

## Infographics that connect: a neuroscience-based analysis of a marketing agency's social media publicity pieces

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<https://dx.doi.org/10.5209/pepu.106937>

Recibido: 24/10/2025 • Aceptado: 15/12/2025

**EN Abstract.** Advertising and marketing agencies are using advances in neuroscience to develop strategies that better connect with consumers' cognitive and emotional stimuli on social media. The objective is to characterize the self-promotion campaign carried out with advertising infographics published on digital social networks by a marketing agency from a neuroscience perspective. A descriptive, cross-sectional, and non-experimental design was used to analyze the 215 comic-style infographics published by Pictoline, a Mexican marketing illustration and information design company, on Facebook during the first half of 2025. An observation guide, validated by experts (CVI index) and piloted by observers (95% agreement, Holsti's index), was used to evaluate visual hierarchy, image power, color use, and narrative elements. Almost all the infographics (98-99%) effectively apply visual hierarchy, ensuring a precise composition that guides the reader's eye and minimizes cognitive load. A strong emotional connection is established using comic book structure and novelty (99%) to generate curiosity. Advertising infographics demonstrated high user interaction on social media, with an 18:1 ratio of positive to adverse reactions and a high level of concordance (98%) between the emotion expressed in the content and the resulting reaction. This research confirms the great potential of infographics to apply neurocommunication principles, facilitate emotional connection, and reduce cognitive effort.

**Keywords.** Publicity Infographics; Neuroscience; Marketing Agency; Social Networks.

### ES Infografías que conectan: un análisis basado en la neurociencia de las piezas publicitarias en redes sociales de una agencia de marketing

**ES Resumen.** Las agencias de publicidad y mercadotecnia utilizan los avances de las neurociencias para desarrollar estrategias que conecten de manera más efectiva con los estímulos cognitivos y emocionales de los consumidores en redes sociales. *Objetivo:* caracterizar la campaña de autopromoción realizada con infografías publicitarias publicadas en redes sociales digitales por una agencia de marketing desde una perspectiva de neurociencia. *Metodología:* diseño descriptivo, transversal y no experimental para analizar las piezas publicadas (n = 215) por la empresa mexicana de ilustración de marketing y diseño de información, Pictoline, en Facebook durante el primer semestre de 2025, de estilo cómic. Se utilizó una guía de observación, validada por expertos (índice CVI) y pilotada por observadores (95 % de acuerdo, índice de Holsti), para evaluar la jerarquía visual, el poder de la imagen, el uso del color y los elementos narrativos. *Resultados:* casi todas las infografías (98-99%) aplican eficazmente la jerarquía visual, garantizando una composición clara que guía la mirada del lector y minimiza la carga cognitiva. Se establece una fuerte conexión emocional utilizando la estructura de cómic y la novedad (99%) para generar curiosidad. Las infografías publicitarias demostraron una alta interacción de los usuarios en redes sociales, con una proporción de 18 a 1 entre reacciones positivas y negativas y un alto nivel de concordancia (98%) entre la emoción expresada en el contenido y la reacción resultante. *Conclusión:* la investigación confirma el gran potencial de las infografías para aplicar los principios de la neurocomunicación, facilitar la conexión emocional y reducir el esfuerzo cognitivo.

**Palabras clave.** Infografía publicitaria; neurociencias; agencia de marketing; redes sociales.

**Summary.** 1. Introduction. 2. Objectives. 3. Methodology. 4. Results. 4.1. Principle of visual brain dominance presented in publicity infographics (The Power of the Image). 4.2. Use of color and emotion in the infographic pieces (Activation of the limbic system). 4.3. Application of visual hierarchy in the publicity infographic content (Attention and Reading Disposition). 4.4. Narrative and emotional connection elements presented in the publicity infographics. 4.5. Level of response that recipients have to the publication of publicity infographics on social networks. 5. Discussion. 6. Conclusion. 7. References.

**Cómo citar:** Rivera-Salas, P. E. (2025). Infographics that connect: a neuroscience-based analysis of a marketing agency's social media publicity pieces, en *Pensar la Publicidad*, 18(2), pp. 65-72.

## 1. Introduction

With the development of neuroscience, a deeper understanding of the nervous system's functioning and its connections to various fields of knowledge has emerged. In the field of communication, marketing, and publicity, these advances have enabled us to understand how the brain registers, responds to, and learns from messages conveyed through diverse communication media (Fernández Domínguez, 2021), including the decoding of visual or auditory stimuli. This is especially relevant given that receivers are highly exposed to a wide range of digital content in spaces such as social media.

Organizations, as major senders of information, are developing external communication strategies aimed at their audiences, not only to position the goods and services they produce, but also to achieve prestige and a positive image among consumers—in other words, to adopt neurocommunication (Palma Corrales, 2021). This is how professionals in these areas have sought to understand consumers as biopsychosocial beings who respond to cognitive and emotional stimuli (Marinescu, 2022), as well as the mental processes that lead them to consume in particular ways (Tenorio-Vilaña & Mideros-Mora, 2022; Segovia, 2021). In this way, they can develop innovative and creative campaigns with messages that connect more effectively with consumers and their emotions, based on a solid ethical foundation (Izagirre-Torres *et al.*, 2020; Lepping *et al.*, 2015; Masrhouni & Bahoussa, 2023). At the same time, they can promote loyalty and thereby achieve a market advantage (Barrientos-Baez, 2024).

Through various communication channels, publicity and marketing organizations have disseminated visual materials. This is because images offer significant advantages in reaching audiences, such as the emotions they evoke. Neuroscience has allowed us to understand the emotions generated by stimuli, in this case, visual ones. While emotions are centered on the individual, they function as a response motivated by the environment. Emotions are a way in which individuals interpret the external world and, from there, make decisions about how to act and even generate value judgments (García Andrade, 2019). However, it has been shown that this involves brain activation, which entails a series of networks—from the physiological level—and fosters relationships with the environment; that is, a reaction based on social cognition, which is also susceptible to modification, given brain plasticity (García Andrade & Sabido-Ramos, 2019).

Neuroscience has revealed that visual representations alone are not enough to capture attention. With techniques such as eye tracking (Pavlenko *et al.*, 2023), which have measured the responses of various age groups, we are better understanding how individuals achieve empathy towards others, how they react to actions or information that may put them at risk, as well as the self-regulation that is manifested with older age groups and thus express their emotions in a more appropriate way (Decety & Holvoet, 2021).

The visual pathway individuals follow when reviewing a piece of communication plays a crucial role in interpreting the content by activating the visual cortex. This process is affected by learning to read—text, images, numbers—as neurons specialize in the most common elements. Reading is not associated with a dominant cerebral hemisphere; instead, it involves a broad neural network and neuronal recycling. Thus, decoding establishes bidirectional connections between visual and language areas. Furthermore, memory is a complex process, originating in accumulated experiences and forming neural networks that shape perceptions of brands and cultural objects. Understanding these dynamics is fundamental to analyzing how consumers respond to messages and perceive products, brands, and messages contained in visual media (De Balanzó & Sabaté, 2007).

This research aims to analyze one of the most widely shared digital media on social networks: digital infographics. These communication pieces utilize elements highlighted by neuroscience in communication (Mejías *et al.*, 2021) in the organization, design, and content included in each information unit (Guillén Rodríguez & Guillén Ruiz, 2025). Thus, the case of publicity infographics published by a Mexican marketing company is analyzed. Using a comic book structure, this company employs narrative to present a wide range of topics and position itself as socially responsible to its audiences (Pellicer Jordá, 2023), especially on digital social media. This Mexican publicity illustration and information design company, with over 10 years in the market, creates content for multinational companies, international organizations, and media outlets that is consulted daily by more than 3 million users on social networks such as Facebook, Instagram, X, and TikTok (Pictoline, 2025). However, how have the elements of neurocommunication and neuroscience been presented in the infographics? How is neuroscience knowledge about imagery used to construct infographics? How are infographics structured to activate the limbic system and arrange ideas for easy reading?

## 2. Objectives

This study aimed to characterize publicity infographics published on digital social networks by a marketing agency from a neuroscience perspective. The following secondary objectives were established:

1. To define how the principle of visual brain dominance is presented in publicity infographics (The Power of the Image).
2. To identify the use of color and emotion in the publicity infographic pieces (Activation of the limbic system).

3. To establish the application of visual hierarchy in the publicity infographic content (Attention and Reading Disposition).
4. To determine the narrative and emotional connection elements present in the publicity infographics.
5. To determine the level of response that recipients have to the publication of publicity infographics on social networks.

### 3. Methodology

To achieve the research objectives, a descriptive, cross-sectional, and non-experimental methodological design was applied. The research involved retrieving the infographics at a single point in time, without intervening in the variables of interest. Furthermore, the work was limited to identifying the presence or absence of these variables through observation of the publicity infographics.

In the search for recent information on the application of neuroscience in advertising, the set of infographics published by the company Pictoline on Facebook during the first half of 2025 was selected as the study object. This network has just over 448 million users in Latin America and more than 3 billion worldwide (Statista, 2025), which implies a significant impact in the digital world. In total, the sample comprised all publicity infographics published during the period, totaling 215 communication pieces.

The content of each piece was analyzed using a digital observation guide. The research instrument consisted of 66 items divided into six sections: the power of the image, activation of the limbic system, attention and readiness, emotional and narrative connection, infographic structure, and general data. The observation guide was validated by eight experts in marketing, neurocommunication, neuroscience, and visual communication using the Content Validity Index (Tristan, 2008). Subsequently, a pilot study was conducted with two observers with prior experience in visual communication research, achieving 95% agreement in observations, as measured by Holsti's index (Mao, 2017).

Data collection took place in the third quarter of 2025. Figure 1 shows an example of the infographics observed for this study. The collected data were subjected to descriptive statistical analysis using SPSS software. This processing enabled the identification of trends in the frequency of occurrence of the variables proposed for the study in the digital environment.

Figure 1. Example of an observed publicity infographic and its form of publication on Facebook



Source: Taken from Pictoline's official Facebook page (2025)

### 4. Results

As a preamble, it is worth commenting on the sample. On average, the company publishes 36 comic-style publicity infographics per month on social media. Of the 215 pieces published, 8% are content developed through collaborations with companies, ranging from supermarkets and pet food stores to non-profit organizations. Furthermore, 91% include sources of information and quotes that support the narratives presented.

Additionally, 98% of the publicity infographics demonstrate that the content aligns with the organization's corporate image.

#### 4.1. Principle of visual brain dominance presented in publicity infographics (The Power of the Image)

Part of the analysis of the publicity infographics involved identifying the visual experience they offer when viewed. In this regard, the infographics were characterized by their use of visual elements that facilitate the smooth flow of information. However, only 6 out of 10 images fully supported the message and aligned with the information presented, thereby enhancing its meaning. Additionally, in 7 out of 10 pieces, the images helped simplify the ideas, making the message easier to grasp. These values are presented in Table 1.

Table 1. Visual domain

Item	Fq.	%
Uses visual elements.	216	100%
There is a balance between the text and the included visual resources.	210	97%
The authorship of the publicity infographic is evident.	206	95%
It provides the source of the information it presents.	207	96%
It includes tags related to the topic.	122	56%
Images are used to communicate the text more fluidly.	215	100%
The images shown summarize the ideas presented.	145	67%
The image is visible and accessible within the publicity infographic information architecture.	132	61%
The image improves the overall understanding and interpretation of the publicity infographic.	134	62%

Source: own elaboration

#### 4.2. Use of color and emotion in the infographic pieces (Activation of the limbic system)

Table 2 presents the results on the composition of the publicity infographic's content. It is noteworthy that 9 out of 10 communication pieces use design elements and visual patterns commonly employed by the target audience. Furthermore, colors are used to differentiate the level of information importance, as well as white space to pause the message and guide the viewer (94%). However, in just over two-thirds of the pieces observed, colors are used to convey their meanings, emphasizing the message. Also, in less than 30% of the pieces, images are observed to reinforce the infographic's message.

Table 2. Color and emotion in publicity infographics

Item	Fq.	%
Use colors to differentiate categories or content within the publicity infographic.	202	94%
Use specific colors to highlight key points.	203	94%
Use color to evoke specific emotional states (for example, blue for trust, red for urgency).	152	70%
A good contrast between the background and the figure (text or graphics) helps minimize visual strain.	208	96%
Use consistent design elements and visual patterns that users are already familiar with in the context to reduce the need to learn new ways to interact with the image.	213	99%
Include brief, direct text that complements the visual information, rather than repeating it or adding unnecessary details.	213	99%
Using clear graphics and concise text in complementary ways can reinforce the message by engaging different brain processing channels, helping avoid splitting the user's attention.	58	27%

Source: own elaboration

#### 4.3. Application of visual hierarchy in the publicity infographic content (Attention and Reading Disposition)

One of the elements considered when assessing attention and readiness for reading. Table 3 shows that, in almost all the analyzed publicity infographics, the design supports natural eye movement during reading. Similarly, only specific and necessary details about the information presented are included to avoid distractions. Given the organization, in 98% of the pieces, it is possible to identify the point of interest or highlighted topic briefly.

Table 3. Clean and balanced composition

Item	Fq.	%
The elements (objects, tones, colors, textures) are distributed so that no one visually "weighs" disproportionately more than the others, preventing the image from feeling like it is "falling" to one side.	210	97%
The arrangement of the elements creates a sense of unity and visual harmony throughout the publicity infographic.	209	97%

Visual weight is distributed evenly across the frame, either through formal symmetry or asymmetrical balance.	208	96%
The viewer immediately identifies the center of interest without having to search for it among confusing elements or an overloaded background.	212	98%
Objects, lines, or colors that do not contribute to the image's main message are not identified.	210	97%
Only the necessary details for correct interpretation are used, avoiding an excess of elements that could overwhelm the viewer.	213	99%
The viewer's gaze is naturally drawn to the desired focal point, without visual obstructions.	214	99%
Negative space is used as a design tool to separate elements and guide the viewer's attention, facilitating the visual organization of information.	203	94%

Source: own elaboration

Regarding the visual hierarchy in the publicity infographics, the information is organized to make it more visible to the viewer, using different font sizes and colors that stand out against the background and figures. Similarly, the information is organized into several boxes and complemented with bold typography to focus the viewer's attention in 9 out of 10 publicity infographics. Although to a lesser extent, the information is also organized from general to specific, allowing the reader to delve deeper into the topics covered in the infographic by following the visual path that unfolds (see Table 4).

Table 4. Visual hierarchy

Item	Fq.	%
Use of eye-catching titles and subtitles that capture initial attention and tell the brain what the content is about.	205	95%
The titles and subtitles reflect the infographic's content.	205	95%
Establish a clear hierarchy (through size, color, and image position) to indicate which elements are most important, directing the viewer's focus.	212	98%
Use of different sizes, bold text, and boxes to create a visual path that guides the reader through the data, from the most important to the secondary.	207	96%
The typography used makes it easy to read.	212	98%
The organization of ideas goes from general to specific.	198	92%

Source: own elaboration

#### 4.4. Narrative and emotional connection elements presented in the publicity infographics

Regarding the comic's structure, just over 90% of the pieces presented characteristics such as well-organized panels or sufficient vignettes that give a sense of continuity to the story, the use of speech bubbles to express the protagonist's thoughts, and a plot developed in stages (beginning, middle, and end) with a specific storyline. Table 5, meanwhile, focuses on the emotional connection and narrative elements expressed in the publicity infographics. In 99% of cases, the information in publicity infographics is presented in a novel way to generate curiosity. The prevailing narrative style uses simple images and a straightforward design that avoids placing a cognitive load on the viewer to decode the message, allowing for almost instantaneous understanding. However, only half of the pieces address narratives focused on cultural diversity, such as that prevalent in Mexico, considering the themes covered. Additionally, four out of ten pieces seek to empower audiences through the messages they convey.

Table 5. Narrative and emotional connection elements

Item	Fq.	%
It shows data sequentially, as if telling a story.	166	77%
It uses visual representations that establish analogies with everyday situations or familiar concepts (prior learning) and immediately facilitate learning.	205	95%
It presents information in a novel way to generate curiosity.	214	99%
It presents the content through key questions that the infographic aims to answer.	177	82%
A reduction in cognitive load is evident in the image, as it is a design that requires the least possible mental effort from the viewer to understand its message or purpose.	212	98%
It implements compelling visual narratives that consider the cultural diversity of the digital audience and the country.	121	56%
It attempts to address emotional barriers (beliefs) surrounding a topic.	147	68%
The message conveyed is intended to motivate the viewer to reflect.	161	75%
It focuses on empowering the digital community through the knowledge it provides.	77	36%

Source: own elaboration

#### 4.5. Level of response that recipients have to the publication of publicity infographics on social

## networks

As part of the assessment of audience response to the published publicity infographics, the most frequent indicators of social media feedback were measured. Table 6 shows the average, range, and total for metrics for positive and negative responses, comments, and shares. The publicity infographics have a high acceptance rate when comparing positive to adverse reactions, with a ratio of 18:1. Furthermore, the average number of comments per infographic exceeds 120, and a single infographic is shared up to 9,000 times. Finally, the degree of concordance between the emotion expressed in the publicity infographic and the resulting reaction was also measured. 98% of the infographics elicited reactions like those expressed in the content.

Table 6. Social networks responses

Item	Mean	Max.	Min	Sum
Shares	558.65	9700	0	122345
Positive reactions	1826.03	14000	0	399900
Negative reactions	104.15	3991	0	22809
Comments	128.06	1600	0	28046
% Agreement between emotion and publicity infographic message.	98%	--	--	--

Source: own elaboration

## 5. Discussion

Based on statistical analysis, this section highlights some significant findings of this research. Regarding the power of imagery, the use of figurative language helps convey the message more fluidly and complements the text. This supports understanding of the central idea, since, as an image, it increases the likelihood that the viewer will retain the information and process it more quickly than if it were only a textual exposition. Additionally, it is clear how the image is used to synthesize an idea or content, reducing the cognitive load for the viewer of the infographic, as a publicity piece. This is observed in most of the publicity infographics in the study.

One of the most prominent neurosciences elements was attention and readiness. On the one hand, hierarchy is evident not only in the organization of information by importance, but also in publicity infographics, which emphasize the most important information by distinguishing it with different fonts or colors. This articulation of the publicity infographic makes the narrative's main idea immediately apparent. Nevertheless, the pieces are conceived as a single unit of information that conveys a message. In this sense, the construction of the publicity infographic can be based on eye-tracking research, which suggests that information capture occurs through the hierarchical arrangement of shapes, colors, images, and text (Intertek Ibérica Spain, 2025; Pavlenko *et al.*, 2023).

Despite the organization shown in the publicity content at these publicity infographics, the color combinations applied to the pieces are not necessarily consistent with their meanings or with what is commonly associated with them, according to design principles (Khan, 2024). This characteristic should be addressed to ensure further the decoding of emotion (Gil Ochando, 2018; Marinescu, 2022; Pellicer Jordá, 2023), which the infographic seeks to convey more efficiently, fostering greater connection with audiences and activating their limbic systems. It is important to emphasize that internal factors, such as emotions, significantly influence daily consumption decisions (Portela López & Rodríguez Monroy, 2023; Tinoco-Egas *et al.*, 2019). This includes media content published daily on social networks.

Another aspect to consider is the use of themes and visual elements that are more relevant to the target audience of the publicity infographic. While the topics covered are diverse, most focus on an urban population. Given the wide range of profiles that might consult social media in Mexico and across Latin America, it is necessary to use more context-specific resources. These have been shown to help the message be better understood and more appealing through their familiarity, while also demonstrating the organization's empathy and inclusion. It is important to remember that emotion is triggered by the brain and social cognition (García Andrade & Sabido-Ramos, 2019). Thus, using elements more familiar to the audience fosters better public response and, consequently, a more effective message (De Balanzó & Sabaté, 2007).

Regarding user response observed on social media, the publicity infographics show a high level of engagement. While they have not gone viral, this company's communication pieces are consistently monitored. Similarly, the message is being understood by the audience, as evidenced by the high level of engagement, consistent with research on the synthesis of information in publicity infographics (Lee & Lee, 2021; Li & Molder, 2021). Another indicator of the infographics' positive reception is the high number of times they are shared.

It is important to emphasize that much of the effectiveness in connecting with audiences and the efficiency in decoding the message of these publicity infographics is due to the choice of a comic book structure. With this strategy, the organization constructs a story with a beginning and an end, and a plot that evokes emotions regarding various themes (Pellicer Jordá, 2023). While it is always advisable to organize infographics by information units, in this case, bullet points serve this purpose, providing concrete data to the audience in a measured yet effective way. These brief segments help connect with emotions and encourage reflection on the message. It is important to remember that the receiver chooses, organizes, and interprets key information based on how they perceive stimuli in their surrounding environment (Muñoz-Querales *et al.*, 2020).

It is worth noting that these findings are significant, as they not only involve recognizing the elements applied in neurocommunication and neuroscience but also highlight the need to equip communication, publicity, and marketing professionals with the skills to analyze neurodata, which provides valuable input for developing communication strategies and products that are more relevant and aligned with audiences (Barrientos-Báez, 2024).

## 6. Conclusion

This research aimed to verify the presence of certain neurocommunication elements in infographics. The content of each infographic was examined for visual hierarchy and a clean, balanced composition of information; the image's ability to guide the viewer; the colors and emotions it seeks to project; and the narratives and their connection to emotional elements. These findings are presented in the tables detailed in the results and analyzed in the discussion, as part of the pursuit of the specific objectives.

As a limitation of this research, it should be noted that it focused on infographics that clearly incorporate a comic-strip narrative to convey a message to audiences. It should also be noted that the organization studied has extensive experience in content creation, which gives it a particular advantage in the design of the information it presents. In this regard, and for future research, it will be necessary to include as objects of study other publicity infographics presented in different formats and produced by different types of organizations, to verify how some elements of the communication neuron are presented. Likewise, it is worthwhile to work directly with the recipient's response and, using neuroscience techniques, elicit their opinion, understanding, and reaction based on the emotion generated by viewing a publicity infographic.

In conclusion, this research has highlighted the vast potential of publicity infographics for applying neurocommunication principles to communicate governmental, political, environmental, or marketing messages more effectively. Further analysis of these communication tools is needed, along with some creativity in their design and construction. This will ensure the message resonates with audiences, addressing both their rational and emotional aspects, and thus maximizing the effectiveness of these materials.

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