Comunicar, n. 63, v. XXVIII, 2020 | Media Education Research Journal | ISSN: 1134-3478; e-ISSN: 1988-3478
www.comunicarjournal.com

Influence of Instagram stories in attention and emotion depending on gender

Influencia de las historias de Instagram en la atención y emoción según el género

Dr. Joan-Francesc Fondevila-Gascón is Professor in Blanquerna at the University Ramon Llull, Barcelona (Spain) (joanfrancescfg@blanquerna.url.edu) (https://orcid.org/0000-0002-6587-939X)
Dr. Óscar Gutiérrez-Aragón is Professor in the Mediterranean University School at the University of Girona (Spain) (oscar.gutierrez@mediterrani.com) (https://orcid.org/0000-0002-4417-6310)
Meritxell Copeiro is Professor in the Mediterranean University School at the University of Girona (Spain) (meritxell.copeiro@mediterrani.com) (https://orcid.org/0000-0002-5255-5724)
Vicente Villalba-Palacín is Researcher at the Barcelona University (Spain) (vicentevillalbapalacin@gmail.com) (https://orcid.org/000-0003-0284-3004)
Dr. Marc Polo-López is Professor in Blanquerna at the University Ramon Llull (Spain) (marcospl@blanquerna.url.edu) (https://orcid.org/0000-0002-8729-4325)

ABSTRACT

The impact of media and social networks on users is growing. The fact that commercial activity is flooding most social networks motivates us to enquire about the success factors of posts, and to try to determine if the impact is greater or lesser depending on gender. Attracting attention and exciting the user or customer are the main objectives of advertising, especially interactive advertising. This quantitative research measures the psychophysiological signals of the attentional level and the emotional level of people taking into account gender, through Sociograph, when they visualize Instagram stories of real influencers. To measure the electrodermal activity by means of two electrodes, a measurement instrument is used which integrates the traditional register of the Electrodermal Activity (EDA) and processes the information of the individuals. A questionnaire, the screen to display the Instagram story, the Instagram stories of the influencers, a registration protocol and a record sheet of the activity sequences are used. We observed that a greater number of followers implies greater emotional activation, although it translates into negative emotions, and a greater emotional activation in men than in women, although it is they who show positive emotions towards the video and would make an act of purchase through Instagram.

RESUMEN

El impacto de los medios y las redes sociales sobre los usuarios es creciente. El hecho de que la actividad comercial esté inundando la mayor parte de redes sociales motiva a indagar sobre los factores de éxito de las publicaciones, y a tratar de determinar si el impacto es mayor o menor en función del género. Llamar la atención y emocionar al usuario o cliente son los principales objetivos de la publicidad, especialmente la interactiva. Esta investigación, de carácter cuantitativo, analiza los datos de las señales psicofisiológicas del nivel atencional y del nivel emocional de las personas teniendo en cuenta el género, a través de Sociograph, cuando visualizan Historias de Instagram de «influencers» reales. Para medir la actividad electrodérmica mediante dos electrodos, se utiliza un instrumento de medición que integra el registro tradicional de la Actividad Electrodérmica (EDA) y procesa la información de los individuos. Se utilizan un cuestionario, la pantalla para la visualización de la Historia de Instagram, las Historias de Instagram de los influencers, un protocolo de registro y una hoja de registro de las secuencias de actividad. Se observa que un mayor número de seguidores implica mayor activación emocional, aunque se traduce en emociones negativas, y una mayor activación emocional en hombres que en mujeres, aunque son ellas las que muestran emociones positivas hacia el vídeo y realizarían acto de compra a través de Instagram.

KEYWORDS | PALABRAS CLAVE

Sociograph, gender, Instagram, influencer, EDA, emotions, neuromarketing, attention.
Sociograph, género, Instagram, influenciador, EDA, emociones, neuromarketing, atención.

Received: 2019-07-27 | Reviewed: 2019-09-29 | Accepted: 2019-11-14 | Preprint: 2020-02-15 | Published: 2020-04-01
DOI https://doi.org/10.3916/C63-2020-04 | Pages: 41-50

1. Introduction and status of the issue

The Broadband Society (Fondevila-Gascón, 2013), social media and the Internet are changing the relationship between businesses and consumers. In fact, online communication surpasses offline communication, led by social media. Instagram surpasses Facebook in the number of active users by 15%, and it is also the first choice when developing "branding" and "engagement" marketing strategies (CECABLE, 2019).

The communications sector, particularly advertising, public relations and marketing, goes to great lengths to make the most of the options provided by the Internet to move and attract the audience's attention. If we analyse an individual that sees an ad, we can control at least three variables: attention, emotion and memory (Torreblanca et al., 2012). Attention and emotion can be measured through Sociograph. This is called registering the Electrodermal Activity (EDA).

The essential goal of this research is to measure the psychophysiological signals of attentional and emotional levels, through Sociograph, of subjects when they see Instagram Stories of real influencers that have different amounts of followers. This allows us to verify the amount of (emotional and attentional) influence generated over the follower and to determine if their activation is positive or negative, in addition to the potential activation differences according to the gender of the subject that sees them. We also suggest getting to know user consumption habits or what an "influencer" is to them to determine their perception.

1.1. Stimuli and emotional contagion

With the appearance of social media, emotional contagion appears among users. On Facebook, it has been proven that if two individuals interact with someone outside of their personal contacts and the amount of emotional content on their timeline is reduced, these people produce less positive content and negative expressions (Kramer et al., 2014).

According to Christakis and Fowler (2007), the influence of each individual extends to a third-degree relationship (three degrees of influence of human behaviour). Physically, it's possible for an emotion to be shared from one person to another (Hatfield et al., 1993), although it has been observed that this can also occur online. The auditory cortex is activated according to the emotional level of the stimulus (Plichta et al., 2011). According to this degree of perception, emotion can be stronger and become a memory, similarly to other areas of the brain through visual stimuli (Keil et al., 2005).

Therefore, emotion makes marketing and advertising useful. Moving the client or audience, for example, during interactive broadcasts on HbbTV (Hybrid Broadcast Broadband Television) (Fondevila-Gascón et al., 2015), customises the product. An experiment with TV ads using Electroencephalogram (EEG) and Heart Rate (HR) proved that it's possible to know the attention, memorisation, pleasure and emotion experienced while seeing the ad, as well as which the most stimulating fragments are (Vecchiato et al., 2014).

Progress in neuroscience and the study of human reactions to external stimuli is considerable, especially due to the incorporation of new research methods, tools and technologies, such as Functional Magnetic Resonance Imaging (FMRI), EEG, Eye Tracking or EDA, which allow us to study and discover more about brain activity and influence on behaviour and relationships, despite critical approaches (Rego & Fernandes, 2005). EDA is the psychological analysis foundation on which this research is based (Monge & Fernández, 2012). Electrodermal Activity is a psychobiological phenomenon discovered by Fere (1888). It refers to the bioelectric activity of the skin (skin surface) and constitutes a parameter to register psychophysiological measurements. The changes originated in registering EDA depend on the secretion of exocrine glands and other skin structures that cause changes in electrochemical properties due to variations in the permeability of cell membranes (Aiger et al., 2013). EDA is related to moods (Cosculluela et al., 1988).

Electric conductance is used to measure the changes in electric transmission between two electrodes (EDR or phasic level and EDL or tonic level). EDL indicates baseline activation levels (attention), and EDR, the emotional response. This provides the individual's attention and emotion values at the time the activity is performed. EDA is one of the most used psychophysiological indexes as physiopsychological correlative due to its connection to emotion, arousal and attention (Dawson et al., 2007). In order to measure electrodermal activity through two electrodes we use Sociograph, a measurement instrument

that integrates the traditional EDA registration and processes individual information through Sociolab (Aiger, Palacín, & Cornejo, 2013). This allows objective and non-verbal validations of human behaviour, with responses that are hard to falsify (Aiger & Palacín, 2012). The values are expressed in Kiloohms and quantify the emotional and general activation index of an activity (Aiger et al., 2016).

EDL indicates baseline activation levels (attention). Brain activity, explained by the Yerkes-Dodson Law (Reeve, 1994) sets an inverted U relationship between activation and performance: when activation is very high or very low, performance decreases. Average values promote performance and concentration. Less resistance entails greater activation, greater resistance, less activation and attention (Aiger & Palacín, 2012). A third variable is related to spontaneous activity (NSA): this is the uncontrolled activity attributed to a known cause (situation response linked to the degree of activation). In order to correctly register the data, the electrodes must be placed on the non-dominant hand and attached to the skin with Velcro strips on the medial phalanges of the forefinger and ring finger (Aiger & Palacín, 2012). Therefore, EDA registers activity related to attention and emotion during the activity through Sociograph, which can measure groups. The analysis is performed with Sociolab software.

Tapia-Frade and Martín-Guerra (2017) verified the attentional level (EDL) and emotional level (EDR) of 30 subjects while they watched a set of ads. They determined that in comical-style ads EDR obtains a higher average than for other styles and that a sound change positively affects the subject's attention to the ad.

Mediaset España requested attention and emotion measurements to reach their goal of staying ahead on TV programming. For this, they monitored subjects and were allowed to analyse the EDA of audio-visual pieces to obtain objective data. This allowed them to change plots and create characters that interested the audience more (Sociograph, 2019). Sociograph allows us to do market research and receive information about consumers. In this sense, Lewinski (2015) used facial coding to check the lack of facial expressions (happiness and sadness) in the videos used by the company ING on YouTube.

In contrast, there are not as many studies or as much research within the field of social media communication. Influencers are also dealt with in marketing strategies where the phenomenon is measured with Sociograph, and they study how the Youtubers with the most followers in Spain influence the perception of users who watch them (Alonso et al., 2018). Access to the psychological effects of actions, videos or content over users is viable through "Eye tracking", a technology used to verify the effectiveness of "food styling" (Jaromír et al., 2017), that is, creating food photos to use in marketing. These authors use eye tracking to know the aesthetic effect of food attracts consumers.

1.2. Instagram and attracting attention

For this reason, Instagram, launched in 2010, with more than 900 million active users in 2019 and acquired by Facebook in 2012, is an intriguing object of study. Likewise, it is incorporating new updates, services and ad inserts. Instagram statistics show the hours of peak traffic (between 9 p.m. and 11 p.m.) and the ideal time to share an image (9 p.m.). In 2016 Instagram created Stories, which are 15-second videos, and are only shown for 24 hours on the creator's profile; and they are the second most viewed option (50.2% of users).

For content creators, Instagram Stories attract traffic to the creator's profile. The main Key Performance Indicators (KPIs) are likes, comments, post sharing, saved posts, profile visits and scope. The Instagram Stories option emerged from adapting Snapchat, a platform where you can add content that is available for 24 hours after it has been published. This service is one of the first to launch vertical content on the market, adapted to smartphones and which is perfectly compatible for mobile users. Instagram Stories allow you to include and adapt the videos and photos shared, adding other filter options, location, surveys, countdown, mentions or links (for accounts with more than 15,000 followers). According to Smith (2016), Instagram has the second highest level (after Facebook) of interaction (60% of all users log in daily). The number of active users per month is around one trillion. Out of all of the connected users, the group that amasses the most activity online is the group of users between the ages of 18 and 24, mostly men. 60.4% of the platform's users respond to these sociodemographic traits. The communication style and content shown to users must match their tastes and preferences linked to age.

Within social media, an "influencer" is someone who has achieved certain social recognition thanks to their activity on social media. Most of their financial income comes from brand collaborations, which reach their target audience faster and more effectively (Santamaría-de-la-Piedra & Meana-Peón, 2017). Followers with similar interests to influencers want to be like them and follow their steps, so they consume the same products (Campillo, 2016). Influencers act as brand advisers, given that their critiques or comments on products are respected. Since 83% of people follow brands on social media (IAB Spain, 2018), the number of companies that build strategies for this medium and collaborate with influencers increases, making it a growing means of communication, especially among young people.

The use and role of influencers in marketing strategies grows, although the path to be followed is intriguing and must take into account the notion of inclusive education (Aviva, 2009). 37.1% of businesses have been using them for three years, while 29% of businesses have been using them for less than a year (Brandmanic, 2018). 46.8% of brands used specialised influencer agencies to create marketing campaigns (brand strategies, recruiting new followers and sales conversion). Influencer marketing connects companies to these influencers. The brand generates greater visibility, engagement or branding. One of the main strategies on social media is word-of-mouth, the most effective for 85% of users, above influencer actions (82%) (Augure, 2018). Micro-influencers have less followers, but high engagement ratios, by targeting a theme and gaining audience loyalty, which represents a greater commitment to the consumer (9.7% more than an influencer) (Levy, 2017) and triggers effectiveness.

2. Material and methods

This research, performed during 2019, follows a quantitative methodology. To collect the necessary data, we got in touch with four influencers of different types according to range of followers (IAB, 2019), gender and category (Table 1 and Table 2).

Table 1. Characteristics of research influencers

Number of Followers			Gender	Category
Low Level	Medium Level	High Level	According to if they are male or female	Network category (entertainment)
Between 10,000 and 50,000 followers	Between 50,000 and 100,000 followers	More than 100,000 followers		

We requested a 15-second video in vertical format from the influencers, with the same communication traits as their usual character on social media. This was the way to make the result similar to an influencer marketing strategy within a conventional campaign. We obtained a minimum sample of 10 individuals for each influencer video, differentiating between the subject's gender, so that each video was seen by at least five men and five women. Each influencer could use any kind of audio-visual tactics (visual effects, filters, audio effects, etc.), in this favourable environment. These variables were not controlled in the study.

Table 2. Research influencers

Level/gender	Male	Female
Low Level	Diego Villalba	Aroa Moreno
Medium Level		Abi Power
High Level	Alberto TM	

The video's objective was to transmit how good the promoted product was, which, in this case was an unbranded bottle of water, a neutral product, uninfluenced by feelings and of vital necessity. Before registering the EDA, we supplied a questionnaire that, together with the one filled out during the registration, was used to determine the sample's qualitative data (type of emotion, range of influence, etc.). The data extracted from the EDA registration offers quantitative data regarding the activation level of EDL and EDR. Once the EDL and EDR signal is registered, it runs through an analogue-digital converter (PowerLab) to process the EDA through Labchart software. This application allows us to convert a graphic signal into a numerical signal to store it in Excel. This file shows columns with time, EDL, EDR and a fourth column which is manually coded by inserting the cuts written on the registration sheets. The following step is to convert the Excel files into plain text (.txt), in order to treat the signal with Electro software.

Finally, this software generates the results that are viewed in output files (.res) and are transferred to statistics software (SPSS or XLSTAT). This is the end of the signal processing route and the explanation of research instruments.

The subjects' experimentation process began by providing an initial questionnaire to provide demographic, social and behavioural data on Instagram, and continued by accessing the Social Psychology Laboratory at the University of Barcelona with the individual. Individuals were placed in front of a screen to proceed with registration. During the registration with Sociograph, several activity modules were developed for the individuals to perform. Once the Activity modules were completed, the EDA registration with the subject was concluded. We registered a total of 42 individuals. The final sample, after processing the EDA, was 37, generating a total of 187,336 records (156.11 minutes registered). Anova or analysis of variance was applied to the Sociograph results with a risk of p=5.

The five records that did not pass the EDA processing were removed from the qualitative information. The entire research sample consisted of adults (between 18 and 24 years of age). Prior experience with Instagram was required and their socioeconomic level was not taken into account. Sample members were homogenous regarding the age variable (men with an average age of 22 and women with an average age of 21). Most men had a university degree (87.50%; 44.12% of women, more with non-university secondary studies, 52.94%). There was a mismatch between men (n=8) and women (n=34) which affected and minimised conclusions regarding the gender variable. A research ethics code was applied, and participants were called individually, chosen randomly to avoid influences between them that could affect the results.

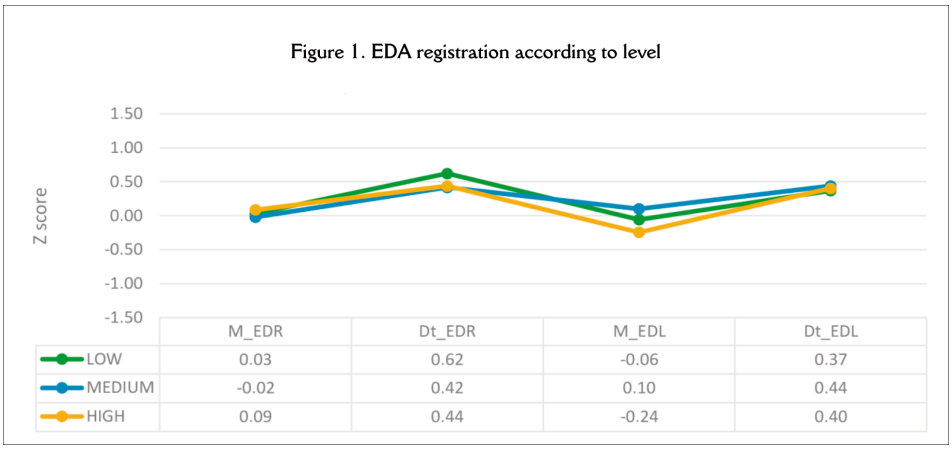
EDA was only measured once per individual for the study. Each subject viewed a different video with a distribution that included the records rejected after EDA processing. The hypotheses of the study were the following:

- H1: Men activate more emotion and attention in women in Stories marketing campaigns.
- H2: In marketing campaigns, the most-viewed elements on Instagram are Stories.
- H3: The influence of advisers on the consumer is limited.

3. Analysis and results

General results per type of influencer (low, medium and high level) (Figure 1) revealed significant F (2, 18731) = 1010.06 greater targeted attention (EDL) in the high level, and less in the medium level with similar levels of distraction in the data. The level of significant emotional response (EDR) F (2, 18731)=65.07 was greater in the high level and lower in the medium level. Low-level influencers have generated more heterogeneous emotional responses in comparison to the medium and high levels.

Figure 1. EDA registration according to level

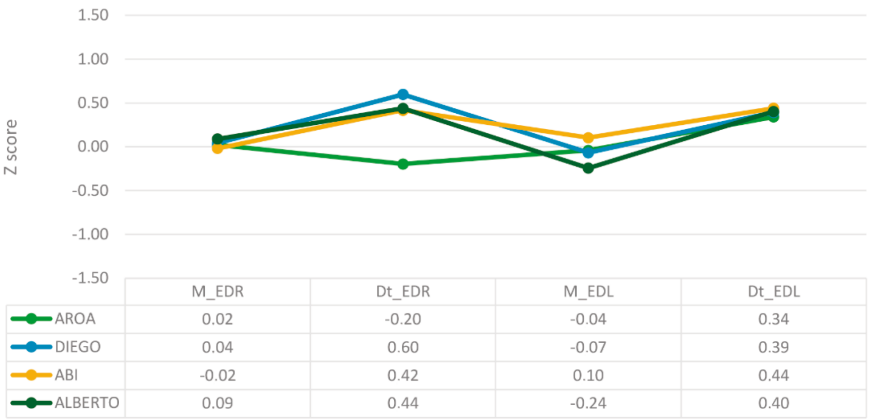


	M_EDR	Dt_EDR	M_EDL	Dt_EDL
LOW	0.03	0.62	-0.06	0.37
MEDIUM	-0.02	0.42	0.10	0.44
HIGH	0.09	0.44	-0.24	0.40

The general reactivity result according to influencer (Figure 2) showed a greater emotional distraction (EDR) for influencer Aroa, which was significant F (3, 17670)=24.90. No significant F (3, 17670)=338.41, emotional (EDR) or attentional (EDL) reactivity differences were observed in

comparison to Figure 1. The global data of the signal required a more specific analysis according to activity modules.

Figure 2. EDA registration according to influencer



	M_EDR	Dt_EDR	M_EDL	Dt_EDL
AROA	0.02	-0.20	-0.04	0.34
DIEGO	0.04	0.60	-0.07	0.39
ABI	-0.02	0.42	0.10	0.44
ALBERTO	0.09	0.44	-0.24	0.40

The emotional response and targeted attention data of the different activities according to influencer level aimed to identify average differences in activity modules, mainly for viewing and task. Greater and significant F (4, 4913)=552.24 EDR averages were observed in the high level for viewing and task. Standard deviation was homogenous. Regarding attention reactivity (EDL), we observed a mild but greater average in low level during viewing, although with a more significant F (4, 11928)=8837.15 heterogeneous distraction.

Regarding EDA psychophysiological responses in activities for each influencer, we observed significant EDR differences (Aroa F (4, 48883)=367.98 and Diego F (4, 7041)=0473.91) between both low-level influencers compared to Figure 3. Influencer Diego revealed a greater average emotional reactivity during viewing than Aroa (her distraction was heterogeneous). Aroa produced greater targeted attention, which was significant F (4, 4883)=6064.71. For the viewing activity, Abi generated less attention, significantly F (4, 5985)=2474.14. Diego registered a more heterogeneous attention distraction, significantly F (4, 7041)=0473.91. For the task activity, we observed significant F (4, 4913)=2242.73 greater targeted attention in the subjects that watched Aroa and Alberto, with similar averages. Task attention distractions were significantly heterogeneous in all four influencers. Moreover, emotional reactivity was quite similar in all four influencers (heterogeneous standard deviations).

Regarding the averages and standard deviations for the viewing module per influencer according to the subject's gender, for EDR F (7, 1304)=148.51 we detected a large emotional range in men for influencer Abi (homogeneous standard deviation). Regarding EDL F (7, 1304)=107.92, we observed greater targeting in the men that watched Alberto. Aroa generated greater distraction for emotion registration (EDR). For influencer Diego, no significant ranges were observed beyond targeted attention in men.

The viewing modules according to individual influencer aimed to observe significant differences between men and women for the same influencer. We observed a mild attention range in men (standard deviation was greater than for women). We did not observe significant differences for emotion. The high heterogeneity in men for registering emotion was noteworthy. We noted a mild significance of attention in men together with a more homogeneous standard deviation, which was heterogeneous in women.

Viewing according to gender for influencer Abi revealed the clear range of emotion in men, which was homogeneous. For women, the signal was quite similar in all ranges and no major differences were observed.

When watching Alberto, we observed a greater attention span in men. The dispersion is slightly higher (more heterogeneous) than in women. This confirmed H1 (Men activate more emotion and attention in women in Stories marketing campaigns), with an emphasis on attention.

In the task activity, there were significant ranges in terms of targeted attention. We observed significant attention averages F (7, 8952)=137.03 for influencer Aroa with male subjects (standard deviation was more homogeneous than in women). The average attention for Diego among men was one of the most significant averages, with a lower standard deviation in comparison to other influencers. The attention for influencer Alberto among women was significant, but with a heterogeneous standard deviation in comparison to the aforementioned groups. Regarding EDR F (7, 8952)=30.21, all standard deviations were quite heterogeneous, except for Diego among men, who presented a homogeneous standard deviation and a low average range. The highest EDR average was observed in Alberto for men, but his standard deviation was very heterogeneous.

The psychosocial data extracted from the questionnaires reflected the trend of Instagram users (type of content viewed or perception of the Instagrammer according to the sample). Subjects classified influencers as content creators or celebrities. There were multiple content categories. The sample's most followed trends were related to friends, humour, music, animals and food. Regarding the most-viewed elements within the app, Stories took first place, with posts in second place and Instagram TV last. This confirmed H2 (In marketing campaigns, the most-viewed elements on Instagram are Stories). Regarding the sample's perception of the influencers' influence, it tended to be limited.

Regarding the data on each influencer obtained from the post-viewing questionnaire, when it came to Diego, the men who watched him would have dismissed his Stories; nevertheless, the women, including exceptions, would have gone to the influencer or product profile. 20% of women would watch more of Diego's content, although the influencer was unknown by both genders. The emotions most aroused in the subjects were, for men, amusement and annoyance and, for women, positive emotions, although also negative emotions (frustration or boredom). The most remarkable thing regarding attention in Diego's Story was the way he communicated and sounded (probably his accent). Diego's level of influence over the subjects was low except in women, with slightly more impact. We observed that none of the subjects would have purchased the product.

Regarding influencer Aroa, men left the Story, whereas women timidly accessed the product profile for more information. The emotions expressed by men regarding Aroa's video were negative; however, women expressed positive emotions (amusement, friendliness or emotion). The most striking thing about Aroa's Story was herself and the way she communicated. Regarding Aroa's level of influence over the subjects, we considered it limited, except for the case of women, which were more inclined to buy the product.

Regarding influencer Abi, there were no differences between men and women when it came to the amount of time spent on the platform, 50% of subjects recognised the influencer. There was a low perception of the influence of opinion leaders and ample use of Instagram. We observed that the main reaction to Abi's video was to skip the Story, although a percentage of women clicked through to the influencer's profile. The emotion aroused in the subjects was negative in men (associated to boredom) but positive in women, who described her as a source of amusement (66.67%) and surprise (11.11%), although also peculiarity (11.11%). The factors that most stood out about Abi's Story were the product (50% of men, 22.22% of women) and how she communicated (half of men and 66.67% of women). Regarding the influence described by subjects regarding Abi's Story, it was modest, except for 12.5% of women who considered it average. This limited influence diverges from the 25% of women who would have purchased the product.

Regarding influencer Alberto, we observed no remarkable differences in the years of Instagram use between men and women. He was recognised by men, although they do not follow him on Instagram. Women spent more time on Instagram, and the perception of the control influencers had was average. The sample's reaction to Alberto's Story for both genders was to skip it or leave it, except for a small percentage of men who would have swiped up to see more content about the product. The emotion and attention aroused in the subjects, for both men and women, reflected positive and negative feelings. Men were split 50/50 between amusement and indifference, while women, despite the prevalence of boredom (44.44%), also thought of friendliness or amusement, without forgetting about indifference. What stood out the most to both genders were Alberto's communication style and (in the case of women) his character

and the product. Alberto's range of influence over subjects was low for both genders, although half of the men and 25% of the women stated that they would have perhaps consumed the promoted product. Based on the results, we confirm that the most-viewed marketing campaigns on Instagram are Stories, that the influence of advisers on the consumer is limited and that the degree of influence generated over followers is proportional to the activation of emotion and attention. Therefore, H3 (The influence of advisers on the consumer is limited) was confirmed.

4. Discussion and conclusions

The research reflects the relevance for businesses to analyse attention and emotion in the use of marketing campaigns on social media, Instagram in this case. We confirm that the most-viewed elements on Instagram are Stories, in line with Brandmanic (2018). The most followed content is created by friends or about humour, music or fashion. The sample confirms that an "influencer" is a celebrity or a content creator, in contrast with what Campillo (2016) states, and the influence of advisers over platform users is considered limited.

Regarding the levels of emotion and attention activation, they are different according to the influencer's range of influence. The more influence generated over the individual, the greater emotion and attention activation observed. However, the lower the influence, less emotion and attention activation. This confirms the influencer marketing strategy (Augure, 2018; Alonso et al., 2018; Santamaría-de-la-Piedra & Meana, 2018), its impact in terms of advertising (Fondevila-Gascón et al., 2015; Tapia-Frade & Martín-Guerra, 2017), and sector (Jaromír et al., 2017), and the effectiveness of EDA (Aiger et al., 2013) as measurement technology.

So, we observed activation differences according to the influencer. Attentional activation was higher in influencer Aroa (low level) and emotional activation, in influencer Alberto (high level). We observed differences according to the subject's gender. Men revealed greater emotion and attention activation, especially regarding attention, with all the circumspection of an extendable sample of individuals and a scalable experiment.

We detected differences according to influencer and the subject's gender. So, arranged from lesser to greater emotional activation registered, influencer Aroa did not manage to generate emotion in the subject, although she did attract the attention of both genders. This activation became negative emotions, dismissal of the Story, lack of interest in the act of purchasing the product or, in men, viewing more of her content. Nevertheless, a small percentage of women sympathised with the content. Influencer Diego did not manage to arouse emotion, and only a higher level of attention in men. Women interacted with his Story and spoke more positively about it. No purchases or interest in his content were achieved from either gender. Influencer Abi raised strong emotions in men and less in women, and he/she did not manage to attract the subject's attention. Women showed more interest in her, expressed positive emotions and made the purchase. In men, although activation was greater, it did not convert into a purchase. Influencer Alberto generated emotion in both genders and attention only in men. Activation translated into positive emotions and produced a likely potential purchase in both genders. Therefore, we observed fluctuating ranges of attention and emotion.

The application of the registration with Sociograph to describe the nature of emotion and attention activation (EDA) in Instagram Stories presented various research limitations. Thus, the sample was limited, and male participation could be improved. Likewise, the number of influencers could also be optimised. Other variables could be taken into account, such as sound effects, clothing or visual effects in the influencers' videos, factors that can affect emotion and attention and which have been standardised for this study. Therefore, delving into the videos' visual standards and obtaining a larger and more varied sample of influencers are guidelines to follow in future studies.

In this sense, the influence and emotional load generated by social media content on the population suggests different types of research: sectoral, according to type of campaign, on different social media (even comparing them synchronously), on different media outlets, such as interactive HbbTV (Fondevila-Gascón et al., 2015), at different ages and different moments of the customer's journey. The use of other tools associated to neuromarketing (EEG or Eye tracker) can help to define the source of emotion and

attention, fundamental for future decisions that actors can take within the field of advertising, especially interactively (HbbTV), where the emotion-attention pairing is triggered by the dialogue between the audience and brands. Establishing categories and types of emotional and attentional impact through ads is both a stimulating and monetizable challenge for companies.

Funding Agency

This research is part of the "New forms of interactive advertising on television, Internet and digital media. Real applications on HbbTV" project, financed by the Ministry of Economy, Industry and Competitiveness, reference CSO2017-88895-R (MINECO/FEDER).

References

Aiger, M., & Palacín, M. (2012). Medición de actividad grupal en relación a la interdependencia mediante Sociograph (medida electrodérmica grupal). *Revista Iberoamericana para la Investigación y el Desarrollo Educativo*, *9*, 1-23. https://bit.ly/2QU8qeD

Aiger, M., Palacín, M., & Cornejo, J.M. (2013). La señal electrodérmica mediante Sociograph: metodología para medir la actividad grupal. *Revista de Psicología Social*, *28*(3), 333-347. https://doi.org/10.1174/021347413807719102

Aiger, M., Palacín, M., Pifarré, P., Llopart, M., & Simó, M. (2016). Effectiveness of relaxation techniques before diagnostic screening of cancer patients. *Suma Psicológica*, *23*(2), 133-140. https://doi.org/10.1016/j.sumpsi.2016.06.002

Alonso, T., Braojos, D., & Costa, L. (2018). *Marketing de influencers: La eficacia de la marca personal*. Universidad de Valladolid. https://bit.ly/37BzvZZ

Augure (Ed.) (2017). *Informe de Influencer. Marketing 2017*. Augure. https://bit.ly/2KPhzku

Aviva, S. (2009). A european approach to media literacy: Moving toward an inclusive knowledge society. [Aproximación europea a la educación en medios: Avanzando hacia una sociedad del conocimiento inclusiva]. *Comunicar*, *32*, 19-20. https://doi.org/10.3916/c32-2009-01-004

Brandmanic (Ed.). *Estudio sobre marketing de Influencers en España*. Brandmanic. https://bit.ly/2QI09tQ

CECABLE (Ed.) (2019). *Informe sobre uso de redes sociales*. CECABLE.

Christakis, N.A., & Fowler, J.H. (2007). The spread of obesity in a large social network over 32 years. *New England Journal of Medicine*, *357*(4), 370-379. https://doi.org/10.1056/nejmsa066082

Cosculluela, A., Guillén, F., & Malapeira, J. (1988). Actividad electrodérmica (EDA), personalidad y estrés. *Anuario de Psicología*, *38*, 107-116. https://bit.ly/2QR6pj8

Dawson, M.E., Schell, A.M., Filion, D.L., & Berntson, G.G. (2007). The electrodermal system. In Cacioppo, J.T., Tassinary, L.G., & Berntson, G. (Eds.), *Handbook of Psychophysiology* (pp. 157-181). Cambridge University Press. https://doi.org/10.1017/9781107415782.010

Fere, C. (1888). Note sur les modifications de la resistance electrique sous l'influence des excitations sensorielles et des emotions. *Comtes Radus de la Société de Biologie*, *40*, 217-219.

Fondevila-Gascón, J. (2013). Periodismo ciudadano y cloud journalism: un flujo necesario en la sociedad de la banda ancha. *Comunicación y Hombre*, *9*(9), 25-25. https://doi.org/10.32466/eufv-cyh.2013.9.163.25-41

Fondevila-Gascón, J.F., Mir-Bernal, P., Carreras-Alcalde, M., & Seebach, S. (2015). *HbbTV history and its educational possibilities: Teaching options in times of the Internet*. InScience Press. https://bit.ly/2KNpD5c

Hatfield, E., Cacioppo, J.T., & Rapson, R.L. (1993). Emotional contagion. *Current Directions in Psychological Science*, *2*(3), 96-100. https://doi.org/10.1111/1467-8721.ep10770953

IAB Spain (Ed.) (2018). *Estudio anual de redes sociales*. IAB Spain. https://bit.ly/2KMiS3V

IAB Spain (Ed.) (2019). *Libro Blanco de marketing de influencers*. IAB Spain. https://bit.ly/2DaTHUn

Jaromír, T., Pavel, R., & Lenka, M. (2017). Neuromarketing approach to efficient food styling. *Journal of Interdisciplinary Research*, *7*(1), 3-5. https://bit.ly/2OK01Yu

Keil, A., Moratti, S., Sabatinelli, D., Bradley, M.M., & Lang, P.J. (2005). Additive Effects of Emotional Content and Spatial Selective Attention on Electrocortical Facilitation. *Cerebral Cortex*, *15*(8), 1187-1197. https://doi.org/10.1093/cercor/bhi001

Kramer, A.D.I., Guillory, J.E., & Hancock, J.T. (2014). Experimental evidence of massive-scale emotional contagion through social networks. *Proceedings of the National Academy of Sciences*, *111*(24), 8788-8790. https://doi.org/10.1073/pnas.1320040111

Levy, A. (2017). El estatus sobre el marketing de influencers 2017. https://bit.ly/2QVqtRF

Lewinski, P. (2015). Don't look blank, happy, or sad: Patterns of facial expressions of speakers in banks' YouTube videos predict video's popularity over time. *Journal of Neuroscience, Psychology, and Economics*, *8*(4), 241-249. https://doi.org/10.1037/npe0000046

Monge, S., & Fernánde, V. (2012). Neuromarketing: Tecnologías, Mercado y Retos. Pensar la Publicidad. *Revista Internacional de Investigaciones Publicitarias*, *5*(2), 19-42. https://doi.org/10.5209/rev_pepu.2011.v5.n2.37862

Pérez-Conde, M. (2016). *Influencer engagement, una estrategia de comunicación que conecta con la generación milenial*. [Degree's thesis, Universidad de Alicante]. https://bit.ly/2qK0jGO

Plichta, M.M., Gerdes, A.B.M., Alpers, G.W., Harnisch, W., Brill, S., ... Fallgatter, A.J. (2011). Auditory cortex activation is modulated by emotion: A functional near-infrared spectroscopy (fNIRS) study. *NeuroImage*, *55*(3), 1200-1207. https://doi.org/10.1016/j.neuroimage.2011.01.011

Reeve, J. (1994). *Motivación y emoción*. McGraw-Hill. https://bit.ly/33fzHdP

Rego, A., & Fernandes, C. (2005). Inteligência emocional: Contributos adicionais para a validação de um instrumento de medida. *Psicología*, *19*(1-2), 139-167. https://doi.org/10.17575/rpsicol.v19i1/2.401

Santamaría-De-La-Piedra, E., & Meana-Peón, R. (2018). Redes sociales y fenómeno influencer. Reflexiones desde una perspectiva psicológica. *Miscelánea Comillas*, *75*, 443-469. https://bit.ly/33hfzYK
Smith, K. (2016). *49 Incredible Instagram statistics you need to know*. Brandwatch. https://bit.ly/2KN9H36
Sociograph (Ed.) (2019). *Informe de actividad*. Sociograph. https://bit.ly/2RquZaV
Tapia-Frade, A., & Martín-Guerra, E. (2017). Neurociencia y publicidad. Un experimento sobre atención y emoción en publicidad televisiva. *Innovar*, *27*(65), 81-92. https://doi.org/10.15446/innovar.v27n65.65063
Torreblanca, F., Juárez, D., Sempere, F., & Mengual, A. (2012). Neuromarketing: La emocionalidad y la creatividad orientadas al comportamiento del consumidor. *3C Empresa*, *Investigación y Pensamiento Crítico*, *6*, 20-30. https://bit.ly/2QLlO4E
Vecchiato, G., Kong, W., Maglione, A.G., Cherubino, P., Trettel, A., & Babiloni, F. (2014). Cross-cultural analysis of neuroelectrical cognitive and emotional variables during the appreciation of TV commercials. *Neuropsychological Trends*, *16*, 23-29. https://doi.org/10.7358/neur-2014-016-vecc