advertising and sponsorship signals.

In the context of differences between age categories, research by several authors can be drawn upon. According to Choudhary and Sharma (2021), each individual has a different advertising literacy, which is influenced by their own experiences. Adults have the most developed advertising literacy because they have experience and sufficient knowledge. Differences in how young people perceive and react to advertising content depending on their age can be essential for understanding and developing advertising literacy. The media environment strongly influences an individual's childhood development and builds their advertising literacy, enabling them to understand the different contexts

and relationships between them. Rozendaal *et al.* (2016) Younger adolescents may be more attracted to visual and textual elements due to less developed critical thinking and analytical skills. They may also be more susceptible to humour and play, which advertisements often use to gain their attention (Rozendaal, 2013). On the other hand, older adolescents, who have more experience and better developed critical thinking skills, may be more able to recognize and analyze subtexts and ulterior motives in advertisements (De Jans *et. al,* 2018, Čábyová and Hudáková, 2022). The authors conducted quantitative research on the level of advertising literacy in a sample of 348 respondents in 2022. The results of the research show that the selected age group of adolescents possess a medium level of advertising literacy, which means that they can identify advertising, but not always. The research also showed that adolescents are interested in information and want to navigate easily through posts or advertisements on the Internet. (Čábyová, Hudáková, 2021) In the research we conducted, younger respondents focused more on the textual content of the meme image and showed a greater amount of positive emotions while interacting with it. On the contrary, older participants were more preoccupied with the comments and showed higher emotional activation while reading them.

We consider our effort to find within-group differences in adolescent behaviour to be an interesting addition to this study. To this end, we decided to test whether the behaviour of older and younger adolescents differs. After conducting the analysis, we did not have enough evidence to reject the null hypothesis. This suggests that there is no statistically significant difference between the groups in our sample therefore **we reject H3 and in this case we can say that the age of the respondents does not affect the distribution of the view towards the label of paid partnership**.

Although older adolescents showed similar levels of positive arousal and laughter as their younger counterparts when interacting with the meme, their positive emotions and laughter doubled when interacting with the comments compared to interacting with the meme. This phenomenon may be related to the fact that older adolescents may have a better understanding of the context and content in comments, which likely stems from their longer life experience and ability to better recognize irony, sarcasm, or other subtle shades of meaning that younger generations may miss (Compare: Neudecker *et al., 2014*; Stathopoulou *et al., 2017*; Walter *et al.,* 2018; Warren *et al.,* 2018). Based on the neuroimaging data, we can conclude that the age of the respondents has an impact on their emotional experience while interacting with internet memes and individual comments; we **can confirm hypothesis H4**.

The more intense emotions of contempt and sentimentality experienced by older participants at the time of interaction with the comments suggest that older respondents may have a more complex emotional response that reflects some level of empathy or critical perception of the commented content. From the results obtained using the skin galvanometer (GSR), it can be concluded that the perception of the content varies between age groups. The increased number of recorded GSR peaks in older participants indicates a more intense emotional response to the meme, which may be indicative of higher emotional engagement or greater sensitivity to humour and social cues in these situations. (Warren et *al.*, 2018) On the other hand, the decreasing trend of emotional activation after interaction with the punchline of the image in younger participants may signal a more rapid adaptation or desensitization to the humour contained in the meme. The findings confirm that age may be an important factor influencing how people respond to humour and social content on the Internet.

Despite these benefits, it is important to acknowledge the limitations of the study. The research was qualitative in nature and focused on an in-depth understanding of participants' unique responses, which opens the door for further research. Potential future studies could validate these initial findings quantitatively and explore their applicability to a broader population. In addition, they could provide a better look into the ways in which different demographic and socioeconomic groups interact with and interpret sponsored content. Our findings are not universal and cannot be applied to the entire population of adolescents without further investigation. The results may be influenced

by the specific contexts and personal experiences of participants, and therefore we should be cautious about generalizing them. Despite these caveats, the contribution of our research to the existing literature on advertising literacy and sponsored content is significant and can serve as a solid foundation for future studies in this area.

6. Conclusion

The study investigated adolescents' level of advertising literacy in recognizing advertising intent in meme images. The findings indicate a low level of this literacy, despite the fact that adolescents were aware of the advertising nature of the meme image. However, they were unable to identify the advertiser, indicating their vulnerability to manipulation and low ability to critically evaluate information in advertising images.

The research results also confirmed that respondents were more interested in humorous images than in the label of paid partnerships. This fact significantly weakened their ability to recognize advertising. Differences between age groups showed that younger adolescents focused more on the textual content of meme images, while older participants focused more on the comments. However, there was no significant statistical difference in behavior between age groups.

The low level of adolescents' advertising literacy in recognising sponsored content points to the need to implement targeted education programmes. The lack of ability of young people to recognise sponsored content highlights the need for specific educational programmes. These should already be part of the school curriculum in primary and secondary schools as part of media education and should focus on developing the skills needed to critically evaluate advertising content and recognise its intent.

The humour and fun elements in meme images, while capturing the attention of adolescents, distract from the message and advertising intent. This reduces adolescents' resistance to manipulation and makes it difficult for them to understand the marketing strategies used in advertising images.

The development of advertising literacy among adolescents is crucial, especially in an online environment full of advertising content, where meme images are an effective tool to capture the attention of adolescents. The implementation of education programmes, outreach and collaboration with popular influencers can be important steps to improve this issue and to strengthen the critical thinking of adolescents in the online environment.

Improving adolescents' advertising literacy will help them critically evaluate information in advertising images, protect them from manipulation by advertisers and strengthen their critical thinking in the online environment.

With the increasing use of memes in advertising strategies, it is imperative to establish ethical guidelines to ensure the protection of vulnerable groups such as adolescents. Memes often combine humour, popular cultural references and emotional appeals, making them an effective tool for spreading commercial messages. However, the absence of clear ethical guidelines can lead to the overuse of manipulative techniques that reduce consumers' ability to recognise advertising. This is particularly problematic for adolescents, who do not yet have sufficiently developed critical thinking skills to be aware of hidden advertising intentions.

Our results are consistent with the research findings of Van Dam and Reijmersdal (2019), who also report that adolescents aged 12 to 16 have a limited ability to recognize sales intent in influencer marketing and often cannot determine whether the content they encounter is sponsored. The results also corroborate the finding of Wojdynskie *et al.* (2018), who argue that when advertising is disguised as humorous content, consumers' cognitive ability to recognize manipulative content is reduced.

7. Acknowledgements

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E-ISSN 2281-4612
ISSN 2281-3993

Academic Journal of Interdisciplinary Studies
www.richtmann.org

Vol 13 No 6
November 2024

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