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ARTICLE

Internet and Digital Devices in Childhood: Analysis of Twitter Conversations

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ABSTRACT

This study aims to analyze human-media interaction, focusing on Twitter users' perceptions and imaginaries of children's use of the Internet and digital devices. The concepts of media panic, mediation, and mediatization are the theoretical keystones supporting the discussion. Exploring users' reactions and representations reveals that mobile communication and social networks are crucial to understanding broader cultural and social transformations. The evolving landscape of the Internet reveals its diverse applications and implications, shaping collective imaginaries and influencing personal and global paradigms. The methodology combines quantitative big data and qualitative analysis, supported by content, thematic, and discourse analysis approaches. The analysis was carried out in several phases: a) big data scraping to contextualize users; b) categorization using the specific software; c) thematic analysis; d) selecting specific examples and providing links to all the posts in the analysis. The results demonstrate different conceptual levels as pathways to approach social media users' perceptions. First, this study shows that social media plays a relevant role in defining the online space for children. It draws attention to the fact that network differences are also related to characteristics that define social actors. Responses included references to the need for regulation, which we associate with media panic, and alternatives to this attitude through references to social change and mediatization. This study also focused on the role played by the media as

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agents of social change linked to the concept of mediatization; the elements that contextualize these perspectives can be social actors, digital tools, and social media.

Keywords: Children; Media Panic; Mediatization; Internet Use; Big Data; Discourse Analysis

1. Introduction

Technological advances within the digital world and related to internet connection have transformed the daily lives of children, attracting growing research interest^[1], and projects about the wellbeing of children and their rights^[2]. Imaginaries are constructed around the Internet, highlighting its value in various fields^[3], such as the economy^[4], media^[5], and politics^[6], among others. The advent of artificial intelligence^[7] has created new possibilities. Social networks have become a medium through which opinions are generated^[8, 9]. Thus, examining how the relationship between youth, children, and the Internet is perceived on social networks is essential.

This paper aims to analyze the perception of Twitter users, who express themselves in Spanish, regarding the presence of digital technology in the daily lives of children and youth. Specific objectives are as follows:

- a) To analyze context dimensions in social media conversations about children and youth's Internet use, including the physical or linguistic environment of messages, users involved, and references to social networks and digital tools.
- b) To determine which conversational contents reveal negative (panic) or positive (mediation) approaches regarding youth's Internet presence. Panic involves collective fear of imminent danger, while mediation relates to social changes and transformations that facilitate environmental adaptation.

Figure 1 depicts a synthesis of the concepts underlying the formulation of the objectives.

New means and tools of communication have triggered contradictory reactions^[10]. Stances in favor and against may be driven by an emotional state, requiring an informed perspective to avoid extremisms^[11–13]. After considering the context of Internet practices, a two-fold theoretical framework is the starting point for the interpretation of Twitter conversations. While the concept of media panic associated with childhood and adolescence^[14–16] is interpreted as a reaction to new media, mediatization^[17, 18] relates to strategies of social change that help overcome this panic^[19]. Big data analysis of Twitter conversations^[20], is conducted using scraping^[21], and discourse analysis^[22–25].

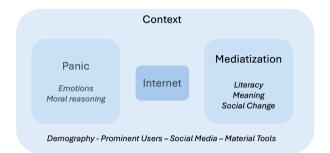


Figure 1. Theoretical nuclei in the formulation of objectives.

2. Literature Review

2.1. The Internet Context

The advent of the Internet, often linked to the fourth industrial revolution (Datta), has generated mixed reactions regarding its applications^[26]. As a "system architecture" that has not only revolutionized mass communication, mass media, and commerce, but also significantly impacted various fields, from art to industry and healthcare^[27], it serves multiple information transmission purposes and is a global communication medium that grows as the digital divide is reduced^[28]. It can generate new communication channels linked to dynamic, evolving platforms^[29–32] and has diverse applications in various communication fields, from art to industry and healthcare^[33].

New thematic concerns emerge with collective imaginaries, understood as culturally defined worlds experienced spatially by people^[34]. The Internet is central to ideas and stereotypes such as security, participation, sociability, privacy, and governance^[35]. This study focuses on mobile communication and social networks, essential to defining the Internet in the collective imagination.

Mobile communication is mediated by technologies

in various settings, ritualized dynamically ^[36, 37]. These exchanges, akin to rites, are governed by rules that allow shared interpretation and understanding ^[38]. The transformative power of mobile phones on social relationships, and their integration with the Internet, has led to innovations across human activities. This intersection of technology and society, where technology is influenced by social forces and interacts with human needs, is a key area of study. Mobile communication among youth has been studied extensively by Sonia Livingstone ^[39, 40]. The use of smartphones among youth, emphasizes instant gratification, which attracts adults' attention for content supervision and technical support, promoting participatory learning ^[41].

The Internet and mobile communications technology are linked to social networks, shaping new media paradigms^[42]. Relationships between technology platforms and user responses are framed by affordances, highlighting the interaction between technology and reactions^[43]. Affordances, which refer to the action of possibilities in the environment, are relationally understood through user interactions^[44, 45]. They mark pathways for action, such as social network participation through likes and comments. Affordances help understand the relationship with technology in social networks, where interactions are socially and culturally mediated.

Exploring user reactions and representations reveals that mobile communication and social networks are key to understanding broader cultural and social transformations. The Internet's evolving landscape highlights its diverse applications and implications, shaping collective imaginaries and influencing personal and global paradigms.

2.2. Panic Toward the Internet and Digital Devices

Panic is based on the use of resources that trigger emotions in their audience, resulting in everyday events attracting public attention^[46]. "Societies appear to be subject, every now and then, to periods of moral panic. A condition, episode, person, or group of persons emerges to become defined as a threat to societal values and interests"^[47]. The concept is constructed in well-defined contexts^[48] and is particularly appropriate regarding social media, where audiences are grouped into well-defined niches^[49?]. Panic looms, calling upon moral reasoning, or even a set of norms, explained by the media and which involve value judgments on goals to be achieved by social agents^[50–53].

Specific mention of media panic exists^[15, 54]. Traits attributed to different social phenomena that trigger media panic focus on mass media, promoting emotionally charged and morally polarized discussion. The more visible negative extreme is emphasized, especially when involving children. In their search for the causes of the use of the social panic strategy, researchers highlight situations of power and fear generated in popular culture elites, especially of youth^[52, 55]. Most relevant is that these crusades are created in environments where shared spaces of meaning have been constructed^[56]. The power of young people and general users to create content is now fully integrated into this media landscape, no longer separated by fear^[16]. Digital platforms and the media represent significant panic-generating tools.

Self-reflection by the media and child-related institutions will be essential to define the cultural competencies involving the use of digital media. To do this, dialogue spaces need to be created with youth^[57–59]. Alternative approaches to overcome negative approaches focus on contextualized interpretations supported by facts. These are explicit alternatives to media panic^[60–62].

2.3. Mediation and Mediatization

This study presents a different interpretative framework using the concepts of mediation and mediatization to approach youth Internet practices, which complements the previous one^[12, 18, 63]. The difference between these two concepts is: First, mediation implies relationships with other people, within the framework of social life, interacting by using signs, from which meanings are constructed in the communicative activity. When technology supports this communication, it becomes mediated communication—this intervention may affect the message and the relationships between sender and recipient^[64, 65]. This is called regular communication^[66].

When mediation is linked to a transforming process, the concept of mediatization emerges^[67–70]. It implies social, cultural, political, or economic changes. This includes actions aimed at facilitating the development of digital literacy in childhood, or the regulation and responsible use of the Internet^[11, 71].

The aim of mediation and mediatization was ques-

tioned^[19]. Previously central institutions—such as the family, church, or education—are now considered "mediatized." Several approaches discuss mediatization. For example, the social-constructivist approach refers to the social construction of reality^[66, 72], where technology plays a relevant role. The idea is not for just one medium to play a part. The phenomenon is more complex, especially within the digitalization framework. In the 20th century, the influence of mass media was consolidated. However, in the 21st century, the focus is on whether the media can sufficiently impact other fields autonomously^[73–75].

The concept of mediatization was the subject of intense debate^[18], regarding the relationship between mediatization and social change^[17, 76–78]. More recent studies have returned to this issue. For example, a model to theorize on the media, including platforms and algorithms^[79]. The concept from a three-fold perspective was analyzed^[80], reviewing the definitions of other authors. Mediatization is related to social change and not to a fixed concept but reflects the importance of media in society. It refers to the importance of media in human activity and the technologies associated with them. It also alludes to social and structural, rather than specific, changes that concern the lives of individuals.

3. Methodology

We adopt a mixed perspective using the Séntisis Intelligence¹ software, a company offering Twitter data collected and a first level of content analysis^[81–83].

3.1. Data

Between December 5, 2018 and January 8, 2019, 40,978 users posted 56,696 messages (posts) reflecting their imaginaries about youth participation in social media, the use of mobile phones, and the way they need to be protected; 65% of the messages were retweets. Demographic data related to gender and age should be interpreted with caution since Twitter does not always provide it, and it appears in only some posts. Regarding individual user gender, details of 15,193 posts are known, with 55% written by males and 45% by females. Data linked to age correspond to 2,047 users. The highest percentage of users (32%) are over 45

years of age, followed by the 18–24 age bracket (29%).

3.2. Analysis Process

The analysis is carried out through several phases, presented in **Figure 2**.



Figure 2. The process of analysis.

The data have been obtained by scraping, and include several levels of analysis:

- a) Big data scraping to contextualize users. The software provides information on various dimensions of Twitter conversations (total posts, posting activities, audience engagement, likes and comments)^[84]. The analysis uses a large magnitude of data ranging from textual to multimedia content present on Twitter. Direct access to the post as appearing on Twitter is allowed.
- b) Categorization using the Séntisis Intelligence software. Words with the same semantic meaning are merged to-gether^[85]. They are two minimum classification units: defined by the machine through analysis of natural language relative to semantic meanings and defined by the analyst and researcher relating to the presence or absence of the mentioned terms.
- c) Thematic analysis^[86]. Meanings are grouped hierarchically and introduced by the researcher. This enables the grouping of categories and defines the coherence of the categories' system.
- d) The software enables the selection of specific examples, providing links to all posts considered in the analysis. These examples are then analyzed by focusing on the multimodal discourses used by the users^[87].

4. Results

The results consider the conversations occurring on Twitter. First, the presence of the Internet context is exam-

¹Séntisis Intelligence is a Spanish company that uses software to classify and visualize network activity, focusing on text analysis with the support of artificial intelligence.

ined, focusing on not only prominent users² participating in the conversation but also the content of the posts referring to social relationships and mobile devices facilitating the interaction. Second, negative (panic) or positive (mediatization) reactions to the presence of children and youth on the Internet are examined. **Figure 3** depicts the main dimensions considered in the analysis.

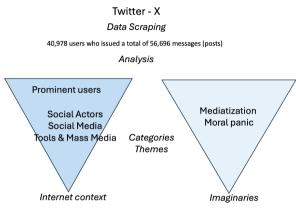


Figure 3. Main dimensions considered in the analysis.

Table 1 contains the analysis results, and a definition of the categories grouped into five thematic cores according to their meaning. The first three address the context: social actors, grouping together terms such as children, parents, or youth^[88]; social media, alluding to posts on Twitter, Facebook, Instagram or other platforms^[89]; and tools and mediators, including terms relating to the media, photography, or video^[60]. The last two refer to the imaginaries that people construct, revealing either panic, which would include terms such as privacy, protection, or police^[14, 16] or mediatization, which includes terms relating to children's

Transcript 1. Example of panic

ComputerHoy.com@computerhoy230.8k Seguidores 06/12/18 - 14:03

In young digital natives, the need to use a mobile phone is stronger than the need to eat, according to a study. https://bit.ly/4ewddeuhttps://bit.ly/3RBTDDR

1Retweets

231.3k reach

rights, education, and respect^[17, 18].

4.1. The Context of The Internet

We define the context of the Internet as the set of circumstances surrounding its use. Social actors are participants in social networks, while the instruments enable access. Social actors can be analyzed from two perspectives: the authors of the messages and the references to the social environment in the conversation settings.

4.1.1. Top Users: Generating Opinion

The concept of mediatization allows the interpretation of media messages to make tools that contribute to social changes. The traditional role of the family or school may now be performed by media or popular culture^[62, 64]. Hence the need to consider the top users for their impact on Twitter conversations.

Table 2 depicts the top users (those who stand out due to the number of followers or the frequency and scope of their posts). Of the top users, 9 are media accounts, 6 are newspaper accounts, 3 are television channels, 6 are private entities linked to social and cultural projects, 2 are state institutions (the police and civil guard) and only 3 are private individuals. These data are interpreted based on the concept of mediatization^[19], considering the media's role as agents of social change. The software used to obtain this data from big data provided an initial classification of these users' posts, depending on their content, grouped into two thematic cores linked to the concepts of panic, when protection or mediation was invoked, and mediatization mentioning their use. The following transcripts are examples of these imaginaries.

²Prominent users are defined as individuals or entities whose posts consistently generate high engagement (likes, retweets, replies), have a substantial follower base, and significantly influence conversations and trends within the platform. This influence can be quantitatively measured.

Transcript 2. Example of mediatization

Policía Nacional@policia3.2M Seguidores 08/12/18 - 12:33 Looking forward to the new season of your favourite series? Take advantage and check the #privacy of your social media profiles and delete the friend of your cousin's friend from Cáceres that you've seen one day in your life. Protect your privacy https://t.co/gzing8CTSU 46 Retweets

3.2M reach

Topics and Categories	Definition		%	
	THE CONTEXT OF THE INTERNET			
Social actors	Participant as conversation content	21.007	33.38%	
Children	Boys, girls, girl, boy, young person, young people, youth, kids (boys), kids (girls), childhood, minors, childish.	13.816	21.96%	
Adults	Dads, teachers, teacher, mums.	7.191	11.43%	
Social media	Related people and organizations through a platform.	4.546	7.22%	
Facebook	Facebook, Facebook, fb,	2.007	3.19%	
Instagram	Instagram, Instagrammer, Insta.	762	1.21%	
Others	Tumblr, Pinterest, 21 buttons, 21 buttons, Snapchat.	35	0.06%	
Twitter	Twitter, twiter, tuiter, tw, tweets; also include the term twitter as content. This means avoiding any link to this social network being coded.	1.742	2.77%	
Tools and mass media	Allow digital relationships and are a theme of conversation.	17.302	27.50%	
App	IT resource, prepared for certain use.	685	1.09%	
Cinema	Cinematographic technique, art and industry.	192	0.31%	
Cinema or TV content	Serial, series, films, film, flick	266	0.42%	
Photography	Type of images that appear on internet. Photograph, photographs, image, images, photos, photo	6.633	10.54%	
Influencers	Influencers, influencers, Instagrammers	190	0.30%	
Mobiles	Mobiles, mobile, mobile (with and without accent in Spanish)	5.297	8.42%	
Streaming platforms	Netflix, HBO, Moviestar, Disney, Filmin	310	0.49%	
Advertising	Promote content	1.989	3.16%	
Television	Television, TV, TVE, RTVE	1.333	2.12%	
Video games	Electronic game watched on a screen	407	0.65%	
	IMAGINARIES AND STEREOTYPES			
Moral panic	Establishment of norms, regulations, laws or situations from which they are generated	9.849	15.65%	
Rage	Expressions in which the author shows anger	1.255	1.99%	
Conflicts on Internet or with mobiles	Mention or evaluation of fight, confrontation, or assessment of fight, coexistence of contradictory tendencies (internet, mobiles)	1.39	2.21%	
Privacy	Privacy, intimacy, own image which does not fail or offers trust, free and without risk, security (boys, girls, son, daughter, young people, young person, childhood, youth)			
Security	In Internet, in childhood, and youth	701	1.11%	
Time	Hours, minutes, time, days	1.725	2.74%	
Mediatization	Related to social transformations	10.221	16.24%	
Social action for childhood	Public activities aimed at improving childhood life and situation	510	0.81%	
Communication	Conversing, exchanging messages, interactions between transmitters and receivers (communicating, communication, conversation, messages, message)	1.444	2.29%	

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Topics and Categories	ries Definition		%
	IMAGINARIES AND STEREOTYPES		
Recommended	Captures advice or guidance for buying or using a product or service	328	0.52%
Childhood right or rights	Allusions to the rights of boys, girls, son, daughter, young people, young person, childhood, youth.	99	0.16%
Education	Teach and learn social uses: contribute to the development of intellectual and moral capacities (educate, teach, learn, learning, education, educated, knowledge)		9.44%
Respect	Respect, to respect, respected, respectful	1.897	3.01%
Total		62.925	100.00%

Table 1. Cont.

As **Table 2** reveals, 15 of the 22 top users focus on moral panic (protection and security) and 7 on mediatization (usage). The data may be interpreted^[14], who referred to moral panic and highlighted the role of the media in spreading these messages. This table reveals that the flow and scope of participation are driven by the media, implying that

editorial viewpoints impact conversational trends that affect public opinion and, in this case, are related to the negative aspects of technology in children's lives^[11]. Meanwhile, the fact that the National Police is one of the most followed users shifts the focus on protection rather than network usage.

Name	Type of User	Followers	Tweets	Retweets	Reach	Imaginaries
El País	Press	6.8M	2	204	13.8M	Moral panic
National police force	Institution	3.2M	9	389	28.9M	Moral panic
Ortografía	Anonymous	2.9M	228	44	656.8M	Mediatization
BBVA world	Bank foundation	2.9M	3	9	7.8M	Moral panic
Leopoldo castillo	Journalist	2.6M	1	78	2.7M	Moral panic
		-				1
Infobae	Argentinian digital newspaper	2.5M	5	3	12.7M	Moral panic
Filosofía	Anonymous	2.5M	223	14	559.1M	Mediatizatio
Culturizando	Online cultural journal	1.9M	1	7	1.9M	Moral panic
Paola rojas	Journalist-blogger	1.8M	3	0	5.4M	Moral panic
Noticias MVS	Mexican media group	1.7M	1	0	1.7M	Mediatizatio
Miguel H Otero	President and publisher of the newspaper El Nacional (Venezuela)	1.7M	1	0	1.7M	Moral panic
Periódico excélsior	Second oldest newspaper in Mexico City	1.6M	2	21	3.2M	Moral panic
Abc.es	Spanish newspaper	1.6M	2	6	3.2M	Moral panic
Ortografía	Anonymous discontinued account	1.6M	211	70	334.4M	Mediatizatio
Telecinco	Spanish TV channel	1.6M	2	150	3.5M	Moral panic
Antena 3	Spanish TV channel	1.4M	1	4	1.4M	Mediatizatio
20minutos.es	Free newspaper in Spain	1.4M	2	10	2.7M	Moral panic
Xataka	Online publication dedicated to technology	1.4M	2	13	2.7M	Mediatizatio
Rae	Royal Spanish Academy	1.2M	10	68	13M	Mediatizatio
24h	Spanish TV channel, public financing	1.3M	1	0	1.3M	Mediatizatio
Guardia civil	Institution	1.3M	3	145	4M	Moral panic
Al rojo vivo	Spanish TV program from a private channel of the Mediapro group	869.9k	2	0	1.7M	Moral panic

Table 2. Top users.

It stands out that Spanish institutions, El País (6.8M) and the National Police Force (3.2M) have the most followers. Their primary function is to provide information on the correct use of social media. The newspaper does this through

related news items and reports, while the police force highlights well-known portals in Spain that offer information on the use of social media. An example of such a post is as follows:

Transcript 3. Mediatization of the opinions through mass-media

EL PAÍS@el_pais 08/01/19 - 12:37 When should you give them a mobile? When should you let them have Instagram? Elizabeth Kilbey: "Until the age of 14 years, children do not have the necessary skills to manage social media". Offered by @AprenderJuntos https://t.co/Dt9wmpYNhB 674 Retweets, 53Quote Tweets, 900 Likes https://twitter.com/el_pais/status/1082602203448258561

This message, issued by major newspapers in Spain, reflects two great trends (frequency and repercussion) that focus on the negative effects of technology and the need to protect children and regulate their practices^[14]. The theory of media panic is relevant here^[16]. The example echoes a pertinent concern: when to begin to use social media. This newspaper adopts the role previously played by the school or family, establishing guidelines that define convenient or inconvenient children's practices^[88]. What is relevant is that the media may react to this panic theory to offer alternative contributors to social change^[80]; in the case of children, it alludes to the need to develop skills that promote responsible Internet usage.

4.1.2. Social and Material Dimensions of the Context

References to the different elements of the internet-

related context include three thematic clusters that group different categories: social actors, social media, material tools and mass media. We will now consider each of them.

Focusing on *social actors*, this nucleus includes children (21.96%) and adults (11.43%), and is the first dimension to consider in terms of media panic and mediatization regarding Internet usage, highlighting the idea that technologymediated contexts cannot be understood without considering participant characteristics and their roles. Although many studies focus on childhood and the Internet^[88], few address the characteristics of adults supporting this usage^[90, 91]. The following example focuses on children as social media users, considering their multiple roles: audiences, recipients, or producers of content. Two trends are reflected in these messages: one focuses on the opportunities created by mobiles or social networks, and the other on their risks^[92].

Transcript 4. Social actors

María Zabala@iWomanish

Jan 8, 2019.3:50 PM · Twitter for iPhone.

The mobile is much + than social media. And not all media are the same. Nor are all children aged 14 are the same. I agree that there is a right age for everything, and that people need to know how to use mobiles and social media, but what most interests me is "for what" do my iKids use technology. 6 Retweets. - 5 Likes, 3.4K ALCANCE

0 Reiweels. - J Likes, J.-R ALCANCE

https://twitter.com/iWomanish/status/1082650751422418944

Awareness of the complexity in using digital media in childhood is emphasized^[60]. Here, the age, network accessed, and the act of using it responsibly are important. The use of Internet mediatized by adults supporting children's activities favors development.

Viewing *social media* as communicative scenarios of media panic and mediatization reveals user perceptions of

Transcript 5. Social media

Marley 曾@Jmvrley Ritsu_Otakumura (1 2 2 7 4) @Ritsu_Okumura The other day I was preparing a gift for my parents. I had to go into the file of photos on their PC ... rac andI discovered that they had been keeping hidden photos of mine from social media and WhatsApp to make an album of me, their daughter $4:02 PM \cdot Jan 4, 2019 \cdot Twitter for Android$ 1 Like 1.7K $https://twitter.com/Ritsu_Okumura/status/1081204189102071808$

Nerina 石海神 司रेना @Nerina_EAO Jan 4, 2019 Replying to @Ritsu_Okumura What a lovely touch! @@

This tweet highlights a common practice among youth: the use of visual language in social media, illustrating the generational gap in network usage. While youth share their daily life on social media through photographs, parents use these same images as memories. This constant social media use alarms certain sections of society, generating panic^[60].

The thematic nucleus related to *material tools and mass media accounts* for 27.50% of total posts. Categories include old and new media (apps, cinema, mobile devices, platforms), photography, and advertising. The content of posts may suggest an awareness of the discourse used, the tool through which the Internet may be reached^[93]. The example below reflects the interaction between all these elements present in the messages, which should be considered when promoting media education, linked to mediatization processes that help eliminate media panic^[80].

The tweet alludes to a film. The adults enjoyed the film, its plot, and its characters. The idea of watching it with children enables them to explain and make children understand how media can be used both positively and negatively^[71].

Transcript 6. Tools and media

María Paradela@mariapagar Yesterday we saw #RalphRompeInternet. The children liked it and us mothers almost died laughing with the Disney princess moment. I also loved the star of the online videogame and their depiction of Internet. So, I really liked it. 8:42 AM · Dec 31, 2018·Twitter for Android 2 Likes. 1.5K https://twitter.com/mariapagar/status/1079643926468984832

their functions. These posts account for only 7.22% of the total because understanding the settings where conversations occur requires high literacy levels, conscious control of the scenario, or the languages used within it^[90, 93]. The following example reveals the references to social media and the functions performed in communicative contexts.

4.2. Imaginaries: Panic and Mediatization

To analyze user opinions about children's Internet and digital tool usage, posts were filtered, and the concepts of panic and mediatization, together with the context in which they were generated, were addressed. The process involved combining quantitative and qualitative approaches^[94]. Moreover, there was a demand for interaction between theory and data^[95, 96].

As information filters, categories "are a means of sorting the descriptive data you have collected, so that the material bearing on a given topic can be physically separated from other data"^[97, 98]. Data recollection was performed using the Sentisis Analytics software.

4.2.1. Moral and Media Panic

The concept of moral and media panic^[47, 49, 99] related

Transcript 7. Applicable law

†Incubus† @ChaosScars

Dec 15, 2018

Look …. We are the children from different times. At the very least we should be able to have WhatsApp on our mobile, even if it is not the latest generation (and with restricted hours and all that). Everything else is unnecessary trivia, but I don't understand missing out.

[†]Incubus[†](a)ChaosScars Replying to (a)Miguel PG

"I have lived on the internet" since I was 11–12, and I've been really happy, with no problems (discounting viruses) whilst following strict security guidelines. 14 seems a good age to have your own mobile (smartphone) Here's to future chats.

Look after yourselves!

https://twitter.com/ChaosScars/status/1074392078866702336

These posts reveal two social media trends: One considers the negative aspects and the need for Internet access legislation^[16]. The other interprets children's practices without ignoring possible risks^[57].

4.2.2. Mediatization

In this study, the concept of mediatization and social change^[62] complements the notion of moral and media panic^[100]. Posts linked to this thematic nucleus account for 16.24% of the total. Categories include social action for childhood, communication, consumption advice, children's to the Internet usage of children and youth is increasingly profuse. Both institutional and personal Twitter accounts of some users stress the importance of establishing laws and regulations to protect children and users without any age distinction^[100]. An analysis of posts demonstrates that the need for protection is associated with considering digital tools and the communicative contexts they generate as threats. Due to the non-existence of regulation, children and youth are unprotected.

The total posts in this thematic nucleus account for 15.65%. References are to conflicts, fear, and lack of privacy associated with risks. The time minors spend on the Internet is associated with panic. The example below is a conversation between two users. This is a joint reflection, common to social media^[53]. It includes at least 6 tweets, 2 of which we reproduce below.

rights, education, and respect. Another example focuses on responsible usage, supported by education, closer to the viewpoint we call mediatization, as an advocate of social change^[72].

This example reveals how institutions adjust to the active role demanded by users^[60, 93]. A user survey ignites controversy between allowing museum visitors to share photos on the Internet to popularize it and the disadvantages of taking images that may damage the art exhibits. Most seem to be in favor of shared knowledge and participative culture.

Transcript 8. Mediatization

Los Museos @MuseosInfo 11:34 AM · Jan 8, 2019·Twitter Web Client #Did you know that there are increasingly more museums that allow you to take photos? Ehttps://goo.gl/qmGrcG Advantages: social media museum promotion, motivation for the youngest users... Disadvantages: Damage to art exhibits: flash, carelessness with selfie stick... In favor 68.8% Against31.3% 16 votes Final results 3 Retweets 1 Quote Tweet 4 Likes 362 Reach https://twitter.com/MuseosInfo/status/1082586444303163392

5. Conclusions and Discussion

This article explores childhood Internet usage, focusing on Twitter posts, considering both the senders and their contents by combining quantitative (big data) and qualitative (content, thematic, and discourse analysis) approaches, giving context and meaning to the data obtained through^[83, 94, 101]. We begin by analyzing social media opinions. Negative reactions and opinions related to media panic^[16], which are repeated through self-reflection, coexist with positive reactions and opinions related to opportunities offered by the media as agents of social change, which are considered mediatization. These processes are present in interpersonal relationships, institutions, and in the role of mass media and digital media today^[19]. Methodologically, defining the five thematic nuclei combines quantitative approaches, big data analysis^[20], and qualitative approaches supported by post content and discourse analysis to discover contextualized meanings^[22]. A notable contribution to this study is the presence of different analysis processes that interact in a circular, non-linear manner and aim to filter information at different times^[96]. All these processes involve interaction between company analysts who contribute software and the research team, particularly relevant during data input.

This study focused on the context in which references to media panic and mediatization appear, and the role assigned to social agents^[79] on Twitter. Further studies are required to explain the traits characterizing these agents, especially adults, and voices from institutional media and contexts.

This study revealed that social media plays a major role in defining the online space for children. It calls attention to the fact that the differences between networks are also related to traits that define social actors. For example, Facebook is mentioned, although it is one of the least used networks by children. Data also reflect how adult conversations on Twitter position digital tools in a multimedia context, where the contexts of other media and discourse, such as photography, television, cinema or viewing by streaming, must be included. This study also focused on the role played by the media as agents of social change, linked to the concept of mediatization, by considering profiles with the most followers or those that have generated the most interaction. Such data reveal that the media can react to this theory of panic to offer alternatives that contribute to social change.

Regarding the second goal, the study findings reveal the possibility of advocating concepts and thematic nuclei generated from the data in conjunction with theoretical models. On the one hand, messages relate to media panic^[100], underscoring the concept of security and focusing on the need to regulate Internet activities. On the other hand, the Internet is viewed as an agent of mediatization and social change^[71], stressing the relevance of media literacy in relation to that change. Processes that could be replicated in other studies are mentioned. The role of posts (tweets and retweets) as units of analysis should be considered, as they are semantically significant units that could remain hidden if data are only quantitatively analyzed^[94].

Limitations include data taken from tweets in Spain prior to the pandemic, making it difficult to extrapolate these data to other contexts. Data may be extended using the five thematic nuclei in future studies. Another aspect to consider is the lack of data regarding the people who tweeted. Moreover, empirical studies generated by the Pew Research Center for the interpretation of some data were obtained in a North American context and should therefore be contrasted. Finally, this study raises questions for future research: has the pandemic and adults' approach to technology during this time changed the perceptions presented by this study? In what direction have changes been made after the "forced" presence of the internet and mobiles in adults' lives and their perceptions of them? Has the pandemic impacted children and youth?

Author Contributions

The three authors have contributed equally to writing this article and to conducting the research on which it is based.

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Institutional Review Board Statement

Ethical approval was not provided for this study on human participants because the University of Alcalá has an Ethical Code, but not a Committee. The study has been developed according to Franzke, Aline Shakti; Bechmann, Anja, Zimmer; Michael Zimmer; Charles Ess, and the Association of Internet Researchers (2020). Internet Research: Ethical Guidelines 3.0. https://aoir.org/reports/ethics3.pdf, and the Code of Ethics for Good Research Practice. University of Alcalá, https://bit.ly/3aQ3oZT. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

Informed Consent Statement

Not applicable.

Data Availability Statement

Supplementary materials and data considered for the preparation of this article are available upon request from the correspondence author Pilar Lacasa p.lacasa@uah.es.

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Conflict of Interest

The authors have no conflicts of interest to declare. All co-authors have seen and agreed with the contents of the manuscript, and there is no financial interest to report. We certify that the submission is an original work and is not under review by any other publication.

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