




Social media influence on young people and children: Analysis on Instagram, Twitter and YouTube

Redes sociales y su influencia en los jóvenes y niños: Análisis en Instagram, Twitter y YouTube

-  Dr. Raquel Lozano-Blasco. Associate Professor, Department of Psychology and Sociology, University of Zaragoza (Spain) (rlozano@unizar.es) (<https://orcid.org/0000-0002-0100-1449>)
-  Marta Mira-Aladrén. Research Trainee, Department of Psychology and Sociology, University of Zaragoza (Spain) (mmira@unizar.es) (<https://orcid.org/0000-0002-6088-0324>)
-  Mercedes Gil-Lamata. Research Trainee, Department of Business Management and Organisation, University of Zaragoza (Spain) (mercedesgil@unizar.es) (<https://orcid.org/0000-0002-1816-5394>)

ABSTRACT

Social networking sites are a new ecosystem of social relations in which adolescents follow public figures or influencers: instagrammers, tweeters and youtubers. Their behaviour in the posts they publish become a trend and a model for the new generations. In order to explore these behaviours and their consequences, it is useful to study the behaviour of the 10 instagrammers, 10 tweeters and 10 youtubers with the largest number of followers in the world. A mixed method was employed, combining: social media analysis (SNA) methodology executed by monitoring Twitter, Instagram and YouTube accounts and their publications (300 posts with the highest number of likes). The FanapageKarma tool was used to capture data by applying data mining techniques. Subsequently, sentiment analysis was performed using Meaning Cloud software, determining sentiment polarity analysis quantitatively. Finally, a semantic analysis of the content was performed using Nvivo. The results of multi-regression and sentiment's analysis show clear differences between social networking sites. Twitter is a space for critical analysis of information and social movements, especially climate change. In this space adolescents defend their values and ideology. Instagram is a showcase for fashion and beauty, where brands support an idealised and desirable lifestyle. YouTube is a space for entertainment and comedy. It concludes that despite their differences there is one univocal feature, the effort of influencers to capture audiences and establish parasocial relationships.

RESUMEN

Las redes sociales son un nuevo ecosistema de relaciones sociales en el que los adolescentes siguen a personajes públicos o «influencers»: «instagrammers», «tweeters» y «youtubers». Su comportamiento en los posts que publican se convierte en una tendencia y un modelo para las nuevas generaciones. Para profundizar en estos comportamientos y sus consecuencias, resulta de utilidad estudiar el comportamiento de los 10 «instagrammers», 10 «tweeters» y 10 «youtubers» con mayor número de seguidores en el mundo mediante sus publicaciones (300 post con mayor cantidad de likes). Se empleó un método mixto, combinando: la metodología de análisis de medios sociales (SNA) ejecutada mediante la monitorización de cuentas de Twitter, Instagram y YouTube. Se empleó el instrumento de FanapageKarma para captar los datos aplicando técnicas de minería de datos. Posteriormente, se realizó un análisis de sentimiento mediante el software «Meaning Cloud», este determinó el análisis de la polaridad de los sentimientos de forma cuantitativa. Finalmente, se realizó un análisis semántico de los contenidos mediante Nvivo. Los resultados de la multirregresión y el análisis de sentimientos muestran claras diferencias entre las redes sociales. Twitter es un espacio de análisis crítico de la información y de los movimientos sociales, especialmente del cambio climático. En este espacio los adolescentes defienden sus valores e ideología. Instagram es un escaparate de moda y belleza, donde las marcas apoyan un estilo de vida idealizado y deseable. YouTube es un espacio para el entretenimiento y la comedia. Se concluye que a pesar de sus diferencias hay una característica unívoca, el esfuerzo de los «influencers» por captar audiencias y establecer relaciones parasociales.

KEYWORDS | PALABRAS CLAVE

Adolescence, youth, polarity, Twitter, YouTube, Instagram.
Adolescencia, juventud, polaridad, Twitter, YouTube, Instagram.



1. Literature review

The establishment of social networks has meant the structuring of virtual spaces where adolescents relate and share interests and experiences (Burnette et al., 2017), meeting different social needs (Anderson & Jiang, 2018; Smith & Anderson, 2018; Throuvala et al., 2019; Vannucci & McCauley-Ohannessian, 2019).

Instagram is a space where social comparison takes place through a canonized model of beauty, that is, it operates an idealised comparison (Burnette et al., 2017; Kim & Kim, 2019; Schmuck et al., 2019; Yau & Reich, 2019) that models self-concept (Kim et al., 2017; Verrastro et al., 2020). This situation is propitious for the emergence of the well-known Instagrammer, users whose function is to influence the virtual community by showing aspects of their lives and establishing themselves as marketing images of the companies that sponsor them (Boerman, 2020; Schouten et al., 2020; Weismueller et al., 2020). The linguistic simplicity and strength of the image means that it is preferred by influencers to capture an audience (Shane-Simpson et al., 2018).

On the other hand, YouTube is a social network based on audio-video content in which videos about people's personal lives and interests (Jerslev, 2016) or celebrities (Ferchaud et al., 2018; Hartmann, 2016) are regularly presented. In other words, YouTubers are established as video bloggers who regularly post videos about their lives, interests or skills, propose challenges and participate in conversations with other users, i.e. a parasocial relationship is generated between influencers and followers (Ashman et al., 2018; de-Bérail et al., 2019; Genç & Öksüz, 2019). Nevertheless, a study with Spanish teenagers has argued that the most appreciated values are humour and leisure, that is to say, these users value their comedy and not the image of a brand that they can represent (Aran-Ramspott et al., 2018). Twitter is considered the network par excellence of information and communication, being used to debate social, environmental and political issues, rendering it a thermometer of social concerns (Harb et al., 2020; Neu et al., 2019; Peres et al., 2020).

In short, teenage influencers are teenagers who narrate and publicly show their lives (fashion looks, romantic stories, make-up skills, socio-political concerns, etc.) (Ferchaud et al., 2018; Hartmann, 2016) through social networks, and can consequently be considered child and youth celebrities (Aran-Ramspott et al., 2018). In most cases, they do not present a transgressive vision but imitate sponsors in the publications they share (Blasco-García, 2020). Their ability to reach out to the teenager gives them a privileged position from a marketing standpoint (Bakir et al., 2020; Boerman, 2020; Schouten et al., 2020). In this way, they favour the transmission of social norms based on consumerism, which not only affects the target population but also normalizes cruel optimism (Ashman et al., 2018). On the other hand, a dichotomous parasocial relationship is established between influencers and followers, so that the latter empathise to such an extent that a physical encounter is not necessary (Ashman et al., 2018; de-Bérail et al., 2019; Genç & Öksüz, 2019). For instance, Bhatia (2018) shows how YouTubers 'discursively exploit the boundaries', oscillating between expert and colloquial knowledge and taking advantage of their discursive competence. In this way, they show themselves to be participatory and committed, making users feel part of the YouTube community as they address them, surely read their comments on videos and so forth, thereby generating an emotional commitment (Bhatia, 2018; Burgess & Green, 2009; Lange, 2014). Specifically, Bhatia's (2018) results show how YouTubers carefully prepare their videos, presenting some degree of strategy. Scannell (2000) argues that conversational quality is a determining factor in sociability. In short, publications on social networks are far from natural; on the contrary, they show a communicative strategy.

From this perspective, we should ask ourselves why adolescents use social networks. Existing research findings suggest that adolescents engage in social sharing and self-editing to adjust their views of themselves to their ideal self. In other words, they seek idealised self-representation (Burnette et al., 2017; Schmuck et al., 2019; Stockdale & Coyne, 2020). This pursuit of the ideal can reinforce low self-esteem and low self-concept and even instigate risky eating behaviours (Burnette et al., 2017; Schmuck et al., 2019), although authors such as Stockdale and Coyne (2020) highlight how, in addition to social comparison, boredom plays a key role. Authors such as Mäntymäki and Riemer (2014) argue that social network use is mediated by hedonism, i.e. a search for pleasure and satisfaction in an online life. Others point out that it is the result of a sense of belonging and self-disclosure, key processes in identity construction at this stage (Davis,

2012). While the theory of uses and rewards and the theory of self-determination expose the relevance of controlling relationships, content, presentation and impressions, this may be the same etiology of fear of missing out (FOMO) and nomophobia (Throuvala et al., 2019). On the other hand, it is necessary to recognise how authors like de-Bérail et al. (2019) and Hartmann (2016) are based on the theory of parasocial relations (which try to satisfy those social needs that are lacking). In this sense, people with anxiety, loneliness or social difficulties rely on parasocial relationships to compensate for their difficulties. Consequently, a bond is generated between the influencer and their followers.

In terms of coherence, the state of the art shows univocal traits in terms of polarity of feeling in social networks, with the idealised vision of oneself and any situation being practically hegemonic. Thus, positive or neutral texts with a high degree of subjectivity abound (Peres et al., 2020; Reyes-Menéndez et al., 2018; Vizcaíno-Verdú & Aguaded, 2020). However, there are certain dichotomies according to the subject matter, so that body image, self-expression, travellers, digital life and startups are associated with positivity, while those related to depression, loneliness and real-world relationships have negative polarity and self-identity and anxiety are neutral (Saura et al., 2019).

One of the outstanding features of social network publications is the use of the hashtag, a short fragment headed by # which manages to increase a publication's visibility and virality (Lipsman et al., 2012; McGoogan, 2017). Erz et al. (2020) show how the use of hashtags correlates with a person's idealized exposure. Similarly, the presentation of consumer elements at the beginning of YouTube videos increases their market share (van-Reijmersdal et al., 2020). As for the most followed content on YouTube, Castillo-Abdul et al. (2020) refer to important gender differences, in such a way that boys stand out as 'gamers' while girls do so in lifestyle issues.

2. Research questions and objectives

It is important to examine the behaviour of adolescents in partner networks by studying their relationships with influencers. The following research questions are thus posed: Which posts do adolescents value most from their influencers? Are there differences according to the social network? What type of content is best received by the adolescent population?

The general objective of the research is to understand the behaviour of the most relevant influencers for the youth population in three of the main social networks. To this end, three specific objectives will be developed: to identify the most influential accounts at present; to carry out a sentiment analysis (polarity, agreement, irony, subjectivity) of the main contents of their publications with the greatest impact (number of likes); and to study the differences in the publications of the aforementioned accounts depending on the social network. Accordingly, the following hypotheses are proposed:

- H1. Within the widespread use of social networks among children and young people, YouTube and Instagram influencers attract more followers than Twitter influencers.
- H2. The content that most attracts teenagers differs according to the social network and its function. Twitter has an information and social awareness function, Instagram a space to present a self-idealised image of oneself, and YouTube playful and entertaining.
- H3. The content with the greatest impact finds justification in the theory of social comparison and social relations.

3. Dataset(s) and methods

3.1. Sample

The corpus consisted of 100 posts of Instagram, 100 tweets, and 100 YouTube videos, extracted from the accounts of international child and youth influencers with the largest numbers of followers, comprising 10 Tweepsters, 10 Instagrammers and 10 YouTubers (Table 1). In this sense, the 10 publications with the highest number of likes from each influencer were chosen. To select the sample, the following were used: the platforms Hype Auditor (Instagram and YouTube) and Statista (Twitter), which provide information on the infant-juvenile influencers with the largest numbers of followers after applying the inclusion and exclusion criteria. However, it was necessary to apply inclusion and exclusion criteria to find child and youth influencers. The inclusion criteria were: a) accounts aimed at children and young

people (the contents and topics worked on must be interesting for this age group and follow digital culture trends); b) content with minors (where the protagonists are children or teenagers); c) minors regarded as influencers (these channels must have a large number of followers). And, as exclusion criteria; d) family accounts of social networks (families that present their daily life, adventures and misadventures of their family nucleus with traditional content); and e) accounts aimed at educational content (accounts aimed at language learning, music, autonomy, such as Cantajuegosvevo). In this sense, today's child and youth influencers belong either to generation Z or centennials (born between 1994 and 2010) or to generation Alpha (born between 2010 and 2025).

Table 1. Channels in each social network

Channel	Fans	Number of likes	Gender	Year of birth	Generation	Language	Country
Instagram							
@alaia	832,895	557,498	Female	2015	Alpha	Spanish	Spain
@clementstwins	1,827,213	9,511,370	Female	2010	Z	English	USA
@brynnrumfallo	3,123,885	8,457,731	Female	2003	Z	English	USA
@coco_pinkprincess	641,995	721,706	Female	2010	Z	English/ Japanese	Japan
@daniellecohn	4,765,218	43,523,845	Female	2004	Z	English	USA
@Gibby :)	1,604,447	1,347,167	Female	2007	Z	Spanish	Mexico
@fashion_laerta	1,145,373	790,700	Female	2011	Alpha	English	UK
@Melody	11,100,000	62,800,834	Female	2007	Z	Portuguese	Brazil
@Анастасия Князева	1340218	3,849,744	Female	2011	Alpha	Russian	Russia
@milliebellediamond	1,008,344	4,088,649	Female	2014	Alpha	English	Australia
Twitter							
@GretaThunberg	4,162,102	6,407,378	Female	2003	Z	English	Sweden
@heybalaa	63,990	2,959,229	Female	2004	Z	English	Mexico
@LittleMissFlint	128,529	1,515,814	Female	2007	Z	Spanish	USA
@marsaimartin	127,756	680,246	Female	2004	Z	English	USA
@Milliestopshate	590,195	884,225	Female	2004	Z	English	UK
@Estilosophie	62,823	526,072	Female	2005	Z	Spanish	Colombia
@ThiagoLUTU	120,150	24,138	Male	2008	Z	Spanish	Argentina
@itslitlevale	412,479	6,130	Female	2002	Z	Spanish/English	Colombia
@ximeponchof	189,849	33,171	Female	2002	Z	Spanish	Mexico
@QueAmara	848,199	19,006	Female	2003	Z	Spanish	Colombia
YouTube							
@Bratayley	14,400,000	3,927,915	Female	2004	Z	Spanish	Spain
@Diana and Roma ESP	13,600,000	4,820,898	Female	2014	Alpha	Spanish/English	USA
@Evan-Tube-HD	11,600,000	2,067,844	Male	2005	Z	English	USA
@Gibby :)	11,300,000	716,823	Female	2007	Z	Spanish	Mexico
@Its JoJo Siwa	11,200,000	1,048,033	Female	2003	Z	English	USA
@MELODY OFICIAL	6,280,000	2,605,115	Female	2007	Z	Portuguese	Brazil
@Mimi Land	5,640,000	1,136,267	Female	2008	Z	English/Spanish	USA
@SIS vs BRO	4,390,000	2,734,924	Female and Male	2007 and 2008	Z	English	Canada
@Tiana Wilson	4,050,000	968,501	Female	2007	Z	English	UK
@Tiana	4,000,000	558,179	Female	2007	Z	English	UK

3.2. Data acquisition and procedure

The first part of the study was carried out using the social media analysis (SNA) methodology based on data mining. The data acquisition was done using Fanpage Karma software from 8 January 2020 to 8 September 2020. We collected 300 posts with the highest numbers using the tool Fanpage Karma. We followed the indications of previous research, such as Latorre-Martínez et al. (2018) and Lozano-Blasco et al. (2021). In this sense, the 10 posts with the highest number of likes from each influencer were selected. In this way, the 100 posts from each social network are proportional. This generated a considerable volume of data, materialized as key performance indicators (KPIs): number of likes, number of retweets, commitment and number of fans (Keegan & Rowley, 2017).

The second part of the study was carried out via opinion mining methodology based on the recognition of linguistic patterns through algorithms (Nguyen & Le-Nguyen, 2018). In other words, a sentiment analysis (Hu & Liu, 2004) of the 300 publications was conducted. Sentiment analysis analyzes the emotional character of the messages emitted from natural language, providing a holistic vision of the new ecosystem generated in social networks (Du cu & Günneç, 2020; Oramas-Bustillos et al., 2019; Yu et al., 2013). This was executed using the MeaningCloud tool and the Emotion Recognition pack, allowing it to be examined in several languages, in response to the linguistic diversity encountered. The third part of the research corresponded to a qualitative methodology, in which a semantic analysis of the publications was

carried out. Words with more than four letters were selected in order to avoid semantic categories such as articles, pronouns and prepositions, instead favoring the appearance of nouns, adjectives and verbs, because these reflect, to a greater extent, the complexity of speech (Krippendorff, 1980). In addition, this selection allowed us to recognize the appearance of “hashtags”. In the same way, we operated according to synonyms by grouping words according to their meaning. This section was carried out by means of the qualitative software NVivo.

3.3. Instruments

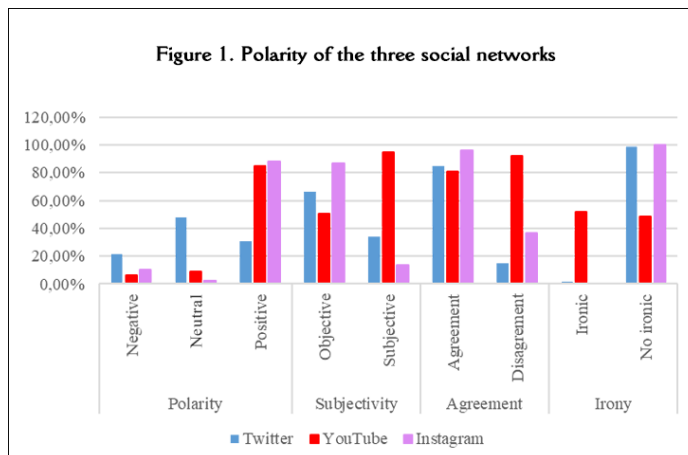
“Fanpage Karma”: this application allowed web analysis and the monitoring of partner networks such as Instagram, Twitter and YouTube, allowing the study of consumer trends. This platform has been used to capture data from the main channels of child and youth influencers (Keegan & Rowley, 2017).

MeaningCloud Emotion Recognition Pack: this application was used in data mining to perform sentiment analysis through semantic recognition by algorithms. It is based on Robert Plutchik’s theory of the ‘emotion wheel’. In addition, it allows text input in different languages, making it possible to cater for linguistic diversity. The variables it studies are polarity, agreement, irony, subjectivity and confidence for polarity analysis. The reliability of this software is presented in previous research (Sharma & Hoque, 2017; Song et al., 2022; Xu et al., 2022). These variables were categorized and worked on according to the principles of Barton and Lazarsfeld (2015), Kale and Jayanth (2019), and León and Montero (2015).

NVivo: this is specialized qualitative research software. This one is specialized in making semantic analysis of content, generating word frequency and clouds of branched graphic words. It also supports different information, including text (Twitter), video and audio (YouTube) and text and image (Instagram).

4. Analysis and findings

The results returned by MeaningCloud expose diversity in the polarity of feelings among social networks (Figure 1).



The network with the most critical language is Twitter, presenting a higher rate of negative than positive polarity, in contrast to Instagram and YouTube, where the opposite occurs. While Instagram’s position has some similarity to Twitter, 85% of YouTube’s content was categorized as positive, with residual negative content. As for the other variables in terms of sentiment analysis (Figure 1), the confidence index on polarity, although high, varies according to the network: Instagram registered 99.51%, Twitter 98.57% and YouTube 80.98%. As for the remainder of the variables, there are differences. Subjectivity indicates that although the most followed content on Instagram and Twitter is of an objective nature, that is, describing a fact or product, YouTube has a high rate of subjectivity, that is, the most followed content is personal opinion. YouTube consistently presents a higher level of affectivity (disagreement) than Twitter and Instagram, that is, its language is loaded with emotion, especially pleasant feelings. Similarly, it is unsurprising that YouTube also presents a higher rate of irony, ironic content on Twitter and Instagram

being minimal. Consequently, H1 is accepted, as YouTube and Instagram are more active than Twitter among the younger generation.

Pearson's correlations show strong and moderate relationships between the sentiment analysis variables of the three social networks (Table 2). However, simple forward regression tests on polarity reveal that not all variables have the same weight on the three social networks (Table 3).

	1. Polarity	2. Agreement	3. Subjectivity	4. Irony
Instagram				
1. Polarity	1	.167**	.481**	.461**
2. Agreement		1	.168**	.627**
3. Subjectivity			1	.544**
4. Irony				1
Twitter				
1. Polarity	1	.297**	.571**	.134*
2. Agreement		1	.156**	.203**
3. Subjectivity			1	.215**
4. Irony				1
YouTube				
1. Polarity	1	.664**	.874**	.266**
2. Agreement		1	.609**	.305**
3. Subjectivity			1	.237**
4. Irony				1

Initially the polarity of Instagram is explained by 27.1% ($R^2=0.271$, $p<.000$), the role of subjectivity and the level of confidence being statistically significant. That is, the number of terms referring to pleasant or unpleasant feelings is explained by the degree of subjectivity (writing of a fact or product, or personal vision or opinion) used in a message, together with the level of confidence in the success of the polarity.

Similarly, the polarity of Twitter is explained by 39% ($R^2=0.390$, $p<.000$), by the level of subjectivity and the level of trust. Although YouTube shows different behaviour, its polarity is explained in 79.3% ($R^2=0.739$, $p<.000$) by the agreement variable and subjectivity. That is, its polarity is determined by the number of emotionally charged words and the use of terms that denote a personal opinion or vision (Table 3).

Social networking sites	B	Standard error	Beta	t	Sig.	R2
Instagram						
(Constant)	11.629	10.584		1.099	0.273	0.271***
Agreement	-1.227	0.792	-0.118	-1.549	0.122	
Subjectivity	2.456	0.270	0.459	9.085	0.000	
Twitter						
(Constant)	-8.245	5.690		-1.449	0.148	0.390***
Agreement	0.296	0.393	0.052	0.755	0.451	
Subjectivity	2.126	0.201	0.501	10.577	0.000	
YouTube						
(Constant)	-26.283	1.342		-19.578	0.000	0.793***
Agreement	0.597	0.121	0.187	4.957	0.000	
Subjectivity	2.931	0.136	0.738	21.621	0.000	

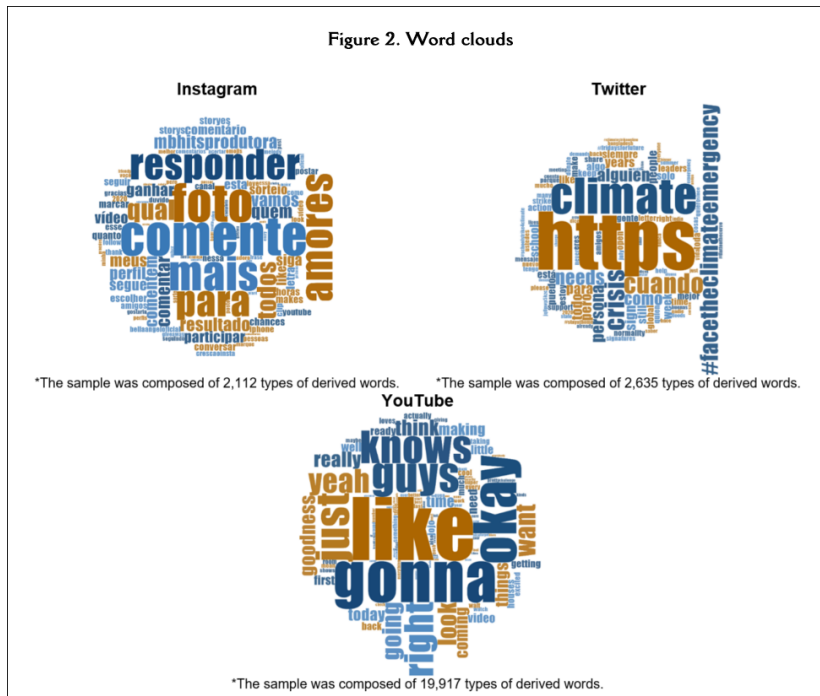
Note. Level of significance $p<0.001$.

As for the semantic analysis of the language most used on social networks, it can be said that the total sample was composed of 24,664 words in English, Spanish, Portuguese and Russian. The search for so-called stop-words was applied automatically. These words are recognised as meaningless (regardless of the number of letters they have) and must be eliminated before the semantic study.

The distribution of the most used words is a function of the level of density, generating word clouds (Figure 2). In this sense, if we analyse in depth the most frequent terms, we find differences in the themes of each social network. On the one hand, Instagram exposes a universe of terms aimed at stimulating interaction with users' followers: "answer", "comment", "love", "follow", "like", "photo". In this way, users seek to promote influence among their followers, demanding attention and greater interaction while presenting themselves as subjects' worthy of following.

As far as Twitter is concerned, the most used terms are sustainability and adjectives that express social movements or actions, such as "climate", "crisis", "needs" and "person". Two hashtags even appear:

“#facetheclimateemergency” and “#flattenthecurve”. The use of ‘https’ is also surprising, as it shows how Twitter is not only a text space but also a video one. Finally, YouTube exhibits behaviour similar to that of Instagram, in that the most used words refer to a conversation between a YouTuber and their followers, in which the former repeatedly launches terms to maintain attention: “cool”, “look”, “just”, “really”. In other words, influencers respond to a monologue-like narrative in which the sender refers to their audience: the content most supported by the adolescent population varies according to social network. In short, H2 is fulfilled, as the three networks studied manifest differences in their most-shared content, Instagram being a space of self-representation, Twitter of awareness of social movements and ecology and YouTube of purely playful entertainment.



On the other hand, the stream graph (Figure 3) shows the behaviour of the five most-used words in the 20 publications of greatest impact. Instagram shows how the terms “amores” (Spanish language, the translation is loves) and “vou” (Portuguese language, the translation is you), which are both used to address followers, remain constant and are interrelated with the words “comment”, “reply” and “photo”. In other words, the publications that teenagers like the most have as their backbone those that ask for help to increase the Instagrammers’ own popularity.

On Twitter, there is a thematic line related to social and political actions (“leaders”) to stop climate change – “climate”, “crisis”, “#facetheclimateemergency” – mostly accompanied by videos and other “https” links. As far as YouTube is concerned, there is a strong degree of homogeneity, with the terms “like”, “gonna”, “okay”, “just” and “I’m” succeeding each other in a regular way”. In other words, a narrative is presented in which the YouTuber interacts and seeks the complicity of their followers. In short, as in the case of Instagram, the publications with the greatest number of likes are those in which the influencers address their followers directly, seeking their direct interaction. Thus, H3 is fulfilled: the contents with the most impact are those where a parasocial relationship is established to influence followers.

In terms of hashtags, there are important differences between Twitter and Instagram. On Twitter there are two main topics: the school climate strike (“#FaceTheClimateEmergency” (30%), “#climatestrikeonline” (30%), “#fridaysforfuture” (7.50%), and “#schoolstrike4climate” (6.25%)) and COVID-19 and the social actions resulting from it (“#flattenthecurve” (6.25%), “#StayAtHome” (6.25%)). These two themes are strongly connected with the current social reality.



Even though Instagram presents greater variety and dispersion, it is striking how a significant percentage refers to brands: “#SHEIN” (12.50%), “#nyxcosmetics_en” (9.37%), “#Zalan-doStyle” (6.25%), “#LGG8X” (3.12%) and “#APPLE” (3.12%). In this case, main Instagram topics are linked with marketing of fashion and technology brands.

5. Discussion and conclusions

Social networks operate within adolescents' everyday lives. The establishment of parasocial relationships between followers and influencers (Instagrammers, YouTubers and Tweeters) is of considerable importance for teenagers today. The differences between the social networks Instagram, Twitter and YouTube operate according to the different functions they perform, the results being consistent with previous publications (Throuvala et al., 2019; Vannucci & McCauley-Ohannessian., 2019).

Although all social networks are regularly used by the adolescent community (Anderson & Jiang, 2018; Smith & Anderson, 2018), the level of active participation seems to be mediated by the social network in question. In this regard, the results of fans and number of likes agree with previous studies indicating that YouTube is the most used platform among this population (Anderson & Jiang, 2018; Ofcom, 2017).

With respect to the sentiment analysis, similar results to previous investigations have been obtained. The contents of the study have considerable positivity or neutrality while also presenting significant subjectivity (Peres et al., 2020; Reyes-Menendez et al., 2018; Vizcaíno-Verdú & Aguaded, 2020). However, it should be noted that there are differences among the social networks, with Twitter being the most critical and objective and YouTube being the most positive and subjective. The results of the correlations and regressions specify how the polarity presents disparate actions. In the cases of Instagram and Twitter, the polarity is explained by “subjectivity” in moderate percentages. By contrast, the polarity of YouTube is the result of “agreement” and “subjectivity” in a high percentage. In summary, the sentiment analysis shows that, in the case of YouTube, messages are charged with “positive” emotions and personal views, as opposed to Twitter and Instagram.

On the other hand, we agree with Saura et al. (2019) that posts with a “real-world relationship” theme, especially those related to environmental policy violations, have a strong negative charge. In the same way, the categories body image, self-expression, travellers, digital life and startups have a positive or very positive polarity, being common in videos about the YouTubers' lifestyles or in Instagram publications.

Similarly, the semantic analysis of the word densities (word clouds), stream graphs and hashtags most used in publications with greater impact, has revealed significant differences among the social networks. Firstly, we agree with Blasco-García (2020) that posts do not present a transgressive image, but follow the fashion of the moment. It is necessary to make an important reflection on the use of the hashtag. The use of this technique increases visibility and virality, as can be seen in the results of this research, in line with previous studies (Lipsman et al., 2012; McGoogan, 2017).

However, there are profound differences between Twitter and Instagram in terms of the use of hashtags: whereas on Twitter its use responds to a social movement, on Instagram it pertains to fashion, cosmetics and technology brands, as also noted in previous research (Bakir et al., 2020; Boerman, 2020; Schouten et al., 2020). Indeed, Instagram is much more than a mirror to proclaim an ideal self, but rather a platform to engage an audience, based on communication that encourages interaction: “respond, picture, comment, love”. In other words, the results are consistent with Shane-Simpson et al. (2018), who demonstrate how this social network is used to capture an audience, while its outreach to adolescents renders it a marketing tool (Bakir et al., 2020; Boerman, 2020; Schouten et al., 2020).

Besides that, if interest is focused exclusively on word density (word clouds) and stream graphs, similar communicative features can be identified, although with different themes. At first glance, one can note how Instagram refers to a world of self-representation, where social comparison is generated through selfies, attending to a canon of beauty (Burnette et al., 2017; Schmuck et al., 2019; Verrastro et al., 2020; Yau & Reich, 2019). Followers show their emotional attachment to publications in which Instagrammers ask them to collaborate or increase their influence. On another note, Twitter deals with social changes and actions, which turn out to be the thermometer of social concerns in the case of adolescents, for instance climate change (Neu et al., 2019; Peres et al., 2020). Teenagers present the social value generated by this age group as well as their ability to reason and defend their ideas and values. YouTube collects action verbs needed for humorous storytelling by both gamers and lifestyle bloggers, consistent with Aran-Ramspott et al. (2018) and Castillo-Abdul et al. (2020). The most relevant publications are those in which the YouTuber asks for attention and collaboration. The use of this type of expression coincides with the results of Bhatia (2018) and Scannell (2000) in such a way as to show a communicative strategy to achieve commitment and active participation. The use of terms that facilitate the establishment of communication among Instagrammers (“respond”, “comenten” (translation comment), “loves”, “photo”, “vou” (translation you) and YouTubers (“I’m”, “gonna”, “okay”, “just”, “like”) responds to the need to establish a parasocial relationship.

In this way, an affective bond and emotional commitment is generated between influencer and follower (Bhatia, 2018), which is rewarded by followers giving “likes”. In this sense, these results coincide with previous studies that either explain this relationship or the extent to which these influencers normalise certain behaviours (Ashman et al., 2018; de-Bérail et al., 2019; Hartmann, 2016). In other words, the publications with the greatest scope are those in which a celebrity seeks their followers’ participation, which, in the eyes of authors such as de-Bérail et al. (2019) and Hartmann (2016) could be indicative of high rates of loneliness and social difficulties, leading them to seek refuge in parasocial relationships.

This study is not without its limitations. First, the context of the pandemic must be taken into account, as this element may have increased connectivity for adolescents. On the other hand, it was not possible to find studies with which to make a true comparison of the results due to the speed with which new communication mechanisms and platforms are incorporated. On the other hand, the tools used are constantly changing and developing. Therefore, it is necessary to replicate this research in the coming years with more up-to-date and cutting-edge software. Similarly, it is necessary to generate longitudinal studies involving the study of a larger number of publications. Finally, given the pseudonymisation and the margin for lies inherent to social networks, bigdata research in this field has a limitation in the study of attitudes. This is because we will never be able to access what these people really think and feel, but only their behaviour in networks. For this reason, it seems interesting to carry out a study of the behaviour of influencers and their followers on all their profiles on all the social networks they have, including emerging channels such as TikTok or Twitch. In this way, it would be possible to analyse whether it is a behaviour adapted to the characteristics of the network used, such as market demand, or a behaviour maintained

in networks and over time, more similar to a study of attitudes. It would be interesting to carry out this study in a few years' time and observe changes in behaviour between today's adolescents and those in the future: will face-to-face social relationships have disappeared? Did social rules and social behaviour change in adolescents? Is the concept of friendship changing in adolescence? Do adolescents feel lonely and therefore establish parasocial relationships through social networks? Are adolescents' capacities for social relationships diminishing? What role do social networks such as Instagram play in marketing and attracting teenagers as customers? And as advertisers or marketers? Will new behaviours emerge linked to new social networks, with new features, such as TikTok or Twitch? As for the direct implications of this research, it is necessary to highlight how it has allowed us to understand what aspects are most valued by the digital community of children and youth influencers. Likewise, the behavior of influencers in this age group is different depending on the social networking sites used.

Authors' Contribution

Idea, R.L.B, M.M.A, M.G.L; Literature review (state of the art), R.L.B, M.M.A, M.G.L; Methodology, R.L.B, M.M.A, M.G.L; Data analysis, R.L.B, M.M.A, M.G.L; Results, R.L.B, M.M.A, M.G.L; Discussion and conclusions, R.L.B, M.M.A, M.G.L; Writing (original draft), R.L.B, M.M.A, M.G.L; Final revisions, R.L.B, M.M.A, M.G.L; Project design and funding agency, R.L.B, M.M.A, M.G.L.

Funding Agency

Regional Government of Aragón with a grant for the recruitment of pre-doctoral research staff in training for the period 2020-2024, and Spanish Ministry of Universities (SIA: 998758 2019).

References

- Anderson, M., & Jiang, J. (2018). Teens, social media & technology. *Pew Research Center*. <https://pewrsr.ch/3aRyOSL>
- Aran-Ramspott, S., Fedele, M., & Tarragó, A. (2018). YouTubers' social functions and their influence on pre-adolescence. [Funciones sociales de los Youtubers y su influencia en la preadolescencia]. *Comunicar*, 57, 71-80. <https://doi.org/10.3916/C57-2018-07>
- Ashman, R., Patterson, A., & Brown, S. (2018). 'Don't forget to like, share and subscribe': Digital autpreneurs in a neoliberal world. *Journal of Business Research*, 92, 474-483. <https://doi.org/10.1016/j.jbusres.2018.07.055>
- Bakir, A., Gentina, E., & De-Araújo-Gil, L. (2020). What shapes adolescents' attitudes toward luxury brands? The role of self-worth, self-construal, gender and national culture. *Journal of Retailing and Consumer Services*, 57. <https://doi.org/10.1016/j.jretconser.2020.102208>
- Barton, A.H., & Lazarsfeld, P.F. (1955). *Some functions of qualitative analysis in social research*. Bobbs Merrill.
- Bhatia, A. (2018). Interdiscursive performance in digital professions: The case of YouTube tutorials. *Journal of Pragmatics*, 124, 106-120. <https://doi.org/10.1016/j.pragma.2017.11.001>
- Blasco-García, J. (2020). *Nuevas formas de ausencia: Las redes sociales*. [Doctoral Dissertation, Universitat Politècnica de Valencia]. <https://bit.ly/3JpIAJN>
- Boerman, S.C. (2020). The effects of the standardized Instagram disclosure for micro- and meso-influencers. *Computers in Human Behavior*, 103, 199-207. <https://doi.org/10.1016/j.chb.2019.09.015>
- Burgess, J., & Green, J. (2009). *YouTube: Online video and participatory culture*. Cambridge Polity Press. <https://bit.ly/3Qfi1rs>
- Burnette, C.B., Kwitowski, M.A., & Mazzeo, S.E. (2017). I don't need people to tell me I'm pretty on social media: A qualitative study of social media and body image in early adolescent girls. *Body Image*, 23, 114-125. <https://doi.org/10.1016/j.bodyim.2017.09.001>
- Castillo-Abdul, B., Romero-Rodríguez, L.M., & Larrea-Ayala, A. (2020). Kid influencers in Spain: Understanding the themes they address and preteens' engagement with their YouTube channels. *Heliyon*, 6(9). <https://doi.org/10.1016/j.heliyon.2020.e05056>
- Davis, K. (2012). Friendship 2.0: Adolescents' experiences of belonging and self-disclosure online. *Journal of Adolescence*, 35(6), 1527-1536. <https://doi.org/10.1016/j.adolescence.2012.02.013>
- De-Bérail, P., Guillon, M., & Bungener, C. (2019). The relations between YouTube addiction, social anxiety and parasocial relationships with Youtubers: A moderated-mediation model based on a cognitive-behavioral framework. *Computers in Human Behavior*, 99, 190-204. <https://doi.org/10.1016/j.chb.2019.05.007>
- Du cu, M., & Günneç, D. (2020). Polarity classification of Twitter messages using audio processing. *Information Processing & Management*, 57(6), 102346-102346. <https://doi.org/10.1016/j.ipm.2020.102346>
- Erz, A., Marder, B., & Osadchaya, E. (2020). Hashtags: Motivational drivers, their use, and differences between influencers and followers. *Computers in Human Behavior*, 89, 48-60. <https://doi.org/10.1016/j.chb.2018.07.030>
- Ferchaud, A., Grzeslo, J., Orme, S., & Lagroue, J. (2018). Parasocial attributes and YouTube personalities: Exploring content trends across the most subscribed YouTube channels. *Computers in Human Behavior*, 80, 88-96. <https://doi.org/10.1016/j.chb.2017.10.041>
- Genç, M., & Öksüz, B. (2019). An analysis on collaborations between Turkish beauty YouTubers and cosmetic brands. *Procedia Computer Science*, 158, 745-750. <https://doi.org/10.1016/j.procs.2019.09.110>

- Harb, J., Ebeling, R., & Becker, K. (2020). A framework to analyze the emotional reactions to mass violent events on Twitter and influential factors. *Information Processing & Management*, 57(6), 102372. <https://doi.org/10.1016/j.ipm.2020.102372>
- Hartmann, T. (2016). Parasocial interaction, parasocial relationships, and well-being. In L. Reinecke, & M. Oliver (Eds.), *The Routledge handbook of media use and well-being: International perspectives on theory and research on positive media effects* (pp. 131-144). Routledge. <https://bit.ly/3zP0GjL>
- Hu, M., & Liu, B. (2004). Mining and summarizing customer reviews. In *Proceedings of the tenth ACM SIGKDD international conference on Knowledge discovery and data mining (KDD '04)* (pp. 168-177). Association for Computing Machinery. <https://doi.org/10.1145/1014052.1014073>
- Jerslev, A. (2016). Media times. In the time of the microcelebrity: Celebrification and the YouTuber zoella. *International Journal of Communication*, 10, 5233-5251. <https://bit.ly/3ySPG3r>
- Kale, G., & Jayanth, J. (2019). Introduction to research. In V. Bairagi, & M. Munot (Eds.), *Research Methodology: A Practical and Scientific Approach*. CRC Press. <https://doi.org/10.1201/9781351013277-1>
- Keegan, B.J., & Rowley, J. (2017). Evaluation and decision making in social media marketing. *Management Decision*, 55(1), 15-31. <https://doi.org/10.1108/MD-10-2015-0450>
- Kim, D.H., Seely, N.K., & Jung, J.H. (2017). Do you prefer, Pinterest or Instagram? The role of image-sharing SNSs and self-monitoring in enhancing ad effectiveness. *Computers in Human Behavior*, 70, 535-543. <https://doi.org/10.1016/j.chb.2017.01.022>
- Kim, J., & Kim, Y. (2019). Instagram user characteristics and the color of their photos: Colorfulness, color diversity, and color harmony. *Information Processing & Management*, 56(4), 1494-1505. <https://doi.org/10.1016/j.ipm.2018.10.018>
- Krippendorff, K. (1980). *Content analysis: An introduction to its methodology*. Sage. <https://bit.ly/3bmaPv0>
- Lange, P.G. (2014). Commenting on YouTube rants: Perceptions of inappropriateness or civic engagement. *Journal of Pragmatics*, 73, 53-65. <https://doi.org/10.1016/j.pragma.2014.07.004>
- Latorre-Martínez, P., Orive-Serrano, V., & Íñiguez Dieste, D. (2018). Measurement and analysis of the presence in Facebook and Twitter in the regional television broadcaster's context in Spain. *Profesional de la Información*, 27, 1061-1070. <https://doi.org/10.3145/epi.2018.sep.10>
- León, O.G., & Montero, I. (2015). *Métodos de investigación en Psicología y Educación. Las tradiciones cuantitativa y cualitativa*. McGraw Hill. <https://bit.ly/3BCmP6w>
- Lipsman, A., Mudd, G., Rich, M., & Bruich, S. (2012). The power of "like": How brands reach (and influence) fans through social-media marketing. *Journal of Advertising Research*, 52(1), 40-52. <https://doi.org/10.2501/JAR-52-1-040-052>
- Lozano-Blasco, R., Quilez-Robres, A., Delgado-Bujedo, D., & Latorre-Martínez, M.P. (2021). YouTube's growth in use among children 0-5 during COVID19: The Occidental European case. *Technology in society*, 66. <https://doi.org/10.1016/j.techsoc.2021.101648>
- Mäntymäki, M., & Riemer, K. (2014). Digital natives in social virtual worlds: A multi-method study of gratifications and social influences in Habbo Hotel. *International Journal of Information Management*, 34(2), 210-220. <https://doi.org/10.1016/j.ijinfomgt.2013.12.010>
- Mcgoogan, C. (2017). Hashtag turns 10: Seven facts you didn't know about the trending symbol. *The Telegraph*. <https://bit.ly/3coL51b>
- Neu, D., Saxton, G., Rahaman, A., & Everett, J. (2019). Twitter and social accountability: Reactions to the Panama Papers. *Critical Perspectives on Accounting*, 61, 38-53. <https://doi.org/10.1016/j.cpa.2019.04.003>
- Nguyen, H., & Le-Nguyen, M. (2018). Multilingual opinion mining on YouTube - A convolutional N-gram BiLSTM word embedding. *Information Processing & Management*, 54(3), 451-462. <https://doi.org/10.1016/j.ipm.2018.02.001>
- Ofcom (Eds.) (2017). *Children and parents: Media use and attitudes report*. Ofcom. <https://bit.ly/3IRiG05>
- Oramas-Bustillos, R., Zatarain-Cabada, R., Barrón-Estrada, M.L., & Hernández-Pérez, Y. (2019). Opinion mining and emotion recognition in an intelligent learning environment. *Computer Applications in Engineering Education*, 27(1), 90-101. <https://doi.org/10.1002/cae.22059>
- Peres, R., Talwar, S., Alter, L., Elhanan, M., & Friedmann, Y. (2020). Narrowband influencers and global icons: Universality and media compatibility in the communication patterns of political leaders worldwide. *Journal of International Marketing*, 28(1), 48-65. <https://doi.org/10.1177/1069031X19897893>
- Reyes-Menéndez, A., Saura, J.R., & Alvarez-Alonso, C. (2018). Understanding #WorldEnvironmentDay user opinions in Twitter: A topic-based sentiment analysis approach. *International Journal of Environmental Research and Public Health*, 15(11). <https://doi.org/10.3390/ijerph15112537>
- Saura, J.R., Debasa, F., & Reyes-Menendez, A. (2019). Does user generated content characterize Millennials' generation behavior? Discussing the relation between SNS and open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 5(4), 1-15. <https://doi.org/10.3390/joitmc5040096>
- Scannell, P. (2000). For-anyone-as-someone structures. *Media, Culture & Society*, 22(1), 5-24. <https://doi.org/10.1177/016344300022001001>
- Schmuck, D., Karsay, K., Matthes, J., & Stevic, A. (2019). Looking up and feeling down'. The influence of mobile social networking site use on upward social comparison, self-esteem, and well-being of adult smartphone users. *Telematics and Informatics*, 42. <https://doi.org/10.1016/j.tele.2019.101240>
- Schouten, A.P., Janssen, L., & Verspaget, M. (2020). Celebrity vs. influencer endorsements in advertising: The role of identification, credibility, and product-endorser fit. *International Journal of Advertising*, 39(2), 258-281. <https://doi.org/10.1080/02650487.2019.1634898>
- Shane-Simpson, C., Manago, A., Gaggi, N., & Gillespie-Lynch, K. (2018). Why do college students prefer Facebook, Twitter, or Instagram? Site affordances, tensions between privacy and self-expression, and implications for social capital. *Computers in*

- Human Behavior*, 86, 276-288. <https://doi.org/10.1016/j.chb.2018.04.041>
- Sharma, S.K., & Hoque, X. (2017). Sentiment predictions using support vector machines for odd-even formula in Delhi. *International Journal of Intelligent Systems and Applications*, 9(7), 61-69. <https://doi.org/10.5815/ijisa.2017.07.07>
- Smith, A., & Anderson, M. (2018). *Social media use in 2018*. Pew Research Center. <https://pewrsr.ch/3aRyOSL>
- Song, L., Li, R.Y.M., & Yao, Q. (2022). An informal institution comparative study of occupational safety knowledge sharing via French and English Tweets: Languaculture, weak-strong ties and AI sentiment perspectives. *Safety Science*, 147, 105602. <https://doi.org/10.1016/j.ssci.2021.105602>
- Stockdale, L.A., & Coyne, S.M. (2020). Bored and online: Reasons for using social media, problematic social networking site use, and behavioral outcomes across the transition from adolescence to emerging adulthood. *Journal of Adolescence*, 79, 173-183. <https://doi.org/10.1016/j.adolescence.2020.01.010>
- Throuvala, M.A., Griffiths, M.D., Rennoldson, M., & Kuss, D.J. (2019). Motivational processes and dysfunctional mechanisms of social media use among adolescents: A qualitative focus group study. *Computers in Human Behavior*, 93, 164-175. <https://doi.org/10.1016/j.chb.2018.12.012>
- Van-Reijmersdal, E.A., Rozendaal, E., Hudders, L., Vanwesenbeeck, I., Cauberghe, V., & Van-Berlo, Z.M.C. (2020). Effects of disclosing influencer marketing in videos: An eye tracking study among children in early adolescence. *Journal of Interactive Marketing*, 49(1), 94-106. <https://doi.org/10.1016/j.intmar.2019.09.001>
- Vannucci, A., & McCauley-Ohannessian, C. (2019). Social media use subgroups differentially predict psychosocial well-being during early adolescence. *Journal of Youth and Adolescence*, 48, 1469-1493. <https://doi.org/10.1007/s10964-019-01060-9>
- Verrastro, V., Fontanesi, L., Liga, F., Cuzzocrea, F., & Gugliandolo, M.C. (2020). Fear the Instagram: Beauty stereotypes, body image and Instagram use in a sample of male and female adolescents. *Qwerty*, 15(1), 31-49. <https://doi.org/10.30557/QW000021>
- Vizcaíno-Verdú, A., & Aguaded, I. (2020). Análisis de sentimiento en Instagram: Polaridad y subjetividad de cuentas infantiles. *ZER*, 25(48), 213-229. <https://doi.org/10.1387/zer.21454>
- Weismueller, J., Harrigan, P., Wang, S., & Soutar, G.N. (2020). Influencer endorsements: How advertising disclosure and source credibility affect consumer purchase intention on social media. *Australasian Marketing Journal*, 28(4), 160-170. <https://doi.org/10.1016/j.ausmj.2020.03.002>
- Xu, Q.A., Chang, V., & Jayne, C. (2022). A systematic review of social media-based sentiment analysis: Emerging trends and challenges. *Decision Analytics Journal*, 3. <https://doi.org/10.1016/j.dajour.2022.100073>
- Yau, J.C., & Reich, S.M. (2019). It's just a lot of work": Adolescents' self-presentation norms and practices on Facebook and Instagram. *Journal of Research on Adolescence*, 29(1), 196-209. <https://doi.org/10.1111/jora.12376>
- Yu, Y., Duan, W., & Cao, Q. (2013). The impact of social and conventional media on firm equity value: A sentiment analysis approach. *Decision Support Systems*, 55, 919-926. <https://doi.org/10.1016/j.dss.2012.12.028>