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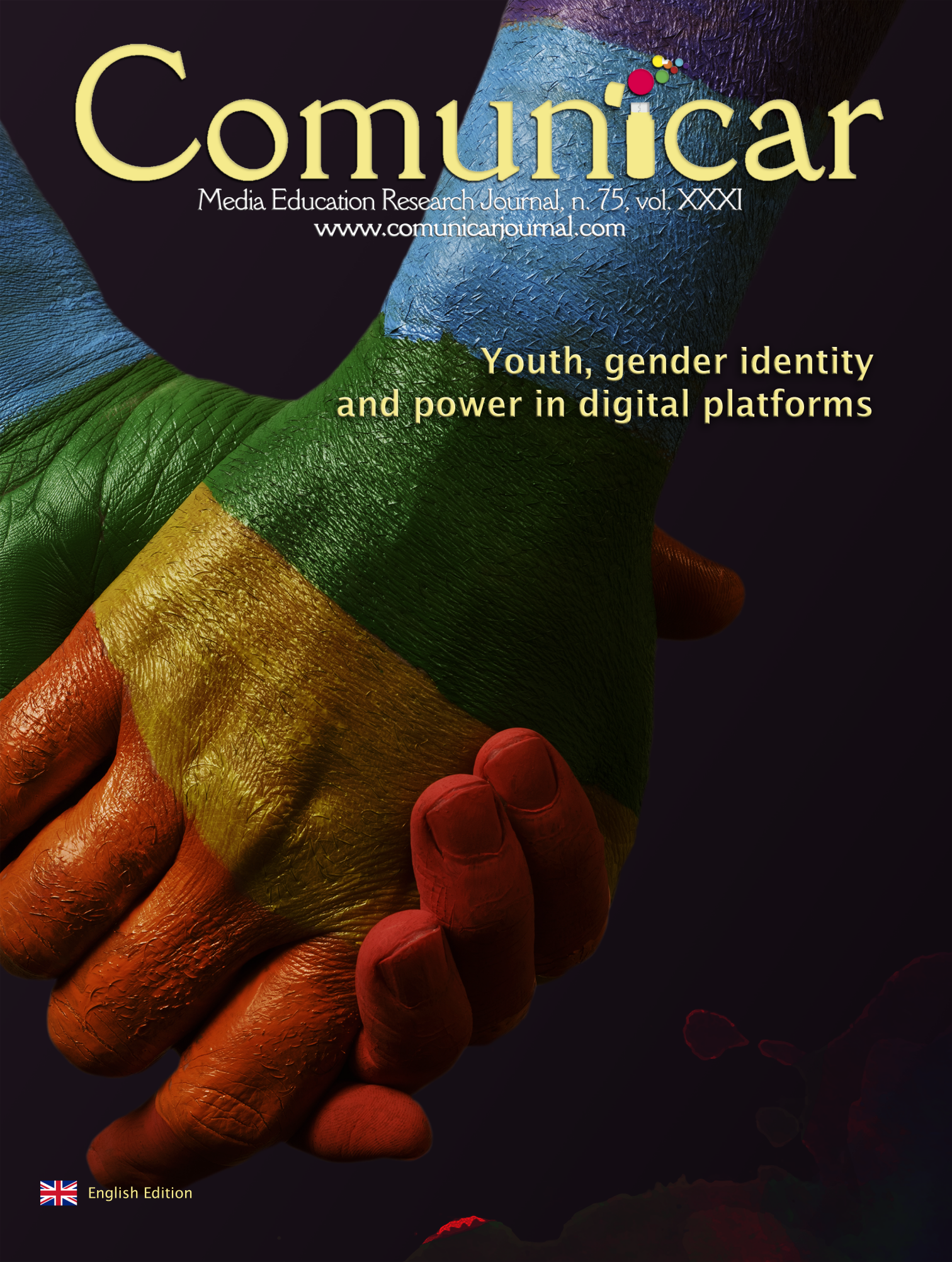
Youth, gender identity and power in digital platforms



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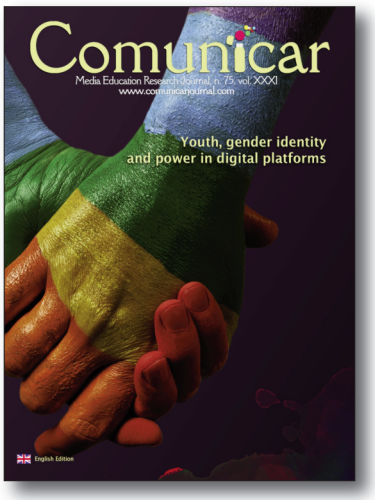

Youth, gender identity and power in digital platforms

Juventud, identidad de género y poder en las plataformas digitales

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Contents are peer reviewed, in accordance with publication standards established in the APA 7 (American Psychological Association) manual. Compliance with these requirements facilitates indexation in the main databases of international journals in this field, which increases the dissemination of published papers and therefore raises the profile of the authors and their centres.

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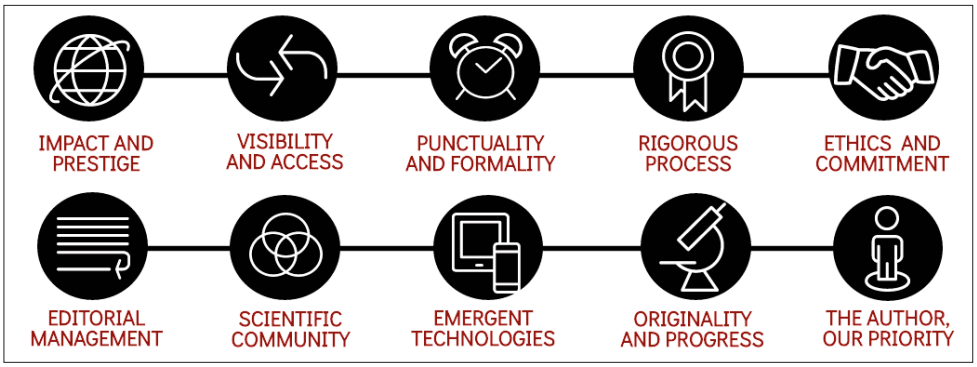

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• Numbers of Reviews: 353 (128 internationals and 225 nationals) (update: www.comunicarjournal.com).
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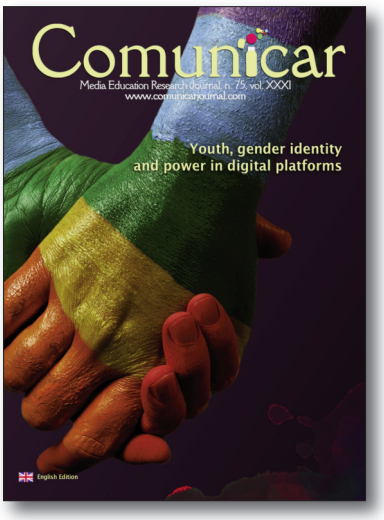

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Special issue

Youth, gender identity and power in digital platforms

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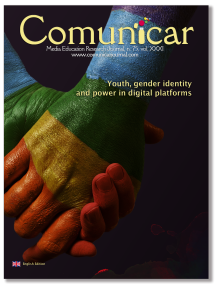

Onlife identity: The question of gender and age in teenagers' online behaviour

Identidad onlife: La cuestión del género y la edad en el comportamiento adolescente ante las redes

Dr. Sara Serrate-González. Professor, Department of Theory and History of Education, University of Salamanca (Spain) (sarasg@usal.es) (https://orcid.org/0000-0002-9985-7623)
Dr. Alberto Sánchez-Rojo. Doctor Assistant Lecturer, Department of Educational Studies, Complutense University of Madrid (Spain) (asanchezrojo@ucm.es) (https://orcid.org/0000-0003-2532-5867)
Luis-E. Andrade-Silva. Teaching Staff and Researcher in Training, Department of Social Psychology and Anthropology, University of Salamanca (Spain) (luiseduas@usal.es) (https://orcid.org/0000-0001-8553-9002)
Dr. José-Manuel Muñoz-Rodríguez. Professor, Department of Theory and History of Education, University of Salamanca (Spain) (pepema@usal.es) (https://orcid.org/0000-0002-4688-6420)

ABSTRACT

The presence of cyberspace in the lives of young people is such that we can no longer distinguish between online and offline spheres. They live a process of onlife development that is not always equitable in terms of gender. This paper aims to account for the online behaviour of Spanish adolescents according to gender and age, the decisions they make when constructing their virtual identity, and the effects that this has on them. A quantitative study has been carried out at a national level (N=2,076, 12-18 years old) following a non-experimental ex post facto design by means of a survey study. The results show that there are gender differences in the preference for one or other social network. A high percentage of girls make different choices when it comes to their online presence. Unlike boys, girls state that their virtual self and their behaviour significantly influence the opinion that they have of themselves and their need to feel integrated. In conclusion, the decisions that adolescents make when creating their virtual selves do not only have negative consequences derived from poor management, but are also plagued by mandates and stereotypes that determine how they should be and what they should do online; something that is especially pressing for girls.

RESUMEN

La presencia del ciberespacio en la vida juvenil es tal que ya no podemos distinguir los ámbitos online y offline, viviendo un proceso de desarrollo onlife no siempre equitativo en cuanto al género. Este trabajo pretende dar cuenta del comportamiento de los adolescentes españoles en la red en función del género y la edad, las decisiones que toman cuando construyen su identidad virtual y los efectos que tienen para ellos. Se ha realizado un estudio cuantitativo a nivel nacional (N=2.076, 12-18 años) en el marco de un diseño no experimental de tipo ex post facto a través del estudio de encuesta. Los resultados muestran que en la preferencia por unas u otras redes se observan diferencias de género, tomando decisiones totalmente diferentes a la hora de estar presentes en la red, y que un alto porcentaje de las chicas, a diferencia de los chicos, afirma que su yo virtual y los comportamientos asociados a su yo influyen significativamente en la opinión que tienen de sí mismas y en la necesidad que sienten por sentirse integradas. En conclusión, las decisiones que los adolescentes realizan a la hora de crear su yo virtual no solo tiene consecuencias negativas derivadas de una mala gestión, sino que está plagada de mandatos y estereotipos que determinan cómo deben ser y qué deben de hacer en la red; algo especialmente acuciante para las chicas.

KEYWORDS | PALABRAS CLAVE

Digital identity, adolescence, social networks, digital behaviour, gender, stereotypes.
Identidad digital, adolescencia, redes sociales, comportamiento digital, género, estereotipos.

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1. Introduction and state of affairs

According to the latest survey on equipment and use of information and communication technologies in Spanish households conducted by the National Statistics Institute (INE, 2021), the use of the internet in the last three months among persons aged between 16 and 24 years old is practically universal (99.7%), with 96.9% using the internet on a daily basis. These figures have continued to grow in recent years, even more so since the pandemic (National Observatory of Technology and Society (ONTSI), 2021), with this age group being the most active with regards to the use of the internet and also of applications and social networks.

If we focus on the younger age group of persons aged between 10 and 15 years old, we notice that, although there tends to be a gradual decrease in mobile phone use, perhaps due to the spreading of discourse centred on possible risks (Besolí et al., 2018), the use of computers and the internet is constantly increasing (95.1% and 97.5% respectively, compared to 91.5% and 94.5% recorded one year previous (INE, 2020)). There are international studies which state that adolescents spend more time online than at school or asleep (Rideout et al., 2022), which makes the internet the main area for this age group to develop and, therefore, a context which inevitably influences the construction of their identity, hence it cannot and must not be underestimated (Muñoz, 2021).

Floridi (2015: 1) uses the term "onlife" to describe the "experience of a hyperconnected reality within which it is no longer sensible to ask whether one may be online or offline", as everything is directly connected in an inseparable way. Cyberspace and what takes place there has come to encompass everything to the extent that today it is practically impossible to fully get away from it. We live connected and we are constantly affected, whether we like it or not, by the internet (Sánchez-Rojo & Martín-Lucas, 2021). This is something that we must deal with, hence it is so important nowadays to try to bridge the digital divide (Gurumurthy & Chami, 2019).

Each and every one of us today lives in this hybrid reality, onlife, but this is even more the case, if that is possible, for those who have never known anything different and who are finding out who they are and learning to socialise using resources of a specific nature. The various spaces for information as well as communication and interaction which make the internet possible are configured in such a way that makes them non-neutral tools, meaning that users are required to behave in a certain which ends up becoming ideal.

As was stated a few years ago by Langdon Winner (1988), technologies themselves, beyond the use that we make of them, are part of politics. This is something which is not often mentioned in the field of education and which is, however, of paramount importance (Sánchez-Rojo & Martín-Lucas, 2021), since it is something that determines, for example, that the so-called privacy paradox exists, consisting of defending the importance of having a space which others cannot see, but, at the same time, still publicly uploading audiovisual content from the most personal sphere to the internet (Barnes, 2006); self-assertiveness as a critical and informed subject, but incapable of distinguishing a hoax from a real piece of news (Herrero-Curiel & La-Rosa, 2022); or the fact that individuals try to present themselves virtually the way they are, because authenticity seems to be a value, however they end up being faced with obstacles in doing so because social recognition and popularity call for specific content to be uploaded which means that individuals opt more for the presentation of an ideal rather than a real self (Uski & Lampinen, 2014). Nonetheless, although this is true, and the various resources that we find online call for certain behaviour, it is also right to say that they have been created and configured from a particular sociocultural and specific ideological approach (Vansieleghem et al., 2019).

Thus, taking into account our current socioeconomic context, it is not surprising that the internet and the various spaces that make it up tend to boost competitiveness and the struggle for success more than the care and protection of vulnerability (Elias & Gill, 2017). In fact, the act of sharing videos and images, seeking recognition and influence through likes or the apparent need to have to express themselves in a certain way, end up making adolescents, mostly, as they are the ones in a self-construction process and therefore are those who have a greater need for recognition from others, end up experiencing an identity crisis, problems with self-esteem (Meeus et al., 2019) and stress (Schmidt et al., 2021) which are difficult to solve. Furthermore, in this process of onlife self-awareness and development there are noticeable

differences in terms of gender, as can be seen in studies on the impact of technology on adolescence such as that conducted recently by UNICEF Spain (2021).

This study shows that, although girls are at a higher widespread risk of having more problems when using the internet than boys, when we take into account certain platforms such as betting sites, the data are reversed. Gender is "an evolving, embodied, sociocultural construct that shapes how individuals move in and interact with the world" (Kriger & Keyser-Verreault, 2022: 24) and, although this evolution is gradually leading us to overcome the binarism which has prevailed for centuries in the West, its presence in the social imaginary is still dominant today, producing effects of inequality which must not and cannot be overlooked.

Thus, for example, there are works (Vannucci et al., 2020) which defend a gender gap in the access, use and consumption of digital technologies. Boys tend to consider themselves more competent and skilled when it comes to moving around cyberspace than girls (Cai et al., 2017). However, some research has shown that this fact stems more from self-perception than from a difference in real ability and competence (Siddiq & Scherer, 2019). This self-perception, however, is still rather substantial, as ultimately it determines the kind of internet use and consumption of each gender, as well as the type of applications and digital content that end up demanding or attracting the aforementioned to a greater or lesser extent, also according to gender (Rambaree & Knez, 2017).

Boys and girls do not interact, or participate, or share in the same way (Quazi et al., 2022), which would not be a problem if this fact were not influenced by sexist stereotypes that end up condemning one of the genders to a position of clear inequality in the current onlife reality (Kapidzic & Herring, 2015; Santos, 2018).

Based on the aforementioned, the aim of this work is to prove that the behaviour of Spanish adolescents online is different according to gender and age and, if this is the case, indicate how this fact influences the construction of their identity. This has become necessary in order to figure out the grammar providing the backbone of their current onlife reality, the knowledge of which is essential when it comes to considering how we must educate them (Sánchez-Rojo et al., 2022). In this respect, there are several questions that we will try to answer:

- Which digital platforms are most popular among male and female adolescents? Are there differences in use preference based on gender? Does gender-based use preference vary with age?
- What decisions do male and female adolescents make when it comes to constructing their onlife selves using network profiles? Are there gender differences in the decisions that they make? Does this construction vary with age? What do they show and what do they hide on their networks?
- What are the effects of the way in which they construct their onlife selves and use platforms? Are there gender differences with regard to individual perception and exposure to risks and danger?

2. Material and methods

For the research presented herein, a quantitative study has been conducted in the context of a non-experimental ex post facto design by means of a survey study, using a questionnaire on the use of technology for young people aged between 12 and 18 years old. This has been designed and put into operation by the researchers of the CONECT-ID project. Each dimension dealt with has been generated based on concepts and variables, using Likert-type scales and dichotomous questions, taking into account a preliminary qualitative analysis of the aforementioned project (Muñoz et al, 2020; Hernández et al., 2021).

In order to obtain and code the instrument, a pilot study has been conducted with 15 adolescents by means of a convenience sample, with the consent of their legal guardians and with the impetus to identify general matters and/or specific questions that may be prone to error, as well as to estimate the average time taken to complete the questionnaire. Following this process, the wording and formulation of some questions has been improved, and any questions that could seem superfluous were removed so as to reduce completion time as much as possible. Explanatory tags have also been added to any questions that gave rise to doubts.

Once the process has been completed, the questionnaire is converted for CAWI use by means of an online formula. At the same time and before it is used, the questionnaire has been validated by eight researchers from the following fields: sociology, psychology and research methods in education. In order to measure internal consistency of the instrument, Cronbach's Alpha statistics have been used, which indicated that the reliability provided guarantees, with a value of 0.713.

Participants were selected by means of multistage sampling, stratified by clusters, with the primary sampling units (schools) being selected proportionally at random, and the ultimate sampling units (individuals) being selected simply at random with quotas for sex and age. The questionnaire has closed-ended and open-ended questions.

It was used in a total of 31 secondary schools, divided into geographical areas (Autonomous Regions of Spain divided into four areas: Centre, North-West, East and South), size of municipality (rural or urban) and socioeconomic environment. When choosing the schools (public, state-subsidised or private), an opportunity criterion was followed in relation to the institutional contact networks of the research team.

For each one of these schools, quotas were set for the collection of sampling units, for the selection of which random criteria were applied within each school. A commitment to random sampling is therefore fulfilled.

2.1. Process

In order to process and work on the results, part of the graphic software developed from the "netCoin Project" (Network Coincidence Analysis)[1] was used. The purpose of this is to integrate traditional statistical techniques with automated learning and network analysis tools in order to obtain visual and interactive displays of data. This involves combining and integrating various statistical techniques under the study of the coincidence of subjects, objects or characteristics in a multi-series of scenarios. This is open-source software that generates interactive graphics which enable an exploratory and confirmatory analysis to be made on information flows.

The caring[2] tool was used here, which produces a network graph based on a data frame by converting variables into dichotomies and finding the coincidences between dependent variables (statistically probable coincidence of co-occurrence) and the effects of a series of exogenous variables in relation to the aforementioned. In accordance with Escobar and Martínez-Uribe (2020), coincidence analysis makes it possible to find patterns of concurrences in a series of events within a set of scenarios.

It is therefore possible to explore how a set of characteristics are jointly distributed and are arranged in various units in which they may or may not be present; it is also possible to differentiate between various degrees of coincidence: null, simple, probable, dependent, statistically probable and dependent, subtotal and total. Together with an appropriate and interactive graphic representation, its interpretation may therefore help and require the distribution of the coincidences of a multi-set of events to be understood.

2.2. Sample

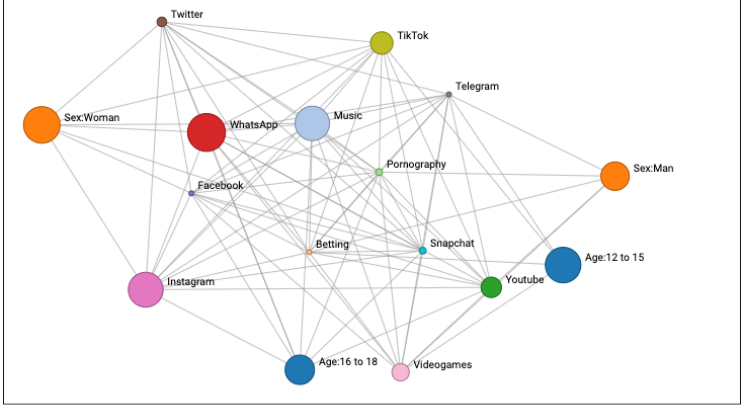
The sample, once it has been debugged, cleaned and coded, has a N=2,076, a sampling error of approx. ±2.15% for a confidence interval of 95.5% and p=q=50 (2Σ). 57.2% (1,182) of the sample are women and 42.8% (884) are men[3]. The age of the students ranges between 12 and 18 years old (Mean age= 14.92, SD=1.77), in which 55.4% (1,151) of the population are part of the 12 to 15 years age group and 44.6% (925) belong to the 16 to 18 years age group. 68.4% of respondents are from urban areas, while the rest come from rural areas.

3. Analysis and results

The apps most used by adolescents are WhatsApp, Instagram and music streaming apps (66.47%, 60.44% and 59.85%). No significant differences have been observed among them to allow it to be said that one app is more important than another.

Taking age into account, as the results have been coded in two groups (from 12 to 15 years, and from 16 to 18 years), there are significant differences in the use of Instagram, WhatsApp, Facebook, Twitter and music streaming apps.

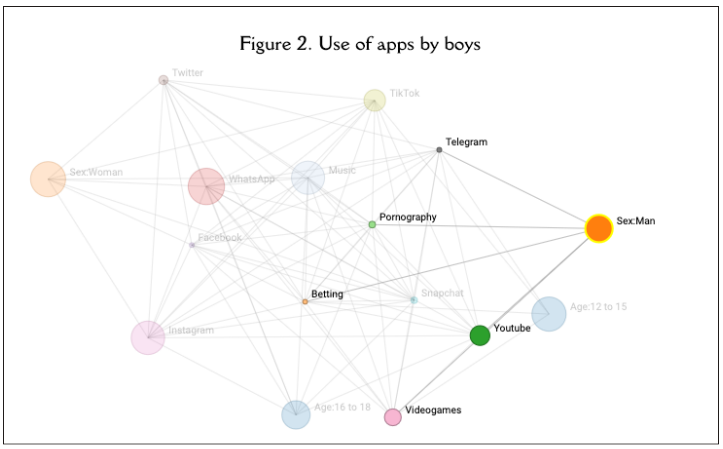
Figure 1. Full network of use of apps[4]



Note. Developed with NetCoin Project.

The use of these apps is seen to considerably increase with age, and the use of some of them even triples, as is the case with Twitter. Whereas the older age group loses interest in TikTok and videogame apps, as can be seen in Figure 1.

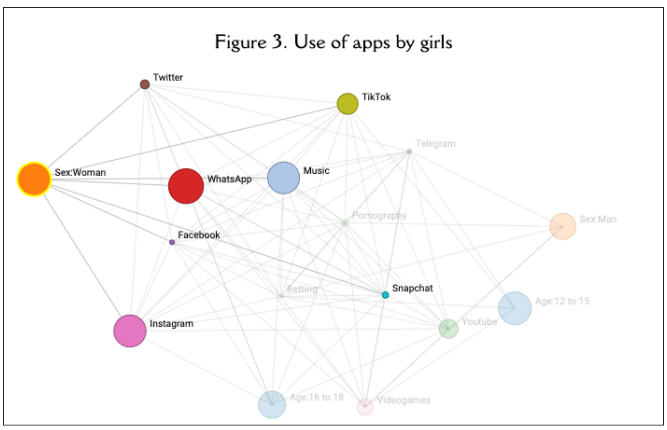
Figure 2. Use of apps by boys



Note. Developed with NetCoin Project.

Putting gender into the equation of the applications most used by adolescents, there is a differential use and gender differences are observed in all the apps put forward by the questionnaire.

Figure 3. Use of apps by girls



Note. Developed with NetCoin Project.

YouTube and videogame apps are those most used by boys, compared to girls, who use Instagram, WhatsApp, TikTok, Twitter and music streaming apps to a greater extent. As can be seen in Figures 2 and 3, boys say that they use pornography and betting apps, which does not occur with girls.

3.1. Construction of the onlife self

When it comes to constructing their virtual profiles, there are significant differences both in terms of gender and age. Girls state that they use a photograph of themselves more than boys do, while also saying that they use filters to show a better version of themselves. Compared to boys, more girls indicate that they behave in the same way as in their daily lives, share more personal information on their networks and screen the contacts who can see their personal information. More boys than girls say that they use nicknames and photos so they cannot be recognised. No considerable differences have been found regarding the influencers who they follow, and the number of likes and followers is not statistically significant between genders. As they get older, both boys and girls use photos of themselves more often as a profile photo on their social networks, while the frequency with which they use their real name increases, to the detriment of nicknames, and they share more personal information. With age, the respondents have more profiles and there is always a higher ratio of girls than boys. Please see Table 1.

Table 1. Construction of the onlife self by age group and gender

	Age group							
	12 to 15 years group				16 to 18 years group			
	Girl	Boy	Total	Chi2/p*	Girl	Boy	Total	Chi2/p*
Several profiles on one social network	50.00	30.73	41.19	0.00	60.18	43.33	53.59	0.00
I care about follower numbers	16.88	14.69	15.88	1.00	15.89	13.89	15.11	1.00
I am influenced by the number of likes or views on my posts	14.15	11.07	12.74	1.00	16.79	14.44	15.87	1.00
I use a real photograph of myself on my social networks	77.01	55.73	67.28	0.00	91.79	82.22	88.04	0.00
I prefer to use a name and a photograph by which I cannot be recognised	21.38	36.64	28.36	0.00	8.21	17.78	11.96	0.00
I share my personal information on my networks (photographs, location, hobbies)	42.77	27.48	35.78	0.00	72.86	50.00	63.91	0.00
I screen my contacts so they can see my personal information	29.26	21.37	25.65	0.03	41.79	38.61	40.54	1.00
I share what other people post	37.30	33.21	35.43	1.00	58.57	50.83	55.54	0.02
I behave the same way online as in person	80.23	71.18	76.09	0.01	78.93	77.78	78.48	1.00
I use filters to show a better version of myself	44.21	16.41	31.50	0.00	48.57	22.50	38.37	0.00
I follow influencers or famous gamers	88.26	86.26	87.35	1.000	87.50	83.89	86.09	1.00
N	622	524	1,146		560	360	920	

Note. *Pearson chi2(1)/Bonferroni-adjusted p-values.

3.2. Effect of the use of the internet, social networks and online gambling

The decisions that adolescents make when it comes to being and spending time online and the way in which they use the internet affect their lives in numerous ways. Girls say that their activity on social networks has a considerable influence on the opinion that they have of themselves (29.70%) to a greater extent than boys (20.14%). At the same time and in line with the same logic, girls state that their online activity has a major effect on their time control (time spent studying and feeling that they have lost control of time) and on their stance on various aspects of their daily lives (opinion on things happening in the world or making them feel part of society), to a greater extent than boys in all cases and this is statistically significant.

Table 2. Effects and consequences of the onlife self * by gender

	Girl	Boy	Total	Chi2/p*
The time that I spend studying	59.56	47.51	54.40	0.000
On friendly relationships in real life	22.76	21.72	22.31	1.000
On my opinion about things that happen in the real world	48.56	39.93	44.87	0.002
On my opinion about myself	29.70	20.14	25.61	0.000
On making me feel part of society	55.92	46.04	51.69	0.000
On refusing to do leisure activities that I like	19.46	22.62	20.81	1.000
On losing control of the time that I spend	75.04	62.56	69.70	0.000
On losing money in online betting	1.35	6.33	3.48	0.000
On making my life worse	14.47	9.50	12.34	0.016
On suffering harassment	19.20	11.54	15.92	0.000
On making me feel integrated in my friendship group	35.53	42.87	38.67	0.016
N	1,182	884	2,066	

Note. *Pearson chi2(1)/Bonferroni-adjusted p-values.

Girls say that they have suffered more harassment (19.20%) in the online world than boys (15.92%), as well as a worsening of their lives to a greater extent than boys (14.47%, 9.50%). No considerable differences have been found, and it therefore seems that there is no direct effect between use and dedication to the internet and their personal relationships, as well as refusal to do activities that they like, even though they have said that it takes up a lot of their time. More boys state to have lost money in online betting than girls and that being and spending time online makes them feel integrated in their friendship group.

4. Discussion and conclusions

It is a verified fact that adolescents are ruled by virtualities (Mace, 2020; Memon et al., 2018; Schofield & Kupiainen, 2015), and that social networks help with identity formation and personal and social development as they offer endless possibilities to exchange information and interact with others too (Magnuson et al., 2008; Renau et al., 2012). This study progresses in three directions in response to the questions asked. The first of these, extensively studied, referred to the digital platforms which are most popular among adolescents, with the aim of proving that there are differences based on gender and age.

The results of our study in this regard are in harmony with those which have investigated the spaces in which this age group moves and even how their preferences for one or other digital space evolve (García et al., 2021; Menezes et al., 2019). We have proven that younger adolescents, between 12 and 15 years old, prefer to use communication and entertainment networks such as WhatsApp, TikTok, Instagram and applications for listening to music. Girls in particular opt for these choices, changing their priorities as they get older, between 16 and 18 years old, to other networks where they can find a greater amount of quick and instant information such as Twitter, while maintaining the use level of networks such as Instagram and WhatsApp. There is a gender difference in the preference for some networks over others, fundamentally linked to the demand for action and updating or having a presence on different networks. In this respect, the results confirm what is shown by other research regarding the different construction according to gender (Fernández-de-Arroyabe et al., 2018); this is, that more boys than girls, even though they have the same goals for use such as entertainment and contact and interaction with others, prefer spaces which are less exposed, such as online games where they can easily go unnoticed, despite spending a very long time on these; and, also, passive spaces, such as watching videos on YouTube, for the same reasons (García et al., 2021; Garmendia et al., 2016; López-de-Ayala et al., 2020).

This choice of some networks over others with clear gender differences is not banal or random. It is linked to the characteristics of each social network and to the purpose or purposes for which they were created (information resource, means of instant communication, spaces for socialising, etc.). Furthermore, in all social networks, anyone who registers is required to create a profile, defining their characteristics and, therefore, the role that they wish to take on. In these spaces, in line with the words of Santos (2018), forms of the self are generated which are self-constructed, public and managed by the individual. This is where we respond to the second group of questions, linked to the decisions made by male and female adolescents when constructing their virtual self (profile) and, similarly, whether there are differences in gender and age. We have found that boys and girls make completely different decisions when it comes to their online presence, how they show themselves to others and their behaviour. As a result, there are different consequences associated with the fact of being a girl or boy, some of which are also related to age. It seems that girls feel they are under an inexplicit obligation to appear transparent online, forced, in the belief of freedom, to share personal information and their everyday lives online. They give, as girls themselves state, a vision of themselves and of the world around them which is the most similar to their daily reality, completely permeated today by their life on networks, using their photograph to a greater extent than boys.

The fact that they use filters to show a better version of themselves seems contradictory, however it fits in with the paradox which has already been indicated by other researchers stating that, although the internet tends to value transparency, it does so by imposing a series of rules and norms with a strict definition of what must or must not be accepted. Consequently, this transparency is complicated, particularly in adolescence, when the opinion of others about oneself is essential (Uski & Lampinen, 2014). The fact of

living an onlife reality (Floridi, 2015) makes online appearance extremely important and, at the same time, at least consciously, indistinguishable from their real appearance.

On the other hand, we find statistically significant differences which allow us to identify a higher proportion of boys who decide that in virtual interaction spaces, they prefer to remain anonymous and use photographs by which they cannot be identified. Although it has certainly been observed that as they get older, they adapt decision-making in line with who they want to be online and how they want to show themselves to others. However, this is not something that seems important for them from the start, that is, from the first few times they go online. This leads us to deduce that, in public spaces of social interaction, even though the virtual space is apparently managed privately, traditional commands and demands are being reproduced which are related to gender and treat girls as an object, forcing them to glorify the idea of looking like who they wish to be, combined with the need for them to be seen as others want to see them. As shown in other works, this results in them feeling increased pressure about their appearance (Åberg et al., 2020). In this respect, the age of the adolescents probably has a lot to do with this lack of creation of a coherent self, mentioned by the symbolic interactionist theory (Serpe & Stryker, 2011) in the process of identity construction, a self-determined and self-defined self, with a critical perspective brought about by maturity. These results have not been obtained from research carried out on university students, on the contrary, as they get older and advance in their studies, girls seem to be more resistant to media pressures imposed on the female gender (Manago et al., 2008; Renau et al., 2012).

For both boys and girls throughout adolescence, all decisions taken in relation to their presence on social networks have a series of consequences and effects (Millán-Ghisleri & Caro-Samada, 2022). The results obtained in this study make it possible to respond to the third group of questions, in relation to identifying the effects generated by the way in which their virtual identity is constructed. It is concerning to see that a high percentage of girls say that their onlife self and behaviour associated with this (regarding time spent, content management, interaction with others, etc.) have a significant influence on the opinion that they have of themselves, on their need to feel integrated and accepted by the community. These aspects are connected with a principle of corroboration and to the desperate attempt to seek acceptance and popularity (De-Felice et al. 2022). This means they become aware of losing control of the time that they spend on their self on networks, at this crossroads which is not liberating in the slightest, and that has confined teenage girls as they must be how they want to be, but with the handicap of being forced to seek acceptance from others under the prevailing norms of beauty and femininity (Oberst et al., 2016; Pérez-Curiel & Sanz-Marcos, 2019).

As a public and private space of our onlife reality, the virtual space must allow teenage girls to be and to act in a way which makes them feel comfortable, as a mainstay and principle of empowerment and freedom, by means of the construction and combination of fluid, adapted and malleable identities. Nonetheless, as we have been able to see, a high percentage of the girls who took part in this research say they feel that their virtual self has made their life worse and that, in the online space, they have suffered more harassment than boys of their age. These data are already evident in studies such as that of Wright (2017) or Mena and Velasco (2017). The effects for boys, however, are related to the need to feel accepted by their peer group, or to losing money in online betting, but not so much to complying with norms of beauty, and these results agree with the findings in research such as that of García et al. (2021).

The results obtained in the study are by no means encouraging. Since Prensky (2001) used digital natives to describe the generation that was born into the digital culture, research has not stopped appearing (Escofet et al., 2014; Kirschner & De-Bruyckere, 2017; Rowlands et al., 2008) in which it has been proven that this is not the case at all, as said competence is not acquired from birth, and in no way does it have the critical sense required by a native to move around online independently and responsibly, to construct their identity in this intangible space called the internet. We have seen, nonetheless, that the decisions made by adolescents when creating their virtual self and, therefore, being and spending time online, not only has negative consequences stemming from poor management, but it is riddled with commands and stereotypes that treat them as an object and determine how they must be, what they must worry about and what they must do online; something especially pressing for girls. We can confirm, as indicated by studies such as that of García et al. (2021), that social networks maintain the traditional gender gaps, which

heighten risks (Savoia et al., 2021) and which, without adequate support throughout the virtual identity construction process in adolescence, may result in a problematic use (López-de-Ayala et al., 2022). We agree with Dans (2015) when she states that the identity game, as well as user choice and the formation of stereotypes through digital profiles, requires necessary and urgent attention in education. Pedagogy must promote strategies and processes to deal with the identity development of young people which, as we can see, presents characteristics which are not only new but also problematic. Beyond technological literacy, education must support the introduction of processes which are more closely related to culture than to technology, to feelings than to machines. We are not facing a technological problem in itself, but a cultural and anthropological, educational problem. A type of pedagogy, in short, which exceeds the educational exploitation of networks and makes progress based on cultural and social approaches demanded by networks, mediating in processes of critical adaptation of young people to the social time-space of the internet in which they are, they act and to which they belong. This kind of pedagogy must be the conceptual basis of unfailing socioeducational actions[4] and in particular, it must support the design of resources such as apps which ubiquitously offer education agents and students themselves, in social, family and school contexts and school and virtual spaces[5], responses and guidelines for an appropriate construction of their onlife identity (Parra et al., 2021).

Even though the limitations of the bivariate analyses have been corrected with the introduction of log-linear models and standard errors of the mean, there is still a lot of work to be done in the preparation, design and interpretation of studies which consider this type of data visualization. For example, the inclusion of other forms of node visualization, with images, another type of variable or other information, is restricted by the way in which this kind of application is designed for the processing of this data type. It must also be noted that the limitations of the study may be marked by the period in which the data were collected: the post-lockdown period. This was a stage in which male and female adolescents had to practise social distancing and, hence, there was an intensive use of networks. Furthermore, replicating this research in international samples is necessary, in an attempt to find cultural frameworks behind the stereotypes and gender bias online. This means that any research which makes progress in this regard at an international level must also stress the discourse of young people and use qualitative methodologies. Further empirical and longitudinal research is required in order to have a scientific basis sound enough to allow us to take precise actions regarding education on the gender stereotypes which are gradually becoming more noticeable online.

Notes

[1]Available at https://sociocav.usal.es/blog/nca/.

[2]Available at http://caring.usal.es/.

[3]Of the 2074 adolescents surveyed, only 10 (0.482% of the total) did not answer or indicate another option in the sex question, which offered three response options: Man; Woman; Other (open-ended response).

[4]Available at http://caring.usal.es/files/1664236671/index.html.

[5]Educational resources and materials created by the GIPEP-Processes, Spaces and Educational Practices Research Group available at https://bit.ly/3VCgbEw.

Authors' Contribution

Idea, J.M.M.R.; S.S.G.; A.S.R.; Literature review (state of the art), A.S.R.; S.S.G.; Methodology, L.E.A.S.; Data analysis, L.E.A.S.; Results, S.S.G.; L.E.A.S.; Discussion and conclusions, J.M.M.R.; S.S.G.; Writing (first draft), J.M.M.R.; A.S.R.; S.S.G.; Final reviews, A.S.R.; S.S.G.; L.E.A.S.; Project design and sponsorship, J.M.M.R.; S.S.G.

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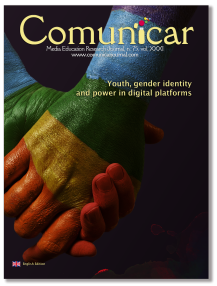

Even if they don't say it to you, it hurts too: Internalized homonegativity in LGBTQ+ cyberbullying among adolescents

Aunque no te lo digan, también duele: La homonegatividad internalizada en el ciberacoso LGBTQ+ en adolescentes

Dr. Mónica Ojeda. Postdoctoral Margarita Salas Researcher, Department of Developmental and Educational Psychology, University of Seville (Spain) (monicaojeda@us.es) (https://orcid.org/0000-0001-6056-8595)
Esperanza Espino. Predoctoral FPU, Department of Developmental and Educational Psychology, University of Seville (Spain) (eespino@us.es) (https://orcid.org/0000-0002-7547-0547)
Dr. Paz Elipe. Associate Professor, Department of Psychology, University of Jaen (Spain) (mpelipe@ujaen.es) (https://orcid.org/0000-0001-5210-3747)
Dr. Rosario Del-Rey. Associate Professor, Department of Developmental and Educational Psychology, University of Seville (Spain) (delrey@us.es) (https://orcid.org/0000-0002-1907-5489)

ABSTRACT

Cyberbullying is a problem that is more prevalent and serious among LGBTQ+ people. Previous research has mostly analysed sexual orientation and homophobic cyberaggression. Hence, becomes necessary to consider sex-gender diversity as a whole and aggressions of a general nature. Moreover, existing prejudices underline the need to consider homonegativity as a key variable in this type of cyberviolence. This sequential mixed study explores, in a first qualitative step with focus groups, perceptions on the characterisation of LGBTQ+ cyberbullying and, in a second quantitative step, cybervictimisation in terms of affective-sexual, bodily and gender diversity, and the possible moderating role of internalised homonegativity. The qualitative study involved 175 students and the quantitative study involved 1,971 students aged 12-18 from secondary schools in Andalusia (Spain). Qualitative results identified valuable dimensions of cyberbullying, such as collective LGBTQ+ cybervictimisation. Quantitative results revealed differences in collective LGBTQ+ cybervictimisation according to sexual orientation, gender identity, and gender expression. It also highlights the moderation of internalised homonegativity, with those at a low level being more sensitive to collective LGBTQ+ cyberaggression. LGBTQ+ cyberbullying is made visible as a construct that includes various types of aggressions aimed at the whole spectrum of affective-sexual diversity and emphasises the need to address internalised homonegativity in psychoeducational interventions involving all students.

RESUMEN

El ciberacoso es un problema con mayor frecuencia y gravedad entre las personas LGBTQ+. La investigación previa ha analizado, mayoritariamente, la orientación sexual y las ciberagresiones homófobas, siendo necesario incorporar la diversidad sexo-genérica en su conjunto y las agresiones de carácter general. Además, los prejuicios existentes subrayan la necesidad de considerar la homonegatividad como variable clave en este tipo de ciberviolencia. Este estudio mixto secuencial explora, en una primera etapa cualitativa con grupos focales, las percepciones sobre la caracterización del ciberacoso LGBTQ+ y, en una segunda etapa cuantitativa, la cibervictimización en función de la diversidad afectivo-sexual, corporal y de género, y el posible papel moderador de la homonegatividad internalizada. En el estudio cualitativo participaron 175 estudiantes y en el cuantitativo 1.971 de 12 a 18 años de centros de educación secundaria de Andalucía (España). Los resultados cualitativos identificaron dimensiones valiosas del ciberacoso, como la cibervictimización LGBTQ+ colectiva. Los resultados cuantitativos revelaron diferencias en la cibervictimización LGBTQ+ colectiva según la orientación sexual, la identidad y la expresión de género. También destaca la moderación de la homonegatividad internalizada, siendo quienes tienen un nivel bajo más sensibles a las ciberagresiones LGBTQ+ colectivas. Se visibiliza el ciberacoso LGBTQ+ como un constructo que incluye diversos tipos de agresiones dirigidas a todo el espectro de la diversidad afectivo-sexual y se enfatiza la necesidad de incluir la homonegatividad internalizada en las intervenciones psicoeducativas con todo el alumnado.

KEYWORDS | PALABRAS CLAVE

Cybervictimisation, gender identity, sexual orientation, gender expression, homonegativity, adolescents.
Cibervictimización, identidad de género, orientación sexual, expresión de género, homonegatividad, adolescentes.

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1. Introduction

Nowadays, the identity of young people and adolescents is formed by both physical and online environments (Mascheroni et al., 2015). Their social life takes place in a mutually dependent continuum of virtual and face-to-face relationships (Wright, 2020). In fact, in many countries, such as Spain, the time they spend using digital platforms has doubled in two years, from 2018 to 2020. As well as accessing information, adolescents and young people are constantly interacting online with others (Smahel et al., 2020).

This widespread use of the Internet at an increasingly early age has facilitated the transfer of certain social problems from the physical world into online relationships. This is the case of cyberbullying, one of the phenomena that has caused most social concern due to its impact and possible negative consequences (Campbell & Bauman, 2018).

Cyberbullying shares the same main features as bullying. It is based on unjustified, intentional, and repeated aggression towards another individual who does not feel able to defend themself, based on a clear imbalance of power or dominance (Menin et al., 2021; Vivolo-Kantor et al., 2014). However, the online environment radically changes some of these characteristics, making cyberbullying a unique phenomenon in its own right.

In the online environment, there are no limits of space or time in which the aggression can be perpetrated, so the victim is continuously exposed to being attacked, and the aggression is witnessed by a much wider audience (Kowalski et al., 2019). Although cyberbullying is slightly less frequent than bullying, with a prevalence varying from 5% to 50% compared to bullying which varies from 20% to 60% (Rodríguez-Hidalgo & Hurtado-Mellado, 2019), neither form of bullying is distributed equally throughout the population, and socially discriminated groups are the most vulnerable (Earnshaw et al., 2018).

1.1. Sex-gender diversity and cybervictimisation

Discrimination based on gender or sex diversity is a "structural" problem which makes people who diverge from heteronormative standards more vulnerable to bullying (Angoff & Barnhart, 2021; Jonas et al., 2022; UNESCO, 2017). This discrimination also occurs in online contexts (Abreu & Kenny, 2018), leading to invalidation of identity, social exclusion, and even the criminalisation of people from sexual minorities (Döring et al., 2022). This is the case of minors and young people who are lesbian, gay, bisexual, trans, questioning or unsure of their sexual orientation, consider themselves 'queer' or do not conform to the binary patterns of sex and/or gender, and any other biological condition, orientation, identity or gender expression, for example, intersexuality (hereinafter, LGBTQ+; Espelage et al., 2019).

The results suggest that LGBTQ+ people are more frequently victims and suffer more than their heterosexual cisgender counterparts, both worldwide (Jonas et al., 2022) and on a national level (Llorent et al., 2016). In fact, previous studies have shown that the prevalence of victimisation depends not only on sexual orientation, but also on other dimensions such as gender identity and gender expression (Kosciw et al., 2018) and that adolescents and young people perceive transgender people and those recognised as gender-incongruent as the most frequently victimised (Gower et al., 2018).

However, despite the fact that cyberbullying has been shown to have more serious consequences than traditional bullying (Kwan et al., 2020), its study in relation to the LGBTQ+ community is still in its infancy. Due to inconsistencies in the use of terminology, the systematic reviews produced to date have found that the prevalence of cybervictimisation among LGBTQ+ youth varies enormously between 10.5% and 71.3% (Abreu & Kenny, 2018). In fact, these figures could be even higher, since the studies tend to analyse either homophobic aggression or general aggression exclusively, and not both types together (Rodríguez-Hidalgo & Hurtado-Mellado, 2019).

In addition, with respect to sex-gender diversity, they usually only deal with sexual orientation (Elipe et al., 2022; Garaigordobil & Larrain, 2020). It is therefore crucial to study cyberbullying in LGBTQ+ by analysing young people's perception of how these acts of aggression take place and the different dimensions of sexuality (sex, sexual orientation, gender identity and expression), as well as the underlying beliefs.

1.2. The role of internalised homonegativity in LGBTQ+ cybervictimisation

LGBTQ+ cyberbullying is a type of bullying based on the stigma attached to beliefs and social ideas that devalue sexual and gender minorities (Earnshaw et al., 2018). Young people, whether LGBTQ+ or not, grow up in environments mainly dominated by the heteronorm or heterosexism, imbued with homonegativity (Russell & Bohan, 2006). Here, the social messages are that heterosexuality is the single most desirable form of sexuality and that it is acceptable to discriminate against any other form of sexual diversity. These environments lead to internalised homonegativity, in other words, the inevitable internalisation of these messages due to the reiteration of generalised and largely unreflective cultural beliefs (Herek, 2007; Russell & Bohan, 2006), and result in feelings of shame and discomfort about belonging to sexual minorities (Puckett et al., 2016).

Internalised homonegativity has been shown to be a risk factor for involvement in face-to-face violence (Berg et al., 2016) and justification of violence (Quirk et al., 2018), as well as having a detrimental impact on mental health (Puckett et al., 2016). However, it is vital to analyse the relationship between this type of prejudice and our awareness about, and identification of virtual phenomena such as cyberbullying and, in particular, cybervictimisation, whether in general, or directed specifically against LGBTQ+.

In recent years, progress has been made in taking action to address cyberbullying, such as the introduction of evidence-based psychoeducational programs (Del-Rey et al., 2018), or the creation of LGBTI government regulations and innovative experiences (Pichardo & Puche-Cabezas, 2019). Despite this, evidence-based psychoeducational programs that focus on this specific type of cyberbullying are still scarce, and it is therefore essential to study the role of internalised homonegativity in this phenomenon, in order to lay the foundations for future educational progress in this field.

1.3. The present study

Studying LGBTQ+ cyberbullying requires a comprehensive analysis of cybervictimisation based on sexual-gender diversity as a whole, to obtain an integrated vision that will enable us to develop psychoeducational strategies to prevent and intervene in this form of cyberaggression (Abreu & Kenny, 2018). For this reason, in this research, we used a mixed sequential qualitative and quantitative methodology (Sampieri, 2018) in order to explore perceptions of cybervictimisation in a community sample of adolescents comprising both LGBTQ+ and cisgender heteronormative (hereinafter, CH).

The specific objectives of our exploratory research were, in the qualitative stage, (1) to find out the pupils' perceptions about LGBTQ+ cyberbullying and the type of aggression it involves, which, in turn, provides a basis for the quantitative study. In the quantitative stage, the research objectives were (2) to analyse general cybervictimisation and collective LGBTQ+ cybervictimisation based on affective-sexual, bodily and gender diversity (from now on, ASBGD) both as a whole and in its different dimensions: sexual orientation, identity and gender expression; and (3) to examine the possible moderating role of internalised homonegativity between general cybervictimisation and collective LGBTQ+ cybervictimisation (feeling hurt by cyberbullying directed at LGBTQ+ people), taking into account ASBGD.

2. Methods

2.1. Participants

In the qualitative study, 175 adolescents took part, with an age range between 12 and 18 (60% girls, 40% boys; $M_{age}=14.12$, $SD_{age}=1.88$), from eight secondary state schools in Andalusia (Spain). In total, 27 discussion groups took place: 12 focus groups in 1st year of secondary school (aged 12-13), two in 2nd year (aged 13-14), three in 3rd year (aged 13-14), five in 4th year (aged 15-16); three in 1st year of High School/Baccalaureate (age 16-17) and two in 2nd year of High School/Baccalaureate (age 17-18).

The quantitative study included 1,971 adolescents between the ages of 12 and 18 ($M_{age}=15.01$, $SD_{age}=1.70$) from 12 secondary state schools in Andalusia (Spain). 14.1% were in 1st year of secondary, 18% in 2nd year, 19.2% in 3rd year, 17.3% in 4th year and 31.5% in High School/Baccalaureate or Professional Training. Table 1 shows the details of the sexual diversity of the participants.

Table 1. Characteristics of the sample for the quantitative study

Variables	N	%
Sex		
Female	1068	54.3
Male	898	45.7
Gender Identity		
CIS boy	850	43.8
CIS girl	1000	51.5
Transgender boy	18	0.9
Transgender girl	22	1.1
Bigender	26	1.3
Agender	24	1.2
Sexual Orientation		
Heterosexual	1487	78.0
Lesbian/gay	66	3.5
Bisexual	147	7.7
Pansexual	84	4.4
Asexual	26	1.4
Questioning	97	5.1
Gender Expression		
Concordant	1052	55.4
Androgynous	789	41.5
Discordant	58	2.9
ASBGD		
LGBTQ+	452	24.3
CH	1405	75.7

2.2. Instruments

Semi-structured script. A discussion guide was used in the focus groups to explore perceptions about LGBTQ+ cyberbullying and types of aggression (see in: https://doi.org/10.6084/m9.figshare.21724160.v4). The guide consisted of 20 open-ended questions divided into four dimensions: sex-gender diversity in schools, LGBTQ+-phobic aggression and bullying, associated factors, and the impact of aggression, and contained questions such as: "Why do you think these situations occur? Why do some people attack others because of their diversity?".

Cybervictimisation. To assess cybervictimisation suffered over the past two months, we used the cybervictimisation subscale from the European Cyberbullying Intervention Project Questionnaire (ECIP-Q; Del-Rey et al., 2015), which contains 11 Likert-type items ($\alpha_{cybervictimisation}$ = .81) with five response options, ranging from "Never" to "Yes, more than once a week". The statements referred to the frequency of being the victim of online aggression, such as insults, threats, or spreading rumours. Sample question: "Someone has used swear words or insulted me on the Internet, social media or WhatsApp".

Collective LGBTQ+ cybervictimisation. As a result of the information obtained in the first qualitative stage with focus groups, an ad hoc Likert-type item was added to assess collective LGBTQ+ cybervictimisation: "I have felt upset because someone posted a meme on the Internet, social media or WhatsApp making fun of someone or something related to the world of LGBT".

Internalised homonegativity. To assess negative beliefs and feelings regarding LGB orientations, from oneself or from others, we used the Spanish version (Vinces, 2016) of the Lesbian, Gay, and Bisexual Identity Scale (LGBIS; Mohr & Kendra, 2011), which includes five Likert-type items (α=.77) with five response options, ranging from "Strongly disagree" to "Strongly agree". Sample item: "If it were possible, I would choose to be heterosexual." The research team also added a sixth item: "My life would be easier if I were heterosexual" (α=.78). In addition, the scale instructions were tweaked slightly so they could also be completed by non-LGB people, by asking them to respond through the eyes of how an LGB person would answer, which involves attributing internalised homonegativity.

Sex and gender identity. Following previous studies (Bradlow et al., 2017; Kosciw et al., 2018), a direct item was used to assess sex identity with the response options "male" or "female". For gender identity, a direct item was used: "Do you consider yourself...", with the response options being "boy", "girl", "both" or "none".

Sexual attraction. In line with other researchers (Collier et al., 2013), we followed the recommendations given by Austin et al. (2008) to measure sexual attraction with the item: "Generally, do you feel romantic and/or sexual attraction towards...", with the response options: "boys", "girls", "boys and girls", "people, regardless of their sex or gender", "neither boys nor girls" or "I'm not sure".

Gender expression. To assess gender expression, we used an item adapted from the Socially Assigned Gender Nonconformity (Wylie et al., 2010) to ask pupils how they think others regard them in relation to their gender expression: "Our appearance, or the way we dress, and our gestures (the way we speak, move our hands, walk...) can affect what others think of us. In general, how do you think people perceive your appearance, way of dressing and gestures?" The answers were positioned on a continuum of seven options, ranging from "Very feminine", through "Equally feminine and masculine", to "Very masculine". The inclusion of this item has added value, given its importance as a risk factor and the fact that it has rarely been included in previous studies, as it is difficult to evaluate.

2.3. Procedure

This study was approved by the University of Jaén Ethics Committee (DIC.18/1.PRY). Incidental sampling was used. Collaboration was requested from a large number of schools via email and telephone. In total, 19 secondary state schools agreed to participate and, before the data was collected, informed consent was obtained from the families and pupils.

The first qualitative stage (Objective 1) took place in eight schools, with 27 focus groups of four to 10 participants each from April to June 2021 (23 face-to-face and four online), in sessions lasting approximately 50 minutes each. Four out of the eight schools had no previous experience of conducting awareness-raising activities about sexual diversity (in total, 13 focus groups), whereas four did (14 focus groups). At the beginning of each focus group, the pupils were asked to use an alias for the recording, and it was emphasised that the aim was to learn about their perceptions of everyday school life and not their personal experiences. The main focus for exploration in the focus groups, therefore, was the pupils' general perception about LGBTQ+ cyberbullying and the type of aggression involved. The discussions were recorded, and the audio was later transcribed. Using a "bottom-up" approach, we used the views expressed by the pupils, for example, the allusion to collective LGBTQ+ cybervictimisation, to specify the choice and extension of the instruments used for the quantitative study, which allowed us to contextualize the phenomenon better.

For the second quantitative stage (Objectives 2 & 3), the study had a cross-sectional, prospective, and unified ex post facto design (Montero & León, 2007), with a fixed minimum number of LGBTQ+ pupils, taking into account the percentages found in previous studies (Garaigordobil & Larrain, 2020), as well as the size required to avoid exceeding a sample error of +5.5%, with a confidence interval of 95.44% (Osuna et al., 1991). We used two formats for the data collection: online, via a SurveyMonkey link, or using a printed questionnaire. In both cases, the pupils completed a series of questions during school hours about their involvement in cyberbullying in general, as well as in LGBTQ+ cyberbullying, their experience of LGBTQ+ prejudice, and their appreciation of ASBGD in their school. During the data collection, we stressed the anonymous and voluntary nature of the study, the confidential treatment of the data, and the importance of answering the questions honestly.

2.4. Data analysis

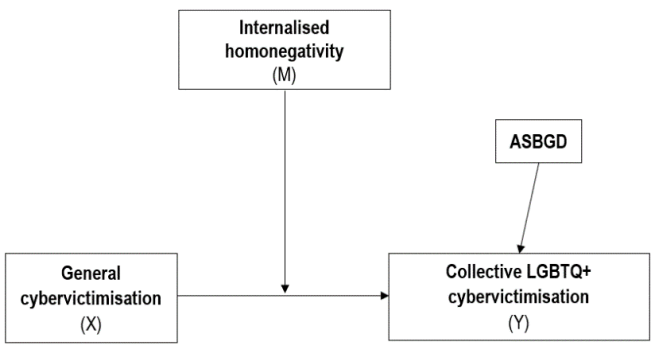
In the first stage, we explored the qualitative data through thematic analysis and basic descriptive analysis, using the Nvivo v.1.6.1 software. Thematic analysis is a method for identifying and analysing themes within data, which organizes and describes the data in detail (Braun & Clarke, 2006, 2014). To provide a result for Objective 1, we first identified the most relevant dimensions to include in the quantitative study, which were as follows: a) various types of aggression, from general personalised aggression to LGBTQ+-phobic aggression towards other people; and b) the full spectrum of sex-gender diversity, including sex, sexual orientation, gender identity and expression.

In the second stage, we used SPSS v.26.0 software to analyse the quantitative data. In the quantitative study, to meet Objective 2, we calculated the mean values of cybervictimisation and internalised homonegativity, and then recoded the variables related to sexual orientation, gender identity and expression, and the integral ASBGD variable. Specifically, sexual orientation was calculated by crossing data from the variables of gender identity and sexual attraction to obtain the values for "heterosexual", "lesbian/gay", "bisexual", "pansexual", "asexual" and "questioning". Gender identity was calculated

by crossing the data of the variables sex and gender to obtain the values for "cis boys", "cis girls", "transgender boys", "transgender girls", "bigender" and "agender". Gender expression was calculated by crossing the gender identity and expression data, obtaining the values for "concordant", "androgynous" and "discordant". From this data, the integral ASBGD variable was calculated by crossing sexual orientation, gender identity and expression, making a distinction between "LGBTQ+" and "CH". The first category included people whose orientation, identity, or expression diverged from heteronormative ones, that is, lesbian/gay, bisexual, pansexual, asexual, questioning, trans, and heterosexual cisgender people with discordant gender expression; the latter included heterosexual cisgender people and those whose expression agreed with their gender or which was androgynous. Next, we performed the basic descriptive analyses and comparisons of means, using non-parametric tests, given the non-normality of the data. To obtain this, we used Student's t-test for independent samples (or, where appropriate, Welch's t-test) to analyse general cybervictimisation and collective LGBTQ+ cybervictimisation based on ASBGD. Cohen's d effect sizes were also calculated.

Likewise, one-factor ANOVA tests (or, where appropriate, Welch's t test) were performed to analyse the differences in means between general cybervictimisation and collective LGBTQ+ cybervictimisation based on sexual orientation, identity, and gender expression. Effect sizes were calculated using eta squared, and post hoc comparisons were made using the Games-Howell test. To give a result for Objective 3, we designed a simple theoretical moderation model (Figure 1), in which we looked at the moderating role of internalised homonegativity (W) in the relationship between general cybervictimisation (independent variable, X) and collective LGBTQ+ cybervictimisation (dependent variable, Y). Model 1 was tested using the PROCESS v.4.0 macro for SPSS (Hayes, 2017). First, to define Model 1, 10,000 bootstrap samples were selected, using a 95% confidence interval. Next, following the recommendations by Davidson & MacKinnon (1993), we included standard error estimators consistent with heteroscedasticity (HC3) to examine the interaction effect on the variables included in the model. To run the model, we decided to focus the continuous variables on a mean of "0" to make it easier to interpret the direct and indirect effects (Hayes, 2017), as well as integrating the Johnson and Neyman technique to examine their region of significance and simple slopes (Carden et al., 2017). Direct and indirect effects were considered significant if $p<.05$ and only when the lower and upper limits of the confidence interval did not contain the value "0". This theoretical model was tested on the general sample, with ASBGD as the covariate (0=LGBTQ+ and 1=CH), and it was then repeated with both subsamples, LGBTQ+ and CH, respectively, omitting the ASBGD covariate in both cases.

Figure 1. Theoretical model with a moderator and ASBGD as a covariate



Note. X=independent variable; Y=dependent variable; M=moderator.

3. Results

The following subsections present the qualitative and quantitative results of our exploratory research. The first subsection shows the results of the focus groups, the second specifies the results of the comparisons of means and variances, and the third gives the results of the moderation.

3.1. Perceptions of the nature of LGBTQ+ cyberbullying

The information extracted from the focus groups helped to identify the dimensions which, in the pupils' eyes, are the most relevant for researching LGBTQ+ cyberbullying. The most important of these included those related to the nature of sex-gender diversity, the vulnerable groups of cyberbullying according to ASBGD, the types of aggression, and the reasons for LGBTQ+ cybervictimisation.

When asked about the nature of sex-gender diversity, the participants highlighted gender identity and expression as key aspects, as well as sexual orientation. However, they also showed prejudices, such as the association between gender expression and sexual orientation, and stereotypes about what is masculine and what is feminine. The following examples illustrate some of these perceptions:

- "There are stereotypes and you're supposed to comply with them. Men are meant to be, like, more masculine and women more feminine, but I don't agree with that. I think all of us are people and it doesn't matter if you like someone or not, or if you act in a more masculine or more feminine way" (Boy, 13 years old).
- "Some people get noticed because of their gestures, but some of these can be misinterpreted. For example, I've got two friends who are like this, and they don't have to be lesbians. But there are other people who, even if they don't say so specifically, you can tell by what they're like, by how they speak..." (Boy, 13 years old).

Regarding the groups most vulnerable to cyberbullying, there were young people in all the focus groups who reported that people from sexual minorities are more likely to be attacked, especially boys. The following examples illustrate some of these perceptions:

- "I think people who show their sexual diversity get attacked more than people who are heterosexual (...) and I think trans people tend to get bullied even more" (Girl, 15 years old).
- "I think that men attack other men more" (Girl, 16 years old).

Among the different types of cyberbullying attacks, they considered the most common to be verbal aggression or social exclusion and pointed out that their heterosexual cisgender peers tended to play down behaviour considered offensive by LGBTQ+ youth through jokes or normalisation. Likewise, in various focus groups, acts of aggression towards collectives were mentioned in which a person witnesses' situations of cyberbullying towards other people due to their affective-sexual diversity. The following examples illustrate some of these perceptions:

- "If a type of orientation is used as an insult, then clearly, the person who it's aimed at, or someone who hears it without it being directed at them, thinks, well, this must be bad, I'd better shut up and keep it to myself" (Girl, 15 years).
- "There are a few kids in class who tease each other and call each other 'puff' and things like that. I've sometimes wanted to tell them not to make those comments, because although they say it as a joke, they're perfectly capable of saying it to someone on the street because of their clothes and make that person upset. Sometimes, even though they don't say it to you, and it's aimed at someone else, it still bothers you" (Boy, 13 years old).

As regards the reasons for cybervictimisation towards LGBTQ+ youth, they highlighted internalised homonegativity and negative beliefs and emotions towards the LGBTQ+ collective. The following examples illustrate some of these perceptions:

- "Apart from the fact that you see your insecurities reflected in the other person, the way you're brought up is also a big influence. If you grow up in a house where everyone is very traditional and where being gay or lesbian is seen as wrong, you grow up with those ideas" (Girl, 15 years old).
- "Because many people say that if you were born a man and want to be a woman, you have to just put up with it. You have to just be a man, because it's not 'natural', in inverted commas" (Girl, 13 years old).

3.2. General cybervictimisation and collective LGBTQ+ cybervictimisation, according to ASBGD

Taking ASBGD into account, no significant differences were found in cybervictimisation experienced in the form of general aggression aimed at LGBTQ+ and CH youth ($t[574.65]=-1.72$, $p=.085$;

M_{LGBTQ+}=0.23, DT= 0.34; M_{CH}=0.27, SD=0.38), but differences were found in collective LGBTQ+ cybervictimisation (t[574.65]=9.65, p<.001, d=.49), with a medium effect. LGBTQ+ youth feel significantly more affected by LGBTQ+-related cyberbullying (M_{LGBTQ+}=1.10, SD=1.35; M_{CH}=0.45, SD=0.87).

With regard to the dimensions of ASBGD, significant differences were found based on all of them in collective LGBTQ+ cybervictimisation. In particular, regarding gender identity, the greatest differences in collective LGBTQ+ cybervictimisation were found among cis girls, who scored higher than cis boys and transgender girls.

According to sexual orientation, pansexual, lesbian/gay, and bisexual people were the most affected and, regarding gender expression, people with discordant or androgynous gender expression scored highest in this type of cybervictimisation. As for general cybervictimisation, although significant differences were found based only on gender identity and sexual orientation, the effect size was minimal (Table 2).

Table 2. Differences in mean values for cybervictimisation according to gender identity, sexual orientation and gender expression

Variables	General cybervictimisation (N=1,939)					Collective LGBTQ+ cybervictimisation (N=1,938)				
	M (SD)	F	p	η^2	Post Hoc Games-Howell	M (SD)	F	p	η^2	Post Hoc Games-Howell
Gender identity										
Cis boy	0.24 (0.36)	2.59	.034	.007	-	0.36 (0.85)	19.74	.000	.050	a < b
Cis girl	0.28 (0.38)				-	0.79 (1.12)				d < a < b
Transgender boy	0.27 (0.29)				-	0.89 (1.32)				-
Transgender girl	0.15 (0.21)				-	0.32 (0.65)				d < a
Bigender	0.45 (0.81)				-	1.00 (1.30)				-
Agender	0.34 (0.74)				-	1.38 (1.61)				-
Sexual orientation										
Heterosexual	0.27 (0.38)	3.18	.009	.004	-	0.45 (0.88)	22.84	.000	.096	a < f < c < b < e
Lesbian/gay	0.18 (0.26)				-	1.29 (1.44)				a < d < b
Bisexual	0.25 (0.32)				-	1.16 (1.35)				a < d < c
Asexual	0.15 (0.21)				-	0.50 (0.81)				d < c < b < e
Pansexual	0.33 (0.47)				-	1.61 (1.48)				a < d < f < e
Questioning	0.22 (0.36)				-	0.90 (1.20)				a < f < e
Gender expression										
Concordant	0.25 (0.37)	2.83	.059	.003	-	0.40 (0.82)	48.10	.000	.051	a < c < b
Discordant	0.27 (0.35)				-	0.93 (1.37)				a < b
Androgynous	0.29 (0.41)				-	0.87 (1.20)				a < c

Note. M=arithmetic mean; SD=standard deviation; Welch's F=F, except in general cybervictimisation*Gender expression, where ANOVA was used; p=significance; η^2=eta squared.

3.3. Internalised homonegativity in the general population

Model 1, from the general sample, was statistically significant, F(4.1882)=57.67, p<.001, accounting for 16.02% of the variability in the data. ASBGD showed a negative effect on collective LGBTQ+ cybervictimisation [β=−.634, t(4.1882)=−9.86, p<.001], indicating that the LGBTQ+ subsample has a higher risk of feeling hurt in this way.

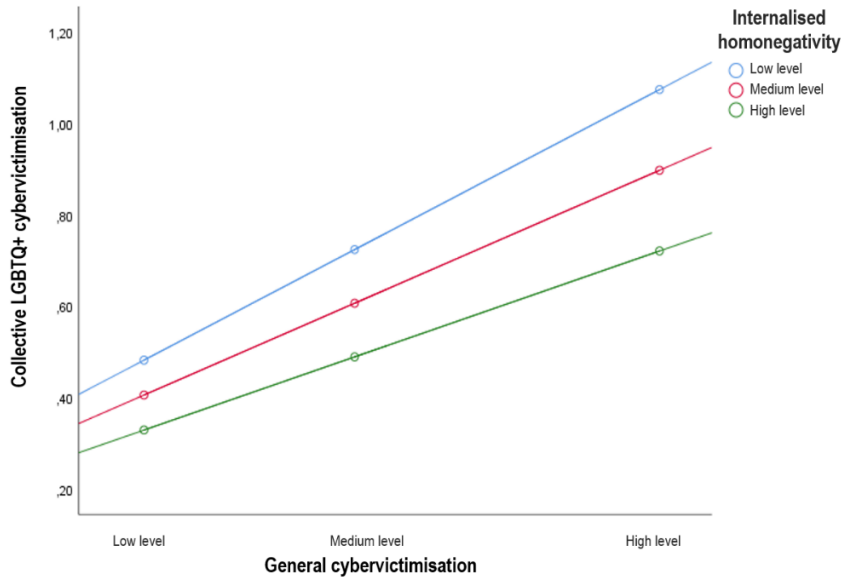
- Direct effects: As can be seen in Table 3, Ordinary Least Squares (OLS) regression analyses revealed that overall cybervictimisation had a positive effect [β=.776, t(4.1882)=9.57, p <.001] on collective LGBTQ+ cybervictimisation, while internalised homonegativity had a negative effect [β=−.139, t(4.1882)=−5.84, p<.001]. In other words, a high level of general cybervictimisation and a low level of internalised homonegativity have a strong relationship with feeling hurt or considering oneself a victim of cyberaggression towards the LGBTQ+ collective.

Table 3. Direct and indirect effects				
Effect	B	EE	95% IC	
			LI	LS
Model 1, general sample (n=1,887)				
General cybervictimisation (GC)	0.776***	.081	0.617	0.936
Internalised Homonegativity (IH)	−0.139***	.024	−0.186	−0.093
GC*IH	−0.188*	.090	−0.363	−0.012
ASBGD	−0.634***	.064	−0.760	−0.508
Model 2, LGBTQ+ subsample (n=460)				
GC	1.447***	.242	0.970	1.923
IH	−0.124	.074	−0.269	0.021
GC*IH	0.033	.335	−0.624	0.691
Model 3, CH subsample (n=1,427)				
GC	0.597***	.083	0.435	0.759
IH	−0.146***	.023	−0.191	−0.101
GC*IH	−0.178*	.089	−0.353	−0.003

Note[1]. Analysis performed using the PROCESS v.4.0 macro for SPSS (Model 1; Hayes, 2017).
Note[2]. Abbreviations: CI, confidence interval; SE, standard error; LL, lower limit; UL, upper limit.
Note[3]. *p<.05, **p<.01, ***p<.001.

- Indirect effects: as can be observed in Figure 2, the indirect effect revealed a negative moderation of internalised homonegativity in the association between general cybervictimisation and collective LGBTQ+ cybervictimisation [β=−,188, t(4,1882)=− 2.10, p<.05]. In other words, low scores in internalised homonegativity, or in attribution of internalised homonegativity, moderate the association between being a victim of general cyberaggression or feeling hurt by cyberaggression related to the LGBTQ+ collective.

Figure 2. Effect of internalised homonegativity on the association of general cybervictimisation and collective LGBTQ+ cybervictimisation in the total sample, with ASBGD as covariate



3.4. Internalised homonegativity in relation to ASBGD

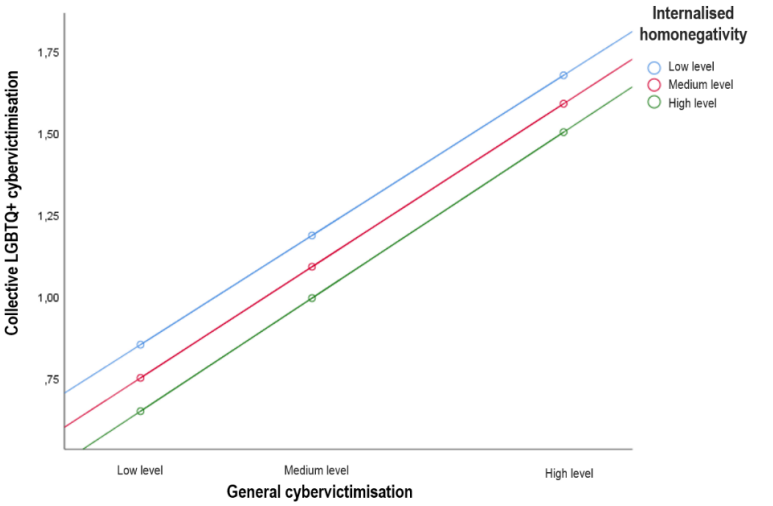
Model 2, from the LGBTQ+ subsample, was not statistically significant, F(1,456)=.010, p=.921 (Figure 3), which indicates that, among LGBTQ+ people, feeling harmed by collective LGBTQ+ cybervictimisation is not explained by general cybervictimisation or internalised homonegativity.

Model 3, from the CH subsample, was statistically significant, F(3.1423)=30.68, p<.001, accounting for 9.25% of the variability of the data.

- Direct effects: As shown in Table 3, the Ordinary Least Squares (OLS) regression analyses revealed that overall cybervictimisation had a positive effect [β=.597, t(3.1423)=7.23, p<.001] and internalised homonegativity a negative effect [β=−.146, t(3.1423)=−6.34, p<.001] on

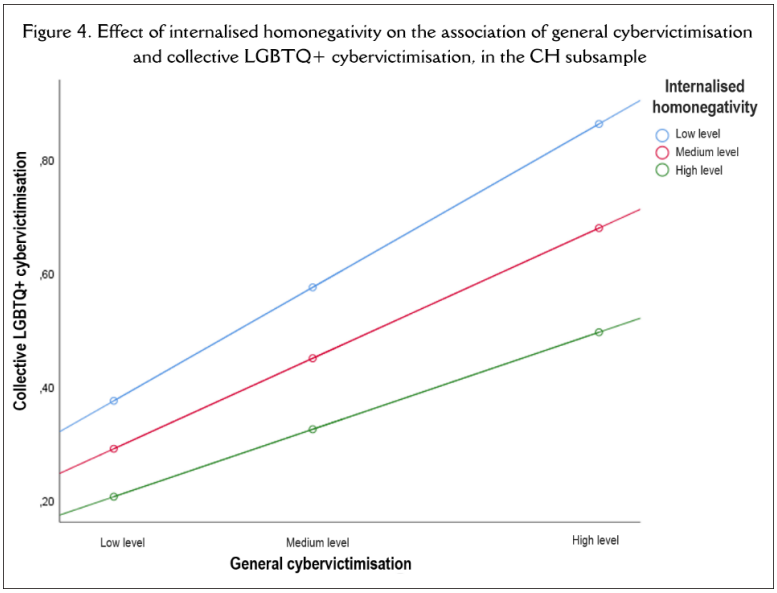
collective LGBTQ+ cybervictimisation. In other words, a high level of general cybervictimisation and a low level of attribution of internalised homonegativity have a strong relationship with feeling harmed or considering oneself a victim of cyberaggression towards the LGBTQ+ collective.

Figure 3. Effect of internalised homonegativity on the association of general cybervictimisation and collective LGBTQ+ cybervictimisation, in an LGBTQ+ subsample



- Indirect effects: as can be seen in Figure 4, the indirect effect revealed a negative moderation of internalised homonegativity in the association between general cybervictimisation and collective LGBTQ+ cybervictimisation [$\beta = -.178$, $t(3.1423) = -1.99$, $p < .05$]. That is, low scores in the attribution of internalised homonegativity, or perception of the experience of the LGBTQ+ collective, moderate the association between being a victim of general cyberaggression and feeling, in addition, harmed by LGBTQ+ cyberaggression.

Figure 4. Effect of internalised homonegativity on the association of general cybervictimisation and collective LGBTQ+ cybervictimisation, in the CH subsample



4. Discussion and conclusions

In many societies, the ASBGD inherent in the human condition poses a challenge to the prevailing heteronormativity. Thus, sexual orientations and non-normative gender identities and expressions have sometimes fallen victim of new forms of online hostility, such as cyberbullying (Jonas et al., 2022). Deepening our knowledge about this type of violence, for the well-being of adolescents and young people, is a key challenge. This research has attempted to advance this knowledge by analysing pupils' perceptions of LGBTQ+ cyberbullying, general and collective LGBTQ+ cybervictimisation, and the possible moderating role of internalised homonegativity in these dynamics.

As regards the first objective, which was to learn about the opinions of adolescents and young people on LGBTQ+ cyberbullying and the type of aggression it includes, the qualitative results have helped us to identify extremely valuable dimensions for research into this type of cyberbullying based on the stigma towards the LGBTQ+ collective. The pupils' discourse revealed that their definition of sexual diversity includes, in addition to the traditional views on sexual orientation, other dimensions such as gender identity and expression, thus constituting sex-gender diversity. However, it can also be seen that, despite being recognised, ASBGD is still not viewed in a normalised way in schools, and there is still fear of experiencing one's own sexuality openly (Akers et al., 2021). In fact, pupils also recognize that the LGBTQ+ collective is one of the most vulnerable groups within minority groups and that within this group there are people who are more likely to suffer cybervictimisation, such as transgender people. This appreciation is consistent with previous studies which found that transgender people and those perceived as incongruent with their gender are more commonly victimised (Gower et al., 2018; Heino et al., 2021).

This research also highlights the relevance of understanding LGBTQ+ cyberbullying as a construct consisting of various types of aggression and not only LGBTQ+ aggression (Elipe et al., 2022). Among the types of aggression, the pupils considered verbal abuse or social exclusion to be particularly common in LGBTQ+ cyberbullying, coinciding with the forms highlighted by Olweus and Limber (2018). However, they also mentioned another type of aggression that, to our knowledge, has not been included in previous studies and has proven to be fundamental in understanding LGBTQ+ cyberbullying as a form of violence: those situations in which a person sees episodes of cyberbullying aimed at others because of their sex-gender diversity and also feels offended (collective LGBTQ+ cybervictimisation). It is therefore of particular interest to delve deeper into these situations, since they reflect the fact that there are adolescents and young people who are especially sensitive to this specific form of cyberaggression, and are able to perceive and define it, which could help them adopt a defensive role when they witness it. After carrying out the focus groups, we considered it essential to make this distinction in the quantitative study, since, as in other phenomena such as cyber-hate (Cover, 2022), although the aggression is not directly aimed at them, they can also cause offence, as these individuals empathize, perhaps more affectively, with the LGBTQ+ collective. This result is closely related to the subjectivity and perception of harm that characterizes cyberbullying (Campbell et al., 2012).

As far as the second objective is concerned, which was to analyse general cybervictimisation and collective LGBTQ+ cybervictimisation based on ASBGD and its dimensions (sexual orientation and gender identity and expression), the quantitative results reveal that bigender, agender, cis girls, transgender boys, lesbian/gay, pansexual, or bisexual people, and those with a discordant or androgynous gender expression are more often victims of collective LGBTQ+ cybervictimisation. This confirms the need to consider, in research, not only sexual orientation, but also diverse orientations, identities, and expressions of gender. In addition, coinciding with previous studies (Rice et al., 2015), cisgender girls presented higher levels of cybervictimisation and feel more harmed by collective LGBTQ+ cybervictimisation than cisgender boys. However, in the present study, the lack of differences between LGBTQ+ and CH people in overall cybervictimisation differs from the results found by Jonas et al. (2022), who identified a higher prevalence and worse consequences of cyberbullying among the LGBTQ+ collective.

In line with previous studies which stressed the importance of addressing internalised homonegativity to protect the mental and physical health of LGBTQ+ people (Berg et al., 2016), this research goes one step further, highlighting its importance as regards cybervictimisation in heterosexual cisgender people too. The qualitative results show that negative beliefs and emotions regarding the LGBTQ+ collective

could be a risk factor for both cybervictimisation and cyberaggression. As regards the third objective, which was to examine whether internalised homonegativity moderated the relationship between general cybervictimisation and collective LGBTQ+ cybervictimisation, the quantitative results confirm the relevant role of homonegativity in cybervictimisation, in that people who have less internalised homonegativity are more sensitive to LGBTQ+ cyberaggression.

In summary, this research reveals the existence of prejudice and stereotypes in adolescent discourses regarding sex-gender diversity, the various degrees of involvement in LGBTQ+ cyberbullying between sexual orientations and gender identities and expressions, as well as the determining role of internalised homonegativity in awareness of, and identification with, this problem. One of the main educational implications of these findings is the need to continue implementing relevant psychoeducational strategies (Camodeca et al., 2018). Prevention and intervention in LGBTQ+ cyberbullying in schools should involve the whole educational community and focus on elements we know are essential, such as social responsibility offline and online (Cohen-Almagor, 2018), the presence of internalised homonegativity, or group beliefs, stereotypes, and prejudice about sex-gender diversity (Earnshaw et al., 2018), both in offline (Petrou & Lemke, 2017) and online (Espelage et al., 2019) phenomena. Taking these key factors into account would allow us to design and implement more comprehensive psychoeducational programs, thus increasing their effectiveness among the entire LGBTQ+ and CH population. These specific measures could also be incorporated into existing evidence-based practices that have proved to be effective, such as the "Asegúrate" program (Del-Rey et al., 2018). All this would help us to continue our progress towards equality in education, in accordance with Andalusian Law 8/2017, which expresses a commitment to equality and exposes the eradication of any discrimination associated with sex-gender diversity in society in general, and particularly in the field of education

This study has its strengths, such as the use of sequential mixed methodology (Sampieri, 2018); the use of a community sample which includes LGBTQ+ and CH youth; or the recognition of beliefs and prejudice as the origin of the problem, not the affective-sexual diversity itself. However, the results of this mixed sequential study should be taken with caution, given the existence of certain limitations, such as the use of an incidental sample in a specific sociocultural context (Andalusia), thus limiting its generalisation; its cross-sectional nature, which prevents us from establishing causal relationships between the variables analysed; and the use of self-reports in the quantitative study, which can lead to a possible social desirability in the responses and result in missing data. Future lines of research could address these limitations and, in particular, taking into account the qualitative and quantitative findings of our investigation, evaluate not only direct cyberaggression, but also non-personalised cyberaggression or that directed towards collectives. It would also be of interest to include certain behaviour which is offensive to LGBTQ+ youth and which is played down, laughed off, or normalised, for instance, the use of terms referring to sexual orientation in a joking way (Elipe & Martos-Castro, 2022).

Authors' Contribution

Idea, R.R., P.E.; Review of the literature (state of the art), M.O., E.E.; Methodology, R.R., P.E.; Data analysis, M.O, E.E..; Results, M.O., E.E.; Discussion and conclusions, R.R., P.E., M.O., E.E.; Writing (original draft), M.O.; Final revisions, R.R., P.E., E.E., M.O.; Project design and sponsorships, P.E., R.R.

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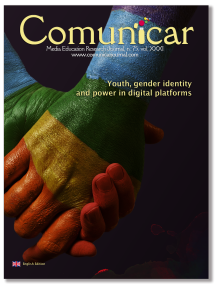

Gendered perspectives on digital skills and digital activities: Comparing non-binary and binary youth

Perspectivas de género sobre habilidades y actividades digitales: Comparación entre jóvenes no binarios y binarios

Dr. David De Coninck. Postdoctoral Researcher, Centre for Sociological Research, KU Leuven, Leuven (Belgium) (david.deconinck@kuleuven.be) (https://orcid.org/0000-0003-3831-266X)
Dr. Leen d'Haenens. Professor, Institute for Media Studies, KU Leuven, Leuven (Belgium) (leen.dhaenens@kuleuven.be) (https://orcid.org/0000-0001-7847-9996)

ABSTRACT

Previous research on gender differences in young people's digital development has shown that boys and girls differ in frequency and type of internet use, but vital gaps in the literature remain. In recent years, gender is increasingly considered to be a multidimensional concept with a growing number of young people identifying as non-binary (i.e. genderfluid, an umbrella term for gender identities that are not conforming to the male/female dichotomy). Non-binary youth more frequently engage with a variety of digital risks such as misinformation, cyberbullying, and co-rumination than binary youth. Despite this, no research so far has investigated how digital development differs between non-binary and binary youth. In this online survey study among adolescents in six European countries (N=6,221), we focus on differences in digital skills and digital activities. Non-binary youth tend to make greater use of the internet for content creation and mental and physical health information than boys and girls. They also report greater content creation skills than boys and girls. Disparities in terms of entertainment and social relationship use are also found. Furthermore, findings on digital skills indicate that non-binary youth closely mirror boys in this regard. We conclude with recommendations for future research that should help bolster our understanding of how digital contexts may predict the development and well-being of non-binary youth.

RESUMEN

Investigaciones previas sobre las diferencias de género en el desarrollo digital de los jóvenes han demostrado que los chicos y las chicas difieren en la frecuencia y el tipo de uso de Internet, donde todavía existen lagunas vitales en materia literaria. En los últimos años, el género se considera cada vez más un concepto multidimensional, con un número creciente de jóvenes que se identifican como no binarios (es decir, «genderfluid», un término que engloba las identidades de género que no se ajustan a la dicotomía hombre/mujer). Los jóvenes no binarios se enfrentan con más frecuencia que los binarios a diversos riesgos digitales como la desinformación, el ciberacoso y la co-rumiación. A pesar de esto, hasta ahora ninguna investigación ha estudiado cómo el desarrollo digital difiere entre los jóvenes no binarios y binarios. En este estudio de encuesta en línea entre adolescentes de seis países europeos (N=6.221), nos centramos en las diferencias en las habilidades y actividades digitales. Los jóvenes no binarios tienden a hacer un mayor uso de Internet para la creación de contenidos y la información sobre salud mental y física que los chicos y las chicas. También declaran tener más habilidades de creación de contenidos que los chicos y las chicas. También se encuentran disparidades en cuanto al uso del entretenimiento y las relaciones sociales. Además, los resultados sobre las habilidades digitales indican que los jóvenes no binarios se asemejan mucho a los chicos en este aspecto. Concluimos con recomendaciones para futuras investigaciones que deberían ayudar a reforzar nuestra comprensión de cómo los contextos digitales pueden predecir el desarrollo y el bienestar de los jóvenes no binarios.

KEYWORDS | PALABRAS CLAVE

Non-binary, gender, young people, digital skills, LGBTQ, digital activities.
No binario, género, jóvenes, competencias digitales, LGBTQ, actividades digitales.

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1. Introduction

Recently, children and young people are spending an increasing amount of time in digital environments. It has become one of their key leisure activities (Livingstone et al., 2018; Pokhrel & Chhetri, 2021). Young people's identities are also increasingly constructed through, and intertwined with, digital environments. In spite of the growing importance of digital technologies, not all children and young people use them in the same way (Bloemen & De-Coninck, 2020; Mascheroni & Ólafsson, 2016; Vissenberg & d'Haenens, 2020). With this in mind, some 'digital natives' are more fluent with regard to certain digital skills and activities than others (Haddon et al., 2020; Livingstone et al., 2018). Yet, in contemporary societies, in which an increasing number of services and activities are taking place online, such skills and activities seem more important than ever before. Despite the rapidly growing literature on digital skills and activities among youth, important gaps remain.

A key gap in this regard is related to gender identity. In previous years, several studies have looked at the differences between men and women in terms of internet use, digital literacy, and digital activities (Singh, 2001; Tian et al., 2021). These have shown that women use the internet for different reasons than men and that digital skills are more developed among men. However, the use of gender identity as a binary construct (female/girl-male/boy) is quickly becoming outdated. Increasingly, gender is considered to be multidimensional, with growing numbers of individuals reporting to be non-binary or genderfluid (i.e. an umbrella term for gender identities that are not conforming to the male/female dichotomy) (Craig & McInroy, 2014). Clark et al. (2018: 159) describe them as "typically experienc[ing] gender in a way that does not always or ever align with the sex assigned to them at birth. For example, a person who is genderfluid may shift between genders, while someone who is genderqueer may experience gender in a way that is not part of the gender binary". Although the literature on non-binary youth is quickly developing, most of it has focused on mental and physical health vulnerabilities or disparities with their binary counterparts (Hatchel et al., 2017). To our knowledge, no studies have investigated digital inequalities between binary and non-binary youth. This is somewhat surprising, especially given the growing link between youth' identity formation and the digital environment. Lesbian, gay, bisexual, transgender, and questioning (LGBTQ) youth have been found to retreat into digital environments to compensate for a lack of supportive face-to-face connections (Craig & McInroy, 2014), which may have a number of repercussions for their digital risks, digital skills, and physical and mental health outcomes (Mascheroni et al., 2022; Valkenburg et al., 2006). Given previous findings that indicate that non-binary youth are significantly more at risk of depression and suicide than binary youth – with peer and family support structures acting as key moderators – (Clark et al., 2018; Hatchel et al., 2021a), it is important to investigate how their digital skills and activities differ from their binary counterparts. The lack of academic research on this topic – and on non-binary youth more generally in the communication sciences – is problematic as it results in little information for policymakers on which to base best practices for digital risks and opportunities (Hatchel et al., 2021b).

With this study, we provide a first investigation into differences in digital skills and activities between non-binary and binary youth. Using online survey data collected among children and young people aged 11 to 20 between April and November of 2021 in six European countries[1] (Estonia, Finland, Germany, Italy, Poland, Portugal, N=6,221), we study to what extent five dimensions of youth digital skills (technological and operational skills, programming, information navigation and processing, communication and interaction, content creation and production) and five dimensions of digital activities (online learning, social relationships, entertainment, content creation, health use) differ based on gender identity (boy, girl, other). Furthermore, we also look at how peer support, family support, and self-efficacy of non-binary youth are linked to their digital skills and activities.

1.1. Literature review

A number of studies have looked at the role of gender to understand disparities in internet use and digital skills. Although many of these studies have been conducted on limited samples of high school or college students, reviews that also include adult samples indicate that men appear to be more likely to exhibit problematic internet use than women (Baloglu et al., 2020; Morahan-Martin, 1998). Men and

women also engage in digital environments for different reasons. When focusing on youth, we also find gender differences in the ways they use the Internet (Herring & Kapidzic, 2015). Livingstone and Bovill (1999) showed in the late 20^{th} century that boys used computers more often than girls and felt more comfortable doing so. However, these gender differences disappeared quickly, and by 2004, boys and girls utilized the internet equally to communicate with peers. In the late 2000's, girls surpassed boys as the most frequent internet users, largely fuelled by the growth of social media platforms (Lenhart et al., 2007). These new media were – and continue to be – more commonly used by girls than boys to communicate with peers and to create and share videos (Lenhart, 2012). Boys were more likely to use these technologies for entertainment (e.g., gaming) and visit video websites like YouTube (Rideout et al., 2010).

The digital development of non-binary youth has not received much attention in Europe. In the United States, evidence from 2013 shows that LGBTQ youth spend an average of 5 hours per day online; approximately 45 minutes more than reported by non-LGBTQ youth (GLSEN et al., 2013; Hatchel et al., 2021b). This is not entirely surprising: The Internet (and, more specifically, social media) has quickly evolved into an arena that provides LGBTQ youth an opportunity to safely construct and develop their sexual and gender identity, interact with people from their community, and establish connections with likeminded individuals – all of which may be absent in their face-to-face relationships (Lucero, 2017). A recent large-scale survey study in the United States and Canada confirms that LGBTQ youth are highly active on the Internet and report high usage of new ICTs (McInroy et al., 2019a). Additionally, it also reports that they are more likely to participate in online than offline LGBTQ communities due to heightened feelings of safety and increased emotional support (McInroy et al., 2019b). However, this greater internet use is also related to a variety of (digital) risks, most notably through cyberbullying, misinformation, sharing and receiving sexually explicit images, and meeting up with online contacts (Hatchel et al., 2021b; Sousa et al., 2020). Recent data indicates that about one-third of LGBTQ youth report being a victim of cyberbullying, either due to their gender identity or their sexual orientation. Varjas et al. (2013) found that those who reported cyberbullying victimization also had a greater likelihood of being victimized by face-to-face bullying. Regarding misinformation, it has been reported that online resources and social media that were regularly consulted by transgender youth (e.g., Tumblr) for health concerns or LGBTQ rights often contain considerable misinformation regarding these topics. While this is problematic for all youth, this is particularly the case for LGBTQ youth given their reliance on online resources for psychoeducation about their gender or sexual development (Hatchel et al., 2021b).

Co-rumination is a final risk that we review here. It is defined as "excessively discussing personal problems within a dyadic relationship and is characterized by frequently discussing problems, discussing the same problem repeatedly, mutual encouragement of discussing problems, speculating about problems, and focusing on negative feelings" (Rose, 2002: 1830), and it is considered common among LGBTQ youth in digital settings. Although outcomes of co-rumination are not exclusively negative – it has been known to increase friendship quality –, the normalization of mental health problems like depression, anxiety, and suicide that result from it outweigh its positive outcomes (Meyer et al., 2015). These risks – along with other factors – are linked to poor mental health, psychological distress, and suicidal ideation among LGBTQ youth (Hatchel et al., 2021b), with rates that are considerably higher than those of non-LGBTQ youth. Given these youth's reliance on digital environments and the risks that are associated with their frequent use of these sources, more research into protective factors against such risks is pivotal among LGBTQ youth. In this regard, various studies have highlighted the role of digital skills (Livingstone et al., 2021; Rodríguez-de-Dios & Igartua, 2016). Youth is expected to be able to avoid the negative outcomes of digital technologies by acquiring digital skills (Rodríguez-de-Dios & Igartua, 2016). However, recent evidence suggests that the relationship between risks and skills is not straightforward. In their systematic evidence review, Livingstone et al. (2021) showed that digital skills were indirectly linked to greater exposure to digital risks. They also found a positive link between skills and online opportunities, information benefits (of particular importance to LGBTQ youth), and orientation to technology.

Regarding Livingstone et al.'s (2021) conflicting results on the relationship between digital skills and digital risks, they did find that specific subsets of skills were linked to lower exposure to digital risks. For example, technical skills were linked to mixed or even negative outcomes, while information skills were

linked to positive outcomes (Livingstone et al., 2021). Contemporary understandings of digital skills dictate that it is a multidimensional concept, consisting of five subdimensions: (1) technical/operational skills; (2) programming; (3); information navigation; (4) communication and interaction; (5) content creation and production (Helsper et al., 2020). These various skills are linked to outcomes in different ways, as illustrated by Livingstone et al. (2021). In addition to outcomes, a number of key antecedents of digital skills have also been identified. An important hypothesis here is the recursive loop hypothesis which suggests that specific socio-psychological and structural factors may reinforce digital inequalities and disparities, which, in turn, negatively affect these factors (Robinson et al., 2020). We focus on the role of peer and family support and self-efficacy. Peer and familial support structures have been found to be of key importance to LGBTQ youth's well-being (Fish et al., 2020; Hatchel et al., 2017), but also to the development of digital skills among youth in general (Mascheroni et al., 2022).

1.2. The present study

This article provides a first investigation of the development of digital skills and digital activities of non-binary youth, comparing these with those of binary youth. Currently, there is a dearth of research on non-binary youth (McInroy et al., 2019a). The few studies that do exist focus mostly on mental or physical health outcomes of these youth. However, as the LGBTQ community grows, it becomes increasingly important to include specific studies on these youths in other areas of social and psychological sciences that are not specifically related to their gender or sexual identity. Not doing so would yield an incomplete picture of the social reality of contemporary societies, particularly for young people.

In this study, we focus on the digital development of non-binary youths. This is directly relevant to this group, as studies have shown they spend significantly more time online and use the internet differently than boys and girls, while also being confronted with a number of digital risks which negatively contribute to their mental health (McInroy et al., 2019a, 2019b). Digital skills are hypothesized to be a key protective factor against such digital risks. Our expectations are twofold. On the one hand, given that LGBTQ youth spend more time online than non-LGBTQ youth (McInroy et al., 2019a), we may expect that their digital skills are more developed. On the other hand, a lack of digital skills may be one of the reasons why these youths are frequently confronted with digital risks. In sum, we seek to answer the following research question:

- RQ1. How do digital skills and digital activities differ between non-binary and binary youth?

With regard to mental health and internet use, more empirical evidence exists – particularly from studies in the United States. LGBTQ youth are known to report high rates of poor mental health, psychological distress, and suicidal ideation (Hatchel et al., 2021b). It is unclear to what extent these adverse mental health outcomes are linked to their internet use, but as well, evidence indicates that LGBTQ youth spend more time online than non-LGBTQ youth – up to 45 minutes per day more on average (GLSEN et al., 2013). To confirm these more well-known insights for the current sample, we test two hypotheses:

1) Non-binary youth report greater internet use than binary youths (Hypothesis 1).

2) Non-binary youth report lower well-being than binary youth (Hypothesis 2).

Because the literature on non-binary youth is scant, we are unable to develop clear hypotheses for the link between well-being and internet use for this group. Thus, we also develop an additional research question regarding the link between well-being and internet use:

- RQ2: How is well-being linked to internet use among non-binary youth?

In line with the recursive loop hypothesis, we believe that digital skills and digital activities may be reinforced by certain socio-psychological and structural factors. Three factors that we examine are peer support, family support, and self-efficacy because of their relevance in both, digital skills and LGBTQ literature (Mascheroni et al., 2022). Because it is unclear to what extent these factors are related to digital skills and digital activities among non-binary youth, a third research question is:

- RQ3. How are digital skills and digital activities linked to support structures and self-efficacy?

2. Materials and methods

2.1. Data

We distributed an online questionnaire to children and young people aged 11 to 20 in six European countries (Estonia, Finland, Germany, Italy, Poland, and Portugal) between April and November 2021 (N=6,221)[2]. The data were collected in collaboration with secondary schools. We used a convenience sampling design, although schools were selected based on their socioeconomic status to ensure the diversity of participants. We contacted and informed schools about the study. A total of 52 schools agreed to participate, with 460 classes participating in total. Researchers were present during the data collection in each class, either in person or digitally, due to school closings during the COVID-19 pandemic. Informed consent was obtained from all participants and their legal guardians. The questionnaire was identical across all countries and it was presented in the official language of each country. Translations were carried out by professionals.

2.2. Measures

- Gender: To assess respondents' gender identity, we asked to what extent they identified as: (1) boy, (2) girl, (3) non-binary.
- Digital skills: We used the youth Digital Skills Indicator (yDSI), a validated cross-cultural scale that measures five dimensions of digital skills: (1) technical and operational skills; (2) programming; (3) information navigation and processing; (4) communication and interaction; (5) content creation and production. It was developed to capture key elements of functional (ability to use ICTs) and critical (understanding ways how ICTs are designed, and content is produced) digital skills (Helsper et al., 2020); 25 items were used to measure digital skills. A sample item was 'I know how to turn off the location settings on mobile devices', and answer options ranged from 1 (not at all true of me) to 5 (very true of me). Programming was measured through a single item, the other skill dimensions, each measured using six items, had high reliability in the current sample (technical and operational: .74; information navigation and processing: .80; communication and interaction: .77; content creation and production: .79). The full scale can be found in Helsper et al. (2020).
- Digital activities: We presented participants with 11 items to assess five different types of digital activities: (1) online learning; (2) social relationships; (3) entertainment; (4) content creation; (5) health use. A sample item was 'I used the internet to search or follow news about local, social, environmental, or political issues', and answer options ranged from 1 (never) to 6 (almost all the time). The specific wording of the items can be found in Table 1.
- Internet use: We included an indicator regarding the time spent on the Internet during a regular weekday, with answer options ranging from 1 (little to no time) to 9 (about 7 hours or more).
- Well-being: Well-being was assessed through six items that asked whether participants felt happy, pleased with the way they were, felt that life was enjoyable (positive dimension), felt dissatisfied with life, felt cheerless, and felt that life was meaningless (negative dimension), in the past year. Answer options ranged from 1 (never) to 4 (often). These six items were aggregated into a positive dimension and a negative dimension.
- Peer support and family support: Peer and family support were each measured through three items. Items that assessed peer support were 'My friends really try to help me', 'I can count on my friends when things go wrong', 'I can talk about my problems with my friends'. Items that assessed family support were 'When I speak someone listens to what I say', 'My family really tries to help me', and 'I feel safe at home'. For these items, answer options ranged from 1 (not true) to 4 (very true).
- Self-efficacy: This construct was measured through a four-item scale developed by Schwarzer and Jerusalem (1995). A sample item was: 'It's easy for me to stick to my aims and achieve my goals'. The response scale ranged from 1 (not true) to 4 (very true).An overview of the full sample can be found below, and the sample by country can be found in Table 2.

Table 1. Descriptive overview of the sample (N=6,221)	
In %	
Gender	
Cisgender male (n=3,119)	50.2
Cisgender female (n=2,991)	48.1
Non-binary (n=106)	1.7
Mean scores (SE in brackets)	
Age	14.50 (1.38)
Digital skills (1–5)	
Technical/operational	4.21 (0.74)
Programming	2.32 (1.30)
Information navigation/processing	3.94 (0.76)
Communication/interaction	4.48 (0.56)
Content creation/production	3.90 (0.85)
Digital activities (1–6)	
Online learning	2.62 (0.94)
Social relationships	3.56 (0.95)
Entertainment	4.08 (1.16)
Content creation	2.18 (1.33)
Health use	1.90 (1.04)
Online learning	2.62 (0.94)
Peer support (1–4)	3.24 (0.73)
Family support (1–4)	3.50 (0.60)
Self-efficacy (1–4)	2.94 (0.65)
Well-being (1–4)	
Positive dimension	3.37 (0.69)
Negative dimension	2.41 (0.89)
Internet use (1–9)	5.96 (1.98)

2.3. Data analysis

We conducted a Pearson correlation analysis between relevant variables for non-binary youth, and boys and girls (Table 3). In this and the following analyses, we chose not to distinguish by country for two reasons. First, as argued by Gui and Argentin (2011: 964), "among today's teenagers in Western countries differences in terms of physical access [to the Internet] are almost irrelevant. Nowadays, schools are increasingly offering an internet connection so that access is free and easily available for many high school and college students. In some areas the binary divide between the haves and have-nots no longer applies to young people". To further support this, Eurostat (2020) indicates that 94% of young people in the EU-27 made daily use of the internet in 2019. Second, the share of non-binary youth was low (under 4%) in all countries. Splitting the analysis by country would further fragment the limited share of non-binary youth which would endanger the robustness of findings of country differences in these analyses. Furthermore, no non-binary youth were included in the Portuguese sample.

In the first step, we ran a one-way analysis of variance to study whether digital skills, activities, internet use, and well-being significantly differed between boys (n=3,119), girls (n=2,991), and non-binary youth (n=106). This analysis provides an answer to the main research question of how digital skills and activities differ between binary and non-binary youth, and to the hypotheses regarding well-being (H1) and internet use (H2). Subsequently, we ran ten linear regression analyses with the five digital skills and five digital activities as dependent variables, and selected socio-psychological and support variables as independent variables to provide an answer to RQ2. To reduce the odds of Type II error resulting from the small sample size for non-binary youth (n=106), we applied a 1,000-sample bootstrapping method. This has been shown to be an effective statistical procedure that reduces the standard error of parameters under the condition requiring both acceptable confidence intervals and confidence levels (Chernick, 2011).

3. Results

To provide an answer to RQ1 about the difference in digital skills and digital activities between non-binary and binary youth, we look to the findings of the ANOVA in Table 2. Regarding digital skills, we found that non-binary youth's skill level closely aligns with that of boys for four out of five digital skills. However, they did report significantly greater technical/operational ($M_{non-binary}$=4.32 vs. M_{girls}=4.05), programming ($M_{non-binary}$=2.54 vs. M_{girls}=2.12), and information navigation skills ($M_{non-binary}$=4.03 vs. M_{girls}=3.78) than girls. As for content creation and production, non-binary youth reported a significantly higher skill level (M=4.21) than either boys (M=3.95) or girls (M=3.84). In terms of digital activities, non-binary youth (M=3.70) engaged with the internet significantly more than boys (M=3.45) to develop social relationships, and significantly more than girls ($M_{non-binary}$=4.50 vs.

M_{girls}=3.83) for entertainment purposes. Non-binary youth also used the internet more for content creation (M=2.83) than either boys (M=2.24) or girls (M=2.08). Finally, results also indicate that non-binary youth (M=2.62) make greater use of the internet to look up information regarding mental and physical health than boys (M=1.73) and girls (M=2.05).

To provide an answer to hypothesis 1, in which we expected non-binary youth to report greater internet use than non-binary youth, we found that non-binary youth scored 6.95 out of a possible 9 on internet use, while boys and girls scored 5.78 and 6.11, respectively – thus, confirming hypothesis 1. For hypothesis 2, we expected that non-binary youth reported lower well-being than binary youth. Here, findings indicate that non-binary youth reported higher scores on the negative dimension of well-being ($M_{non-binary}$=3.02 vs. M_{boys}=2.16, M_{girls}=2.64) and lower scores on the positive dimension of well-being (M=2.63) than either boys (M=3.54) or girls (M=3.23). These results confirm hypothesis 2. Regarding the link between internet use and well-being among non-binary youth, we briefly turn to the results of the Pearson correlation analysis in Table 3. Here, the correlation between dimensions of well-being and internet use were not statistically significant for non-binary youth, while there was a strong significant link among binary youth – providing an answer to the second research question.

Table 2. Analysis of variance of skills, well-being, internet use, and digital activities by gender

	F-value	p-value	Mean scores (SD)		
			Boy (n=3,119)	Girl (n=2,991)	Non-binary (n=106)
Digital skills					
Technical/operational	134.253	.000	4.36 (0.71)	4.05** (0.74)	4.32 (0.76)
Programming	24.486	.000	2.49 (1.34)	2.12** (1.22)	2.54 (1.40)
Information navigation/processing	133.658	.000	4.09 (0.74)	3.78** (0.75)	4.03 (0.75)
Communication/interaction	1.678	.187	4.46 (0.59)	4.49 (0.52)	4.48 (0.69)
Content creation/production	18.962	.000	3.95** (0.88)	3.84*** (0.82)	4.21 (0.77)
Digital activities					
Online learning	3.047	.048	2.60+ (0.95)	2.64 (0.92)	2.81 (1.02)
Social relationships	37.284	.000	3.45* (0.98)	3.67 (0.92)	3.70 (0.84)
Entertainment	144.876	.000	4.32 (1.14)	3.83*** (1.12)	4.50 (1.02)
Content creation	21.102	.000	2.24*** 1.37)	2.08*** (1.27)	2.83 (1.59)
Health use	92.320	.000	1.73*** 0.97)	2.05*** (1.06)	2.62 (1.28)
Online learning	3.047	.048	2.60+ (0.95)	2.64 (0.92)	2.81 (1.02)
Well-being					
Positive dimension	193.830	.000	3.54*** 0.61)	3.23*** (0.70)	2.63 (0.88)
Negative dimension	233.944	.000	2.16*** 0.84)	2.64*** (0.86)	3.02 (0.97)
Internet use	29.220	.000	5.78*** 1.96)	6.11*** (1.99)	6.95 (1.84)

Note. p+<.10; p*<.05; p**<.01; p***<.001. Asterisks indicate if significant differences were found between scores of boys/girls and non-binary youth based on Tukey post-hoc testing. Significant differences between boys and girls are not indicated here.

To provide an answer to the third research question, about how digital skills and digital activities are linked to support structures and self-efficacy among non-binary youth, we look at the results of the linear regression analyses in Table 3 and Table 4.

Table 3. Multinomial regression of digital skills and peer support, family support, and self-efficacy

	T/O		P		IN&P		C&I		CC&P	
	β	p	β	p	β	p	β	p	β	p
Non-binary										
Peer support	-.236	.206	-.278	.101	-.150	.305	-.139	.345	-.336	.027
Family support	.183	.397	.284	.140	.090	.615	.275	.123	.180	.295
Self-efficacy	.237	.097	-.135	.404	.243	.076	.221	.108	.292	.047
R^2	.044		.025		.012		.090		.087	
Boy										
Peer support	.080	.000	.016	.494	.075	.001	.098	.000	.060	.007
Family support	-.010	.640	-.051	.025	-.024	.267	.058	.007	-.035	.104
Self-efficacy	.207	.000	.083	.000	.264	.000	.222	.000	.257	.000
R^2	.057		.006		.082		.086		.073	
Girl										
Peer support	.062	.008	-.070	.003	.009	.679	.105	.000	.063	.006
Family support	-.112	.000	-.053	.026	-.103	.000	-.035	.132	-.130	.000
Self-efficacy	.196	.000	.076	.001	.277	.000	.224	.000	.220	.000
R^2	.040		.009		.067		.067		.050	

Note. T/O=technical and operational skills; P=programming; IN&P=information navigation and processing; C&I=communication and interaction; CC&P=content creation and production. Skills scores range from 1 (low skill) to 5 (high skill). 1000 bootstraps.

Support structures and self-efficacy only seem moderately related to digital skills among non-binary youth. Greater (real-life) peer support was related to lower content creation skills (β=-.336, p=.027), while greater self-efficacy was linked to greater content creation skills (β=.292, p=.047). Particularly, the former effect is notable: a small positive effect between peer support and content creation skills was found

among boys and girls. This may indicate that boys and girls create content to share and interact with their (face-to-face) friends in digital settings (e.g., creating memes about events at school), while non-binary youth may create content mainly to share with strangers or publicly post on digital platforms, without a specific link to their face-to-face friends.

For digital activities, we saw that self-efficacy was linked to greater internet use for online learning activities (β=.502, p=.007) and the development of social relationships (β=.349, p=.026). While these effects of self-efficacy were also found among boys and girls, they were much stronger for non-binary youth. Although it is impossible to make claims regarding the direction of this relationship based on these cross-sectional data, fostering self-efficacy among non-binary youth may thus indirectly also strongly benefit their tendency to inform themselves about the world and engage with others in digital settings. We also found that family support was negatively linked to using the internet to look up health information (β=-.374, p=.036), in line with findings from boys and girls – but again, with a much stronger effect among non-binary youth. Having support from one's family may encourage non-binary youth to discuss their health problems with their family rather than look up information online.

Table 4. Multinomial regression of digital activities and peer support, family support, and self-efficacy

	Online learning		Social relationships		Entertainment		Content creation		Health use	
	β	p	β	p	β	p	β	p	β	p
Non-binary										
Peer support	.035	.817	.091	.592	.057	.729	-.199	.248	-.004	.992
Family support	-.482	.005	-.315	.077	-.056	.766	-.072	.772	-.374	.036
Self-efficacy	.502	.002	.349	.026	-.068	.702	.113	.514	.076	.615
R^2	.177		.054		.023		.012		.064	
Boy										
Peer support	.007	.765	.126	.000	.060	.008	.041	.074	.006	.788
Family support	-.028	.218	-.006	.787	-.020	.371	-.114	.000	-.159	.000
Self-efficacy	.131	.000	.065	.003	.050	.021	.096	.000	.068	.002
R^2	.015		.023		.006		.016		.023	
Girl										
Peer support	.005	.819	.133	.000	.045	.057	-.010	.670	-.025	.274
Family support	-.102	.000	-.091	.000	-.136	.000	-.183	.000	-.235	.000
Self-efficacy	.215	.000	.043	.057	-.002	.940	.112	.000	.048	.033
R^2	.041		.017		.014		.032		.053	

4. Discussion and conclusions

As the LGBTQ community becomes an increasingly visible and policy-relevant social group in contemporary societies, many scholarly insights regarding gender differences are quickly becoming outdated, or, at the very least, provide an incomplete picture. Especially among today's young people, a growing number identify with a sexual or gender identity that does not align with previous categorizations. One such example is non-binary youth, who experience gender in a way that is not part of the gender binary (Clark et al., 2018) – the focus of this study. The digital development of young people is one area where these new gender identities are highly relevant to study. Youth spend a growing amount of time on digital technologies, with data indicating that LGBTQ youth spend up to 45 minutes more online on an average day than non-LGBTQ youth (GLSEN et al., 2013). Through their digital activities, these youths are exposed to a number of risks (e.g., mis- and disinformation, sexual imagery) that can cause harm (Craig & McInroy, 2014; Hatchel et al., 2021b; Lucero, 2017). Digital skills are commonly considered to be a key protective factor against such digital risks (Livingstone et al., 2021). Although various studies into digital skills and digital activities among youth have been conducted, no studies have considered differences by gender as a multidimensional construct. Our study fills this gap.

Findings indicate that the digital skill level of non-binary youth closely mirrors that of boys while being significantly higher than that of girls. This is the case for three out of five subdimensions of digital skills: technical and operational skills, programming skills, and information navigation and processing skills. As for content creation and production skills, non-binary youth reported significantly higher skills than both boys and girls. As for digital activities, non-binary youth reported using digital technologies significantly more than boys and girls for content creation and to look up information regarding mental or physical health. They also went online for entertainment purposes more frequently than girls did and used online technologies to cultivate social relationships more frequently than boys did.

The main takeaway from this study is that non-binary youth both use and feel more skilled at content creation than youth who identify within the gender binary. This is not entirely surprising. In a qualitative study on the identity development of LGBTQ youth, Craig and McInroy (2014) found that new media enabled them to access resources relevant to their identity, safely explore their identity, in part thanks to these media's anonymity, easily engage with other LGBTQ members, and (start the process) of digitally coming out. Although there are a number of risks related to this new media use as well (e.g., cyberbullying), the advantages to their identity development appear to outweigh its drawbacks. Although new media have become increasingly important to youth identity development in general (Herring & Kapidzic, 2015), they appear particularly important to LGBTQ youth. Given the key advantages that these media offer – specifically, new media that allow LGBTQ youth to create their own content and interact with other members (e.g., TikTok, Tumblr, YouTube, Instagram) –, it is then not surprising that they make more use of them (and as such, report a higher skill level) than boys and girls.

A second takeaway refers to the higher use of digital technologies for looking up health information among non-binary youth than among either boys or girls. Various studies and official statistics have shown that members of the LGBTQ community report greater psychological distress, mental health problems, and suicide ideation than non-LGBTQ members (McInroy et al., 2019a). Particularly for LGBTQ youth, who are in a key developmental phase of their lives but faced with the additional psychosocial strain of potential stigma and bullying, information of and access to necessary and relevant health services is paramount. Aside from support for mental health care, non-binary youth may also search for information regarding gender-affirming care (e.g., hormone therapy, surgery, sexual reproduction) (Clark et al., 2018). Our study clearly shows that non-binary youth use digital technologies for this purpose more frequently than those who identify within the gender binary. This highlights the need to make digital access to information about these health services widely available to LGBTQ youth. Clark et al. (2018) found that non-binary youth did not only struggle with accessing gender-affirming care, but also that information regarding this type of health care was difficult to retrieve for them. Mis- and disinformation regarding this type of care also present a significant risk for LGBTQ youth.

Although our study is the first to provide in-depth insights into the digital development of non-binary youths, we also have two key limitations. First, it is possible that there are transgender youth in our sample that have transitioned and fully identify as either boy or girl. Although they also deviate from their assigned gender at birth and thus are part of the LGBTQ community (Clark et al., 2018), we are unable to identify them with the current data. Second, the digital skills indicators that were presented were self-report measures. As such, we must be careful with interpreting these scores as 'real' digital skills, but rather as 'self-reported' digital skills. Youth's actual skill level may deviate from their own interpretation.

Taken together, this study provides a first insight into the different development of non-binary youth compared to boys and girls. It strengthens the idea that youth who do not identify within the gender binary increasingly constitute a social group that is clearly distinct from the 'traditional' gender binary in both digital skill level and the use of digital technologies. Despite some forays into the internet and social media use of LGBTQ youth for identity formation, very little information exists on the digital development of these youth. Furthermore, very few studies have incorporated different gender identities as a formal category of the investigation next to traditional gender dichotomy. We encourage future studies to increasingly consider the role of other gender identities when studying gender differences in (digital) youth development.

Notes

[1]These countries are geographically dispersed in Europe, exhibit different media ecologies, and position themselves differently on the Digital Economy and Society Index (DESI), which tracks a country's digital performance and progress in this regard.

[2]Approval for this study was obtained from the Social and Societal Ethics Committee of KU Leuven (Belgium).

Authors' Contribution

Idea, D.D.C, L.dH.; Literature review (state of the art), D.D.C, L.dH.; Methodology, L.dH.; Data analysis, D.D.C.; Results, D.D.C, L.dH.; Discussion and conclusions, D.D.C, L.dH.; Writing (original draft), D.D.C, L.dH.; Final revisions, D.D.C, L.dH.; Project design and sponsorship, L.dH.

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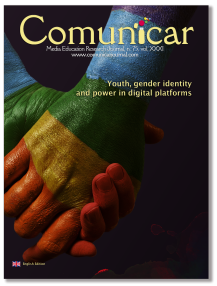

Feminism, gender identity and polarization in TikTok and Twitter

Feminismo, identidad de género y polarización en TikTok y Twitter

Dr. Simón Peña-Fernández. Full Professor, Department of Journalism, University of the Basque Country (UPV/EHU), Leioa (Spain) (simon.pena@ehu.eus) (https://orcid.org/0000-0003-2080-3241)
Dr. Ainara Larrondo-Ureta. Associate Professor, Department of Journalism, University of the Basque Country (UPV/EHU), Leioa (Spain) (ainara.larrondo@ehu.eus) (https://orcid.org/0000-0003-3303-4330)
Dr. Jordi Morales-i-Gras. Researcher, Department of Journalism, University of the Basque Country (UPV/EHU), Leioa (Spain) (jordi.morales@ehu.eus) (https://orcid.org/0000-0003-4173-3609)

ABSTRACT

The potential of social media to create open, collaborative and participatory spaces allows young women to engage and empower themselves in political and social activism. In this context, the objective of this research is to analyze the polarization in the debate at the intersection between the defense of feminism and transsexuality, preferably among the young population, symbolized in the use of the term "TERF". To do this, the existing communities on this subject on Twitter and TikTok have been analyzed with Social Network Analysis techniques, in addition to the presence of young people in them. The results indicate that the debates between both networks are not very cohesive, with a highly modularized structure that suggests isolation of each community. For this reason, it may be considered that the debate on sexual identity has resulted in a strong polarization of feminist activism in social media. Likewise, the positions of transinclusive feminism are very much in the majority among young people; this reinforces the idea of an ideological debate that can also be understood from a generational perspective. Finally, differential use between both social networks has been identified, where TikTok is a less partisan and more dialogue-based network than Twitter, which leads to discussions and participation in a more neutral tone.

RESUMEN

El potencial de las redes sociales para crear espacios abiertos, colaborativos y participativos ha permitido involucrar y empoderar a las mujeres jóvenes en el activismo político y social. En este contexto, el objetivo de esta investigación se centra en el análisis de la polarización que se produce en el debate de las redes sociales en la intersección entre la defensa del feminismo y de la transexualidad, preferentemente entre el público joven, simbolizada en el uso del calificativo «TERF». Para ello, se han analizado las comunidades existentes en Twitter y TikTok mediante técnicas de Análisis de Redes Sociales, y la presencia de los y las jóvenes en ellas. Los resultados indican que los debates en ambas redes son poco cohesivos, con una estructura altamente modularizada que sugiere aislamiento de cada comunidad en sí misma. Por todo ello, puede considerarse que el debate sobre la identidad sexual tiene como resultado una fuerte polarización del activismo feminista en las redes sociales. Asimismo, las posturas del feminismo transinclusivo son muy mayoritarias entre las personas jóvenes, lo que refuerza la idea de un debate ideológico en el seno del movimiento feminista que también puede entenderse en clave generacional. Por último, ha podido constatarse un uso diferencial entre ambas redes sociales, donde TikTok se muestra en esta temática como una red menos partisana y más dialógica que Twitter, pues conduce a discusiones y participaciones en un tono más neutro.

KEYWORDS | PALABRAS CLAVE

Young people, gender studies, identity, feminism, social media, digital activism.
Jóvenes, estudios de género, identidad, feminismo, redes sociales, activismo digital.

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1. Introduction

1.1. Feminism on social media

Social media has considerable potential to involve and empower young women in political and social activism (Batsleer & McMahon, 2016), thanks to its capacity to create open, collaborative and participatory spaces for feminism (Ott, 2018). Platforms such as Twitter and TikTok allow young women freely to express themselves and converse with all manner of social agents to express their opinions and feelings. They are also able to exchange information as to the issues involved in the construction of sexual identities, or gender-based injustices that they have experienced or witnessed (Jackson, 2018).

The spread of social media has likewise allowed the feminist movement to create and raise awareness of a host of issues, whether it be sexism, inequality, or gender violence (Baer, 2016), serving to extend the scope of the movement's claims. In this regard, Social Sciences drive to advance and address parameters which go beyond the influence which can be measured in terms of the number of followers and retweets, because in a hyperconnected and interactive world, social activism is, above all, a conversation. The trends encapsulated within what is known as the "affective turn" in this academic field (Ticineto-Clough & Halley, 2007) also plays an important role regarding this epistemological advance, as has the momentum given to certain activisms online.

Among those social movements that have developed on social media, feminism has revealed a prominent role, as highlighted by gender studies conducted in conjunction with sociology, pedagogy, and communication. Twitter, TikTok and other social media platforms have communicative characteristics (immediacy, media impact, message simplification, mobilization capacity, etc.) which favour the creation of ideologically like-minded communities. As demonstrated in the case of what is known as "feminist hashtivism", through such high-profile campaigns as #Metoo, #WomensMarch, etc. (Jinsook, 2017; Turley & Fisher, 2018; Storer & Rodriguez, 2020; Linabary et al., 2020).

According to the most recent Report on Youth in Spain (Injuve, 2021), the interest among the younger population regarding gender inequalities could be connected with the fact that they are socialising within a context in which the main mobilizations are linked to the feminist cause. In parallel, there has been, over recent years, an increase in the number of critical voices demanding an intersectional reading of online activism, as the very concepts of cyberfeminism and gender have been overtaken by pressing social changes and debates in the virtual world (Salido-Machado, 2017). In this sense, the feminist movement has succeeded in arousing the interest of a younger population, pushing them towards mobilization in the offline and online sphere, but in particular in the latter.

This type of analysis proves of interest in exploring in greater depth the mechanisms allowing young people, as a group, to construct and socialize their identity or feminist consciousness through all manner of systemic and counter-systemic positions via online media platforms. What is more, an analysis of such media proves of interest in order to understand positions or discourses of hate based on dialectic confrontations, which currently represent a sphere which has still not been explored to any great extent in the literature focused on expressions of the identity of the young population in connection with gender in digital environments.

1.2. Polarization of discourse as to identity

In the contemporary feminist movement, there has been an intense debate about identities and their political subject, characterized by the extensive use of digital platforms (Willem & Tortajada, 2021). The inclusion within the feminist struggle of claims linked to environmentalism and the LGTBI collective has deep roots and a lengthy theoretical discussion behind it (Earles, 2017). The debate about identities in feminism is a complex one, and trans issues and the very language used by different agents in these debates not only constitute disputes in terms of terminology or how sex and gender should be conceptualized, but are also forms of representing a positioning in this dispute. Trans/feminist conflicts, also known as "TERF wars", reflect the current conditions of our day, in which public discourse is dominated by polarization and the proliferation of disinformation.

What is known as Trans-Exclusionary Radical Feminism (or "TERF") is one of the most widespread terms within the context of the digital feminist debate. The term was first used around the year 2008 and is

now very commonly employed in digital conversations on such social media platforms as Twitter (Sulbarán, 2020). The term "TERF" is there used with negative connotations linked to the alleged transphobia shown by feminists who identify with their biological gender, towards transgender women or women who do not self-identify with their biological agenda. In this regard, feminists classified as "TERF" perceive this term as having negative connotations, or even as an insult (Malatino, 2021). The academic literature includes recent studies which examine the rise of the "TERF" anti-transgender movement in English-speaking contexts (Mclean, 2021).

Recent works such as "TERF wars: An introduction" (Pearce et al., 2020) have highlighted the intensity of these debates or "dialectic wars" on social media, as well as their importance in extending our understanding of the trans phenomenon from the perspective of a younger population, through the analytical framework of cyberfeminism, and also from the ideological context from which trans-exclusionary arguments emerge.

The discourses regarding trans-inclusive positions have been highly polarized (Carrera-Fernández & DePalma, 2020), generating an interest in understanding the way in which these debates spread via social media. The dialectical struggle between the different concepts as to the political subject of feminism and the location of identities within this sphere have been investigated on such social media platforms as Instagram (Vázquez-González & Cárdenes-Hernández, 2021), Twitter (Lu, 2020) and YouTube (Tortajada et al., 2021).

The analytical and conceptual framework which has thus far been provided by studies linked to digital feminism is becoming increasingly extensive. Among these analyses, we here highlight the case investigation into the hashtag #ContraElBorradoDeLasMujeres ("#AgaintTheDeletionOfWomen"), indicating that the discourse generated in connection with this hashtag is highly emotive (Ferré-Pavia & Zaldívar, 2022). Similar studies highlight that this type of tag reinforces positions and serves to identify discourses in the digital public debate, in particular among a younger population, as the main user group of the spaces covering this type of dialogue. As set forth in various studies, social media users tend to become majorities with radical positions thanks to the influence of phenomena of reciprocal influence, such as polarization and echo chambers (Demszky et al., 2019). The existence of parameters or indicators such as language proves useful in these analyses to detect affinities in the conversation or, where applicable, polarities determining the democratic and social usefulness of public digital spaces.

Regarding the topic which here concerns us, "feminist hashtivism" has been upheld in general terms as an enhanced and enriched digital feminist activism, drawing on theoretical-conceptual artefacts such as intersection, colonialism, multimodal violence, etc. This phenomenon began to emerge prominently as a result of the #MeToo mobilizations and represented a cornerstone not only for other digital feminist mobilizations in combating all forms of sexist discrimination (violence, pay inequality, discrimination of any type, etc.), but also for all manner of research into the value of social media for this movement (Manikonda et al., 2018).

Feminism is of interest in this regard, since it defines itself as a movement with a theoretical corpus which is not closed, and with a practice which evolves towards new forms of action and protest, such as those occurring in different realms and contexts of the digital public-political sphere. It is no coincidence that young people typically encounter hatred in their activities online, and debates concerning LGBTI issues are among the most affected (Council of Europe, 2014; Injuve, 2019).

In this context, the objective of this research focuses on an analysis of activism and polarization arising in the social media debate at the intersection between the defense of feminism and transsexuality, above all among a younger population, symbolized in the use of the term "TERF" (Trans-Exclusionary Radical Feminism). On this basis, the following research questions are raised:

- RQ1. Which social media communities have been created in connection with feminist activism in terms of the inclusion of demands connected with gender identity?
- RQ2. What is the presence of young people in these communities, and their position regarding this matter?
- RQ3. What is the degree of polarization in the debate within feminist activism on social media concerning this topic?

2. Methodology

In order to measure the polarization which occurs in feminist activism on social media, in particular among young people, an analysis was conducted of the use of the term "TERF" on TikTok and Twitter between 5 March and 11 March. In other words, data were compiled for 8 March ±3 days, taking advantage of the increased debate occurring on social media regarding topics connected with feminism as a result of International Women's Day.

The choice of Twitter follows on from prior research into polarization and feminism on this platform, and the influence that it acquires as the soapbox used by public figures to express their opinions. Twitter has 4.2 million registered accounts in Spain, of which 796,385 are considered active accounts (having published content in the last two months) (Social Media Family, 2022). By user gender, men (32%) slightly outnumber women (28%), although 40% do not specify their gender. Meanwhile, the choice of TikTok is based on the fact that this is a social media platform with a very young audience, 41.4% of users being aged between 18 and 24, while 59.3% are women. On this platform, the most popular category is News and Entertainment.

Twitter data were accessed by means of the API 2.0 with academic access, which serves to analyze a large volume of data defined both in semantic and temporal terms. Meanwhile, the TikTok data were acquired by means of web scraping techniques, as the platform does not yet provide access to an academic API, at least for the moment (TikTok, 2022). The difference in the conditions of access to data on Twitter and TikTok is the first limitation of the study which must be taken into account in terms of methodological design itself. Once the data were downloaded, both conversations were then analyzed by means of Social Media Analysis techniques with a twofold objective: 1) identify structural dynamics on both platforms to ascertain the uses made of digital content by defined user groups; and 2) facilitate basic conditions to compare what happens on the two platforms, for which the same data access conditions are not available.

It should lastly be emphasized that the term "TERF" itself is controversial and is not used in this research in its descriptive or characterizing facet, but as a core around which debates concerning sexual identity can be identified on social media, in the context of digital feminist activism. In this regard, the second limitation of this study lies in this differential identification with the term and the intentionality with which it is used, which influences the frequency of its use by each of the communities, and which does not cover the social media debate as to sexual identity and its relationship with feminism to its full extent.

2.1. Data analysis on Twitter

For the Twitter analysis, 24,714 tweets with the term "TERF" in the singular and plural were captured during the period analyzed. The conversation was subsequently converted into a directed network of retweets in which each node represents a user who retweeted or was retweeted by another. In total, the network comprised 10,449 nodes which retweeted with one another 10,970 times. Of these, 8,666 nodes did not receive any retweet, and 1,478 did not retweet to anyone else. Only 305 nodes (2.92% of the total) sent and received at least one retweet. If we take into account only those nodes that retweeted to another node, thus discarding those that only received retweets, the average number of retweets per user is 1.27.

The first analytical step involved identifying the user groups that conducted conversations among themselves. Following application of the Louvain algorithm (Blondel et al., 2008) for community detection (RQ1) with NetworkX (Hagberg et al., 2008) for Python, 980 communities were identified (Figure 1).

To estimate age (RQ2), the baseline situation is that the Twitter API does not provide data as to users' ages. Any algorithm-based inference is essentially precarious, since it requires declarative data from users who do not always exist, or advanced data-mining procedures which, although they may ultimately be precise, are always very difficult to corroborate.

Lastly, to estimate the average age of the nodes of each cluster, a different strategy was employed, based on the artificial intelligence developed by Twitter itself to classify its users. The creation of two advertising campaigns was thus simulated, respectively segmenting users similar to the trans-inclusive and non-trans-inclusive cluster nodes, comparing the estimations of their scope by age band. Segmentation of users sharing the node characteristics and differentiated by age band thus served to estimate the support

for each of the two positions among young people. The age bands that Twitter allows for segmentation are 13 to 24 years, 21 to 34, 35 to 49, and over 50.

This mode of segmentation has its limitations. To begin with, the age bands used by Twitter partially overlap, since two of them include young people aged between 21 and 24. This is because the tool is not intended for scientific research, but rather for audience segmentation in advertising campaigns. Lastly, the discourse of each of the communities was characterized (RQ3) on the basis of the content analysis of the most retweeted messages, and of the most followed accounts and the tags most shared by these communities.

2.2. Data analysis on TikTok

To analyse the TikTok data, the strategy deployed was different from the case of Twitter because of the differences between the two platforms in the type of communication they permit between users, and in the access to data. While in the latter the interactions are based on likes, retweets, replies, quotes and other types of reference (with a retweet being the interaction best denoting affinity between users), on TikTok the interactions essentially comprise likes and replies to content uploaded by users in video form. While on Twitter the information was obtained via the academic API, which offers very good data access, even retroactively, on TikTok, data can only be obtained by means of web scraping techniques.

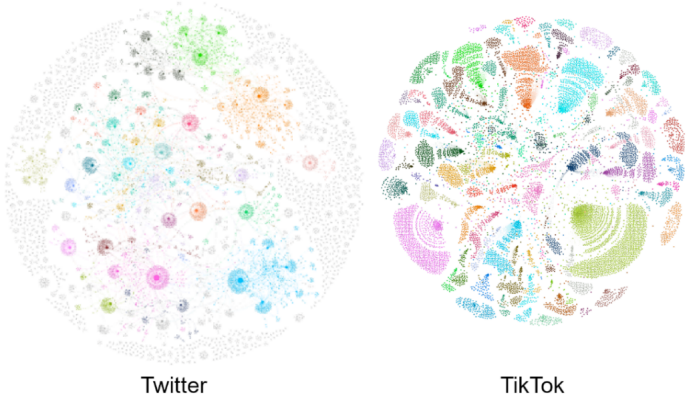
To conduct the analysis, data were downloaded for the 500 most viewed videos containing the term "TERF" with PhantomBuster. Of these, 165 (33%) contained descriptions in Spanish, the comments on which were downloaded with the Google Chrome Web Scraper plug-in. This technique provided access to the comments directly posted to the video, setting aside replies to the comments. In total, 16,974 comments were downloaded, and analyzed by means of Social Media Analysis techniques, with each network node being a user, and each link corresponding to one or more comments made by one user towards another. Lastly, the network analyzed comprised 12,687 nodes and 16,091 edges.

3. Results

3.1. Communities and polarization

In the case of Twitter, the 24,714 tweets analyzed served to identify 980 communities, with a Modularity of 0.939. This parameter measures the quantity of fragmentation of a graph, presenting values close to 0 when the graph comprises one single community in which all nodes are symmetrically and horizontally related, and values close to one when the nodes tend to comprise fragmented communities without contacts among them. These figures thus show that the conversation is highly fragmented and that each community is individually isolated. For this topic, then, Twitter proves to be a network with very little cohesion, and user opinions are most likely polarized (Figure 1).

Figure 1. Network of retweets (Twitter) and comments (TikTok)



After applying the same Louvain algorithm to the network of comments on TikTok, we note that the network of replies shares some structural characteristics with the network of retweets on Twitter, such

as a high degree of modularity, of 0.854 points, and an architecture revealing little cohesion, with each community being individually isolated. This means that on both social media platforms, interactions in the "TERF" debate tend to take place within closed circles. The network density was 0.000097 on Twitter and 0.0001 on TikTok. This means that on both platforms, the vast majority of possible links between nodes remain unexplored: users prefer to interact with very small groups of other users, thereby limiting their form of participation, and eschewing more broad-based debates.

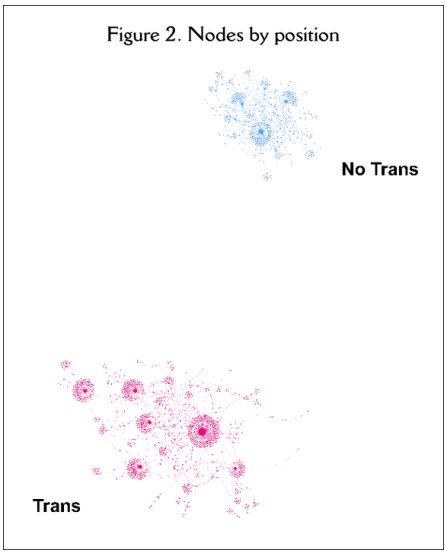
To identify which modes of cohesion operate within the network, a series of categories were synthesized, classifying nodes in accordance with four variables: the language most used by each node in its retweets, the language most used in each community, the provenance of the users (Spain or elsewhere), and within the Spanish communities, whether the position upheld is or is not inclusive. All these categories were visualized (Figure 2) and evaluated by means of the categorical assortativity statistic available in NetworkX (Hagberg et al., 2008), this being one of the most typical forms to measure intra-community homophily in social media political polarization studies (Leifeld, 2018; Taylor et al., 2018; Salloum, 2021) (Table 1).

Table 1. Categorical assortativity by different categories on Twitter

Category	Categorical assortativity
Language of the user	0.813
Main language of the community	0.991
Main country in the community (Spain vs. Others)	0.969
Position, for the Spanish communities (Inclusive/Non-inclusive)	1.0

All the categories considered proved to be highly assortative. Evidence is thus found of linguistic, national and ideological homophily in a highly polarized network in all assortativity indicators consulted. Language, whether measured individually for each node or measured according to the majority use of each community, proves a fundamental element in explaining the relationship between nodes. Users tend to retweet content always in the same language, and communities likewise tend to be formed in accordance with criteria of linguistic homogeneity.

Figure 2. Nodes by position



We can likewise see that users belonging to mainly Spanish communities tend to relate to like communities, and to isolate themselves from different communities. Within the Spanish communities, total assortativity is also found with regard to the two positions: the nodes with trans-inclusive and non-trans-inclusive feminist positions do not relate to one another.

Although the statistics to evaluate polarization can only be applied to Twitter, the data show that both networks have little cohesion, since the nodes are mainly disconnected from one another, and connected only to the most retweeted users or to the content creators. They furthermore have a highly modularized structure, with a modularity figure close to 1, which suggests that each community is individually isolated.

3.2. Young women

Positioning by age was established directly on the basis of simulation conducted in Twitter by means of its marketing tool, and indirectly by means of the user profiles on each of the social media platforms analyzed.

In the former case, Twitter shows that trans-inclusive feminist positions are very much the majority among young women, as we may estimate according to the data analyzed that three in every four users supporting this option are aged under 34 (Figure 3). Meanwhile, 45.4% of feminists upholding non-trans-inclusive positions are aged 35 or over, and in the segment aged over 50, non-inclusive positions outnumber the opposite view almost 5 times over. In the light of these data, it may be asserted that the supporters of this discourse on social media have an older audience, reinforcing the idea of an ideological debate at the heart of the feminist movement, which may also be understood in generational terms.

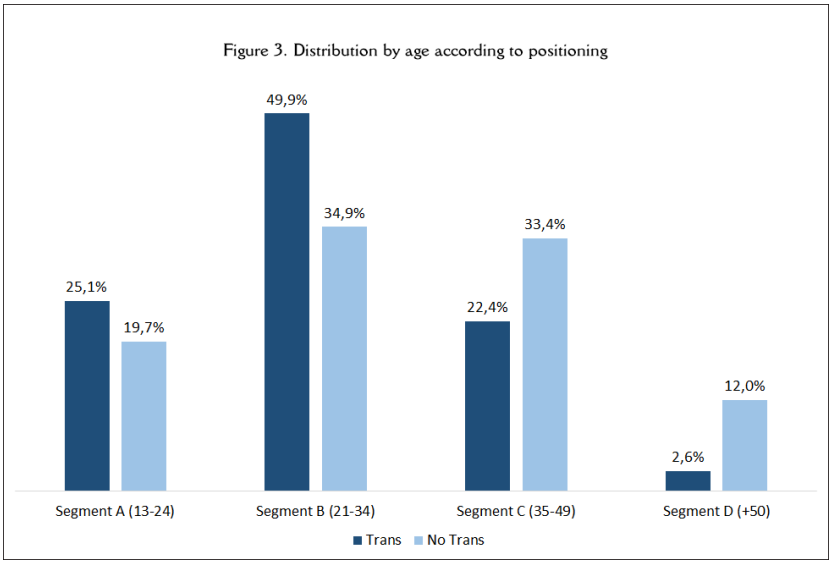
3.3. Discourse

On Twitter, the community which refers to itself as "antiTERF" articulates a confrontational, conflictive and even violent discourse in terms of the symbology deployed. There are constant suggestions that non-trans-inclusive feminists should be isolated and expelled from International Women's Day marches, even denying that there is a place for them in the feminist movement. The non-inclusive discourse is presented in these communities as discriminatory, a breach of human rights, regarding which no form of debate is possible.

The discourse of the different communities that have been identified can be characterized on the basis of the most followed profiles and the most used tags. For example, in community 3 (Table 2), which stands out for its non-trans-inclusive discourse, the leading accounts include @ContraBorrado, that of the influencer @Barbijaputa, and the writer @jk_rowling. The presence of this type of account, and the importance of hashtags opposing the Spanish legislation known as the "Trans Bill", bear witness to the high degree of activism within the community: this is a community made up of activists, in which other topics scarcely have a presence.

In communities aligned with trans-inclusive feminism, meanwhile, there are notable opinion-leaders associated with queer discourse, but one also finds leading figures among popular youth culture in Spain, such as the YouTubers Ibai Llanos, AuronPlay and Mister Jägger, who are not particularly connected with feminist activism on social media, beyond occasional statements. Both the type of leadership identified in these communities and the hashtags used (such as #eurovision, #laisladelastentaciones, #eurobasket and #wordle) reveal a less activist use of Twitter on the part of the accounts of these communities, which include the topic in a more horizontal manner.

Figure 3. Distribution by age according to positioning



On Twitter, some of the messages most shared by trans-inclusive feminists characterize non-trans-inclusive feminists, whom they refer to as "TERF", as privileged, white, well-to-do and almost always heterosexual women. Although age does not form part of the set of privileges of non-trans-inclusive feminism, the presence of references to age in some of the messages serves to indicate that the generational element hovers over the dispute, with trans-inclusive feminists seeing themselves as the future of feminism.

Table 2. Characterization of the most relevant networks on Twitter

Community	Discourse	Nodes	% Nodes	Most followed profiles	Most popular hashtags
3	Not Trans	524	4.99%	@ContraBorrado, @AranguezTasia, @jk_rowling, @Barbijaputa, @peliradfem	#movimientofeminista, #stopdeliriotrans, #leytransesmisoginia, #leytransesmaltratoinfantil, #rompeelgeneronosucuerpo
4	Trans	523	4.98%	@__erosgarcia, @PutoMikel, @firecrackerx, @SaraRiveiro, @PuteadoMikel	#eurovision, #maestrosdelacostura, #laisladelastentaciones, #cyberpunkedgerunners, #edgerunners
11	Trans	199	1.90%	@IbaiLlanos, @badbixsamantha, @PutoMikel, @auronplay, @MisterJagger_	#70siff, #deltarune, #steddyhands, #theovlhouse, #digitalart
17	Trans	169	1.61%	@iamthekillerq, @badbixsamantha, @DragRaceEs, @hugaceo_cruji, @ladygaga	#eurovision, #shehulk, #cáncer., #foreverlove, #mewsuppasit
20	Trans	149	1.42%	@IbaiLlanos, @natalialacunza, @_.albxreche, @auronplay, @Aitanax	#laisladelastentaciones, #eurovision, #eurobasket, #jaehyun, #wordle
21	Trans	147	1.40%	@badbixsamantha, @IbaiLlanos, @IreneMontero, @senorcito, @VelvetMolotov	#laisladelastentaciones, #splatoon3mm, #pictdle, #elalfilyladama, #discapacidad

On Twitter, meanwhile, the typical content of non-trans-inclusive discourse is to complain of the violence which they suffer at the hands of transactivists. It should be recalled that the concept of "TERF" itself, although it was created as an explanatory rather than derogatory term (Smyte, 2018) is considered an insult by most of if not all of the women accused of belonging to this category.

Table 3. Characterization of the most relevant networks on TikTok

Community	Discourse	Nodes	% Nodes	Most commented profiles
1	Trans	1785	14.07%	@hdeharva
2	Trans	907	7.15%	@le_dudette
3	Not Trans	614	4.84%	@joanne_fem
4	Trans	593	4.67%	@_pic0tres, @shinji.anti.terfs
5	Not Trans	471	3.71%	@soff.duh
6	Trans	427	3.37%	@camradhoe, @bellafiera, @noagrcia_
7	Trans	369	2.91%	@gato.de.biblioteca, @rocioesperilla
8	Trans	368	2.90%	@ilinkaandarcia
9	Trans	368	2.90%	@melii_jade
10	Trans	316	2.49%	@emmapalmina
11	Mixed	296	2.33%	@lamejorcapricorniana, @ddaimode, @myqueerdom
12	Trans	292	2.30%	@rebelarme
13	Not Trans	290	2.29%	@lilith_131
14	Trans	289	2.28%	@gg_well_play
15	Trans	241	1.90%	@maria_byw_love
16	Mixed	208	1.64%	@sung.jinnie, @hell.alexaa
17	Trans	206	1.62%	@aannaabbeeell, @cristinapadrolrov
18	Trans	187	1.47%	@bravo_joack, @juancamiloreyes
19	Trans	170	1.34%	@franchesqui__lopez
20	Trans	158	1.25%	@luisii.4370
21	Ambiguous	156	1.23%	@mateotrosko
22	Trans	152	1.20%	@diegocond1
23	Ambiguous	152	1.20%	@chocottete
24	Trans	150	1.18%	@yosoymariamaya
25	Trans	144	1.14%	@heyitschiquiar

Whatever the case, when the term "TERF" is used in the communities we have here designated as non-trans-inclusive, this is to criticize the caricature which they see as being applied to them from trans positions. The argument is that the climate at marches is violent, that their activists are insulted and attacked, and that there is no possible reconciliation between the two positions. They even accuse their adversaries as serving as the weapon of age-old patriarchal violence against women.

In the case of TikTok, given the characteristics of the data comprising the network, the same cohesion and homophily tests cannot be performed as for Twitter, nor can we estimate either the geographical location or age of the users by means of the advertiser platform. Nonetheless, the comparative analyses that can be performed serve to reveal certain trends on this platform.

Table 4. Languages of conversation on Twitter

Community	Nodes	% Nodes	Main language
1	811	7.72%	Spanish
2	572	5.45%	English
3	524	4.99%	Spanish
4	523	4.98%	Spanish
5	309	2.94%	Spanish
6	305	2.91%	English
7	235	2.24%	English
8	211	2.01%	Japanese
9	207	1.97%	English
10	201	1.91%	English
11	199	1.90%	Spanish
12	197	1.88%	Spanish
13	191	1.82%	English
14	190	1.81%	English
15	178	1.70%	English
16	173	1.65%	French
17	169	1.61%	Spanish
18	164	1.56%	English
19	161	1.53%	English
20	149	1.42%	Spanish
22	147	1.40%	English
21	147	1.40%	Spanish
23	129	1.23%	English
24	122	1.16%	English
25	105	1.00%	English

First of all, in the network of TikTok comments, the positions are not so clearly defined as in the network of Twitter retweets (Table 3). In the analysis of the most important communities on this platform, conducted by means of the number and the percentage of nodes they contain, the implicit position in their content and the main content creators indicate that there continues to be a degree of debate in communities on either side of the dividing line.

This dialogue is not always of great quality, since there is considerable caricaturing and even ad hominem arguments, but nonetheless, unlike on Twitter, the exchange of arguments for and against the position of each group is more present on TikTok.

On TikTok, those communities supporting trans-inclusive feminism, unlike the more aggressive approach in the Twitter discourse, denounce the violence to which they are subjected at the hands of non-trans-inclusive activists. There is also plenty of the content typical of TikTok, caricaturing the adversary, or even videos in response to other videos posted by proponents of the opposing position. It should nonetheless be emphasized that although the opinions attributed to the interlocutor are often distorted, ridiculed and simplified by both communities, TikTok and its comments much more closely resemble the supposed town square for debate that so many authors hoped Twitter would serve as more than a decade ago now. This is also reflected in the existence of communities in which multiple discourses coexist, which we have referred to as mixed communities. In terms of language, there is a substantial presence of Spanish as the language of the "TERF" debate, indicating the increasing prominence of the debate in Spain and Latin American countries.

4. Conclusions and discussion

The debate centred on the use of the term "TERF" illustrates firstly the considerable polarization caused within feminist activism on social media by the inclusion within this context of the claims of the trans movement. The debate as to the political subject of feminist claims is a complex and long-standing one, which has been reinforced by its transfer to digital spaces (Earles, 2017). The study of Twitter and TikTok served to identify communities with considerable cohesion, little porosity, characterized by a high degree of homophily, and with very little dialogue between them. Polarized and aggressive, even dialectically violent, conversations can likewise be found, with a substantial degree of confrontation (Williams, 2020; Ferré-Pavia & Zaldívar, 2022).

Secondly, the so-called "TERF wars" on social media are, to a great extent, an expression of the intergenerational conflict which exists within feminism, and which is linked to disputes between members of the second and third waves, as opposed to the fourth wave of the movement (Maulding, 2019). References to age may also be found running through some of the references made. By age group, younger users on Twitter and TikTok opt, to a greater extent, for trans-inclusive positions, as opposed to older groups, who maintain a largely opposing position. Interactive elements allow the hyper-personalization of the messages and reinforce their meaning, an opportunity exploited by young people as a group, who

represent the majority on such platforms, to exert their own space of influence in the debate and discussion of topics with which they feel social and affective engagement. We should again here consider the presence of different age groups on social media, and the way in which this influences the perception of these debates (Schuster, 2013).

Thirdly, as a result of the majority participation of young women in the debates on these social media platforms, the dominant positions on Twitter and TikTok are aligned with trans-inclusive feminist activism. Meanwhile, support for these positions is included more horizontally across content associated with other types of topic, unlike in non-inclusive communities, which are the minority, and have a more focal and specific nature.

It was lastly possible to confirm differential use between the two social media platforms, with TikTok being a less partisan and more dialogue-based network than Twitter, which lends itself to discussions and participations in a more neutral tone. This may be influenced by factors such as a younger user profile (which means that an intergenerational debate is less present on the platform), the focus on entertainment in most of the content (Peña-Fernández et al., 2022) and the abundance of non-textual elements. On Twitter, meanwhile, there is a greater presence of strategies and dynamics of polarized discourse and segregation, perhaps as a result of the use of algorithms which give rise to the formation of echo chambers and closed communities (Cho et al., 2020). This effect could generate a greater degree of polarization in areas that necessarily require integrating and inclusive perspectives, as is the case of issues connected with gender, feminism and the LGTBI+ movement, and be harmful for dialogue, deliberation and understanding between different positions as to the subject and object of feminism. This influence had to date been linked mainly to debates and topics in the sphere of politics, rather than issues connected with gender and sexual identity, nor had it focused on a younger population group. In line with Banks et al. (2018), it is also possible to deduce that repeated exposure to trans-inclusive messages online, above all on Twitter, as well as signs of confrontation itself, would be helping to reinforce attitudinal positions in the opposing direction (Woolley & Howard, 2018).

Authors' Contribution

Idea, S.P.F., A.L.U., J.M.G.; Review of the literature (state of the art), S.P.F., A.L.U.; Methodology, J.M.G.; Data analysis, J.M.G.; Results, S.P.F., A.L.U.; Discussion and conclusions, S.P.F., A.L.U., J.M.G.; Authorship (original draft), S.P.F., A.L.U.; Final revisions, S.P.F., A.L.U., J.M.G.; Project design and sponsorship, S.P.F., A.L.U.

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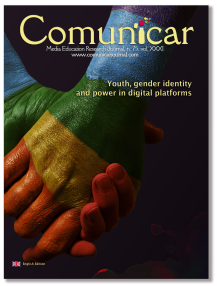

Selfies and videos of teenagers: The role of gender, territory, and sociocultural level

Selfis y clips de vídeo de adolescentes: Papel del género, territorio y nivel sociocultural

Uxía Regueira. Pre-doctoral Researcher, Department of Pedagogy and Didactics, University of Santiago de Compostela, A Coruña (Spain) (uxiafernandez.regueira@usc.es) (https://orcid.org/0000-0003-2738-182X)
Ángela González-Villa. Pre-doctoral Researcher, Department of Pedagogy and Didactics, University of Santiago de Compostela, A Coruña (Spain) (angela.villa@usc.es) (https://orcid.org/0000-0003-3920-6236)
Dr. Esther Martínez-Piñeiro. Tenured Professor, Department of Pedagogy and Didactics, University of Santiago de Compostela, A Coruña (Spain) (esther.martinez@usc.es) (https://orcid.org/0000-0002-6568-4787)

ABSTRACT

Social networks integrate adolescent daily life by configuring modes of socialisation, negotiation and self-representation through different practices that operate as subjectivation resources and condition the gender experience. The objective of this study is to explore the production of selfies and videos among adolescents from Puebla (Mexico) and Galicia (Spain) from a gender, territorial, and sociocultural perspective. A survey study was carried out using an online questionnaire designed ad hoc and applied to 6,654 adolescents (14-17 years), with different gender identities, from public secondary schools in Puebla and Galicia. The results show that the selfie is a more widespread practice among adolescents than video, with revealing differences in its production. Similarities are evident in the level of preparation and the motivations that lead to these practices. Gender differences are found in their production in terms of intentions, materialities, and body expression. The family's sociocultural level and the territory are visualised as realities that affect the production of these practices. The conclusions point to a transition of knowledge and meanings between the selfie and video and the relevance of analysing gender experience on social networks in light of the forms of power they exercise there.

RESUMEN

Las redes sociales integran la cotidianidad adolescente, al configurar modos de socialización, negociación y representación de sí a través de distintas prácticas que operan como recursos de subjetivación y condicionan la experiencia de género. El objetivo de este estudio es explorar la producción de selfis y clips de vídeo entre adolescentes de Puebla (México) y Galicia (España) desde una perspectiva de género, territorio y nivel sociocultural. Se desarrolla un estudio de encuesta mediante un cuestionario online diseñado ad hoc y aplicado a 6.654 adolescentes (14-17 años), con distintas identidades de género, de centros públicos de Educación Secundaria en Puebla y Galicia. Los resultados muestran que el selfi es una práctica más extendida entre adolescentes que el clip de vídeo, con diferencias reveladoras en su producción. Se evidencian similitudes en el nivel de preparación y las motivaciones que conducen a estas prácticas. Se encuentran diferencias de género en su producción en cuanto a intenciones, materialidades y expresión corporal. El nivel sociocultural familiar y el territorio se visualizan como realidades que inciden en las formas de producción de estas prácticas. Las conclusiones apuntan al tránsito de saberes y significados entre el selfi y el clip de vídeo y a la relevancia de analizar la experiencia de género en redes sociales a la luz de las formas de poder que allí ejercen.

KEYWORDS | PALABRAS CLAVE

Gender, practices, adolescence, social media, selfie, video.
Género, prácticas, adolescencia, redes sociales, selfi, vídeo.

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1. Introduction and state of the art

In the platform society (Van-Dijck et al., 2018), digital environments are visualised as hybrid social constructions (Latour, 2008) for social interaction and practices. Practices are understood as activities structured and guided by the know-how, the attributed meanings and the materialities they are produced with (Bourdieu, 1991; Reckwitz, 2002; Schatzki et al., 2001). These enable the execution of a human action (Schatzki et al., 2001), while shaping the fabric of societies at the same time. Hence, platforms are inscribed on human nature and embody policies, norms, and values (Srnicek, 2018), which (from their architectures) involve, propose and stimulate one practice or another for the benefit of interests that operate at different levels (Van-Dijck et al., 2018). In this framework, opportunities for anonymity (Fumero & Espiritusanto, 2012), viralisation (Jacquier, 2019), fame (Echeburúa & de-Corral, 2010) and speed of response, among others, shape modes of relationship in adolescence.

Under this approach, people (particularly the youngest) constitute themselves as subjects through practice, by negotiating and incorporating power-knowledge relations (Foucault, 1980). The possibility of negotiating a self-presentation in connection with others and the way in which people show themselves publicly are "signs of identity"; surfing the net and having an extended network helps them validate the identities presented. Profiles (boyd & Ellison, 2007), selfies, or emerging forms of self-representation, which take this concept and transform it according to the new material possibilities, such as videos (reels and TikTok videos), are examples of this. Accordingly, studies such as those carried out by Ayerbe & Cuenca (2019) and Oberst et al. (2016) relate play, experimentation, communication, and self-representation in these environments with the construction of their identities.

These are sites that mould our way of being with others, in a "connected society" (Van-Dijck, 2016), and are presented in a controversial fashion. On the one hand, as mercantilistic discursive machines, which are vehicles for power devices (Papacharissi, 2009) and stimulate subjects' behaviour towards homogeneous codes of being, doing, and self-representation. And, on the other hand, as an opportunity to negotiate the knowledge and meanings, that are faced by power relations in a global manner. This controversy surfaces on social networks through the performance and evolution of the sex-gender device, understood as the regulating (De-Lauretis, 1989) and colonial (Connel & Pearse, 2018) fiction that links technologies of the self (Amigot & Pujal, 2009) operating in the processes of power and knowledge of the fact of becoming a subject, from the system of sex, race, and socioeconomic class. Social network sites have been used to socialise and disseminate gender roles considered traditional and non-traditional, as well as an arena of expression of equality and difference.

On the one hand, there is a mercantilisation of gender discourses (Banet-Weiser, 2018), which favours the perpetuation and reproduction of power-knowledge relations under the perception of social transformation. In this sense, several studies point to the perpetuation of gender stereotypes and substantial differences in the expression of identity. Dhir et al. (2016) and Rodríguez-Illera et al. (2021) indicate that adolescent girls take more selfies than boys, with increased pressure regarding what to show and how to show it (Martínez-Valerio, 2013), in addition to an increased relevance of beauty (Gómez-Urrutia & Jiménez-Figueroa, 2022), body exposure (Camacho-Miñano et al., 2019), and even the reification of the body (Vera-Balanza et al., 2020). Less is known about videos, regarding which Suárez-Álvarez & García-Jimenez (2021) indicate that there are no significant gender differences in the type of content created, although they suggest significant differences in the production of girls and boys. The proximity of the findings linked to the two forms of production suggests a possible transition from the selfie to video. Therefore, it is hypothesised that this displacement does not start from zero but could be mobilising a negotiation of knowledge and meanings, which were already operating in the selfie, with the new material opportunities of platforms in relation to video – an expression of the recursive nature of this practice (Reckwitz, 2002).

While fewer research studies have broken the cisgender woman-man binomial, studies such as those carried out by Vivienne (2017) or Duguay (2016) point to the normalising imposition of the selfie culture around the body, beauty, and cis-heteronormative aesthetic sense versus the discursive opportunities that the LGBTI community finds in video (Vine). Other studies, such as the one carried out by Jenzen (2022), suggest differences in the meanings attributed to the selfie and other practices in digital environments by

people from the LGBTI community. Along these lines, few studies have analysed the role of race or the family's sociocultural capital, which appear as relevant characteristics in studies on the digital gap (Gewerc et al., 2017; Dussel, 2011). However, Bucknell-Bossen and Kottasz (2020) point out the importance given by young girls and boys to the creation of this type of production in the construction of their identities. The role of Instagram (Camacho-Miñano et al., 2019; Del-Moral-Pérez et al., 2021) stands out, following the logics of monopolisation favoured by platform structures (Srnicek, 2018). In these unequal architectures and practices, young people with dissident gender identities, male and female, from different territories, races, and socioeconomic classes, mobilise unequal learning (Miño-Puigcercós et al., 2019), agency and representation (Vera-Balanza et al., 2020) opportunities.

In addition, other studies suggest opportunities to experience gender outside the normative sex-gender binomial (Wargo, 2015); the proliferation of debates around gender, sexuality, race, and class as political categories; the shaping of communities (Wargo, 2015) or association movements and vindication (Walker & Laughter, 2019) – lines of flight (Deleuze & Guattari, 1980) that show the opportunities for fight and transformation around the predominant power-knowledge.

In this sense, the controversy is expounded as the operating simplification of a complex rhizomatic network (Deleuze & Guattari, 1980), in which devices, discourses, artefacts, and subjects interact and are transformed through social practice, constantly generating new opportunities and risks for gender equity. The social practice approach (with only a few studies dealing with gender knowledge in selfie and video production) provides an opportunity to explore in depth how these forms of social production and the marks of normative and dissident gender are characterised in this transformation, and how education can tackle the representation practices that emerges in living environments. Along these lines, this study is based on practice theory, following the work of Schatzki et al. (2001) and Bourdieu (1991), and identifies four dimensions that are specified as follows: (a) materialities: devices, platforms, frequency of use and frequency of production; (b) meaning: identification of the practice, value, expectations, and the affective motivational component; (c) know-how: operational, informational, creative, and social, and (d) production conditions. This study is presented as an initial approach to this problem and pursues the following objectives:

- To explore the characteristics of the production of selfies and videos by adolescents from Puebla and Galicia.
- To identify potential differences in these forms of self-representation according to sex/gender identity, territory, and sociocultural level.
- To analyse the potential transfer of knowledge and meanings from the selfie to video.

This study contributes to an understanding of the practices that integrate the sociocultural reality of contemporary adolescents according to gender, territory, and sociocultural level, offering a view that provides a broad look at gender experimentation by young people in relation to these digital practices.

2. Materials and methods

This study is part of the research project "Entornos digitales e identidades de género en la adolescencia" (Digital Environments and Gender Identities in Adolescence, EDIGA) (PID2019-108221RB-I00). According to the objectives, the survey method was used by applying an online questionnaire designed ad hoc. Questions regarding selfie-taking and video-recording activities, both of which are closely linked to self-representation through body image, were taken into account.

2.1. Participants

The study was carried out in the Autonomous Community of Galicia, Spain, and in the state of Puebla, Mexico, through public secondary schools in the two regions. The participants were selected according to the population density of the areas in which they were located, through proportional stratified cluster sampling.

The sample was composed of 6,654 adolescents, including 1,020 residents of Galicia and 5,634 residents of Puebla. Most informants were 14 to 17 years old, with a mean age of 15.6 years. More than a half of the sample was composed of cis women (52.1%), followed by cis men (39.6%) and transgender

people (8.3%) who identified themselves as being of the gender binomial, fluid gender, non-binary, or other identities that did not add up to sufficient statistical representativeness and were grouped as "other" identities dissenting from the hegemonic norm (Table 1).

Table 1. Sociodemographic characterisation of the sample

Variable	Category	*N*	%
Gender	Cis man	2,300	39.6%
	Cis woman	3,028	52.1%
	Other	480	8.3%
	Total	**5,808**	**100.0%**
Age	14	1,097	16.5%
	15	2,018	30.3%
	16	1,847	27.8%
	17	1,511	22.7%
	Over 17	181	2.7%
	Total	**6,654**	**100.0%**
Territory	Galicia	1,020	15.3%
	Puebla	5,634	84.7%
	Total	**6,654**	**100.0%**

2.2. Tool

An ad hoc online questionnaire was designed on the platform Survio, with 71 questions distributed in six sections: two general questions – "(I) Sociodemographic questions" and "(II) Use of social networks" – and four specific questions, relating to the main activities carried out by young girls and boys on the digital platforms identified in the literature (Boczkowski et al., 2018) – "(III) Media profile configuration", "(IV) Selfies", "(V) Meme creation" and "(VI) Videos". The construction of this tool (Padilla, 2002) took place as follows:

- Definition of the construct based on the social practice paradigm (Bourdieu, 1991; Reckwitz, 2002; Schatzki et al., 2001).
- Delimitation of dimensions, following the theoretical framework: (a) materialities; (b) meaning attributed to the practice in the context in which it is framed and the subject's motivation; (c) knowledge that operationalises the practice (technical, theoretical, and contextual), and (d) production conditions (Bourdieu, 1991; Reckwitz, 2002; Schatzki et al., 2001).
- Elaboration of indicators for each of the dimensions.
- Drafting of questions for each indicator (scale, multiple-choice and dichotomous questions). The drafting of the tool was adapted to each country according to the language and sociocultural characteristics of each of them.

To ensure the validity of the tool (Taherdoost, 2016), expert judgement was obtained according to the literature on the issue (Escobar-Pérez & Cuervo-Martínez, 2008), with six specialists in educational technology, social research methodology and gender identity. The review allowed us to include new answer options and improve and adapt the wording and language.

Next, a pilot study was carried out with 46 adolescents from Galicia and Puebla with similar characteristics to those of the study population. As a result, other answer categories were included, and attitudinal items were added. The final version was applied in the selected schools in the year 21-22. The study was approved by the Ethics Committee of the University of Santiago de Compostela (registration code: USC-01-2022). The subjects freely agreed to participate after being informed on the contents, purpose, and authorship of the study, and in no case were they forced to answer personal or delicate questions, especially those related to gender. Their legal tutors were also informed by the school and their authorisation was requested when the school deemed it appropriate.

2.3. Data analysis

The data collected were analysed using the software IBM SPSS Statistics 25. Previously, three new variables were created from the items of the tool:

- Employment and educational status of the families (as indicator of their sociocultural level). Created from the items related to the tutors' employment status ("In paid employment", "Without paid employment" or "I do not know") and the level of education of each of them (following

ISCED 2011). This resulted in a variable with five values that were classified from a very favourable level (both tutors work and have an ISCED 5 level of education) to a very unfavourable level (both tutors are without paid employment and with an ISCED 1 or 2 level), with intermediate favourable, medium, and unfavourable levels.

- Level of preparation to take selfies. Made up by the sum of the score of the following items: "I prepare what is going to appear in the background of the photograph", "I put on special clothes", "I style my hair", "I try different angles and body poses" and "I try different filters"; a total of ten (as each item was asked about for selfies alone and selfies with friends), measured on a scale of 0 (never) to 3 (always), so that the total variable has a range of 0 to 30. A higher score in the resulting summation variable means a higher level of preparation of the practice. The resulting variable has been recodified in five values: very low, low, medium, high, and very high.
- Level of preparation to record videos. A variable made up by the following items: "I carefully choose where to record", "I set up a scenography", "I put on special clothes", "I style my hair", "I try different angles and poses", "I try different filters", "I rehearse" and "I prepare this thinking about who is going to see it". This variable was calculated from the sum of the values of these variables measured on a scale of 0 (never) to 3 (always), so its range is 0-24. A higher score in the resulting summation variable means a higher level of preparation of the practice. The resulting variable has been recodified in five values: very low, low, medium, high and very high.

Univariate descriptive analyses (frequencies, percentages, measures of central tendency, and measures of dispersion) were carried out for the whole of the sample and for each of the subsamples according to territory, the main variables related to taking selfies and making videos (level of preparation, frequency of edition, personal attributes projected, and selfie-editing tips) in order to characterise the practice in the two sociocultural contexts.

A chi-squared test (significance level of 0.05) was used to find out whether there was a significant relationship between the performance of the activities analysed (selfies and videos) and the variables of territory, gender, employment, and educational status, as well as between the number of previous selfies and gender, and between the possible motivations and gender. A chi-squared test was also used to find out about the potential association between the motivations to take selfies and the motivations to record videos. The effect size was calculated by applying Cramér's V, following the proposal of Rea & Parker (2014).

The Kruskal-Wallis nonparametric test was used to compare potential differences between genders in the level of preparation of selfies and videos (<0.05), as the Kolmogorov-Smirnov normality test was significant (with values between $=0.013$ and $=0.00$), and the overall effect size was assessed with the E^2 statistic. Between-group comparison with Bonferroni correction was applied and the effect size was calculated according to the r statistic (Tomczak & Tomczak, 2014). To know the possible association between the level of preparation of selfies and videos, Spearman's correlation coefficient was calculated, and Cohen et al. (2011) was used as a reference for its interpretation.

3. Results

We will first present a general approach to selfie and video practices, according to the material preferences and frequency of production of the sample, for the three objectives of the study. Next, we will present each of the practices, paying attention to their characterisation and differences by gender, territory, employment, and educational status. To conclude, we will point out the synergies found between the two practices.

The results show that the platforms most widely used by contemporary adolescents are mainly Facebook (44.2%), Instagram (37.6%) and TikTok (38.3%). With regard to production practices, selfies are more popular, as 71.4% of the young girls and boys surveyed state that they take selfies, compared to 19.7% for those who participate in the creation of videos.

With regard to the second objective, it can be seen that adolescents of other genders are more inclined to use TikTok (42.3%), compared to cis women (38.2%) and cis men (36.2%). The same is true for alternative and less popular platforms among this age group, such as Reddit (36.4%) or Twitter (32%).

These are spaces where cis women (30.2%; 32%) and cis men (27.8%; 28.9%) are less present. The latter participate notably in streaming platforms such as Discord (31%) or Twitch (29.5%), less inhabited by people of other genders (24%; 28.6%) and cis women (28.5%; 27%). Cisgender female adolescents stand out on Instagram (38.2%), also popular among cis boys (36.2%) and people of other genders (34%).

Cisgender women and gender-dissident people show a higher participation rate than cis men in both activities, both in Puebla and in Galicia (Table 2). However, there are substantial territorial differences: young cis Mexicans take more selfies than young cis Spaniards, and video recording proves to be a more popular trend in Spain. The percentage of cis men who record themselves is 2.4 times higher in Galicia than in Puebla, 3.6 times higher in the case of cis women, and 2.9 times higher among other genders.

In spite of the popularity of videos among Galician adolescents, TikTok, a platform based on this type of production, is more widespread in Puebla (39.9%) than in Galicia (31%). However, Instagram, which enables self-presentation through both practices, is the leader in Galicia (44.8%) and less prominent in the Latin American state (24.7%). There, Facebook remains the main platform (45%), while it is barely relevant in Galicia (20.7%).

Table 2. Gender and social media practices

	GAL	PUEBLA	GAL	PUEBLA	GAL	PUEBLA
	Cis man	Cis man	Cis woman	Cis woman	Other	Other
Takes selfies	52.9%	58.1%	85.1%	83%	69.2%	68.2%
Record themselves on video	20.1%*	8.2%*	70.9%*	19.8%*	43.6%*	15%*

The family's employment and educational status is not related to the production of selfies by young girls and boys (χ^2=2.75; =0.6). However, video production is significantly higher among young people with favourable or very favourable employment and educational status (25.7% and 26.1%, respectively, compared to 12.9% and 17.2% in unfavourable and very unfavourable cases [χ^2=79.47; <0.001; V=0.125]). Along these lines and as detailed below, the practices linked to selfies and videos show similar tendencies, but some differences are identified in their characterisation which are related to gender, the geographic context, and the family's employment and educational status.

3.1. Selfies

Selfies are characterised by a casual approach, as the level of preparation among the subjects surveyed tends to be medium-low (62.7%). These values contrast with the number of selfies taken before sharing the production: 46.6% of the respondents take more than five selfies before sharing one on their profiles, and 10.2% even take more than 20. There are nuances between individual practice, which is slightly more planned (29% show a high or very high level of preparation), and spontaneous group practice, which is less premeditated (22.74%) and for recreational purposes. The preparation to take selfies focuses on the previous rehearsal of angles and poses (51.9% practise their selfies always or quite often). On the contrary, filters are rarely used by 56% of the sample; these people state that they aim its use at improving their photographs (52.5%), looking more attractive (24.4%) and having fun (20.6%). This tendency extends to the use of editing: 56% of the respondents' state that they rarely edit their selfies and only 10.5% (in the two regions) make intensive use of these technologies.

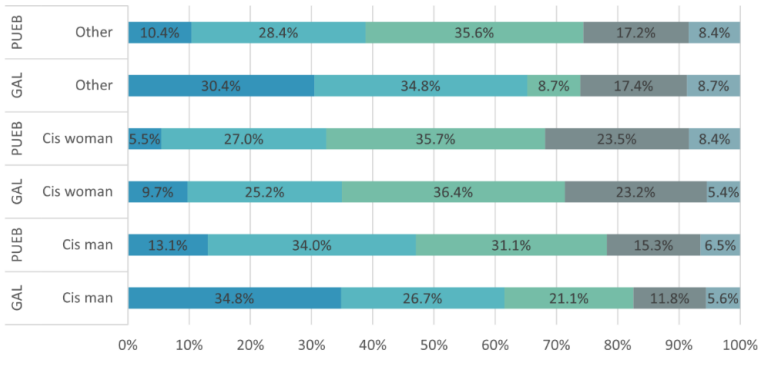
With regard to the personal attributes they intend to convey, looking attractive (70.1%), looking formal (64.1%), and looking elegant (55.7%) stand out in individual practice. However, in group practices (although physical appearance still carries a certain weight in selfie production) the importance of intrinsic characteristics such as being funny (55.1%) and friendly (45.3%) is increased. In tune with this, the intentionality of the practice is focused on showing oneself (56.4%), followed by the search for social approval through likes (36.2%). The suggestions to produce a good selfie focus mainly on selecting the background of the image well (68.6%) and using a subtle filter (56.1%), compared to using filters that alter facial features (29.4%) or not using filters at all (37.3%).

The production is higher among cis women, which are a group that shows less inequality between Puebla and Galicia (Table 2). The number of selfies taken before they are posted is minimally associated with gender (χ^2=32.46; =0.000; V=0.06); while 44.7% of cis women and 50.2% of transgender young people take more than five photos, 70.3% of cisgender boys take between one and five. This might indicate some gender influence on selfie creation (objective 2). Some differences are also seen in the relevance

given to having fun as motivation to edit their production in the case of group selfies (χ^2=83; =0.000; V=0.14), which is more important for girls (67.5%, compared to 60.1% of transgender young people and 52.4% of cis boys). The same applies to the intention to enhance one's physical appearance, as in the case of selfies in which they are alone (χ^2=73.8; =0.000; V=0.14), cisgender women stand out (82.8% of them point this out), followed by other genders (77.2%) and, lastly, cis men (70.7%).

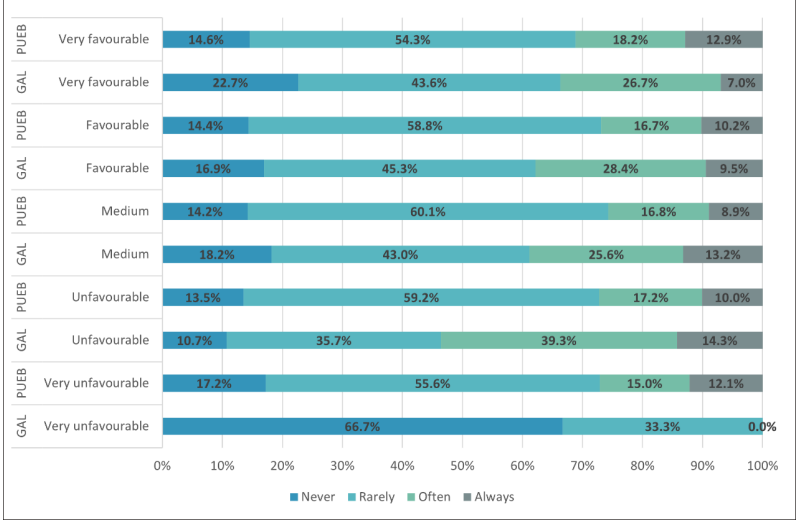
No differences are found between cisgender girls and boys in terms of personal attributes they intend to convey in their individual selfies. Both groups choose characteristics linked to attractiveness (good-looking in the first place, followed by formal and elegant). The people of other genders choose "friendly" in the second place (between formal, first, and good-looking, third) (60.4% versus 52.6% among cis men and 55.7% among cis women) (χ^2=27.36; <0.001; V=0.082) and are more in favour of choosing intrinsic characteristics, such as looking adorable (57.9% versus 41.4% among cis men and 55.7% among cis women) (selfies alone: χ^2=74.32; <0.001; V=0.135).

Figure 1. Level of preparation for selfies according to gender and territory



Regarding tips to take selfies in which they are alone, there is a notable difference between cisgender and transgender people when it comes to asserting their sexual orientation (32.6%) and gender identity (41.1%) through selfies (compared to 23% and 28.5% of cis women and 15.2% and 21.1% of cis men) (χ^2=57.26; <0.001; V=0.12; χ^2=57.67; <0.001; V=0.12). Depending on the geographic context, the difference in the level of preparation is clear and progressive (Figure 1).

Figure 2. Frequency of selfie edition according to employment and educational status and territory



The subjects with a low or very low level of selfie preparation are more common among the Galician population (more polarised). However, the difference between Puebla and Galicia decreases as the level of preparation increases. The behaviour of transgender people is similar: in Galicia, the percentage of non-cisgender people who spend very little time on that is clearly higher, while the percentages in the brackets with the highest levels of preparation are practically the same in the two regions.

The differences between genders in the frequency of edition according to territory are significant among cisgender people. In all cases, the percentage of young Galicians who never use edition formulas is higher (18.3% versus 8.4% in Puebla), and more accentuated among cis men (28.2% in Galicia versus 16.3% in Puebla).

Regarding the family's employment and educational status, it can be seen that in the most extreme situations of the scale ("Very unfavourable", "Favourable" and "Very favourable") the tendency is towards greater preparation among young people from Puebla (27.3%, 31.1% and 29.4%, respectively, show high or very high preparation). In Galicia, on the contrary, this situation occurs in the middle strata ("Medium" and "Unfavourable") (33.3% and 30.8%, respectively, show high or very high preparation).

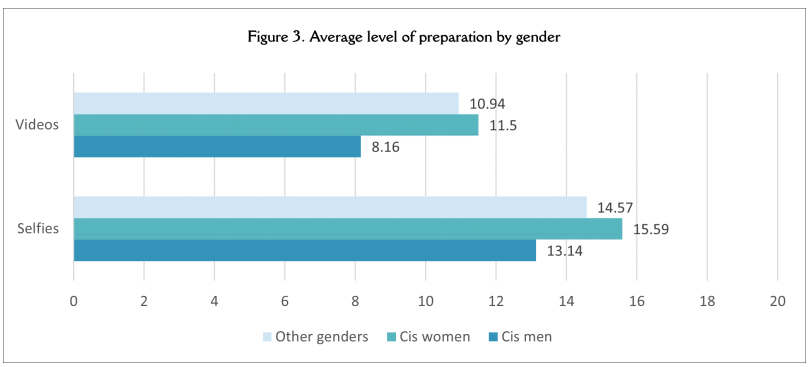
This variable shows a weak association with the frequency of selfie edition in the case of Galicia (χ^2=26.70; <0.009; V=0.13). In general, the attitudes in Galicia seem to be more extreme: except for the families in an unfavourable situation, the people who never edit their selfies are more common in this territory, and those who do this quite often or always are a notably larger group, except for those who are in a very unfavourable situation (Figure 2).

3.2. Videos

Video recording – which is a less widespread practice (19.7%) – is characterised by a higher level of in advance preparation than selfies. In comparison, this practice shows a lower number of recording attempts before the production is shared: 70.7% make one to five attempts, and only 3.9% make more than 20.

The forms of preparation of this practice consist in trying different angles and poses (which 50.7% of these young people always or almost always do) and filters, which are commonly used (always or almost always) by 47.6%. Their intentionality is focused on entertainment (59.7%) to the detriment of the search for social approval through reactions from their audience (20.2%). Along these lines, dancing (65.1%) is the most popular type of video, followed by humour (15.7%) and transitions (15.4%). In contrast with selfie production, young people's suggestions are mainly fun-oriented (54.6%). The choice of music (47%), the background (41%), monitoring trends in video (23.4%) and clothes (30%) come next.

Figure 3. Average level of preparation by gender



In relation to the second objective of this study, significant differences can be seen in the level of preparation for video production (Figure 3) between men and women (p=0.001; r=0.22) and between men and other genders (p=0.003, r=0.19). However, there are no differences between cisgender women and transgender people (p=0.43; r=0.03), who show higher levels of preparation.

A significant association is seen between body representation on video and gender (χ^2=101.5; <0.001; V=0.23). The majority tendency is never to try to highlight any parts of one's body, whether one seeks to show it or not. It is seen that cisgender girls tend to highlight parts of their bodies on occasion

(54.2%), especially at the same time as they try to avoid showing others (77.9%). Trans people, for their part, also tend to hide some parts of their bodies (60%), while cis youth show less concern about both showing parts of their bodies (33.9%) and hiding them (52.3%). Along these lines, the use of filters is more common among transgender people (56.3%), followed by cis women (50.1%), compared to a low percentage of cisgender boys (34.7%). A similar behaviour is found in relation to rehearsing poses and angles, which is common among 52.3% of trans people and 54.9% of cis women, but recurrent for only 33.6% of cisgender boys.

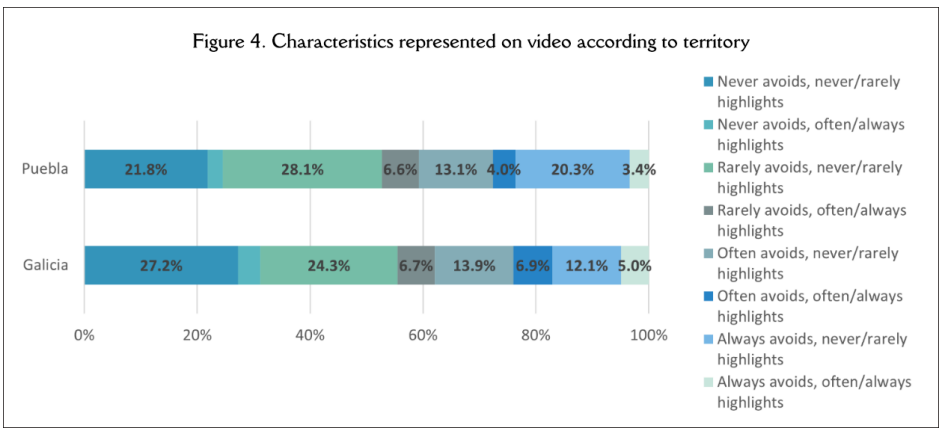
In terms of intentionality that guides the production of this practice, cis women attach great importance to showing themselves (30.8% versus 26% of cis men and 27.3% of other genders), in contrast to people of other genders, who are more concerned about communicating with their followers (11.4%) or meeting people (18.2%). The search for likes through these types of production is more common among cisgender boys (25.4%), followed by cisgender girls (20.6%), and is noticeably lower among trans youth (15.9%).

Regarding contents, cisgender men prefer to record humorous videos, whether they are funny scenes (20.9%) or jokes (23.8%), as well as challenges (16.2%) or produce content where they can show their skills (12.8%). By contrast, cisgender girls and transgender youth opt for musical staging and dancing (28.5% and 75.2% of girls and 29.6% and 58% of transgender people, respectively).

Placing the focus on territory, the tendencies related to video recording differ, to a certain extent, from those described for selfies. Young people from Puebla show a greater level of preparation (high or very high) than Galician youth in the groups of other genders (30.3% versus 18.2%) and cisgender men (21.3% versus 11.9%). Cis women show a greater level of preparation in Galicia (18.4% versus 14.5%).

In Puebla, those who never try to highlight any parts of their body (Figure 4), in combination both with always avoiding showing them and with never doing this, stand out (74.8% and 77.7%). In Galicia, the highest percentages are found in intermediate situations, such as "Often avoids showing, rarely tries to highlight" or "Often avoids showing, often tries to highlight" (51.3% and 35.1%). In contrast, young people in Puebla rehearse different angles and poses (53.4%) and use filters (52.7%) to a greater extent than young Galicians (46.4% and 39.6%, respectively).

Figure 4. Characteristics represented on video according to territory



All types of videos have been seen to be more popular in Galicia than in Puebla. In Galicia, young people seek more intensely to obtain likes (22.4%), meet new people (16.4%) and flirt (11.2%), all of which is hardly relevant among adolescents from Puebla (18.7%, 10.8% and 6.2%, respectively). Young girls and boys from Puebla are more oriented towards the exhibition of skills (30.9%) and the aspiration of being influencers (17.2%), a wish that is less widespread among young boys and girls from Galicia (20.3% and 7%, respectively).

Regarding the family's employment and educational status, it can be seen that in advance preparation to record videos is associated with better employment and education conditions and works differently in Puebla and in Galicia. In cases of favourable or very favourable status, young boys and girls from Puebla tend to show a significantly higher level of in advance preparation for the practice. In the case of Galicia, on the contrary, the subjects with medium and low family employment and educational status show a higher

level of preparation. Very low preparation percentages reach 21.6% and 16.7% in Galicia, respectively, and 7.7% and 8.8% in Puebla.

The way of presenting one's body is also associated with employment and educational status in cases of medium capital. The percentage of young people from Puebla who indicate "Always avoids showing" is higher in households of good status. In addition, except in the case of medium-capital households, the answer "Never avoids showing" is always more common in Galicia in all other family situations.

3.3. Selfie-video relationship

Concerning the third objective, an important relationship can be seen between the level of preparation to produce selfies, both alone and accompanied by others, and the level of preparation to record videos (correlation of r=0.64 for individual selfies and r=0.60 for group selfies). This correlation is greater for the subjects of other genders (r=0.78 and r=0.55, compared to cisgender women: r=0.66, r=0.62, and cisgender men: r=0.65, r=0.62) and slightly higher in Galicia (r=0.66; r=0.66) than in Puebla (r=0.64; r=0.54).

At the same time, there are similarities in the motivations to produce group videos and selfies, specifically when the subjects are happy (χ^2=109.46; <0.001, V=0.30), feel that they look good (χ^2=99.57; <0.001, V=0.29) or are sad (χ^2=50.80; <0.001, V=0.21), or when something funny happens (χ^2=162; <0.001; V=0.37). This association does not occur in the case of individual selfies.

4. Discussion and conclusions

The findings of this study reveal the potential of the social practice approach (Bourdieu, 1991; Reckwitz, 2002; Schatzki et al., 2001) to expand the characterisation of selfie and video production that is present in the literature (Camacho-Miñano et al., 2019; Gómez-Urrutia & Jiménez-Figueroa, 2022; Martínez-Valerio, 2013; Rodríguez-Illera et al., 2021). This perspective has also allowed us to detect transition trends in knowledge and meanings between different representation practices and to identify gender marks (in the practices and in academic literature).

The imprint of the architecture of the platforms where the practice originates and takes place becomes apparent (Van-Dijck et al., 2018) (objectives 1 and 3). In Galicia, young people experiment with selfie and video creation on Instagram, whose architectures favour the coexistence of both forms of creation, compared to Puebla, where the prevalence of Facebook might impose the selfie to a greater extent. In both cases, the popularity of TikTok, together with the changes undertaken by Facebook in its structures for the benefit of videos as a strategy for its perpetuation (Srnicek, 2018), suggests a prompt increase in other forms of selfies in motion (Rodríguez-Illera et al., 2021) or different types of videos.

Along these lines, the results of the study reveal that, although there are substantial differences in the characterisation of selfie and video production, there is a recursive transition between the two practices (Reckwitz, 2002), as was hypothesised in the introduction of this study. The trends in in-advance preparation to produce selfies and the motivations for creating group selfies are significantly related to those seen in video production, which is less often practised but shows higher levels of preparation and similar motivations. This reveals a flow of practices grounded in the production of selfies that transits through the dialogue between meanings, knowledge and the material transformation of the artefacts and their structures (Van-Dijck et al., 2018) towards forms of representation on video.

Identifying this flow allows us to deal with video production from an analysis of the academic journey of selfies as an object of study, i.e. an exploration of the social gaps underlying the material access to selfies (to their potentialities and risks as a subjectivation practice in a power-knowledge system) in video production practices. Along these lines, the data show that selfies are explored to a greater extent by the highest socioeconomic strata in Puebla and by middle socioeconomic strata in Galicia, with these preparing the practice more. This trend evolves towards videos (which are less popular) in a different way in the two territories. On the one hand, in Puebla, the study reveals the vulnerability of young girls and boys in unfavourable socioeconomic situations to access forms of expression through video. This is in line with the critical voices on digital and media literacy that point out the higher vulnerability of these groups to the digital gap (Dussel, 2011). On the other hand, the opposite move can be seen in Galicia: a displacement

of the practice and its preparation towards the most disadvantaged strata. This reality has already been echoed by research studies on digital literacy in Spain, which suggest greater control of upper social strata families over this type of uses (including their prohibition), compared to the unlimited, uncontrolled material access of disadvantaged strata (Gewerc et al., 2017).

In relation to the second objective, the results reaffirm young girls as main producers of selfies and videos compared to boys (Dhir et al., 2016; Rodríguez-Illera et al., 2021), with pressures operating around the body and beauty (Gómez-Urrutia & Jiménez-Figueroa, 2022). However, when adopting the social practice approach and expanding the cisgender binomial in favour of the transgender population, which has been excluded from these studies, a more complex reality is revealed which could account for an androcentric, cis-normative perspective – or, in other words, the operating power and knowledge relations – also in scientific production.

This complexity becomes apparent with the materialities that operate in selfie and video production practices. It is revealed that young girls access the common space to a greater extent (mainly Instagram, Facebook and TikTok), whereas transgender people and cisgender boys access these and other alternative spaces, such as Reddit and Twitter for the former and Twitch or Discord for the latter. Consequently, cis boys and people of other genders have a broader material network. This might imply, on the one hand, the coexistence with different forms of production stimulated by the architectures of these spaces (Van-Dijck et al., 2018) and, on the other hand, greater material opportunities for negotiation of representation practices. The homogenising tendency seems to fall heavily on cisgender girls, who produce to a greater extent, under the logics of preparation, body representation and editing stimulated by platforms where selfies and videos prevail.

Regarding the forms of selfie and video production, t the differentiation of cisgender boys from the forms of practice of cis girls and transgender youth emerges. It is cisgender boys who break away from the usual platform-stimulated behaviour to respond to the standard of masculinity. They focus to a greater extent on the projection of their worth and the search for recognition, expressing a low concern for practice preparation and body exposure (Camacho-Miñano et al., 2019) that contrasts with the wish to look elegant and attractive.

Although transgender people and cisgender girls tend to engage in these practices in similar ways, different meanings are revealed which are reflected in the tips given for such practices and operate in body exposure and posture rehearsal, without necessarily including reification. Along these lines, trans people identify in selfies and videos an opportunity to vindicate their sexual and gender identities (Jenzen, 2022; Wargo, 2015), recommending their expression in the practice. This is a meaning that is attributed less as gender is experienced from within the norm or privilege (Son, 2017) (cisgender girls and, even less, cis boys). In terms of body exposure, the focus is on concealment rather than display, an issue that is even more pronounced in transgender people, who also make greater use of filters. At the same time, cisgender girls and especially people of other genders pursue the expression of intrinsic qualities such as friendliness to a greater extent than cisgender youth in their productions.

While these issues coexist with self-reification without denying it, they reflect the regulating violence on the bodies of transgender identities and cisgender girls (Duguay, 2016). At the same time, this might be suggesting an androcentric reading by academia of adolescent girls' behaviour in these spaces, always interpreted as forms of self-reification, without noticing a potential representation of the body that, in a complex fashion, comes in response to the regulating power over the body and ignoring greater attention to motivations and intrinsic qualities.

All this reveals gender identity and its representation in digital environments as a complex experience, given the power-knowledge relations that operate in societies, and this experience cannot be reduced to one single sociodemographic variable. Digital platforms, as structures that reproduce these power relations (Van-Dijck et al., 2018), possess lines of flight that are explored by adolescents for the vindication of their identities, self-protection against body-normalising violence or the creation of links with their peers. These forms of resistance are not accessible by all, are cut across by territory, employment, and educational status, and are strongly revealed in emerging practices, outlining an agenda of unmet challenges in the educational and regulatory field.

Authors' Contribution

Idea, U.R., A.G.V., E.M.P.; Literature review (state of the art), A.G.V., U.R.; Methodology, E.M.P.; Data analysis, E.M.P.; Results, U.R., A.G.V.; Discussion and conclusions, U.R., A.G.V.; Writing (original draft), U.R., A.G.V.; Final reviews, A.G.V., E.M.P., U.R.; Project design and sponsorship, E.M.P.

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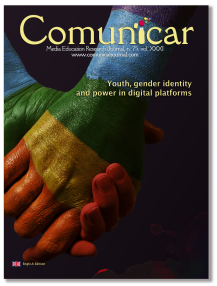

Let's talk series: Binge-watching vs. marathon. The duality in the consumption of episodes from the Grounded Theory

Hablemos de series: Binge-watching vs. maratón. La dualidad en el consumo de episodiosdesde la Teoría Fundamentada

Eva Martínez-Serrano. Professor, Department of Marketing, Complutense University of Madrid (Spain) (evamarma@ucm.es) (https://orcid.org/0000-0003-4146-0401)
Dr. Diana Gavilan. Professor, Esic University, Department of Marketing, Complutense University of Madrid (Spain) (dgavilan@ucm.es) (https://orcid.org/0000-0002-5293-779X)
Dr. Gema Martinez-Navarro. Professor, Department of Marketing, Complutense University of Madrid (Spain) (mgmart01@ucm.es) (https://orcid.org/0000-0002-9047-8010)

ABSTRACT

Binge-watching refers to the consecutive viewing of episodes of a fictional series, usually of the drama genre, in a single session. The approaches to its background, practice, and effects are diverse and controversial. Using a qualitative-exploratory approach analysed with Grounded Theory, this paper studies the experience of binge-watching users from data collected from a sample of 20 individuals combined with techniques such as group meetings, in-depth interviews and projective techniques. Results lead to the identification of two underlying patterns of behaviour associated with the consumption of dramatic content: planned binge-watching and unplanned binge-watching. Planned binge-watching is the intentional consumption of more than two consecutive episodes of a fictional series whose psychological effects are mainly gratification based on evasion. Planned series consumption has a socializing effect, especially among young people. Unplanned binge-watching is the unintentional and spontaneous chained viewing of more than two episodes of a fiction series. The viewing unit is each individual episode, linked to the next by the curiosity aroused by the plot. The psychological effects are gratification derived from evasion, followed by a feeling of guilt derived from the loss of control. The study concludes with the formulation of seven hypotheses for empirical verification, academic and professional implications, and future lines of research.

RESUMEN

El «binge-watching» hace referencia al visionado consecutivo de episodios de una serie de ficción, generalmente del género dramático, en una sola sesión. Los enfoques sobre su origen, práctica y efectos son diversos y controvertidos. Mediante un enfoque cualitativo-exploratorio analizado con Teoría Fundamentada, este trabajo estudia la experiencia de los usuarios de «binge-watching» a partir de datos recogidos sobre una muestra de 20 individuos combinando técnicas como la reunión de grupo, la entrevista en profundidad y las técnicas proyectivas. Los resultados conducen a la identificación de dos patrones de comportamiento subyacentes asociados al consumo de contenidos dramáticos: el «binge-watching» planificado y el «binge-watching» no planificado. El «binge-watching» planificado es el consumo intencionado de más de dos episodios consecutivos de una serie de ficción cuyos efectos psicológicos son principalmente la gratificación basada en la evasión. El consumo planificado de series tiene un efecto socializador especialmente entre los jóvenes. El «binge-watching» no planificado es el visionado encadenado, no intencionado y espontáneo, de más de dos episodios de una serie de ficción. La unidad de visionado es cada episodio individual, vinculado al siguiente por la curiosidad que despierta la trama. Los efectos psicológicos son la gratificación derivada de la evasión, seguida de un sentimiento de culpa derivado de la pérdida de control. El estudio concluye con la formulación de siete hipótesis para su verificación empírica, implicaciones académicas y profesionales, y futuras líneas de investigación.

KEYWORDS | PALABRAS CLAVE

Binge-watching, series, Netflix, video streaming, Grounded Theory, content consumption.
Binge-watching, series, Netflix, vídeo bajo demanda, Teoría Fundamentada, consumo de contenidos.

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1. Introduction

United States. Friday. October 27, 2017: 361,000 people devour "in one sitting", lasting more than eight hours, the nine episodes of the second season of Stranger Things on the very same day of its release (Otterson, 2017), and were joined by another 4.6 million over the weekend according to Nielsen figures. This is the trend that predominates in the current consumption of audiovisual products (Shim & Kim, 2018), to the point of acquiring its own name: binge-watching.

Although there have been precedents for this behavior in the 90s, with DVD, binge-watching appears linked to streaming platforms that, led by Netflix, offer complete seasons of fiction series accessible from multiple devices (television, computer, mobile...), and whose episodes are projected in a chained way: one ends and the next automatically begins in seconds. The episodes last between 50 and 60 minutes and relate to a main plot, usually dramatic (Feeney, 2014), that extends throughout all the episodes, and whose outcome is not revealed until the end of the season (Homeland) or even the series final (Lost).

Academically, there is no consensus on the term binge-watching. Many definitions focus on the number of episodes viewed in the same session (Sung et al., 2018): more than two consecutive episodes of a fiction series (Walton-Pattison et al., 2018), several episodes (Jenner, 2017), one episode (Merikivi et al., 2018), two (Davis, 2016), three (Ciaramella & Biscuiti, 2014), four (Feeney, 2014), and even the viewing of the entire season in a single day (Ramsay, 2013). Understanding the experience of users during the practice of binge-watching involves unraveling the cognitive, emotional, and behavioral process that this experience implies, identifying three stages: antecedents of consumption, experience during consumption, and post-consumption effects. That is, what happens before, during, and after viewing the episodes.

An interpretive approach has been chosen to address this analysis, due to the experiential nature of the phenomenon from its very beginning to its results. There is a long tradition of interpretive research regarding the experience of consumption (Joy & Sherry, 2003) that argues that the best way to study this experience is within its context, gathering the experiences of its participants and compiling all the possible interpretations before developing the final concepts to demonstrate, with the evidence of the data, the relation between these concepts (Bhattacherjee, 2012).

Therefore, we have opted for qualitative-exploratory research through the Grounded Theory (GT) described by Glaser (1992). This theory proposes to avoid the bibliographic review in the initial stage of the research and to carry it out iteratively, in parallel to the collection and interpretation of data, thus minimizing its influence on interpretation. This aspect is relevant when analyzing the binge-watching phenomenon, whose literature is still recent (Walton-Pattison et al., 2018), due to its multiple facets and the absence of a consensual definition of the term (Davis, 2016).

2. Research background: Binge-watching

Binge-watching is linked to the possibility of self-administered viewing, where it is the viewer who decides what to watch and when, without a programming scheme (Chmielewski, 2013). The digitization of audiovisual content and its easy accessibility have fostered this context. It is noted that the term binge-watching is only applied to the audiovisual format of series, explicitly excluding films or other narrative structures within television fiction (Horeck et al., 2018). Binge-watching is related to drama which provides a plot with elements of continuity that hook the viewer, making them link the episodes.

In recent years, different industry tactics, led by Netflix, have favored the practice of binge-watching: releases of complete seasons of the series; ending episodes at a peak moment of the plot, encouraging the viewer's curiosity; automation in the way episodes are replayed (Pittman & Sheehan, 2015); and reduction of the time between episodes to stimulate chaining –initially set by Netflix in 15 seconds, it was reduced to 6 in January 2020 –.

Additionally, events in 2020 also led to an increase in binge-watching. With one-third of the world's population confined to their homes as a result of the COVID-19 pandemic, Netflix registered more than 15 million new subscriptions during the first quarter of 2020 (Mena in Statista, 2021, based on Netflix data), 50% more than in previous periods. In addition to increasing the sources of content, viewers extend the hours of audiovisual consumption and consolidate fiction series as one of the main entertainment alternatives to combat isolation. Binge-watching emerges as a strategy to regulate the emotional states

caused by this unusual situation (Sigre-Leirós et al., 2022). But the influence of COVID-19 should not only be analyzed at the quantitative level. Arrieta et al. (2020) point out two noteworthy aspects concerning how audiovisual products were consumed through streaming platforms during the pandemic. On the one hand, viewing times shifted from the classic prime time (in Spain, from 20.30 to 24.00 hours) to hours unthinkable in other circumstances, such as the morning. The second noteworthy aspect is co-watching. During the pandemic, the use of platforms that allow shared viewing proliferated. Friends and family members found a way to reduce the social distance imposed by the health situation. Some of the main streaming platforms themselves offer the possibility of group and remote viewing, such as Netflix Party, Group Video (Amazon Prime Video), or GroupWatch (Disney+), but they also allow their customers to use other websites and third-party applications.

Unlike other similar behaviors that allude to an excess or deviation from the norm (alcohol, food, gambling...) and have a negative social valuation, binge-watching benefits from a positive social consideration. Exceptionally, the excessive consumption of culture, such as music or reading (binge-reading, studied by Hanel, 2014), even outside the norm, distances itself from this animosity to the point of being socially accepted and even admired. Something similar occurs with serial drama, dignified thanks to its complex narrative structures, famous directors and actors, or recognition through awards, to the point of being considered cult content (Jenner, 2017) whose excessive consumption, binge-watching, not only lacks negative social judgment but also unleashes a certain admiration. In this line, the term coined by Peterson and Kern (1996), omnivorous intellectuals, is noteworthy to qualify binge-viewers.

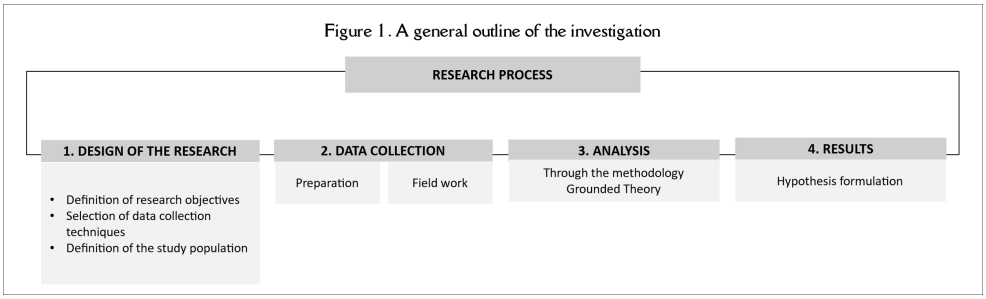
Jenner (2017) proposed the term binge-worthiness, dignifying the marathon for the value of the content of the series, alluding to a non-guilty (Ramsay, 2013) and socially confessable pleasure. Despite this, other studies have pointed out that its negative side cannot be ignored: the binge-viewer can devote excessive time to viewing, which may involve wasted time, poor personal hygiene or eating habits, and even damage their social relationships (Davis, 2016).

It is also noted that terms such as hooking, drug, or loss of control appear frequently linked to the speech of binge-viewers. Several authors have studied the possible relationship between binge-watching and addictive behavior (Flayelle et al., 2017; Riddle et al., 2018). In 2000, the American Psychological Association included behavioral addiction in the DSM-IV-TR (Diagnostic and Statistical Manual of Mental Disorders). Although so far only gambling addiction is included in the DSM-IV-TR, Beck et al. (1999) point out that any behavior can potentially become addictive, which leads to considering binge-watching practiced with a certain intensity as a behavioral addiction.

3. Research methodology

To study the experience of series consumers in the practice of binge-watching, its background, and results, we have opted for a qualitative approach based on the GT methodology proposed by Glaser and Strauss (1967). GT, considered a research paradigm, leaves room for interpretation and adaptation, allowing the emergence of a research methodology (Birks & Mills, 2015). Our research, following this approach, identifies theoretical categories from the data through a system of codes and sub-codes. Through inductive reasoning, an exploratory qualitative approach to the studied phenomenon is carried out, providing theoretical insight (Papathanassis & Knolle, 2011). The general scheme of the process is presented in Figure 1.

Figure 1. A general outline of the investigation

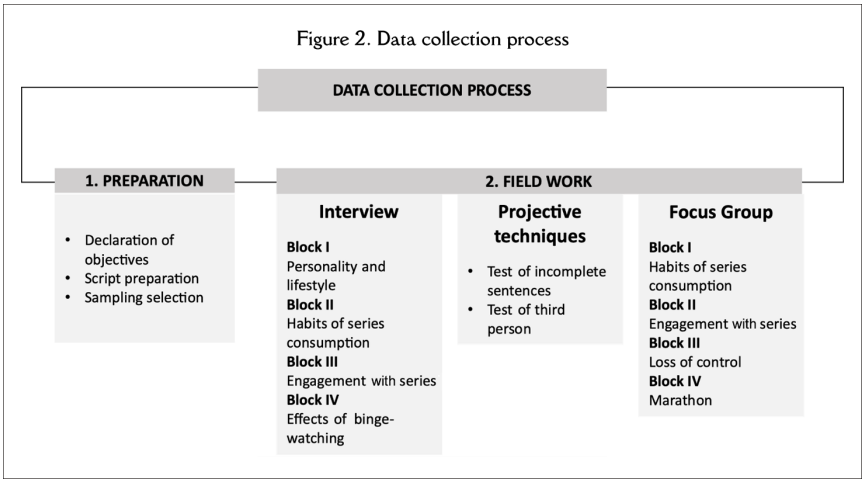


3.1. Data collection techniques

Considering the exploratory nature of the research, for data collection we opted for the semi-structured personal interview complemented with projective techniques and the focus group, all of which are common in the application of GT. The combination of individual and group interviewing techniques allows us to check the effect of the interaction.

- Interviews: A semi-structured script was followed (funnel type, from general to specific) divided into four blocks: introductory (personality and life habits), series consumption habits, engagement with the series, and identification of the effects of binge-watching. The interviews were completed with two types of projective techniques, ideal for bringing out aspects that are difficult to express directly, like motivations, attitudes, or underlying feelings (Malhotra, 2004): projective techniques of incomplete stimulus, concretely a Test of incomplete sentences (For me the Netflix phenomenon has supposed...; These series for me are...), and projective techniques of expression, concretely a Test of the third person, in order to reduce the effect that the negative social consideration of the addiction could have when talking about their own behavior (… even if you have never done it, do you know any friend or classmate who has stopped going to class because they were watching a series?)
- Focus Group: The focus group script was semi-structured, with a funnel sequence, and divided into four blocks of questions: consumption habits of fiction series, engagement with series, loss of control when interrupting the viewing, and practice of marathons. The summary of the data collection process is shown in Figure 2.

Figure 2. Data collection process



3.2. Sampling

Given the exploratory nature of the research, diversity took precedence over representativeness in the selection of the sample (Papathanassis & Knolle, 2011). The sampling procedure used was non-probabilistic, combining convenience and snowball. For the selection of participants, only one profile condition was established (age over 16), and two filter conditions: being an online video platform user and having watched a complete season of a fiction series in the last six months. A final sample of 20 subjects was available, 13 were interviewed, and the remaining 7 participated in the focus group.

For the composition of the focus group sample, criteria of homogeneity (age and social class) and heterogeneity (sex, studies, and occupation) recommended for this technique were considered (Malhotra, 2004). The subjects selected have a varied origin. They are residents of Spain (mainland and islands) and outside Spain. Participants were initially contacted in person, and by telephone. Interviews took place face to face, through telephone or virtual meetings. Focus group took place physically. Prior to the interviews, participants filled out an informed consent document. The confidentiality of the data obtained, and the anonymity of the informants were assured. Table 1 provides details of the sample and duration of the interviews and the focus group.

Table 1. Sample description

Subject	Age (years)	Occupation	Level of studies	Gender	Interview/Focus group (minutes)
1	16	Student	High school	Female	Interview (59)
2	20	Student	2nd Grade Marketing	Male	Interview (59)
3	22	Student	4th Grade Advertising	Female	Interview (41)
4	22	Student	4th Grade Double Advertising and Protocol Events	Male	Interview (37)
5	25	Student(opponent)	Agricultural Engineer	Female	Interview (47)
6	26	University professor (doctoral program)	Computer Engineer (Ph.D. program)	Male	Interview (42)
7	30	Store manager	Characterization-make-up technician	Female	Interview (27)
8	39	Engineer	Industrial Engineer	Male	Interview (22)
9	47	Marketing Manager	Bachelor of ADE	Male	Interview (30)
10	53	Child professor	Degree in Tourism - Teaching	Female	Interview (32)
11	58	Military	Army Superior School	Male	Interview (28)
12	64	Judge	Graduate in Law	Female	Interview (27)
13	75	Geologist. Retired university professor.	Graduate in Geology	Male	Interview (34)
14	56	Housewife	High school	Female	Focus (52)
15	56	Lawyer	Graduate in Law	Female	Focus (52)
16	56	Housewife	High school	Female	Focus (52)
17	59	Military	Army Superior School	Male	Focus (52)
18	60	Entrepreneur	Graduate in Biology and MBA	Male	Focus (52)
19	60	Entrepreneur	High School	Male	Focus (52)
20	62	Bank manager	Economics Degree	Male	Focus (52)

The interviews were conducted between May 21 and June 1, 2021, and the focus group in July 2021. Data collection reached saturation with 20 subjects. In qualitative research, saturation has attained widespread acceptance as a methodological principle (Saunders et al., 2018). Saturation indicates that, based on the data that have been collected, further data collection is unnecessary (Papathanassis & Knolle, 2011). Qualitative studies can reach saturation at relatively small sample sizes (Hennink & Kaiser, 2021).

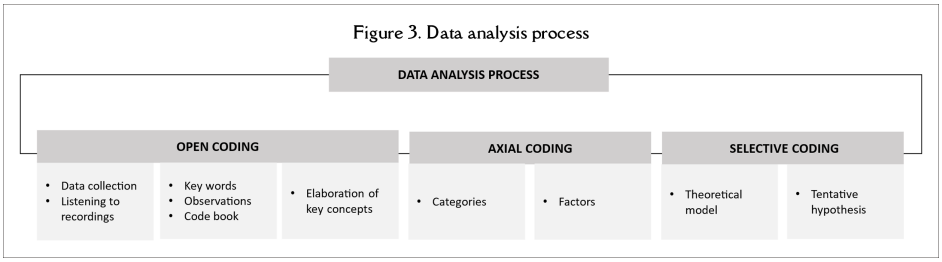
3.3. Data analysis

The sessions were audio-recorded and subsequently transcribed to facilitate the coding of the information obtained. Data analysis followed a process of (1) open, (2) axial, and (3) selective coding (Borgatti, 2008).

First, the concepts were identified and grouped into categories (open coding). To do this, keywords and all appropriate observations were noted throughout each interview, thereby creating a codebook that was used as the basis for axial coding. This coding activity involves the identification of the underlying concepts and the interrelationships between these concepts according to the type of content with which they are related, which allows their subsequent interpretation (Borgatti, 2008). Codes not semantically related to the rest were excluded.

From the data collected, seven categories were identified to unravel and understand the process of viewer experience of binge-watching. At this stage, and depending on the nature of their influence, the categories were grouped around three factors (axial coding). In the last phase of analysis (selective coding), the objective was to provide an overview of the study phenomenon by creating a theoretical concept that would allow the formulation of tentative hypotheses. The coding process is described in Figure 3.

Figure 3. Data analysis process

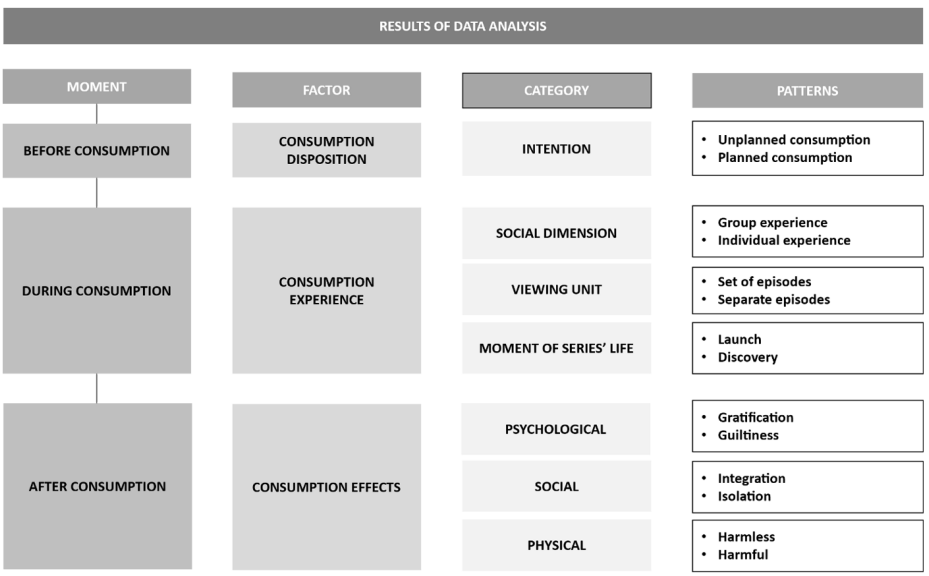


4. Results

When analyzing the codes, seven categories are identified around three factors that are determined by the moment of the users' experiential process during the practice of binge-watching: viewer disposition (before viewing), consumer experience (during viewing), and derived effects (after viewing). The viewer's disposition factor gives rise to the intention category. It is a central factor that triggers the duality of the

process and conditions the second factor, the viewing experience, with three categories –social dimension, viewing unit, and time of life of the series–. Finally, the third factor refers to the effect of binge behavior on its psychological, social, and physical dimensions. In each of the seven categories identified, two patterns of behavior are observed (Figure 4).

Figure 4. Data analysis result



4.1. Consumption disposition

Disposition is a factor linked to the moment prior to consumption. It refers to the way in which the viewing experience and the practice of binge-watching are approached. Disposition includes only the category intention, and gives rise to two consumption patterns, planned and spontaneous.

4.1.1. Planned consumption vs. unplanned consumption

- Indicative code (planned): "In summer and holidays, I watch five or six episodes at a time".
- Indicative code (unplanned): "I don't like having to wait to watch another episode. If it's a good series and they cut you off, you say: I'm just going to see how it is solved. And you watch the whole episode. When I watch five or six episodes, I say to myself: but girl!...".

When the interviewees describe their way of watching the series, two patterns appear. On the one hand, we find interviewees who conceive binge-watching as one more leisure activity within leisure that is planned. It has, therefore, an intentional character, it requires enough free time to watch several episodes in a row and to decide in advance to devote that time to watching the series.

On the contrary, other interviewees state that they set a time for the series, no more than two episodes, about two hours, which is then exceeded due to the interest that the plot unleashes, usually subtracting it from the hours of sleep. Binge-watching, in this case, is not premeditated and could be described as spontaneous.

In the literature on television consumption, not specifically series, the existence of different binge-watching patterns isrecognized. Riddle et al. (2018) introduce the intentional and unintentional binomial and relate it to a personality trait: impulsivity. Certain consumers manifest intentionality, previously making the decision to practice binge-watching and dedicating time and/or resources to watching multiple episodes of a television program, while others carry out this behavior spontaneously and unintentionally. These are subjects who consume multiple episodes of the same program without having the objective of doing so in advance. Pittman and Sheehan (2015) also distinguish different types of binge behaviors in relation

to fiction series, planning being one of the determining factors of binge typologies. They differentiate between binge-viewers who "plan the binge", motivated by the quality of the show and the social aspect, and unplanned binge-viewers, motivated by relaxation, engagement, and hedonism.

Both patterns could be analyzed from the perspective of the Theory of Planned Behavior (Ajzen, 1985). Planned binge-watching is a premeditated behavior encouraged by a favorable subjective norm and an anticipated effect linked to pleasant emotions because of viewing. On the contrary, unplanned binge-watching exemplifies that the correlation between intention and behavior, although substantial, can vary (Ajzen, 2011). Unplanned binge-watching could be associated with a low ability to regulate behavior and inhibit impulses. In terms of affection, there could be an anticipated regret that would act as a brake, but without enough force to avoid the behavior.

4.2. Consumer experience

The moment of viewing gives rise to one factor, the consumption experience. However, this factor groups three categories: the social dimension of the experience, the unit of viewing, and the time in the life of the series. Two distinct consumption patterns emerge from each of these, which are described below.

4.2.1. Social dimension of the experience: shared vs. individual

- Indicative code (shared experience): "On weekends, I watch more than three or four episodes in a row, with my boy".
- Indicative code (individual experience): "It's solitary. You manage your time".

Participants narrate a variety of experiences. Pittman and Sheehan (2015) describe a journey from solo viewing to planning with others. The experiences of the interviewees can be grouped into two modes, depending on whether the viewing takes place alone or accompanied. In the survey by Sung et al. (2018), among those under 30 years of age, 83% usually watch series alone compared to 17% who do it accompanied. In the study by de-Feijter et al. (2016) with German men and women between 18 and 34 years old, 77% of the sample declared that they view series alone.

Some of the practices narrated by the participants show a relationship between the planned binge-watching and the shared experience (Pittman & Sheehan, 2015). Binge-watching planned in company (partner, family, or friends) is linked to fashion series, usually coinciding with the launch of new seasons, as a form of social entertainment. It is an event and requires preparation. The unplanned binge-watching accompanied arises spontaneously from the viewing of series, with family or partners, as an evolution of the traditional family television viewing, after dinner, as a prize (rest for the day). The established consumption dose (one or, at most, two episodes) is exceeded, exceptionally, at points of maximum interest in the series.

Some interviewees declared their preference for solo viewing in a deliberate way as more of a leisure activity, which does not generate guilt feelings. A lonely pleasure, where the phone is turned off to lock up to watch a full season of a show (Riddle et al., 2018). When it comes to fashion series, the young interviewees stay connected with other viewers through social networks so that the viewing takes on the character of an event. Pang (2014) alludes to real-time chat and de-Feijter et al. (2016) suggest that binge-watching has a "solitary social" character. It is practiced alone within a socially active online context.

The interviewees who practice unplanned binge-watching in solitude describe it as an experience that often leads to guilty feelings, possibly related to a greater number of episodes viewed (de-Feijter et al., 2016). Television is the preferred viewing device for company consumption, while the computer, tablet, and mobile phone are the usual devices for solo consumption.

4.2.2. Viewing unit: Set of episodes vs. separate chained episodes

- Indicative code (set of episodes): "When Dragon Ball was released, I couldn't think of anything else. I watched it all in one afternoon, about seven episodes of twenty minutes. I made a group to watch it".
- Indicative code (chained individual episodes): "They put the interesting thing at the end, and you say: it can't be it; they won't leave me like that. And you put on another episode".

The data collected suggests that the difference is based on whether they are content units, such as the season, or, on the contrary, individual episodes. When the viewing of a set of episodes is related to the launching of a new season of a series, it acquires the character of an event, such as watching the Super Bowl (Pittman & Sheehan, 2015).

In the viewing of interrelated individual episodes, the content unit is the episode itself, which is hooked to the next one as the curiosity to know how the plot unfolds cannot be mastered. The succession of episodes could even go up to the entire season. Interviewees coincide in feeling "hooked by the dramas", as the narrative presents elements of continuity (de-Feijter et al., 2016). Drama versus comedy, and suspense within the drama, encourage longer viewing time. Regarding the content development strategy, the episodes can have a closed or open ending, the latter being the one that most favors the chaining, especially when the situations of maximum tension within the plot (cliff-hanger) are placed at the end of the episode.

4.2.3. Moment in the life of the series: Launch vs. discovery

- Indicative code (launch): "I want it now. Before anyone. Before you get all the spoilers".
- Indicative code (discovery): "I feel like I'm trapped by some series when one episode ends, and I want to watch the next one".

The motivation of the binge-watching planned before the premiere of a new season of a fashion series among young people has a social nature, of attachment to the group. The same fondness for following fashions is not observed among those interviewed over 40 years of age, nor for being the first in their circles to watch a new series or season. This planned binge-watching prompted by the launch of a new season of a series has been widely picked up by the literature. According to Wallenstein (cited by Matrix, 2014), the fifteen episodes of the new season of Arrested Development, released by Netflix in the summer of 2013, were watched by 10% of viewers in the next 24 hours.

The motivation for unplanned binge-watching is linked to the discovery of a series, with an enveloping plot, which prompts the viewer to link one episode to another. This behavior could be facilitated by the way binge-viewers select the series: they choose them carefully; they are prescribers, and they recommend them. They are very demanding and abandon those series they do not like. There are abundant references to the discovery effect and the consequent chained viewing of episodes. Flayelle et al. (2017) argue that immersion (engagement) is linked to plots that extend throughout the entire season, the attractiveness of a beginning, and the personality of the protagonists, with whom binge-viewers can develop strong ties.

4.3. Effects of experience

One factor emerges after viewing: the effects of consumption. These effects can be grouped according to their psychological, social, or physical nature. The psychological effects are gratification derived from evasion, followed by a feeling of guilt derived from the loss of control and reinforced by sedentarism and procrastination. Each of these three categories gives rise to the patterns of consumption described below.

4.3.1. Psychological effects: Gratification vs. guilt

- Indicative code (gratification): "You evade other worlds".
- Indicative code (guilt): "[…] you lose control. It is comparable to a drug; you cannot stop using it. You want to quit, but you can't". It seems that the feeling of guilt is less when the experience is shared.

The interviewees watch the series as a form of immersive entertainment. They declare to "go" fully into the story, establishing an intense connection with these series. They talk about the series, think about them at other times of the day, recommend them, identify with the characters, buy merchandising items, and even create content, usually drawings. Season endings trigger feelings of desolation and emptiness among the youngest. These effects have been studied since the Theory of Uses and Rewards (Katz et al., 1973). Pittman and Sheehan (2015) refer to experiences that distance binge-viewers from everyday life and their obligations through hedonism, avoidance, and immersion. Jones et al. (2018) even allude to escapism. This gratification is reflected in any manifestation of binge-watching.

However, in unplanned binge-watching, guilt emerges in the speech of some interviewees. Pittman and Steiner (2019) have called it post-binge regret and relate its intensity to the attention the series arouses, which depends on the degree of narrative transportation and the need to complete the narrative. The greater the attention, the less regret. The phrase "control is lost" emerges when interviewees refer to the chained viewing of episodes. From the lack of control springs, the feeling of guilt. Vice, hooking, addiction, or drug describe the experience, words that do not appear in the case of planned binge-watching.

In planned binge-watching, interviewees may also experience guilt for the perception of the behavior as unhealthy, sedentary, "confined" or "hermit", or due to the opportunity cost of time (de-Feijter et al., 2016).

Despite this, self-indulgence (Sung et al., 2018) acts as a reducer of guilt. Firstly, because of the absence of negative social valuation of binge-watching since the series is considered quality content. And secondly, by the normalization of behavior: everyone does it, therefore it is not harmful.

For all the above, planned binge-watching occurs as blameless gratification, while unplanned binge-watching leads to a duality of guilty gratification. This conflict is described by Shim et al. (2018), concluding that binge-viewers simultaneously experience negative and positive feelings, the latter reinforcing and facilitating the behavior.

4.3.2. Social: Integration vs. isolation

- Indicative code (integration): "If in a group of three, two people are watching the series, you'll be left out".
- Indicative code (isolation): "Maybe I'm going to hang out with a friend, but I tell them I'm sick and watch the series instead".

The duality observed in the discourse of the interviewees, socialization vs. isolation, is consistent with the results of Vaterlaus et al. (2019). The authors acknowledge the social character of the behavior (students claim to make new friends with it) but also warn that binge-watching can be socially isolating.

The youngest interviewees stated that they talk about series with their friends, give and receive recommendations, keep up with the latest series, watch episodes online, create WhatsApp groups around series and organize marathons. Recently, young adults are adopting second-screening practices, using another device to virtually connect with their peers while they are watching a series. This is called co-viewing (Nee & Barker, 2020; Pires-de-Sá & Roig, 2016). They consider series to be an essential tool to relate to others. Possibly they seek conformity with the group. Watching and knowing about series enhances their social integration, to the point that they consider Netflix a socialization tool (de-Feijter et al., 2016; Umesh & Bose, 2019). Ramayan et al. (2018) introduce the term binge-bonding, alluding to cohesion between those who practice binge-watching and, on the contrary, to isolation when they cannot participate in conversations because they have not watched a series.

Among young interviewees, binge-watching behavior was linked to an additional motivation: to stay ahead of their peers when watching and finishing series. Horeck et al. (2018) allude to the ritual of ending series and accumulating them as if they were trophies to discuss and give spoilers in various forums afterward. Although the interviewees argue that they practice binge-watching to avoid spoilers, the search for leadership appears as an objective in their speech: being the first to complete the season is an achievement and, on the contrary, being the member who lags could result in feelings of exclusion. Among adult interviewees, this socializing effect is observed with less intensity. Series are usually a topic of conversation, and even recommendation, among family, friends, or co-workers; they help understand jokes and cultural references. To select series, they rely on word of mouth (Pang, 2014).

A recurrent theme in the discourse of young interviewees is social isolation caused by binge-watching. When the immersion in a series is intense, the viewer develops a strong involvement that temporarily paralyzes their everyday life, including its social aspect (de-Feijter et al., 2016). Although most binge behaviors are associated with loneliness and depression, this link is not clear in the case of binge-watching (Sun & Chang, 2021). The existing research is insufficient and contradictory: while some studies have failed to demonstrate a relation between binge-watching and loneliness and depression (Ahmed, 2017; Tukachinsky & Eyal, 2018), others conclude that there is a connection.

These discrepancies may be due to understanding binge-watching as a single behavioral pattern. The differentiation of planned and unplanned binge-watching could explain the contradictions identified in the literature. Following this reasoning, the absence of negative feelings could be associated with planned binge-watching, given its social character. On the contrary, unplanned binge-watching, given its mostly individual character, could be considered both a cause of loneliness and an effect of the state of loneliness, in line with Sun and Chang (2021).

4.3.3. Physical: Harmless vs. harmful

- Indicative code (harmless): "We put the series on after dinner […]. Sometimes we watch them two by two but sometimes, already addicted, we have watched up to three episodes".
- Indicative code (harmful): "There are times in which I stayed up until eight in the morning". Some of the interviewees do not consider the practice of binge-watching to be physically harmful.

These binge-viewers manage their time and do not abuse the number of episodes watched in a single session, usually two, exceptionally three, in situations of maximum interest in the plot. Binge-watching is one of the ways in which they choose to spend their free time; it is planned and compatible with the rest of their life activities. This practice could even be considered beneficial from a cognitive, emotional, and physical perspective for those facing a health problem (Perks, 2019).

When the watching activity exceeds three episodes, the number of hours dedicated to a sedentary activity can be unhealthy. In addition, binge-watching is associated with the consumption of fast or unhealthy food (popcorn, pizza...), even compulsively: "filling your freezer full of microwavable food" (Riddle et al., 2018: 590).

Another negative physical consequence is lack of sleep, as most of them practice binge-watching at night. Some students interviewed confess that they suffer from sleep deprivation, especially during exam season. Viewers who practice unplanned binge-watching are more exposed to negative physical consequences (Riddle et al., 2018). The literature recognizes procrastination as an effect of binge-watching. Binge-viewers often postpone work and social activities – housework, schoolwork, sports – due to being immersed in the plot until they spend a full day watching a series (de-Feijter et al., 2016). Davis (2016) associates high levels of television consumption with a higher risk of heart disease and mortality from any cause, regardless of other factors such as physical activity, family, health history, age, and duration of sleep. As a conclusion to her work, she describes binge-watching as a harmful behavior and calls for further investigation of its adverse effects.

5. Proposed model

The GT approach suggests the identification of a central category or categories and their relationship with others (Borgatti, 2008). In this analysis, the intentionality of the viewing process is identified as the dominant category. Based on this category, a splitting of the phenomenon is observed both in the experience and in the results obtained by the user (Figure 5).

Figure 5. Splitting of the phenomenon

FACTORS	CONSUMPTION DISPOSITION	CONSUMPTION EXPERIENCE			CONSUMPTION EFFECTS		
CATEGORIES	INTENTION	SOCIAL DIMENSION	VIEWING UNIT	MOMENT OF SERIES' LIFE	PSYCHOLOGICAL	SOCIAL	PHYSICAL
BINGE-WATCHING BEHAVIORS	PLANNED MARATHON	Group experience	Set of episodes	Launch	Gratification	Integration	Sedentary lifestyle Bad eating habits
	UNPLANNED MARATHON	Individual experience	Separate chained episodes	Discovery	Guiltiness	Integrating effect with possible temporary isolation	Sedentary lifestyle Bad eating habits Lack of sleep Procrastination

The proposed model could be expressed in a set of tentative hypotheses susceptible to empirical verification. These hypotheses establish the influence of the categories in any of the three moments of the

process (Figure 5).

Hypothesis referred to consumption diposition:

- H1: Users who watch successive episodes of a series can face this activity in a planned way, although there may also be users who face this activity in an unplanned way.

Hypothesis referred to consumption experience: Users who view series as a planned marathon (vs. those who do an unplanned marathon) tend to:

- H2a: Perform this activity as a social practice (vs. a solitary experience).
- H2b: Visualize a defined set of episodes (vs. an indefinite succession of chained episodes).
- H2c: Watch the series immediately after launch (vs. the moment of discovery).

Hypothesis referred to consumption effect:

- H3a: Experience gratification (vs. guilt) because of this activity.
- H3b: Experience social integration (vs. isolation) because of this activity.
- H3c: Experience, because of this activity, lack of sleep and procrastination.

6. Discussion and conclusions

The definitions of binge-watching collected in the literature focus on the number of episodes of the series viewed consecutively, with few references to other factors (Flayelle et al., 2020; Merikivi et al., 2020). The research conducted in this study identifies two consumption patterns in the practice of consecutive viewing of several episodes. The analysis of the variables identified in the research leads to a splitting of the binge-watching phenomenon (Starosta & Izydorczyk, 2020). Two different manifestations emerge, even with the same number of episodes watched during the same session, based on different motivations, provoke diverse experiences, and result in disparate effects. The intention behind binge-watching is the pivot point of its dual understanding (Riddle et al., 2018). The main academic contribution of this research is the differentiation between planned binge-watching, aligned with the Theory of Planned Action, and unplanned binge-watching.

Planned binge-watching is the intentional consumption of more than two consecutive episodes of a fictional series usually of dramatic content. It has the character of an event and is planned in time like any other leisure activity. It can take place alone or accompanied (real or virtual) and happens through the television screen as the main device. The viewing unit is a set of episodes determined in advance. Often, it is practiced when a new series or entire season is released. The psychological effects of the planned marathon are mainly positive: gratification based on evasion (Jones et al., 2018). However, there are also possible negative effects: a shy feeling of guilt due to the sedentary nature of the activity and the fact that it is usually practiced in connection with unhealthy eating habits, such as fast food.

We have called unplanned binge-watching the unintentional and spontaneous chained viewing of more than two episodes of a fiction series, usually of dramatic content (Spangler, 2016; Rubenking & Bracken, 2018). It is most often a solitary activity due to its unintentional nature. The viewing unit is each individual episode, linked to the next by the curiosity aroused by the plot and the attractiveness of the protagonists, towards whom the binge-viewers develop strong bonds. The psychological effects are dual. Gratification is derived from evasion, after which appears a feeling of guilt derived from the loss of control and reinforced by sedentarism and procrastination. The absence of negative social valuation of binge-watching and the normalization of the behavior emerges as guilt-reducing factors.

Despite the possible temporary isolation of the binge-viewer, the final consequence of the unplanned marathon is integration (Anghelcev et al., 2022). However, the negative physical effects of unplanned marathons are noteworthy. It is sedentary, linked to unhealthy eating habits, and usually practiced at the cost of lost sleep. This work has important academic implications. The proposed typification of binge-watching behaviors brings some order to the understanding of the results of previous research conducted by various authors in relation to the personality traits of the binge-watcher, the application of the Uses and Gratifications Theory, the feeling of guilt or even the possible relationship with addictive behavior.

The present work has professional implications due to its topicality. This study explains the consumption patterns of audiovisual products in the current scenario (Song et al., 2022). Business competitiveness in the audiovisual sector has multiplied the abundance and availability of supply, generating

new consumption patterns that need to be described, characterized, and categorized, the latter aspect hardly been addressed by the literature so far. This work has been developed from a qualitative point of view to discover aspects not considered around binge-watching behavior. Due to the subject's social, academic, and professional relevance, further research should be conducted to test the suggested hypothesis.

Authors' Contribution

Idea, E.M.S., D.G., G.M.N.; Literature review (state of the art), E.M.S.; Methodology, D.G., G.M.N.; Data analysis, E.M.S.; Discussion and conclusions, E.M.S., D.G., G.M.N.; Writing (original draft), E.M.S.; Final revisions, D.G., G.M.N.; Project design and sponsorship, D.G., G.M.N.

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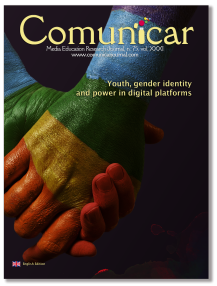

Digital media use on school civic engagement: A parallel mediation model

Medios digitales y participación cívica escolar: Un modelo de mediación paralela

Camila Contreras. Research Assistant, Department of Psychology, Pontificia Universidad Católica de Chile, Santiago (Chile) (cgcontreras@uc.cl) (https://orcid.org/0000-0001-7319-8044)
Josefina Rivas. Research Assistant, Department of Psychology, Pontificia Universidad Católica de Chile, Santiago (Chile) (jjrivas@uc.cl) (https://orcid.org/0000-0002-6112-2648)
Rosemberg Franco. PhD Student, Department of Education, Pontificia Universidad Católica de Chile, Santiago (Chile) (rfranco1@uc.cl) (https://orcid.org/0000-0002-5188-8973)
Dr. Maryluz Gómez-Plata. Researcher, Faculty of Health Sciences, Universidad del Magdalena, Santa Marta (Colombia) (mgomez@unimagdalena.edu.co) (https://orcid.org/0000-0002-1520-3236)
Dr. B. Paula Luengo Kanacri. Associate Professor, Department of Psychology, Pontificia Universidad Católica de Chile, Santiago (Chile) (bluengo@uc.cl) (https://orcid.org/0000-0001-7228-459X)

ABSTRACT

Despite the democratised access to digital media, there are still gaps in uses and opportunities according to age, sex, socioeconomic level, and location. In addition, the study about the use of digital media by children and adolescents has focused more on the risks than on the opportunities. This study analyses the relationship between different uses of digital media (socialisation, socio-political, and learning purposes), with school civic engagement. A sample of 524 students (M_{age}=12; 43.7% girls) from Santiago de Chile participated. Structural equation modelling with latent variables was used to test a parallel mediation model in which the use of socialisation in digital media is related to school civic engagement, through digital media use for socio political purposes and the digital media use for learning purposes. In addition, multigroup analysis by sex was tested. The main results showed that digital media use for socialisation has a positive effect on school civic engagement through the parallel mediation of digital media use for socio-political purposes and the digital media use for learning purposes. The multigroup analysis showed that mediation is significant in both boys and girls. The results have contributed to the expansion of knowledge about the opportunities of digital media on civic engagement in formal school contexts.

RESUMEN

A pesar de la democratización del acceso a los medios digitales, siguen existiendo brechas en los usos y oportunidades según edad, género, nivel socioeconómico y localización. Además, estudios sobre usos de medios digitales por parte de niños y adolescentes se han centrado más en riesgos que en oportunidades. Este estudio analiza la relación entre los usos de los medios digitales (socialización, sociopolíticos y aprendizaje), y el compromiso cívico escolar. Participó una muestra de 524 estudiantes (M_{age}=12; 43,7% niñas) en Santiago de Chile. Se utilizó un modelo de ecuaciones estructurales con variables latentes para probar un modelo de mediación paralelo en el que el uso de los medios digitales para la socialización se relaciona con el compromiso cívico escolar, a través del uso de los medios digitales con fines sociopolíticos y el uso de los medios digitales con fines de aprendizaje. Finalmente, se realizó un análisis multigrupo por sexo. Los resultados mostraron que el uso de medios digitales para la socialización tiene un efecto positivo en el compromiso cívico escolar a través de la mediación paralela del uso de los medios digitales con fines sociopolíticos y el uso de los medios digitales con fines de aprendizaje. El análisis multigrupo mostró que la mediación es significativa tanto en hombres como mujeres. Los resultados amplían el conocimiento sobre las oportunidades de los medios digitales para el compromiso cívico en contextos escolares.

KEYWORDS | PALABRAS CLAVE

Digital media, civic school engagement, digital citizenship, digital gender gap, adolescence, mediation model.
Medios digitales, participación cívica escolar, ciudadanía digital, brecha digital de género, adolescencia, mediación paralela.

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1. Introduction

The Internet has become a bidirectional communication, providing a new paradigm for understanding human interaction (Saputra & Siddiq, 2020). Several researchers have considered the increasing digitization as a democratising potential (Zriba, 2019; Mossberger & Tolbert, 2010). According to the Survey We Are Social (2021), the world population for 2021 is 7,830 million people, of which 59.5% actively use the Internet. In Chile, the report indicates that 82.3% have internet access. These data reflect the boost given by the Covid pandemic to social digitisation, which brought all social practices to digital environments, requiring all citizens to acquire digital skills and highlighting socio-digital inequalities.

Access to and use of the Internet have not only brought new opportunities, but have also introduced new forms of civic participation which seek to respond to the new dynamics of the 21st century, making it necessary to redefine activism with digital democracy as the axis as it leads to citizens being concerned about their empowerment, thus expanding their participation (Gil-Moreno, 2017). Furthermore, this redefinition in the form of participation in the digital society has promoted research on the uses of the Internet as indicators of participation and opportunities for children and adolescents (Livingstone et al., 2018). These opportunities to participate in the digital society have been conceptualised under digital citizenship, which does not replace the concept of citizenship, nor is it a dimension, but rather a set of practices through which civic activities are carried out in digital environments.

Therefore, it refers to the ability and use of ICTs to plan, organise, or carry out activities in the fields of social, political, economic, and academic-cultural citizenship (Mossberger et al., 2007; Yue et al., 2019; Runchina et al., 2022). Regarding the exercise of digital citizenship, since 2006, the Kids Online researchers have been studying the activities they developed on the Internet and the risks involved in digital environments, generating a typification of the types of communication where the more passive roles (the receiver of the content) are differentiated from the more active and interactive roles (participant and actor). On the other hand, understanding the uses of the Internet has identified risks associated to commercial, sexual, and aggressive activities, both at a personal and evaluative level (Livingstone & Haddon, 2009; Livingstone et al., 2018; Martin et al.,2018).

Studies on the opportunities of digitisation in children and adolescents are more limited than studies on the risks of Internet use (Vázquez-Barrio et al., 2020). In addition, for children and adolescents, digital media use can promote the development of feelings of competence in creating material and web pages, the generation of educational elements, health promotion and prevention, and support in academic achievements and goal-setting (Arab & Díaz, 2015). However, despite these opportunities, the use of these means often has a negative connotation since it carries risks such as unwanted exposure to violence, the creation of false profiles, cyberbullying, grooming, and addiction to the Internet, among others (Arab & Díaz, 2015).

Therefore, the current research seeks to contribute to empirical knowledge about the opportunities that participation in digital environments offers to children and adolescents. Furthermore, socioeconomic level, age, sex, geographic location (urban/rural), and digital skills are fundamental in differentiating factors (Sanders, 2020). In particular, the current study aims at analyzing the relationship between the use of digital media for socialisation (DSOC) and school civic engagement (CIVE), through the use of digital media for socio-political purposes (DPOL) and the use of digital media for learning purposes (DLEA). In addition, considering the digital gender gaps described by some authors (Sanders, 2020; Cabello & Claro, 2017a; Cabello et al., 2021; Masanet et al., 2021; Herranz et al., 2017), the moderating role of sex in the mediation model between DSOC and CIVE through DPOL and DLEA is analysed.

1.1. Types of digital media use by children and adolescents

Young people use digital media for different purposes. The instruments used by the international group of Global Kids Online (2022) in the dimension of activities (opportunities) and the different forms of participation of children and adolescents were grouped into uses for learning, community participation, socialisation[1], and civic participation. The learning subdimension alludes to the possibility of seeking information to acquire new knowledge either individually, through the consumption of educational content, or collaboratively, by sharing with others with the same interests (Garmendia et al., 2012; Jasso-Peña et al.,

2019). It also refers to the use of the Internet and social networks to carry out work, tasks and activities that occur in the educational environment, as well as to maintain contact with their teachers and classmates to solve doubts (Cabello & Claro, 2017a; Cabello et al., 2021; Laje & Gasel, 2019).

As for the sociability dimension, it refers to the new possibilities of bonding, socialising with others and maintaining face-to-face relationships, transcending spatial limitations, and favouring the identification and consolidation of groups with shared interests (Meikle, 2016; Runchina et al., 2022). On the other hand, the dimension of citizenship and community contemplates the extension and expansion of the possibilities of political participation through sharing one's experiences and consolidating a digital identity (Claro et al., 2021), where it becomes possible to create systems and relationships that support communities that share information dynamics about the events that afflict their local and global community, also questioning the role of digital technologies in daily life (Choi, 2016; Gleason & von-Gillern, 2018; Chen et al., 2021).

The motivations for citizen participation are those that, without adopting a political character, have the purpose of solving the problems of a community or group, while the social ones refer to the predisposition to engage in discussions on specific public issues and the need to obtain information, express opinions, and persuade others through informal political conversations.

This expansion of possibilities has given rise to new forms of participation, thus increasing the growing interest of young people in politics and social participation, actively engaging with specific issues through innovative activities carried out through social networks, which have both an informative and discursive function that allows them to connect with each other, express and share their views, emotions, and identities (Emejulu & Mcgregor, 2019; Jost et al., 2018; Kim & Yang, 2016). These new spaces of socialisation facilitate individuals to increase their capabilities to achieve their personal goals through collective activities (Consalvo & Ess, 2011), these can trigger actions that have been characterised as digital activism, that is, ways in which citizens use digital environments to influence social and political change, in addition to giving a voice to groups usually marginalised in the traditional media (Lozano & Fernandez, 2020).

The new political interests of young people respond to a generational change since they have grown up with digital media. They are especially attracted to these collective experiences that revolve around social identity, empowering them to express their feelings and opinions through new forms of political communication (Dennis, 2018). Therefore, when studying the forms of citizen participation, generational changes must be considered, adding key factors such as managing a profile on social networks or participating in online debates and discussions (Holt et al., 2013; Pangrazio & Cardozo-Gaibisso, 2020).

1.2. Citizenship participation in a digital society

Our interest in digital participation is motivated by the possibilities offered by the new digital environments, especially social networks, establishing a participatory culture characterised by peer-to-peer participation, highly interactive, based on horizontality and independence from traditional institutions (Jenkins et al., 2009). It is in this participatory culture in social networks where adolescents engage, collaborate, and create content, while connecting with a wide range of people who share their interests (Kahne & Bowyer, 2019).

It is because of the participatory culture that citizen participation in digital environments must be contemplated by education, which has the challenge of providing students with the necessary preparation for leading a responsible life in a knowledge society and guidance for the improvement of human conditions as the foundation of democracy and social justice (Luengo-Kanacri & Jiménez-Moya, 2017). In addition, it should provide young people with skills that allow them to adopt an active and critical role in the face of multimedia texts and multimodal media services, thus allowing them to be part of the information society (Dias-Fonseca & Potter, 2016; Fuentes & Belando-Montoro, 2022).

Luengo-Kanacri et al. (2021) emphasise that the role of the school should not be considered in a general way, but should allow for the specific mechanisms through which school dynamics operate in relation to individual differences in order to ensure greater civic engagement among young people. In this sense, Fernández-Prado et al. (2021) conclude that individual integration in civic action cannot be sustained only in the face-to-face or online environment but must be complemented by strong participation

in both environments in order to foster sustained engagement over time, impacting both individuals and their communities. Also, there is evidence that informal digital participation is indeed positively correlated with offline civic participation inside and outside school contexts (Días-Fonseca, 2019; Manca et al., 2021), becoming an important factor to explain mechanisms of involvement, agency, and participation in adolescents.

Gleason and von-Gillern (2018) conducted a study which proposed that digital media provide an entertaining and engaging way for young people to learn about their citizenship and civic education, while reducing barriers to participation. The use of social networks is a new way in which young people can develop their digital citizenship skills through the exchange, production, and debate of information related to politics. Through the empirical findings, they found various activities of young people both in digital environments and outside of these, ranging from participating through Twitter about political protests that are taking place live, to participating in community service projects and generating awareness and support for equitable school funding.

1.3. Digital gender gaps

In the interest of analysing public policies around digital inclusion in Chile, we define and typify the gaps in access (first-order gap), uses (second-order gap), opportunities, and rights (Cabello & Claro, 2017b). They highlighted that governmental actions have focused on access and individual connection where access is related to opportunities from the belief that its use brings benefits, without considering the persistent and systematic differences between different groups and individuals of different origins (Helsper, 2021). Regarding gender differences, they found that girls spend more time online than boys, and use the Internet more for academic purposes, while boys do it more for entertainment purposes such as playing online (Cabello & Claro, 2017a; Cabello et al., 2021).

The above reinforce gender roles and stereotypes, limiting the use by women to communicative purposes and men relating more to technology skills (Masanet et al., 2021). These differences have led to conceptualising the term digital gender gap, whose purpose is to measure the delay of women in Internet use, identifying the barriers that limit the benefits of participating in the digital society (Herranz et al., 2017; de-Andrés-del-Campo et al., 2020). The importance of typifying the differences in uses between men and women lies in the fact that the different sources of the gender gap do not act in isolation, but interact with each other, accumulating impediments in the access to ICTs for certain citizens.

Therefore, it is essential to analyse the types of digital participation (learning, socialisation, and socio-political) and their relationship with the school civic engagement of children and adolescents, by paying special attention to the differences between boys and girls. From a rights and inclusive development approach, where digital environments represent new areas of concern, it is important to safeguard the principles of equality and non-discrimination (Rotondi et al., 2020). This study will provide empirical evidence of the concept of the digital gender gap in specific domains of digital participation (learning, socialisation, and socio-political) and consider its relationship with school civic engagement.

1.4. The present study

Considering previous studies that relate the use of digital media to school civic engagement (Literat et al., 2018) and that the most frequent use of digital media by adolescents is to socialise with others (Cabello & Claro, 2017a; Cabello et al., 2021), this study aimed to explain the relationship between the use of digital media for socialisation (DSOC) and school civic engagement (CIVE). More specifically, a model was tested where the digital media used for learning and for socio-political purposes acted as parallel mediators of this relationship. In other words, we hypothesised that a higher use for socialising (e.g., communicating by video call with friends) leads to a higher use for learning (e.g., searching for information or learning new things) and socio-political (e.g., discussing politics on social media) purposes, which, in turn, predict increased civic engagement at school.

In addition, considering the digital gender gaps described by some authors (e.g., Sanders, 2020; Cabello & Claro, 2017a; Cabello et al., 2021; Masanet et al., 2021; Herranz et al., 2017), the moderating role of sex in the mediation model between DSOC and CIVE through DPOL and DLEA was analysed.

We believe that this objective, in addition to providing empirical evidence, can contribute to the design of public policies in school contexts.

2. Methods

2.1. Participants and procedure

This study was carried out in four schools (both public and subsidised) in the city of Santiago de Chile (two classrooms per school). The sample consisted of N=524 students between 11 and 15 years old (M=12 years old, SD=1.11), of which 275 were boys (52.5%) and 229 were girls (43.7%), and 20 of them did not report their gender (3.8%). Likewise, 413 students (78.8%) considered themselves Chilean and 79 (15.1%) were immigrants. The data was extracted from the wave 1 of a longitudinal project, ProCiviCo (Luengo-Kanacri et al., 2020), which is a school-based intervention aimed at promoting prosocial behaviour and civic participation for social cohesion. In this study the data prior to the intervention carried out was used.

Regarding the recruitment of the schools, they were identified in the city of Santiago, and the project was presented to the School Council and the teachers' assembly for approval. Once the alliance with the schools was established, the students and their respective parents were contacted, who gave their consent to participate after receiving all the necessary information about the project. Data were collected through a face-to-face questionnaire, which was subsequently coded for data analysis. During data collection, a member of the research team and a schoolteacher accompanied the students to answer questions about it. This project was approved by the ethics committee of the Pontificia Universidad Católica de Chile, safeguarding all ethical standards.

2.2. Measures

2.2.1. School Civic Engagement (CIVE)

To assess student's civic engagement, three items from the Civic Engagement Scale were used (See appendix). This scale is adapted from the International Study of Civic and Citizenship Education (Torney-Purta et al., 2008a; Torney-Purta et al., 2008b). The response options range from 1 (Never/Almost never) to 7 (Always). Examples of items are "You participated in activities organised by the school or the students, outside school hours (...)", "You participated in campaigns to raise money and donations". Cronbach's alpha=.672.

2.2.2. Activities (opportunities) of digital media use

To assess the use of digital media by adolescents, some items of the activities (opportunities) dimension in relation to civic participation, social relationships and learning were used from the adaptation made by Cabello et al. (2018) of the Global Kids Online instrument (2022). Response options range from 1 (Never/Almost never) to 7 (Always). Three dimensions were assessed as follows.

2.2.2.1. Socio-Political Dimension (DPOL) Four items were used to evaluate the creation of community relationships that share information dynamics about the events that affect society (See appendix). An example of the items is "Have you discussed political or social issues with other people online?". Cronbach's alpha=.672.

2.2.2.2. Learning Dimension (DLEA) Two items measured the possibility of seeking information to acquire new knowledge, using the Internet to carry out work and tasks (See appendix). An example of an item is "Have you learned something new by searching online?". Pearson's correlation=.342 $p<.001$.

2.2.2.3. Socialisation Dimension (DSOC) Two items measured the new possibilities of relating and socialising with others, transcending spatial limitations, and favouring the identification and consolidation of groups with shared interests (See appendix). An example of this scale is "Have you talked to family or friends who live further away using Skype?". Pearson's correlation=.672. $p<.001$.

3. Analysis and findings

For the descriptive and correlation analysis, we used the SPSS 25 software. The parallel mediation model where the use of digital media predicts civic school engagement was tested by structural equations modelling using MPLUS 8.3 software (Muthén & Muthén, 2017). This multivariate technique uses a conceptual model, path diagram and system of linked regression-style equations to capture complex and dynamic relationships within a web of observed and unobserved variables (Gunzler et al., 2013).

Maximum Likelihood (ML) was used as the estimation method. The following criteria were used to determine an acceptable model fit: A Root Mean Square Error of Approximation (RMSEA) $\leq$ 0.06, Comparative Fit Index (CFI) $\geq$ 0.95, Tucker-Lewis Index (TLI) $\geq$ 0.95, Standardised Residual Mean Square (SRMR) $\leq$ 0.08 indicating a good fit (Hu & Bentler, 1998).

In the model, variables were defined as latent variables (e.i., constructs or factors, which synthesise the items measured). Before testing the direct and indirect relationships, the measurement model was tested, that is, ensuring that the factorial structure was adequate. The bias-correction (BC) bootstrap approach was used to determine the significance of indirect effects (95% CI) through 5,000 resamples.

4. Results

4.1. Descriptive statistics and correlation

Table 1 shows the descriptive statistics and the correlations between variables of models. Civic school engagement was positively related to the socialisation dimension (r=0.22, p<0.01), to socio-political dimension (r=0.353, p<0.01) and learning dimension (r=0.26, p <0.01) of digital media use. In other words, adolescents with the highest digital media use for the purposes analysed show higher civic school engagement.

Regarding control variables, gender (2=girls) was negatively associated to socialisation dimension (r=-.13, p<0.01), socio-political dimension (r=-.13, p<0.01). This means that females use digital media less for these purposes than males. Also, the higher the mother's educational level, the more adolescents use digital media for socialisation (r=.10, p<0.05) and for learning purposes (r=.16, p<0.01).

Table 1. Descriptive statistics and correlations

Variables	M	SD	1	2	3	4	5	6
1. Gender (girls)								
2. Mother's education level	2.45	.50	-.08					
3. Age	12.27	1.11	-.02	-.14**				
4. School civic engagement	2.21	.62	-.08	.04	.01			
5. Socialisation dimension	2.53	.99	-.13**	.10*	.02	.22**		
6. Socio-political dimension	1.49	1.16	-.13**	.02	.21**	.35**	.29**	
7. Learning dimension	3.64	.82	-.01	16**	-.10*	.26**	.26**	.11*

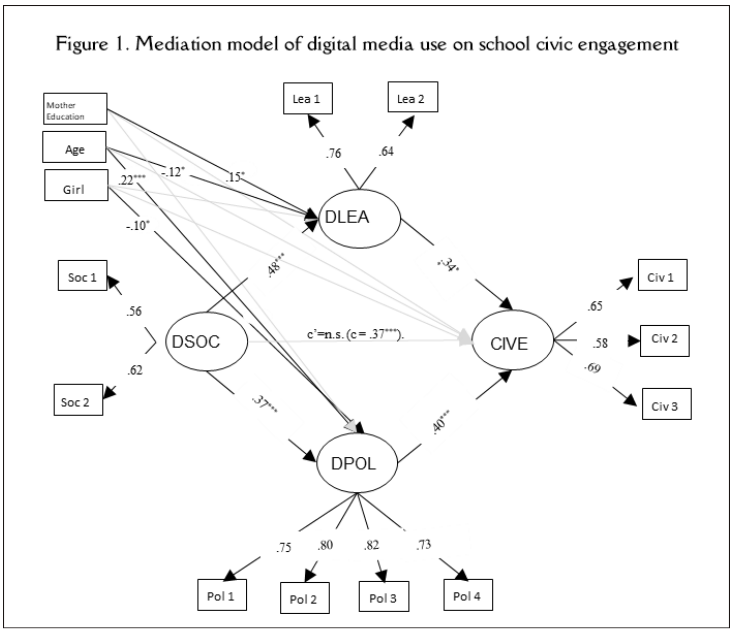
Note. 1 boy=1, girl=2.2 *p<0.05. ** p<0.01.

4.2. Measurement model

Four latent variables were included in the model: school civic engagement, digital socio-political participation, digital sociability, and digital learning. A Confirmatory Factor Analysis was conducted to analyse the measurement model. The factor loadings of all items towards their respective constructs were significant (p<0.001), indicating the one-dimensionality of each latent variable analysed. The fit indices of the measurement model were satisfactory (RMSEA=.040 [90% CI=.024, .055], CFI=0.979, TLI=.969, SRMR=.033) Chi X^2=68.32 P-Value=.0018.

4.3. Structural model

We also analysed a mediation model with MPlus to identify the indirect effect from DSOC to CIVE through the parallel mediation DPOL and DLEA. In addition, we controlled some covariables: gender, age, and mother's educational level.



Note. C=Total effect; c'=Direct effect. DSOC=Digital media use for Socialisation purposes. DLEA=Digital media use for Learning purposes. DPOL=Digital media use for Socio-political purposes. CIVE=School Civic Engagement.

Once the measurement model was verified, the effect of digital media uses for socialisation (DSOC) on school civic engagement (CIVE) was examined through the parallel mediation of digital media use for socio political purposes (DPOL) and digital media use for learning purposes (DLEA). In addition, the effects of gender, age, and mother's education level were controlled. Altogether, the structural model showed a good fit (RMSEA [90% CI]=.033 [.019, .046], CFI=0.977, TLI=.968, SRMR=.040; Chi^2=95.767 p-value r=.0049). Figure 1 shows the influencing paths in detail. The higher use of digital media to socialise is associated with higher use for socio-political and learning purposes, which, in turn, lead to high civic engagement at school. Regarding the control variables, age had a significant and positive effect on DPOL (β=.22; p<.001) and a negative effect on DLEA (β=-.12; p<.05). Gender shows a negative effect on DPOL, (β=-.10; p<.05) that is, girls use digital media less than boys for socio political purposes. The mother's educational level positively affects DLEA (β=0.128; p<.05), that is, adolescents whose mothers have a higher educational level use more digital media for learning.

4.4. Indirect effect

Table 2 shows the parallel mediation effects of DLEA and DPOL on the relationship between DSOC and CIVE. DLEA significantly mediated the relationship between DSOC and CIVE (95% CI=[.082,.314]). Similarly, DPOL mediated the relationship between DSOC and CIVE (95% CI=[.076, .238]). The direct effect between DSOC and CIVE in the model is not significant, indicating a total mediation of DLEA and DPOL. In other words, adolescents who socialise through digital media have a higher school civic engagement because they use digital media more for socio-political and learning purposes.

Table 2. Indirect effect of digital communication on civic engagement

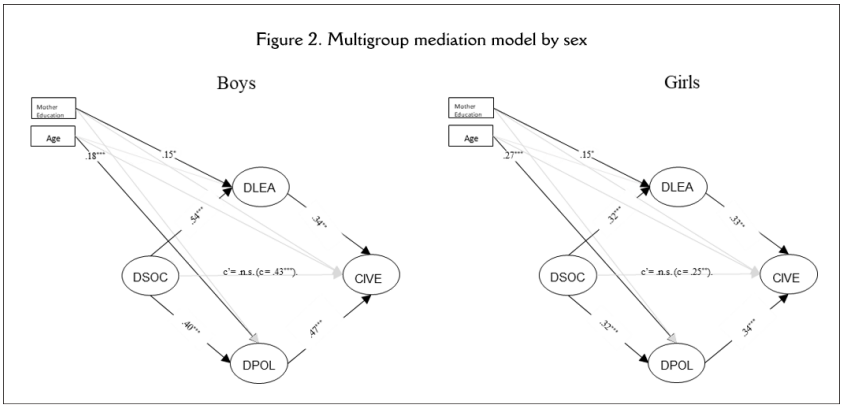
Model pathways	Point estimated	BC bootstrap 95% CI	
		Lower	Upper
Total	.372[a]	.221	.523
Total Indirect	.305[a]	.194	.476
DSOC → DLEA → CIVE	.160[a]	.082	.314
DSOC → DPOL→ CIVE	.145[a]	.076	.238
Direct effect DSOC → CIVE	.066	-.165	.288

Note. DSOC= Digital media use for Socialisation purposes. DLEA= Digital media use for Learning purposes. DPOL= Digital media use for Socio-political purposes. CIVE= School Civic Engagement. BC= Bias-corrected bootstrap. Confidence interval was constructed with 5000 resamples. [a] =The 95% confidence interval does not overlap with zero.

4.5. Gender multigroup

A multigroup analysis was used to explore gender differences in the parallel mediation model. The model with all invariant paths between groups showed a good fit (RMSEA [90% CI]=.037 [.020, .051], CFI=0.969, TLI=.964, SRMR=.055; Chi2=173.929 p-value=.0072). Figure 2 shows the influencing paths in detail.

Figure 2. Multigroup mediation model by sex



Note. c=Total effect; c'=Direct effect. DSOC=Digital media use for Socialisation purposes. DLEA=Digital media use for Learning purposes. DPOL=Digital media use for Socio-political purposes. CIVE=School Civic Engagement.

The indirect effects of DSOC on CIVE through DLEA and DPOL were significant in both girls and boys. However, as shown in Table 3, the effect sizes varied between girls and boys.

Table 3. Gender differences. Indirect effect of digital communication on civic engagement

Model pathways	Boys			Girls		
	Point estimated	BC bootstrap 95% CI		Point estimated	BC bootstrap 95% CI	
		Lower	Upper		Lower	Upper
Total	.430[a]	.244	.615	.248[a]	.107	.390
Total Indirect	.371[a]	.208	.534	.215[a]	.100	.329
DSOC → DLEA → CIVE	.182[a]	.061	.303	.105[a]	.020	.190
DSOC → DPOL→ CIVE	.181[a]	.088	.290	.109[a]	.050	.168
Direct effect DSOC → CIVE	.059	-.191	.309	.034	-.120	.188

Note. DSOC=Digital media use for Socialisation purposes. DLEA=Digital media use for Learning purposes. DPOL=Digital media use for Socio-political purposes. CIVE=School Civic Engagement. BC=Bias-corrected bootstrap. A confidence interval was constructed with 5,000 resamples. *=The 95% confidence interval does not overlap with zero.

5. Discussion and conclusions

This study aimed at explaining the relationship between the use of digital media for socialisation (very frequent among adolescents) and school civic engagement, through the mediation of other uses (for learning or for socio-political purposes). The hypothetical model that we have proposed in order to explain this relationship has shown that it is plausible that socialising through digital media is not directly related to school civic engagement, but rather indirectly, through the effect it has on the uses for learning (e.g, looking up information or learning new things) and for socio-political purposes (eg, talking about politics on social media).

Despite the risks that the use of digital media by children and adolescents may represent (Arab & Díaz, 2015), the results of this study show the potential of the use of digital media in the development and exercise of citizenship in school contexts. A high correlation between the uses of digital media for different purposes (socio-political, socialisation, and learning) is confirmed. In addition, this parallel mediation model was found to be significant in both boys and girls, although the mediation effect size is higher in boys. The use of digital media for learning and socio-political purposes was directly related to school civic engagement; however, within the model, the use of digital media to socialise was not directly related. Considering that adolescents use digital media more frequently to socialise through social network platforms (Cabello & Claro, 2017a; Cabello et al., 2021; De-la-Torre & Fourcade, 2012), we proposed a model where the use to socialise indirectly influences the school civic engagement through socio-political and learning uses. Similarly, results showed that digital media use for learning also mediates the relationship between the use for socialisation and school civic engagement. In this sense, when students use digital platforms to

socialise, to learn new knowledge and skills, or to do homework, it also predicts higher levels of school civic engagement.

The increase in telecommunications infrastructure (ICT) and the proliferation of cell phones have made evident the disparities in the way people use and take advantage of these technologies (Helsper, 2017; Helsper, 2021). Thus, the benefits of ICT use depend not only on access but also on people's individual, social, and cultural characteristics to take advantage of the opportunities available in digital environments. One of the challenges of studying the digital gap is its overlap with other forms of inequality (Herranz et al., 2017), such as gender or immigration status. The results are related to the meta-analysis of young People, Digital Media, and Engagement (Boulianne & Theocharis, 2020), which found that the way in which adolescents use online digital media has consequences for civic engagement outside (for example volunteering, participating, or protesting) and these positive impacts depend on political uses of digital media such as discussing politics online, reading or following political news, or blogging. The division by gender shows us that the use of digital media for socio-political and learning purposes as mediation mechanisms works in the same way in boys and girls. However, the strength of the relationships between the different uses of digital media and school civic engagement is stronger in boys than in girls. This is consistent with previous research that has found that men are more involved in digital content creation activities and are more related to technology, which favours a greater acquisition of digital skills compared to women (Masanet et al., 2021). Likewise, it evidences the gender gaps in the use of digital media, which could, in turn, be reflected in the difference in school civic engagement between boys and girls (Rotondi et al., 2020). One of the plausible limitations of this study, is the number of immigrant participants, which although it is not insignificant (15.1% of the total sample), we consider that they do not represent a sufficient sample to carry out comparative analyses, so it would be interesting to delve into how migratory status is related to the digital gap of the second order. Based on the above, we hope that this study can encourage future research considering the context of the pandemic and perform statistical analyses with a representative sample of migrant children, in order to explore the uses given to digital environments, in the new global context and the influence of intersectionality in this area. In addition, we are aware that these data were collected in only one country, Chile, so it would be interesting to strengthen this evidence in other places. Although structural equation modelling has shown that causal relationships are plausible (the model has shown a good fit), we do not rule out that other alternative models are also plausible, considering that the design was cross-sectional. It would be pertinent to test the model in future longitudinal studies or to compare different alternative models.

Finally, as future considerations and in terms of the contribution to the development of public politics, we believe it is relevant for educational institutions to reflect on the challenges that the digital society brings to the teaching-learning process. The school could serve as a mediator so that the daily use that adolescents make of digital media translates into civic actions, taking advantage of the enormous potential that digital media offer in learning processes and also in connection with social and political causes.

Notes

[1] This dimension was renamed as "Socialisation" due to the factor analysis carried out later, according to the theoretical label of Meikle (2016).

Authors' Contribution

Idea, C.C., J.R., P.L; Literature review (state of the art), R.F., C.C., J.R; Methodology, C.C., P.L., J.R; Data analysis, C.C., J.R., M.G.P; Results, M.G.P., C.C., J.R; Discussion and conclusions, C.C., J.R., R.F., M.G.P; Writing (original draft), C.C., J.R., R.F., M.G.P, P.L; Final revisions, C.C., J.R., R.F., M.G.P, P.L; Project design and sponsorship, P.L.

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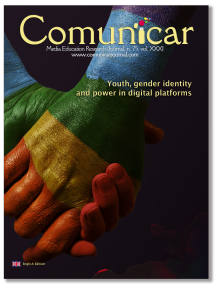

Psychosocial factors and low-risk behaviour in ICT use among adolescents

Factores psicosociales y comportamiento de bajo riesgo de uso de TIC en adolescentes

Dr. Sara Malo-Cerrato. Associate Professor, Department of Psychology, University of Girona (Spain) (sara.malo@udg.edu) (https://orcid.org/0000-0003-3561-0610)
Dr. Maria-de-las-Mercedes Martín-Perpiñá. Adjunct Professor, Department of Psychology, University of Girona (Spain) (mercedes.martin@udg.edu) (https://orcid.org/0000-0002-0922-4380)
Dr. Maria-Gràcia Cornellà-Font. Psychotherapist, Research Institute on Quality of Life, University of Girona (Spain) (mariagracia.cornella@gmail.com) (https://orcid.org/0000-0003-1616-9292)

ABSTRACT

Many current investigations have analysed adolescents' risky ICT behaviours (such as excessive or addictive use), but few have explored the characteristics of low-risk behaviour in this regard. This study aimed to explore the psychosocial profile of a sample of 593 Spanish adolescents aged 13 to 18 who have been categorized as low-risk ICT users. To this end, the low-risk ICT use group was calculated using the "multitasking while doing homework index" and a set of items on risky ICT behaviour. Chi-squared and t-tests were performed and a forward stepwise binary logistic regression was carried out to determine the explanatory variables for low-risk ICT use. The results showed that some 7.1% were classified as low-risk ICT users, with a higher percentage of girls. These users' profile was characterised by: lower digital self-efficacy with social networking applications; less generalized ICT use and a less dependent attitude; less extroversion and more agreeableness and conscientiousness; higher academic self-concept; having rules for ICT use at home; and less insecure and anxious attachment to parental figures. The variables that predicted the likelihood of low-risk ICT behaviour were: high academic self-concept; low perceived separation anxiety from loved ones; and high agreeableness scores. These results are useful for proposing psycho-socio-educational interventions to promote healthy ICT use.

RESUMEN

Muchas investigaciones actuales analizan comportamientos de riesgo de adolescentes en el uso de TIC (como el uso excesivo o adictivo), siendo escasas las que exploran las características del comportamiento de bajo riesgo. El objetivo fue analizar el perfil psicosocial de una muestra de 593 adolescentes españoles de 13 a 18 años. El grupo de uso de TIC de bajo riesgo se calculó mediante: «el índice de multitarea mientras se realizan tareas escolares» e ítems sobre conductas de riesgo en el uso de TIC. Se realizaron pruebas Chi-cuadrado y pruebas t y una regresión logística binaria por pasos para predecir el bajo riesgo de uso de TIC. Los resultados mostraron que el 7,1% se clasificó como usuario de TIC de bajo riesgo, con mayor porcentaje de chicas. Su perfil se caracterizaba por: menor autoeficacia digital en redes sociales, menor uso generalizado de las TIC y una actitud menos dependiente; menor extroversión y mayor amabilidad y responsabilidad; un mayor autoconcepto académico; disponer de normas de uso de TIC en el hogar; y un apego menos inseguro y ansioso hacia las figuras paternas. Las variables que predijeron un comportamiento de bajo riesgo fueron: un elevado autoconcepto académico; una baja percepción de ansiedad por separación de los seres queridos; y una puntuación alta en amabilidad. Estos resultados son útiles para proponer intervenciones psico-socio-educativas que promuevan el uso saludable de las TIC.

KEYWORDS | PALABRAS CLAVE

ICTs, digital self-efficacy, digital attitude, personality, self-concept, family.
TIC, autoeficacia digital, actitud digital, personalidad, autoconcepto, familia.

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1. Introduction and state of the art

Over the past decade, numerous investigations have attempted to identify the variables associated with risky behaviours on the Internet. One such example is the study of psychological and social variables that predict excessive use of ICTs (Information Communication Technologies) in adolescence due to the psychological impact this can cause (Helsper & Smahel, 2020; Kuss et al., 2020; Martín-Perpiñá et al., 2019a). Excessive ICT use occurs when the number of hours of use do not allow young people to lead a normal life (Malo-Cerrato et al., 2018; Vondrackova & Šmahel, 2019).

A recent meta-analysis on addictive Internet behaviour (also understood as problematic or excessive use) reveals how the scientific literature distinguishes between personality and environmental variables when predicting this behaviour in adolescents (Lozano-Blasco et al., 2022). At the level of individual personality variables, some of the risk factors would be introversion or low self-esteem, whereas agreeableness or conscientiousness would act as protective factors. In terms of environmental elements, adolescents' relationships with interpersonal contexts such as family and school stand out. It is thought that dysfunctional families and families with internal conflicts may be predisposed to excessive use, while good relationships with teachers and a good school climate could play a protective role. The same study highlights a disparity in the impact of the gender variable on this type of risky behaviour. Although a digital divide has been observed in girls in recent decades, these differences are currently considered to have been eradicated in European countries (Smahel et al., 2020), and while prior studies suggest that girls are more likely to make excessive use of social networks (Malo-Cerrato et al., 2018; Müller et al., 2017), a recent study of 19 European countries found that these differences were minimal or non-existent, with high frequencies of social network use being detected in both genders (Smahel et al., 2020). Although we understand the vital importance of determining which profiles are most associated with high-risk behaviours (such as excessive ICT use) in the digital environment, we focused our research question on the psychological and social profile of adolescents who present a low-risk behaviour with regard to ICT use. This alternative approach is not common in the recent literature and there have been few publications on this topic. One example would be Gudmundsdottir et al. (2020), who examined the responsible use of ICTs in two student teachers' samples in Spain and Norway.

In order to define the low-risk profile, we have used the following: a) a list of indicators of risky behaviours in the use of ICTs, such as having problems at school or having made excessive use of technologies (based on Livingstone et al., 2011), and a question regarding making new friends on the Internet. In respect of this, some studies have indicated that one of the online activities reported to be the highest risk among children and adolescents is related to the behaviour of communicating with new people they have never met face-to-face (Livingstone et al., 2011; Livingstone & Stoilova, 2021); and b) an index related to media multitasking behaviour while doing homework (henceforth IMMHW). There is a broad scientific consensus regarding the large presence of this behaviour among adolescents (Ettinger & Cohen, 2020) and its negative consequences on learning and academic performance, which are associated with high levels of distraction (Luo et al., 2020; Martín-Perpiñá et al. 2019b; Rogobete et al., 2021).

We also use the Big Five model (Costa & McCrae, 2004) to explore the personality profile of those adolescents who display low-risk behaviours with regard to ICT use. People who score highly on agreeableness (kind, friendly, trusting and trustworthy) and conscientiousness (responsible, hard-working and diligent) generally avoid badmouthing and seeking the attention of others (Seidman, 2013). In contrast, extroverted individuals (extroverted, gregarious and sociable) with high levels of neuroticism (depressed, fearful and anxious) and high openness to experience (creative, perceptive and reflective) tend to use ICTs to communicate more frequently (Marshall et al., 2015), and may therefore be more exposed to more high-risk behaviours of ICT use. A recent study on problematic social media use shows that high levels of extraversion and low openness are related to social media overuse and phubbing (an individual's withdrawal from interpersonal communication, p. 258), and low agreeableness with creeping (passive social media browsing, p. 259) and catfishing (altering one's identity on social media, p. 259) (Kav i et al., 2019). The intensive use of certain technologies among young people has a negative impact on their self-concept in general. Taking a sample of young university students, Castro-Sánchez et al. (2019) found that those who played video games less had a greater academic and social self-concept, while the most

intensive use of this technology had a negative impact, especially on academic self-concept. In respect of this, we can state that self-concept appears in abundant studies (carried out in different cultural contexts) as a protective factor against problematic behaviours with regard to the use of technologies that could predispose adolescents towards addiction (Arafa et al., 2019; Echeburúa, 2012). However, the issue of access to technologies is no longer related only to age (Holloway et al., 2013), but rather to the opportunity and model of use offered by the family with regard to digital device management. Aspects such as family members perceiving a high ICT use or not having rules for ICT use at home have been identified as risk factors when it comes to excessive use among the adolescent population (Martín-Perpiñá et al, 2019a; Malo-Cerrato et al., 2018). Recent research seems to indicate how the model of family technology consumption can interfere with the behaviour and development of the child at an increasingly younger age (Coyne et al., 2020). Furthermore, the family is the first interrelational context in which affective bonds are created among members. In recent years, numerous studies have explored the role that this type of attachment plays in relation to the addictive or problematic use of technologies among adolescents and young people. Kim and Koh (2018) observed how the avoidant attachment style, mediated through self-esteem and anxiety, explained addictive smartphone use among adolescents. Similarly, loneliness and depression appear as mediating psychological constructs between the insecure bond and smartphone addiction (Kim et al., 2017). Along the same lines, Ozteke et al. (2017) showed that preoccupied and dismissing attachment styles are predictors of problematic Internet use among young people. Other authors, such as Ching and Tak (2017), found that positive parenting styles - both authoritarian and permissive - are related to the development of secure bonds, which, in turn, generate a greater capacity for self-regulation in adolescents, the latter construct acting as a protective factor against addictive smartphone use. In order to address gaps in the previous literature, the aim of the present study is to explore the psychological and social profile of adolescents aged 13 to 18 who have been categorised as low-risk ICT users. Specifically, the profile of these subjects is explored in relation to:

- Their perceived level of digital self-efficacy, uses and attitudes towards ICTs.
- Their personality profile and self-concept in this regard.
- The family context in relation to the perception of ICT consumption.
- Relationships and attachment styles with family members.

Which of the variables explored increases or decreases the probability of low-risk ICT use behaviours at these ages?

2. Materials and methods

2.1. Participants

From a total population of 5,365 pupils studying secondary and upper secondary education and vocational training in the Alt Empordà region (Girona, Spain), a random sample (n=1,218) was selected using the multi-stage cluster sampling technique. The final sample comprised 997 students (90.5% participation) from six schools and colleges, mostly public (91.6%), in the province of Girona. A subsample of 593 participants aged 13 to 18 (M=15.50; SD=1,240) was selected for the purposes of this research, since these were the ones who responded to all of the scales explored in the study. With regard to gender, 55% were girls, and as for school year, the students were in Years 10 and 11 (n=323) or 12 and 13 (n=244) of secondary education, or in vocational training (n=26).

2.2. Instruments

2.2.1. Scales used to define low-risk ICT use

Index of Media Multi-tasking while doing homework (IMMHW). This index was calculated using an adaptation of the scale developed by Ophir et al. (2009). It was calculated from the question "How often do you do the following activities at the same time as studying or doing your homework? (1=never and 5=continuously)". The internal consistency for this study was .82. The Media and Technology Usage and Attitudes Scale (MTUA) (Rosen et al., 2013). This consists of 60 items grouped into 15 sub-scales that evaluate the frequency of use of and attitudes towards ICTs. Using the five-item scale referring to the Number of friends on Facebook/Instagram, which is evaluated on a 10-point numerical scale (0, 0-10,

10-50, 51-100, 101-175, 176-250, 251-375, 376-500, 501-750, 751 or more), the following question was used: "How many friends have you met online and never in person?"

List of items related to problems or negative experiences as a result of ICT use (mobile, tablet or computer) (created ad hoc by the authors and based on Livingstone et al., 2011): "I have had performance problems at school"; "I have used them excessively (I have spent more hours than usual on them)"; "I have lied or impersonated someone else"; "I have said inappropriate things"; "I have spent more money than I should have"; "I have consulted pages with inappropriate content for my age". The response to this scale was dichotomous (Yes/No).

2.2.2. Scales used to analyse adolescents' uses of and attitudes towards ICTs

Perceived digital self-efficacy (created ad hoc by the authors). The question used was: "To what degree do you think you master the following tools and applications: Word; Excel; PowerPoint; Prezzi; blog creation and edition; Google Drive or other cloud storage platforms such as iCloud or Dropbox; Facebook; Twitter; Instagram; WhatsApp; video creation and editing; participation in online debates or conversations". This was evaluated on a scale from 1 (Not at all) to 5 (Very high). The Cronbach's Alpha for this scale was .76. Media and Technology Usage and Attitudes Scale (MTUA) developed by Rosen et al. (2013). The frequency of use of the following subscales was explored: smartphone use; general social network use; Internet search; e-mail use; and use of media designed for sharing. In addition, the following subscales related to ICT attitudes were considered: positive (.74), negative (.63), and anxiety/technological dependence (.83). This was evaluated on a scale from 1 (Never) to 10 (Continually).

2.2.3. Scales used to determine personality profile

NEO Five Factor Inventory (Costa & McRae, 2004): a shortened version of the NEO PI-R was used, which evaluates five personality traits and consists of 60 items (0=Totally disagree and 4=Totally agree). The Cronbach's Alphas for each dimension were: Neuroticism .68, Extraversion .60, Openness to Experience .65, Agreeableness .53 and Conscientiousness .69. Catalan version of the AF5 Self-concept (Malo-Cerrato et al., 2014): consisting of 30 items and including the five dimensions (Family, Academic, Social, Emotional, Physical) (0=Never and 10=Always). The psychometric properties were very good for this study and similar to those of the original scale: internal consistency ranged from .75 (social) to .91 (academic).

2.2.4. Scales to determine family context for ICT use and affective family relationships

Self-attributed family ICT consumption type (version adapted from Casas et al., 2007). This is a single-item scale that asks participants about their perceptions regarding their parents' (father/mother) consumption, based on five categories of responses (1=Your father/mother never or nearly never uses it; 2=Your father/mother is a low consumer; 3=Your father/mother is an average consumer; 4=Your father/mother is quite a high consumer; 5=Your father/mother is a very high consumer). Rules for ICT use at home (version adapted from Hiniker et al., 2016). A question was created with a dichotomous answer (Yes/No) to explore whether there are any established rules of use for ICTs (mobile, computer, tablet, etc.) at home. Spanish version of Cartes, Individual Relationship Models, reduced version (CaMir-R) (Balluerka et al., 2011). This short version of the CaMir test assesses the mental representation of seven attachment dimensions based on 32 five-point Likert response items (1=Strongly agree and 5=Strongly disagree): "Security: availability and support of attachment figures" being related to secure attachment; "Family concern" and "Parental interference" to an anxious insecure attachment; "Self-sufficiency and resentment towards parents" to an avoidant insecure attachment; and finally, "Childhood trauma" to the disorganized attachment. "Parental authority value" and "Parental overtolerance" are related to representations of the family structure. Internal consistency for this study ranged from .57 for "Parental authority value" to .84 for "Security", with the exception of "Parental permission" (.45). These values corresponded to those detected in the study by Balluerka et al. (2011), who considered them acceptable for scales with fewer than eight items.

2.3. Procedure

Permission was requested from the Autonomous Government of Catalonia's Department of Education, the directors of the schools and colleges and the students' parent associations, reporting the objectives of the research. Confidentiality in the use of data and anonymity were guaranteed both to those in charge of the schools and colleges and to the participating adolescents. The questionnaire was divided into two parts to avoid subject fatigue, and was administered in their classrooms in two sessions of one hour, with the support of two investigators. It being a study involving human beings, the ethical norms of the 1964 Declaration of Helsinki and its subsequent modifications were followed.

2.4. Data analysis

Two groups were created to explore the general objective: a low-risk use group and a normative use group. These were determined according to three scales: 1) the IMMHW: the mean score of the index was calculated and a standard deviation (henceforth SD) was added (2.38+.71).

Those participants who scored above the mean score of 3.09 were considered to have a higher IMMHW, while those who scored 1.67 or less (mean-1 SD) were considered to belong to the group with a low IMMHW; 2) the MTUA-S: those subjects who marked the options "0" friends and "1-10" friends (referring to Facebook/Instagram and their friends online) in response to the question "How many friends have you met online and never in person?" were selected, and 3) participants who responded that they had NOT experienced problems or negative experiences as a consequence of ICT use were also selected. The value "0" was assigned to the normative use group and "1" to the low-risk use group.

Chi-squared tests or *t*-tests were performed for the first fourth objectives, depending on the type of variables explored, and a forward stepwise binary logistic regression was carried out for the last objective in order to determine the explanatory variables for low-risk ICT use. All analyses were performed using the SPSS statistical package, version 27.0. The minimum level of statistical significance required in all tests was $p<.05$.

3. Analysis and findings

3.1. Socio-demographic profile and prevalence of the low-risk ICT use group

The prevalence of boys (n=12) and girls (n=30) comprising the low-risk ICT use group was 7.1% of the total, with the percentage of girls (71.4%) being significantly higher ($\chi 2=4.944$; $p=.026$) than that of boys. The mean age was 15.29 (SD=1.274), with no statistically significant differences observed.

3.2. Perceived digital self-efficacy and uses of and attitudes towards ICTs

The participants in the low-risk ICT use group perceived themselves as being significantly more competent in the use of PowerPoint ($t_{(63.58)}=-3.266$; $p=0.002$; $d=.89$), while they reported a lower mastery of Facebook ($t_{(46)}=3.039$; $p=0.004$; $d=1.33$), Twitter ($t_{(50.88)}=3.856$; $p<0.005$; $d=1.60$), Instagram ($t_{(45)}=3.036$; $p=0.004$; $d=1.26$) and Whatsapp ($t_{(45.09)}=2.510$; $p=0.016$; $d=0.68$), when compared to the other participants. They also reported less use of ICTs in relation to: activities that can be carried out using a smartphone (e.g. using mobile apps) ($t_{(591)}=3.405$; $p=0.001$; $d=1.80$), social media in general (e.g. uploading photos to a social media platform) ($t_{(591)}=4.450$; $p<0.005$; $d=1.92$), searching the Internet (e.g. for photos) ($t_{(591)}=3.430$; $p=0.001$; $d=2.27$), sharing on social media (e.g. watching video clips on the computer) ($t_{(591)}=2.651$; $p=0.008$; $d=1.87$), sending text messages ($t_{(591)}=3.301$; $p<0.005$; $d=2.07$), making phone calls ($t_{(591)}=2.112$; $p=0.035$; $d=2.25$), playing video games ($t_{(591)}=3.375$; $p=0.007$; $d=2.35$) and watching TV ($t_{(591)}=2.981$; $p=0.003$; $d=2.14$). This group also showed a significantly less dependent/anxious attitude towards ICTs ($t_{(47,163)}=3.152$; $p=0.003$; $d=1.10$) than the normative use group.

3.3. Personality and self-concept

Statistically significant differences were observed in the dimensions of extraversion ($t_{(591)}=1.960$; $p=0.05$; $d=6.03$), agreeableness ($t_{(591)}=-3.343$; $p=0.001$; $d=5.21$) and conscientiousness ($t_{(591)}=-4.929$; $p<0.005$; $d=5.93$): the low-risk ICT use group scored higher in conscientiousness and agreeableness and lower in extraversion. Regarding self-concept, differences were observed in reference

to academic self-concept ($t_{(56,617)}$=-7.466; p<0.005; d=1.84), the highest scores being found among the low-risk ICT use group.

3.4. Family context with regard to the use of ICTs

This study has explored how adolescents categorize their parents as ICT consumers, and no significant differences were observed between the two groups with regard to fathers and mothers. A total of 29.8% of the adolescents reported having rules at home when it comes to ICT use, with differences being statistically significant when comparing the two groups: 26.8% belonged to the low-risk ICT use group and the remaining 3% to the normative group ($\chi^2_{(1)}$=3.653; p=.05).

3.5. Dimensions in CaMir-R

Regarding individual models of parental relationship and affective bonding, statistically significant differences were found for the factor "family concern" ($t_{(591)}$=-2.117; p=.035; d=.77), those adolescents who present a low-risk use of ICTs displaying less concerned attachment. Analysing all the items on this scale, significant differences appeared in: "I have the feeling that I would never get over the death of one of my loved ones" ($t_{(49.952)}$=-3.428; p=.001; d=1.28), which corresponds to the family concern factor and "My parents have given me too much freedom to do anything I want" ($t_{(591)}$=-1.912; p=.05; d=.94), which refers to the factor parental permissiveness, representing family structure. The low-risk group of adolescents scored higher in both cases, which reflects greater disagreement with these statements.

3.6. Factors predicting low-risk ICT use

A binary logistic regression was carried out following the forward stepwise method (Wald). The dependent variable was low-risk ICT use, and those variables that showed a statistically significant relationship in the previous analyses were included as co-variables. The model correctly classified 92.9% of the participants and explained 28% of the variance (Nagelkerke's R2=.285).

Those variables found to increase the probability of low-risk ICT use were as follows: reporting a high academic self-concept (OR=1.573; IC 95%=1.230–2.013), having a low perception of separation anxiety from one's loved ones (OR=1.448; IC 95%=1.111–1.888) and a high score in the agreeableness dimension (OR=1.074; IC 95%=1.002–1.150); in contrast, being a boy (OR=.414; IC 95%=.187-.918), making greater use of social media in general (OR=.725; IC 95%=.598–.878), perceiving high self-efficacy in the use of Twitter (OR=.774; IC 95%=.603–.992) and a high level of TV use (OR=.823; IC 95%=.677–.999) reduce the likelihood of low-risk ICT use (Table 1).

Table 1. Psychosocial variables included in the equation for the binary logistic regression model that predicts low-risk behaviour of ICT use

Steps	Variables	B	E.T	Wald	df	p	OR	IC 95%	
Step 7 (g)	Gender(1)	-.881	.406	4.709	1	.030	.414	.187	.918
	Twitter	-.257	.127	4.104	1	.043	.774	.603	.992
	AgreeablenessNEOFFIVIR	.071	.035	4.078	1	.043	1.074	1.002	1.150
	AF5__AcademicVIR	.453	.126	13.003	1	.000	1.573	1.230	2.013
	MTU__GeneralSocialMediaUsageVIR	-.322	.098	10.760	1	.001	.725	.598	.878
	MTUA_TViewingVIR	-.195	.099	3.870	1	.049	.823	.677	.999
	I have the feeling that I would never get over the death of one of my loved ones	.370	.135	7.487	1	.006	1.448	1.111	1.888
	Constant	-5.948	1.505	15.625	1	.000	.003		

Note. Variable(s) introduced in step 1: AF5__AcadèmicVIR; b. Variables specified in step 2: MTU_GeneralSocialMediaUsageVIR; c. Variables specified in step 3: Twitter; d. Variables specified in step 4: I have the feeling that I would never get over the death of one of my loved ones; e. Variables specified in step 5: AgreeablenessNEOFFIVIR; f. Variables specified in step 6: Gender; g. Variables specified in step 7: MTUA_TViewingVIR.

4. Discussion and conclusions

The main aim of this study was to describe the psychosocial profile of a sample of 13 to 18-year-old adolescents who present low-risk ICT behaviours. A higher prevalence of girls than boys was identified in the low-risk ICT use group and age does not seem to be a discriminating element. Of the total sample,

7.1% of the adolescents displayed low-risk ICT use. Although the digital gap between genders with regard to ICT access is decreasing (Smahel et al., 2020), some previous studies have confirmed that girls are more intensive users (Müller et al., 2017). In terms of risk behaviours, girls are more frequently identified with problematic situations as a consequence of the use of ICTs and social networks (Malo-Cerrato et al., 2018; Smahel et al., 2020). Furthermore, girls also speak more with their parents about what they do online (Smahel et al., 2020), this is considered a behaviour that protects against online risks (Durager & Livingstone, 2012). The results of the present study would seem to indicate that girls are at the two extremes when it comes to technology use: on the one hand, their use of ICTs and social networks is more excessive (high-risk), while on the other it is also more adaptive (low-risk). This points to the importance of carrying out differentiated psychoeducational interventions according to gender and type of use in order to promote online safety. The first of the specific objectives of the study was to explore the perceived level of digital self-efficacy, uses and attitudes towards ICTs. With regards to computer applications that may be related to greater ICT use in the academic field, such use is found to be more frequent among adolescents who present a low-risk behaviour with regard to ICT use. That being said, however, those adolescents who present a low-risk profile perceived themselves as having lower digital self-efficacy than other adolescents when it comes to tools used for more relational and communicative tasks. Furthermore, the two applications in which both groups perceived themselves as having greater digital competence were WhatsApp and Instagram (in that order), with those in the normative group scoring significantly higher in this regard. This greater perceived self-efficacy in the aforementioned social networks by the normative group may be explained by them accessing these applications more frequently for more social and recreational purposes, rather than educational ones. In this regard, previous research has indicated that providing and receiving social support online is a predictor of more intensive ICT use (Tang et al., 2016).

The second aim of this study was to determine the personality profile and self-concept of adolescents categorised within the low-risk ICT use group. Similarly, to studies that have identified differentiated personality characteristics between the group of adolescents who make excessive use of ICTs and the normative group (Helsper & Smahel, 2020; Kuss et al., 2020; Malo-Cerrato et al., 2018; Martín-Perpiñá et al., 2019a), this study also found different personality traits between those adolescents who present low-risk behaviours of ICT use and those who do not. The adolescents in the low-risk behaviour group were characterised as being sincerer, empathetic, considerate and supportive (high levels of agreeableness) and having greater self-discipline, sense of duty, order, punctuality and scrupulosity (greater conscientiousness), as well as lower levels of extraversion. These results may be related to previous findings, namely that the conscientiousness factor is a good predictor of healthy behaviours (Singh, 2022), and that agreeableness and conscientiousness are related to a lower risk of developing addictive behaviours, even defining them as protective factors in the use of ICTs (Schou-Andreassen et al., 2013; Martín-Perpiñá et al., 2019a). Regarding the lower extraversion scores, these could be explained by a lower desire for social interaction among this group of adolescents. High extraversion is related to risky behaviours such as problematic use of ICTs (Atroszko et al., 2018; Panda & Jain, 2018; Kav i et al., 2019), which is, in turn, associated with a greater need to be in contact with people (Marshall et al., 2015) and having an impulsive and carefree character. In contrast, low scores in this regard are a distinctive feature of the personality profile of adolescents with low-risk behaviours in ICT use, defining them as individuals with a high sense of duty, greater self-discipline and high self-control (Costa & McRae, 2004).

Regarding self-concept, this turns out to also be a differentiating construct between the two profiles in terms of the academic dimension. Adolescents in the low-risk ICT use group award themselves a higher self-assessment in the academic world (in relation to their teachers, classmates and themselves), and therefore report being more satisfied with their role as students than those in the normative group. This result could be related to previous findings that high self-esteem and high self-concept in adolescents have been considered a protective factor when it comes to addictions to ICTs and social networks (Echeburúa, 2012), and that academic self-concept is a protective factor against their excessive use (Arafa et al., 2019; Castro-Sánchez et al., 2019; Wachs et al., 2020). The third aim of this work was to explore the role played by how adolescents perceive their parents' ICT consumption. Although statistically significant differences

were not observed between the two groups of ICT users, according to the adolescents' perceptions, it is suspected that there is generally little mediation and normative regulation on the part of the family nucleus in this regard. The data show that 70% of the adolescents studied reported not having norms related to ICT use at home. In addition, among those who did perceive there to be some, the highest percentage corresponded to the low-risk ICT use group. These results may indicate an absence of or scarce parental supervision, with non-existent or inconsistent norms, far from promoting adaptive ICT use within the family context (Echeburúa, 2012). This idea is reinforced in the present study, since when exploring the parental relationship and affective bonding (fourth objective), it was found that those adolescents with low-risk ICT behaviour perceived having a less permissive family structure, as well as a less concerned and more secure attachment style, in line with previous studies (Kim et al., 2017; Ozteke et al., 2017). In light of these results, it is worth emphasising the need to provide adults with effective tools, given that, in their role as models of consumption, they must provide their children with effective media regulation strategies adapted to the times in which we live and the demands and needs of each adolescent (Durager & Livingstone, 2012; Zaman et al., 2016), thereby progressively promoting greater autonomy in decision-making and in the security that this accompaniment offers adolescents (Livingstone et al., 2017). With regard to the final aim, those variables that increase the probability of low-risk ICT use were found to be high academic self-concept, low perception of separation anxiety from loved ones and high levels of agreeableness. In contrast, being a boy, having a high use of social media in general, perceiving a high self-efficacy in the use of Twitter and having a high consumption of television were found to reduce the likelihood of low-risk behaviours in relation to ICT use.

By way of conclusion, in response to a current psycho-socio-educational need in the field, this study adopted a scientific approach to the concept of low-risk ICT use among adolescents. The subject matter is both original and novel, because it is in an incipient phase where there is no substantial theoretical framework of reference (Gudmundsdottir et al., 2020). Although much of the literature focuses on the negative consequences that high-risk ICT behaviours (such as excessive or addictive use) can entail, it is relevant to continue contributing new scientific data and studies that allow the documentation of, and support for, interventions based on preventing and promoting healthy ICT use. In response to the main research question, the study confirms that low-risk ICT use results from a combination of variables of a more personal nature, as well as elements from the social context. Fostering psychological aspects such as conscientiousness, agreeableness and the capacity for self-regulation may prove to be key elements in healthy ICT use. Specific adolescent interventions should be developed in order to promote empathy, prosociality and social skills (related to agreeableness) on the one hand, and psychoeducation for the teaching of self-conscientiousness strategies and self-control (related to conscientiousness) on the other. Thus, a central element in avoiding risky behaviours with regard to ICT use will be the provision of actions that allow children and adolescents to develop socio-emotional skills, such as good academic self-concept or the development of positive relationships in the school and in the family contexts (OECD, 2015). The new media literacy points in this direction by highlighting the relevance of learning in order to work collaboratively, within a network, critically and respecting the opinions of others. Furthermore, this study reinforces the relevant role of relational and affective bonding models with the family nucleus. As recent studies have pointed out, positive parental models that generate secure relationships are the basis for fostering a capacity for autonomy and self-regulation among boys and girls, protecting them from the potential risks associated with less adaptive or functional ICT use (Prats-Fernández et al., 2018). This must be accompanied by models of media regulation, bearing in mind the characteristics of each family and the age and psychological maturity of the children.

This study has its limitations. The sample is representative of a specific age group and region, which must be taken into account when extrapolating the results to other social and cultural contexts. The measurement instruments are self-reported, which could also lead to a bias when collecting data. Future studies should therefore be supplemented with more objective data, such as hours of consumption and other such indicators currently available on smartphones. As it is a cross-sectional study, the importance of collecting data in a systematic way in order to establish causal relationships was paramount. The regression model explained a moderate variance (28%), which indicates that there are probably other

variables related to personality and the social context that should be included in future research when investigating the profiles of adolescents in this area.

Authors' Contribution

Idea, S.M., M.M.; Literature review (state of the art), S.M.; Methodology, MG.C.; Data analysis, S.M.; Results, M.M., MG.C.; Discussion and conclusions, S.M., M.M., MG.C.; Writing (original draft), S.M., M.M.; Final revisions, S.M., M.M., MG.C.; Project design and sponsorship, S.M., M.M.

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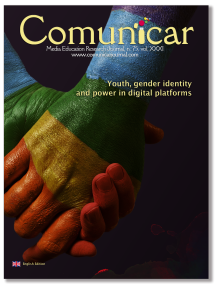

The student self-assessment paradigm in MOOC: An example in Chinese higher education

Paradigma de autoevaluación de estudiantes en MOOC: El caso de la educación superior en China

Tingting Duan. PhD Student, School of Marxism, Northwestern Polytechnical University, Xi'an (China) (duantt417@126.com) (https://orcid.org/0000-0003-4962-4415)
Dr. Binghui Wu. Associate Professor, International Business School, Shaanxi Normal University, Xi'an (China) (vcmd@163.com) (https://orcid.org/0000-0003-0031-7529)

ABSTRACT

Although scholars have proposed many types of self-assessment methods. There are still many teachers in China who consider that student self-assessment is "difficult to implement". This paper aims to optimize the assessment of MOOC learning, and to establish an integrated student self-assessment paradigm with "student-centered, teacher, and peer auxiliary". We started by selecting nine key factors that influence the implementation of self-assessment in MOOCs. Then, we clarified the relationship between the nine factors by using the interpretative structure model (ISM) and the MICMAC analysis, and a six-level paradigm of integrated student self-assessment was established. Moreover, we put forward the following suggestions to optimize student self-assessment in MOOC learning. First, it's necessary to consider student self-assessment in MOOCs as a formative assessment method. Second, universities should enhance student awareness of self-assessment through publicity. Third, institutions of higher education could set up assessment courses to enhance the quality of assessment of students. Fourth, schools should optimize the environment of student self-assessment with the help of technology. This study is of great significance for students to make self-assessment become the basis of online learning and thus perfect the research on MOOC learning.

RESUMEN

Los estudios han propuesto varios tipos de métodos de autoevaluación, sin embargo, muchos profesores, en el país, todavía consideran que la autoevaluación de estudiantes es «difícil de implementar». El objetivo de este artículo es optimizar la evaluación del método MOOC y establecer un paradigma integrado de autoevaluación para los estudiantes, en base de «centrado en estudiantes, asistido por profesores y compañeros». Se han seleccionado nueve factores clave que influyen en la implementación de autoevaluación del MOOC, y sobre esta base, a través del modelo de estructura interpretativa ISM y el método de análisis MICMAC, se han definido las relaciones entre estos factores y se ha establecido un paradigma integrado de seis niveles de la autoevaluación de estudiantes. Además, se han dado unas proposiciones para optimizar la autoevaluación del MOOC. En primer lugar, se necesitan utilizar la autoevaluación del MOOC como un método de evaluación formativa. En segundo lugar, las universidades deberían, mediante la publicidad, aumentar la conciencia de los estudiantes sobre la autoevaluación. En tercer lugar, las universidades pueden ofrecer programas de evaluación para mejorar la calidad de la evaluación de los estudiantes. En cuarto lugar, se utilizan los medios tecnológicos para optimizar el entorno de autoevaluación de estudiantes. Este estudio es significativo para hacer la autoevaluación como una base del aprendizaje online, y así, promover los efectos del MOOC.

KEYWORDS | PALABRAS CLAVE

MOOC, MOOC learning, self-assessment, interpretative structure, lifelong learning, cognitive learning.
MOOC, aprendizaje MOOC, auto-evaluación, estructura interpretative, aprendizaje permanente, cogniciones del aprendizaje.

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1. Introduction

In recent years, massive open online courses (MOOCs) have become quite popular. Popular does not mean regular. MOOC faces the challenge of not being recognized as "regular" courses (i.e., the ones taken at traditional learning institutions). Shrader et al. (2016) found that MOOC learners described different preferences for exploratory or instructor-directed instructional strategies. The implications for the instructional design of MOOC for attitudinal learning included recognizing that MOOC learners often view MOOC more as entertainment than formal education. MOOC is only seen as an auxiliary way to upskill. One of the major reasons for this is the assessment in an unsupervised environment, for example, the problems of test takers' online searches or interaction with others to find the answers to test questions (Beg et al., 2020). As a form of free and self-paced education, MOOC often does not count toward a formal university qualification. In addition, the low course completion rate is the most criticized problem of MOOCs, a difficult problem that online courses have always faced (Tauber, 2013). As a result, assessments valued by universities as important learning outcomes are thought to be less relevant to MOOC learners or designers (Zhao et al., 2017; Chudowsky et al., 2003; Earl & Torrance, 2000).

Assessment is a central character in the design of massive open online courses (MOOC) (Sandeen, 2021). In the past few years, a few universities started designing credit-bearing MOOCs as part of university programs, with the aim to encourage quality learning and good outcomes that satisfy formal university assessment criteria. Chunwijitra et al. (2020) suggest that the MOOC service framework consists of five layers: authentication, resources, learning, assessment, and credential layers. Assessment is one of the emerging key themes of MOOC (Bayne & Ross, 2013). Self-assessment is also very important in MOOC, especially in our case, as we received a lot of letters with questions. It has been suggested that self-assessment should be used as an assessment for learning instead of an assessment of learning (Admiraal et al., 2015). Some scholars suggest developing and embedding student self-assessment courses in subject teaching (Brown & Harris, 2014; Olivares et al., 2021). As a result, more and more universities are conducting assessment research on MOOCs. Earl (2003) divided the assessment into three categories according to the purpose of the assessment: assessment for learning, assessment of learning, and assessment as learning.

Peer and self-assessment offer an opportunity to scale both assessments and learning in global classrooms (Kulkarni et al., 2013). Gradually, more and more scholars are beginning to study the effectiveness of the assessment. Among them, many scholars place more emphasis on peer assessment. Stan i (2020) showed that despite being stressful and uncomfortable for many students, peer assessment was more beneficial for the student's learning than self-assessment. Peer assessment is becoming an increasingly popular tool to assess complex assignments in MOOCs (Capuano & Caballé, 2018; Reinholz, 2016). But some learners do not have the necessary knowledge and experience to assess their peer's work. Hence, there are some problems with the quality of the peers' respective feedback (Hew & Cheung, 2014). One of the major challenges facing Massive Open Online Courses (MOOC) is assessing learner performances beyond traditional automated assessment methods (Cho & Cho, 2011; Watson et al., 2017). However, there is no in-depth and systematic study on student self-assessment of MOOC (Liyanagunawardena et al., 2013). Today, students who self-assess effectively often learn better, and creating effective, comprehensive methods to help them do so is still a critical challenge. Although self-assessment appears to be a skill that can be improved, both students and professionals continue to have difficulty with accurate self-assessment (Motycka et al., 2010). For example, Ivaniushin et al. (2016) proposed the approach of assessment learning outcomes in collaborative project-based learning. Ashton and Davis (2015) identified that training students to assess will improve their ability to provide quality feedback. Different researchers have different priorities in defining self-assessment. Andrade and Du (2007) believed that self-assessment belongs to formative assessment. The concept emphasizes that the purpose of students' self-assessment is not only to make a self-judgment to identify what's lacking, but also to adjust their learning on this basis. Some researchers have expanded the concept of self-assessment to self-judgment based on assessment criteria, emphasizing the use of assessment criteria. As Rolheiser and Ross (2000) put it, "Self-assessment is 'Students judging the quality of their work based on quality criteria and assessment of good performance"'. Some researchers directly define self-assessment as student self-

assessment. There is no special emphasis on the use of assessment criteria in judging learning. For example, Brown and Harris (2014) defined student self-assessment as the description and assessment of students on their performance and academic ability. There are different types of assessment used by different MOOCs (Papathoma-Köhle et al., 2015; Zeng, 2017; Wong, 2016), for example, automated assessment (Pieterse, 2013; Ashton & Davis, 2015), peer assessment (Kulkarni et al., 2013; Sadler & Good, 2006; Stan i , 2020), and self-assessment (Wilkowski et al., 2014).

Reviewing the existing research, there are three popular directions for student self-assessment in the academic world. First, Boud and Brew (1995) proposed that different learning and assessment tasks serve different cognitive interests, and then proposed three types of student self-assessment: student self-assessment in technical interest, practical interest, and emancipatory interest. Student self-assessment in technical interest means that we check whether knowledge and skills have been acquired and understood against established standards and the level achieved. Second, Panadero et al. (2013) identified three strategies for teachers to help students develop self-assessment skills, namely self-assessment, self-assessment gauge, and self-assessment script. A script is an ordered set of structured statements built from task execution steps (Alonso-Tapia & Panadero, 2010). The self-assessment script indicates that students conduct learning activities according to the questions in the self-assessment script, then reflect on and evaluate the learning results. Self-assessment scripts are ordered reflective questions based on evaluation criteria constructed according to task execution steps (Alonso-Tapia & Panadero, 2010). For example, Lepp et al. (2017) showed that the two tools of self-assessment (self-assessment questions and troubleshooters) complement each other and can be suitable for different participants.

In a survey of 15 MOOC pilot schools in China, the reason lies in the lack of clear criteria, which makes it difficult for teachers and students to control this form of assessment. For this situation, some scholars' research provides some help. For example, Panadero et al. (2013) discussed the question of "whether, and in what form, assessment standards exist" in student self-assessment activities. According to power sharing between teachers and students, Taras (2016) rates student self-assessment as low, medium, and high, including a standard model, learning contract design, self-marking, sound standard, and self-assessment with an integrated tutor and peer feedback. One of the power prerequisites is resources (Burns, 1996). In self-assessment, reflective learning can help learners speed up knowledge updating, make students become learning subjects, promote online collaboration and communication of learners, effectively improve their information literacy, and complete the transition from superficial learning to deep learning (Wang et al., 2018). Some researchers (Wang & Sun, 2002) point out that student self-assessment mainly takes place in learning. Student self-assessment should include three stages: the beginning of learning activities, the middle of learning activities, and the end of learning activities. In terms of the results of learning, it should include a self-assessment of knowledge, skills, habits, attitudes, and personality (Wang & Sun, 2002; Eschenbrenner & Nah, 2007). Scholars also focus on the technical aspects of how to apply it, and there is no in-depth research on how to assess it. Valdivia-Vázquez et al. (2021) indicate that the EIIMC-MOOC is a valid, reliable, and stable tool to evaluate initial motivation and prior knowledge of participants regarding energy-related topics. Student self-assessment in MOOC is not only lacking in China but has also received little attention in other countries. Therefore, this study hopes to establish an integrated student self-assessment paradigm for MOOC learning, especially for university students in China.

2. Material and methods

2.1. Theoretical framework

To optimize the assessment of MOOC learning, this research has three major objectives. First, we will sort out influencing factors that affect Chinese student self-assessment in MOOC. Second, we will use an analytics tool to analyze student self-assessments in MOOC. Third, we will construct an integrated student self-assessment paradigm. For this reason, the following research question was proposed: What factors influence student self-assessment in MOOC? Student self-assessment is a comprehensive assessment in which students try to find the changes in their deep and implicit learning. We need supportable theories to classify and simplify the process of student self-assessment. To answer the question, a theory called "the Seven Pillars of Assessment" can help. The main contents of this theory are as follows: Falchikov (2004)

described seven basic questions in the assessment area: "Why to Assess", "How to Assess", "What to Assess", "When to Assess", "Who Assesses", "How Well" and "Whither". It will be more concise and logical to select the factors that affect student self-assessment from these seven basic questions. According to the characteristics of MOOC learning, the author consulted fifteen experts, including educational technology experts from Chinese universities, principals and backbone teachers from pilot schools of MOOC classrooms, and finally determined nine factors that affect student self-assessment in MOOC. The nine factors are shown in Table 1.

Table 1. The principal factors

Dimension	Factor	Code	Meaning
Why Assess	Motivation for assessment	S1	To optimize student MOOC-based learning continuously.
	Assessment objective	S2	Effective MOOC learning.
How to Assess	Assessment method	S3	Qualitative methods and quantitative methods. For example, self-assessment rubrics, self-assessment scripts, reflective logging, and so on.
	Assessment technology	S4	Network evaluation techniques like computer adaptive testing and E-assessment.
What to Assess	The gaining of knowledge and skills	S5	Knowledge, skills, and cognitive processes.
When to Assess	Continuity of self-assessment process	S6	Student self-assessment runs through the whole process of learning.
Who Assess	Assessor	S7	The students themselves are given priority, and teachers and peers are supplemented.
How Well	Reliability of assessment	S8	To ensure the accuracy and realism of student self-assessment.
Whither	Appreciation of self-assessment	S9	Student self-assessment becomes the basis of MOOC evaluation.

2.2. The interpretative structure model

We need to clarify the relationship between these important factors above to provide a basis for the establishment of an integrated self-assessment paradigm. For this purpose, the interpretative structure model (ISM) was selected as the analytical tool in this study. The ISM is a structural model put forward by Professor John Warfield in 1973, which aims at analyzing complex social structure problems. The basic idea is to make use of people's practical experience, professional knowledge, and computer assistance. By structuring and layering the complex and disorderly relationships among system elements, a multi-level and hierarchical explanatory structure model is constructed. The characteristic of this model is that many fuzzy factors of the system are decomposed into a visual, organized, and hierarchical internal structure so that people can clearly understand the relationship among the factors, grasp the essence of the problem and find solutions. It is especially suitable for system analysis with many variables, complicated relations, and unclear structure. The ISM plays a very important role in revealing the system structure, especially in analyzing the content and structure of teaching resources, designing and developing learning resources, and exploring the mode of the teaching process. It is a unique research method in educational technology research. The ISM is a valuable management tool and a qualitative and interpretative method used to generate solutions for complex problems and identify the relevant importance of each variable (Shen et al., 2016; Pfohl et al., 2011). The interpretative structural model (ISM) is to create a structural model made up of nodes and directed edges by calculating the logical relationship among the elements. The model is to describe the hierarchy and causality within the complex system through mathematical methods. Given the wide applicability and the effectiveness of the model in analyzing internal factors, this paper used the ISM to analyze the influence factors of student self-assessment so that we can understand the internal structure of the process of student self-assessment in MOOC. The various steps involved in the ISM are extracted from (Abbas et al., 2022; Ravi & Shankar, 2005; Shahabadkar, 2012). The analysis process is as follows:

- Step 1. E is the set of all the elements in system S, and R is the set of all the relations in system S. There are n elements in system S.

$$S = <E, R> \quad (1)$$

$$S = \{e_i \mid i = 1, 2, 3, 4, \cdots\cdots, n\} \quad (2)$$

Adjacency matrix A is used to represent the influence relationship between two elements of the system, where,

$$a_{ij} = \begin{cases} 1, e_i \text{ has a direct impact on } e_j \\ 0, ei \text{ has an indirect impact on ej} \end{cases} \quad (i = 1, 2, \cdots\cdots, n) \quad (3)$$

$$A = \begin{pmatrix} a_{ij} \cdots a_{ij} \\ \vdots \ddots \vdots \\ a_{ij} \cdots a_{ij} \end{pmatrix} \quad (4)$$

- Step 2. Solve the reachable matrix M. There is a transitive relationship between e_i and e_j. If there is a directed path from node i to node j on a directed graph, e_i to e_j is considered to be reachable, where

$$m_{ij} = \begin{cases} 1, j \text{ is reachable by i} \\ 0, j \text{ is unreachable for i} \end{cases} \quad (5)$$

The reachable matrix B can be obtained by logical operation of the adjacency matrix and the identity matrix, and the formula is:

$$B = (A + I) \cup (A + I)^2 \cup \cdots \cup (A + I)^n, \text{ and } M = A^{2r} = A^{2(r+1)} \neq A^{2(r1)}, r \leq n$$

$$B = \begin{pmatrix} m_{11} \cdots m_{1n} \\ \vdots \ddots \vdots \\ m_{n1} \cdots m_{nn} \end{pmatrix} \quad (6)$$

- Step 3. According to the reachable matrix, the antecedent set and reachable set are given:

$$A(e_i) = \{ e_j \mid e_i \in S, m_{ji} = 1 \} \quad (7)$$

$$R(e_i) = \{ e_j \mid e_j \in S, m_{ij} = 1 \} \quad (8)$$

Further, the underlying elements are given:

$$B = \{ e_i \mid e_i \in S \text{ and } R(e_i) \cap A(e_i) = A(e_i) \} \quad (9)$$

If e_i is the underlying element, then the antecedent set A (e_i) contains e_i itself and strongly connected elements. The reachable set R (e_i) contains itself, elements strongly connected to e_i and elements reachable from e_i. If there is an element e_j at the lower level of e_i, e_j can only be contained in A (e_i) but not in A (e_i) ∩ R (e_i), that is, A (e_i) ≠ A (e_i) ∩ R (e_i).

2.2.1. Constructing the ISM of student self-assessment in MOOC

Based on Table 1, this study takes MOOC teaching in Chinese universities as an example to establish an integrated student self-assessment paradigm. According to the definition of the interpretative structure model, we use MATLAB software to get the reachability matrix B. First, this study consulted 15 experts with rich experience in MOOC teaching in Chinese pilot universities. Based on the literature review and expert discussions, the relationships among the nine factors were determined. Then the adjacency matrix A was created.

$$A = \begin{bmatrix} 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 \\ 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \quad (10)$$

Next, the reachable matrix can be calculated:

$$B = \begin{bmatrix} 1 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 1 & 1 & 1 & 1 & 1 & 0 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 & 0 & 1 & 1 & 1 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 & 0 \\ 1 & 1 & 1 & 1 & 1 & 0 & 1 & 1 & 1 \\ 1 & 1 & 0 & 0 & 1 & 0 & 0 & 1 & 1 \\ 1 & 1 & 0 & 0 & 1 & 0 & 0 & 0 & 1 \end{bmatrix} \quad (11)$$

2.2.2. The model results

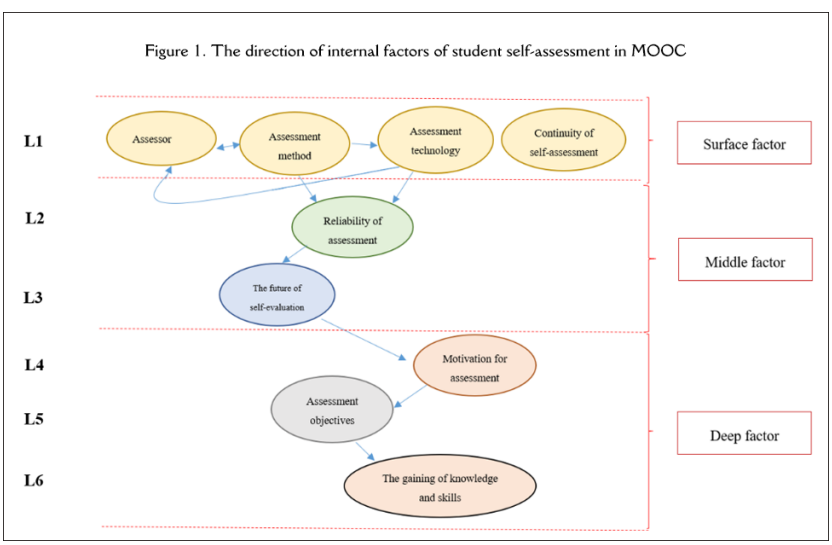
According to the solution formula of ISM, the level of division of the reachable matrix can divide the influence factors into six levels. The first level: L1={S3, S4, S6, S7}. The second level: L2={S8}. The third level: L3={S9}. The fourth level: L4={S1}. The fifth level: L5={S2}. The sixth level: L6={S5}. As shown in Table 2.

Table 2. Reachable set, antecedence set, intersection, dividing of the hierarchy

Number	A (e_i)	R (e_i)	A (e_i)∩R (e_i)	Level
S1	S1, S2, S5	S1, S3, S4, S7, S8, S9	S1	L4
S2	S2, S5	S1, S2, S3, S4, S7, S8, S9	S2	L5
S3	S1, S2, S3, S4, S5, S7, S8, S9	S3, S4, S7	S3, S4, S7	L1
S4	S1, S2, S3, S4, S5, S7, S8, S9	S3, S4, S7	S3, S4, S7	L1
S5	S5	S1, S2, S3, S4, S5, S7, S8, S9	S5	L6
S6	S6	S6	S6	L1
S7	S1, S2, S3, S4, S5, S7, S8, S9	S3, S4, S7	S3, S4, S7	L1
S8	S1, S2, S5, S8, S9	S3, S4, S7, S8	S8	L2
S9	S1, S2, S5, S9	S3, S4, S7, S8, S9	S9	L3

According to the hierarchy above, matrix A is presented as a directed graph as shown in Figure 1, and ellipses of different colors represent elements at different levels. According to the horizontal and vertical relationship of the factors, this paper divides the six levels into surface factors, middle factors, and deep factors. Surface factors refer to L1 {S3, S4, S6, S7}. Middle factors include L2 {S8}, L3 {S9}. Deep factors refer to L4 {S1}, L5 {S2}, L6{S5}.

Figure 1. The direction of internal factors of student self-assessment in MOOC



2.3. The MICMAC analysis

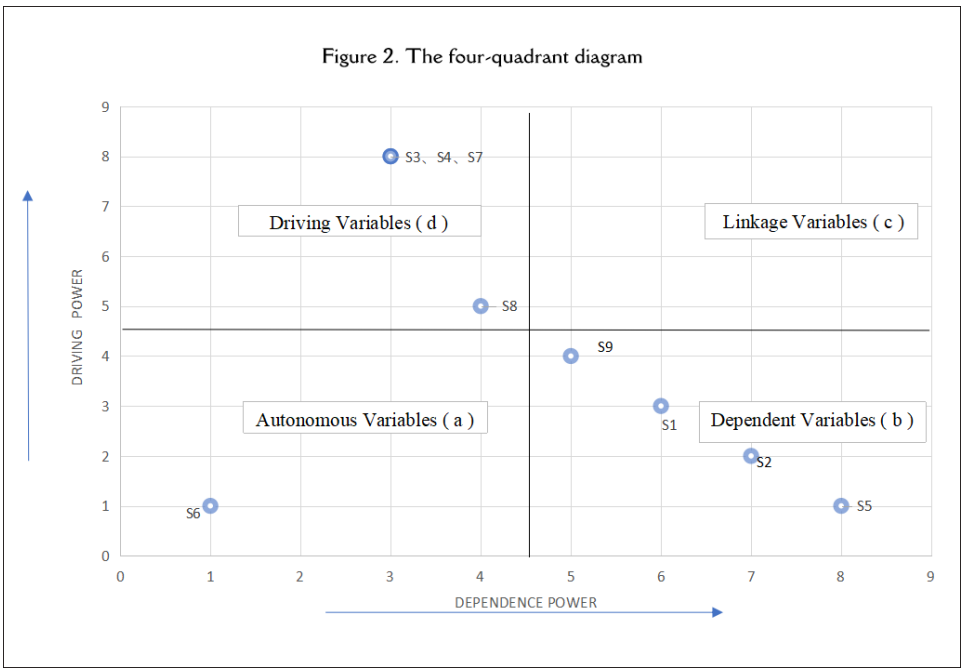
The MICMAC analysis is carried out based on the principle of matrix multiplication. The model is a method proposed by Duperrin and Godet to analyze the relationship and interaction between factors in the system and is commonly used to identify factors with high driving and high dependence in the system.

System elements can be divided into the following four quadrants: autonomous variables (a), dependent variables (b), linkage variables (c), and driving variables (d). As shown in Figure 2, the driving power and dependence power of autonomous variables are weak.

The dependence power of dependent variables is strong, but the driving power is weak. The driving power and dependence power of linkage variables are both strong. The driving power of driving variables is strong, but the dependence power is weak.

Calculate the sum of the rows and columns of the reachable matrix B, denoted as the driving force P, and the dependence J. P indicates the degree of influence of this factor on other factors. J indicates the extent to which this factor is affected by other factors. By calculating P and J values for each system element, the system element is divided into four different quadrants, as shown in Figure 2.

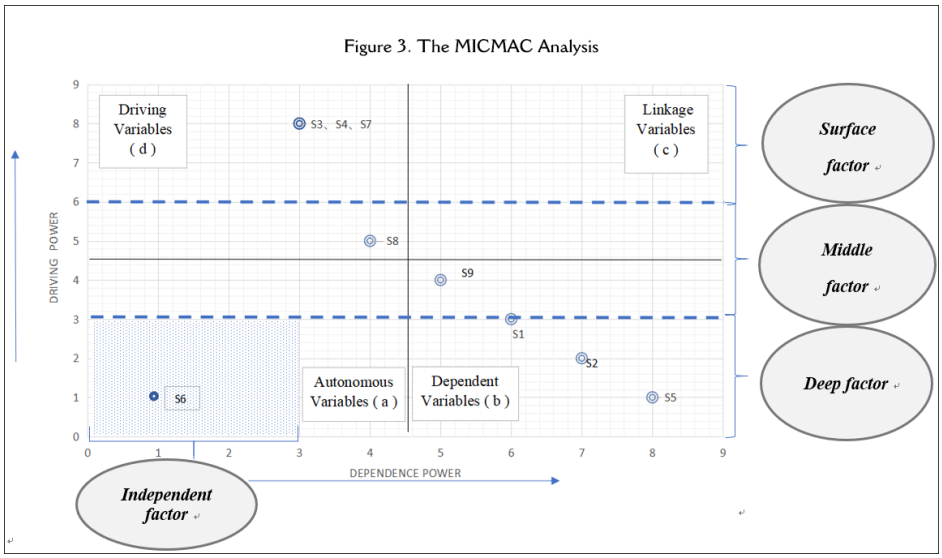
Figure 2. The four-quadrant diagram



Based on the four-quadrant diagram, we further classify these nine factors. In Figure 3, the four-quadrant diagram is divided into three parts by two dashed lines. The three parts are called the surface factor, middle factor, and deep factor respectively.

As shown in Figure 3, assessment method (S3), assessment technology (S4), and assessor (S7) are in the first part, and they are the surface factors. Reliability of assessment (S8) and appreciation of self-assessment (S9) belong to the middle factors. Except for the continuity of the self-assessment process (S6), motivation for assessment (S1), assessment objective (S2), and the gaining of knowledge and skills (S5) are classified as deep factors.

We believe that the shaded region where S6 is located belongs to the region with weak dependence and power, so factors in this region cannot be considered deep factors. Combined with the classification results of the ISM before, the S6 is in the first level but it doesn't have any arrows associated to other factors in Figure 1. So, we consider that the continuity of the self-assessment process (S6) should be an independent factor for the student self-assessment in MOOC.



3. Discussion

Based on the ISM and MICMAC analysis, we obtained a hierarchical structure (Figure 1) of students' self-assessments and the classification of influencing factors (Figure 3). In the following part, we will discuss the details of the analysis above.

3.1. Surface factor analysis

Surface factors include assessor (S7), assessment method (S3), and assessment technology (S4). The assessor, assessment method, and assessment technology form a closed loop in the MOOC learning process, and student self-assessment runs through the entire process.

Assessors can choose the method according to their judgment and the assessment method will affect and limit the assessor's choice. So, there is a two-way relationship between the assessor and the assessment method. First, the assessor's competence determines the choice of method. Given that the role of students as the main body of assessment has been neglected for a long time in MOOC, the students now are encouraged to take part in the formulation of assessment standards and determine assessment methods. Research has shown that some kind of agreement (i.e. agreed assessment criteria) is needed between students and teachers for self-assessment to play a role in promoting learning. Students set learning goals and plan their learning process according to the agreed standards before learning, and self-assess the learning outcomes according to the standards at the end of the learning process.

Second, different methods also influence the assessor's performance and decision. On the one hand, teachers give students appropriate and timely feedback (rather than grades), which can reduce students' mistakes in self-assessment and encourage students to make more intelligent assessments. On the other hand, peers can provide students with different perspectives, for example, to see the strengths or weaknesses that students cannot identify by themselves, and give workable suggestions to help students make a more comprehensive assessment.

3.2. Middle factor analysis

Middle factors include the reliability of assessment (S8) and the future of self-assessment (S9). As shown in Figure 1, the assessment methods and techniques affect the authenticity of the assessment. These two factors belong to external causes. There has been a series of research about student self-assessment that has emphasized the importance of realistic or verifiably accurate self-assessment for achievement (Boud & Falchikov, 1989; Sánchez-Vera & Prendes-Espinosa, 2015). Studies have shown that the accuracy of student self-assessment depends on students' professional knowledge and ability in the assessment area (Dunning et al., 2004; Kitsantas et al., 2004). These belong to an internal cause. Therefore, the key to

ensuring accuracy is to improve student self-assessment skills and professional knowledge, and their ability to analyze the assessment content.

The reliability of the assessment means the accuracy and realism of the assessment results. The reliability of self-assessment results will directly affect the future development trend of student self-assessment. An inauthentic or inaccurate student self-assessment is an invalid assessment. Therefore, the better development of student self-assessment must be based on reliability. In China, MOOC classroom assessment mainly happens in three ways: teacher assessment, peer assessment, and student self-assessment. In current MOOC teaching practice, teacher assessment is the foundation and dominant position, while student self-assessment is the least used. In the future, with the rise of learning-oriented assessment, and the establishment of a lifelong learning system, students must grow into excellent self-assessors. Therefore, the change in the future development of student self-assessment will inevitably affect the motivation for student self-assessment. Moreover, the objective of student self-assessment can only be determined after the new motivation for student self-assessment is established. The above discussion is about the relationship between the elements of the middle level.

3.3. Deep factor analysis

The motivation for assessment (S1), assessment objective (S2), and the gaining of knowledge and skills (S5) is the deep factor. Motivation is the starting point of student self-assessment, and it should be clear that the motivation of student self-evaluation in MOOC is to continuously optimize student learning. Specifically, student self-assessment not only optimizes students' current learning but also fosters students' lifelong learning. In the process of self-assessment, if students have greater assessment power and a sense of control over their learning, which is conducive to breaking the misunderstanding that students "learn for teachers or parents", making students feel that "learning is their thing", enhancing their sense of responsibility for learning, and then planning, monitoring and regulating their learning stably.

The assessment objective is like the bull's eye, and its position determines the learner's direction. Therefore, it is crucial to grasp the assessment objective. If the motivation of assessment is the starting point, then the objective is the foothold. For self-assessment in MOOC, the assessment objective is effective MOOC learning (Deng et al., 2020). This is the overall objective of MOOC learning. In MOOC, there will be many sub-goals due to the learning progress. In a word, the objectives are not set in stone, they need to be adjusted.

It should be clear that what we are assessing for student self-assessment in MOOC learning is the acquisition of knowledge and skills. This is determined by the assessment objective of student self-assessment. Compared to external assessment where students can only judge what they have learned, self-assessment can also reveal how they have learned. In the process of MOOC learning, on the one hand, students should know what they have learned and evaluate whether their knowledge and skills in a certain aspect meet the standards and to what extent they have achieved them, by referring to the established assessment standards. In this way, students clearly understand what they know, what they have mastered, what they don't know, and what they haven't mastered. On the other hand, to further understand how they are gaining knowledge and skills, students can understand their thinking mode, learning attitude, and learning strategy by reflecting on and recording the learning process. Thus, students adjust their learning in a timely and targeted way and develop their metacognitive awareness. Just as the assessment type – "self-assessment in the emancipatory interest" proposed by Boud and Brew (1995), the emancipatory interest refers to the basic interest of humans in "liberation" and "empowerment".

4. Constructing integrated student self-assessment paradigm in MOOC

Through the analysis of different levels of factors, this study established an integrated student self-assessment paradigm in MOOC, as shown in Figure 4. In the figure, the element node (○), with different colors and heights, represents different levels. The next section will expand on Figure 6, starting with L1 (the surface factor).

First, for MOOC learning in China, student self-assessment should be run through the entire process of MOOC learning. Students should carry out a self-assessment of their learning progress and achievements

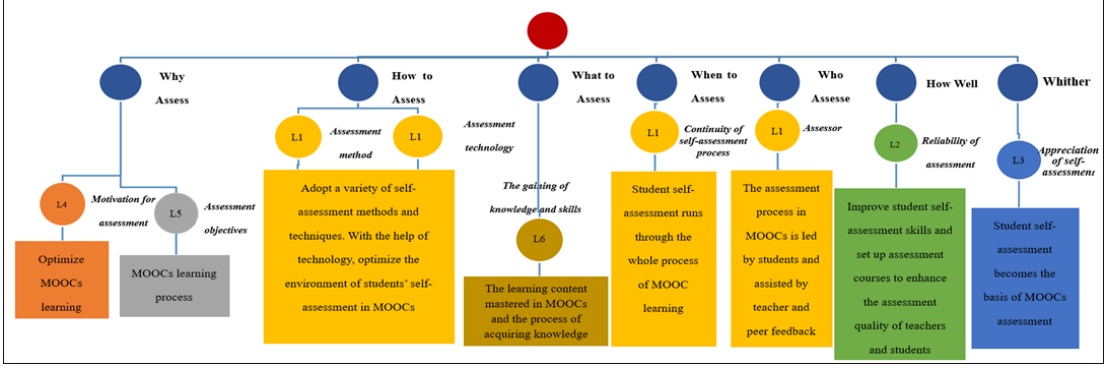
before, during, and after MOOCs. Meanwhile, it is best to adopt different assessment methods in different learning periods.

Second, students should be the primary executors of the assessment. However, being an excellent self-assessor is not something that can be accomplished by accepting a large number of assessment activities given by teachers. Instead, students need to carry out a large number of self-assessment practices and learn through doing. Therefore, teacher assessment will gradually give way to self-assessor and peer mutual assessment, and the situation dominated by teacher assessment will be transformed into students' self-assessment as the basis and leading. Universities should change the assessment trend from the traditional terrace model to the supporting lifelong learning model. This, to awaken students' self-awareness and initiative so that they can be transformed from passive assessment objects into conscious and active assessment subjects. Teachers should make students aware of their responsibility to monitor, assess, and regulate their learning.

Third, the validity of an assessment depends on its reliability. To ensure the reliability of student self-assessment in MOOC, it is necessary to improve students' self-assessment skills and set up assessment courses to enhance the quality of assessment. On the premise of ensuring the effectiveness of self-assessment, universities should make student self-assessment become the basis of MOOC assessment. According to the current situation of MOOC assessment in China, teachers should be diligent in "making concessions", transferring the assessment rights to students, and turning the assessment activities into a process of students' active participation, self-reflection, self-education, and self-development. After clarifying the importance of student self-assessment in MOOC, the motivation of student self-assessment is further determined to optimize the learning of MOOC. Then, the self-assessment object (MOOC learning process) in MOOC is determined.

Finally, we should focus on the deep factors (the gaining of knowledge and skills) of student self-assessment. First, the content of student self-assessment can be divided into "knowledge and skills", and "cognitive process". So, the gaining of knowledge and skills mastered in MOOC is what the assessor needs to assess first. This assessment process is cognitive and we need to use different assessment methods. Based on the characteristics of MOOC, it is more suitable for the assessment method with the characteristics of constructive assessment criteria and dynamic assessment process. Specifically, if the content of the assessment is the knowledge and skills, self-assessment methods with a middle of power-sharing, clear assessment criteria, and emphasis on grades or scores can be adopted, like the following types, self-marking, sound standard, and self-assessment rubrics. If the content of the assessment is a cognitive process, self-assessment in the practical interest, self-assessment in the emancipatory interest, and self-assessment with the integrated tutor and peer feedback are more suitable. Through communication and discussion with teachers or peers, students form their personalized understanding of the assessment tasks and construct their assessment criteria. Students not only construct individualized understanding and individual assessment criteria but also reflect on the construction process itself and carry out self-assessment activities independently.

Figure 4. The integrated student self-assessment paradigm



5. Conclusion

Given the above discussion, we propose several suggestions for student self-assessment of MOOC learning. First, consider student self-assessment in MOOC as a formative assessment method. Student self-assessment is not only an assessment activity after a learning stage. It is a kind of formative assessment, running through the entire process of student learning. Therefore, student self-assessment is a form of "formative assessment". Second, universities should enhance student awareness of self-assessment through publicity. Make students aware of their responsibility to monitor, evaluate and regulate their learning. Third, we could set up assessment courses to enhance the quality of student assessment. For example, video micro-lectures can be created so that students can acquire assessment knowledge and skills in class. Then, choose assessment methods to increase the reliability of the results. Finally, schools should optimize the environment of student self-assessment with the help of technology. With the deep integration of information technology and education and teaching, the networked nature of assessment activities is becoming increasingly apparent. All kinds of network assessment systems provide students with personalized learning data, diversified assessment tools, and communication platforms, which break through the limitations and difficulties of traditional assessment in data collection and can optimize the environment of student self-assessment.

To sum up, a good lifelong learner must be a good self-assessment. Teachers can still assume the responsibility of assessing students' learning, but in the long run, students would rely on teachers' evaluation and feedback, and would find it difficult to form self-assessment quality. Thus, students would find it hard to judge their growth after leaving school and even miss learning opportunities. Therefore, cultivating student "assessment quality" through the process of self-assessment not only helps to optimize students' current learning but also lays a good foundation for students' lifelong learning and development. In addition, student self-assessment should integrate qualitative methods and quantitative methods. For example, for the assessment of knowledge and skills, quantitative methods, such as self-assessment rubrics can be used. For the assessment of the cognitive process, qualitative methods, such as self-assessment script, self-assessment report, and reflective logging can be used. Among them, reflective learning not only develops students' learning behavior but also enables students to have more comprehensive abilities in the learning process, making them more complete people (Cristianti et al., 2020).

In the current case of MOOC in China, the focus on student self-assessment is not enough (Li, 2017). It is necessary to break the one-sided tendency of "student self-assessment just means students grade themselves". We need to form a holistic and comprehensive understanding of self-assessment. Besides China, according to the review of existing literature, there is little research focusing on student self-assessment in MOOCs in other countries. For online learning, such as MOOC, self-assessment should be the main assessment method because of the characteristics of self-study in online teaching. Therefore, the first thing is to change the attitude of teachers and students towards self-assessment and form a comprehensive self-assessment understanding. Then, sort out the logical path of student self-assessment and construct an integrated student self-assessment paradigm in MOOC. This is the contribution of this study. In the future, we will focus on how to optimize the learning effect of MOOCs through student self-assessment.

Authors' Contribution

Idea, D.T., W.B.; Literature review (state of the art), D.T.; Methodology, D.T., W.B.; Data analysis, D.T., W.B.; Results, D.T.; Discussion and conclusions, D.T.; Writing (original draft), D.T., W.B.; Final revisions, D.T.; Project design and sponsorship, W.B.

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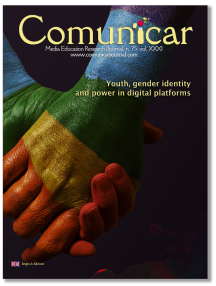

Female political leadership styles as shown on Instagram during COVID-19

Estilos de liderazgo político femenino en Instagram durante la COVID-19

Dr. Virginia García-Beaudoux. Lecturer, Department of Political Science, University of Buenos Aires – CONICET (Argentina) (dagar02@gmail.com) (https://orcid.org/0000-0003-2428-8056)
Dr. Salomé Berrocal. Full Professor, Department of Journalism and Audio-visual Communication and Advertising, University of Valladolid (Spain) (salome.barrocal@uva.es) (https://orcid.org/0000-0002-0483-0509)
Dr. Orlando D'Adamo. Lecturer, Centre for Public Opinion, University of Buenos Aires (Argentina) (orlando.dadamo@ub.edu.ar) (https://orcid.org/0000-0003-4871-6633)
Leandro Bruni. Lecturer, Department of Political Science, University of Buenos Aires (Argentina) (leandroabruni91@gmai.com) (https://orcid.org/0000-0003-3200-9555)

ABSTRACT

This paper explores the leadership styles of fourteen elected female politicians in executive government positions, as communicated through the official Instagram accounts that were in use during the COVID-19 pandemic. Seven of them are, or were, heads of government, six are or were mayors, and one is the president of an autonomous region in Spain. These women are Angela Merkel (Germany), Jacinda Ardern (New Zealand), Sanna Marin (Finland), Mette Frederiksen (Denmark), Erna Solberg (Norway), Katrin Jakobsdottir (Iceland), Tsai Ing-Wen (Taiwan), Anne Hidalgo (Paris), Virginia Raggi (Rome), Ada Colau (Barcelona), Claudia López (Bogotá), Claudia Sheinbaum (Mexico City), London Breed (San Francisco) and Isabel Díaz Ayuso (Madrid Region). A comparative content analysis of 2,330 units was conducted over a 6-month period. The study analyses the hard or soft leadership style conveyed by the women politicians selected in relation to four variables: political ideology, generational affiliation, level of government and techniques used in communication. The results show that the values of the variables affect leadership styles; therefore, the assumption that all female politicians have a single leadership style is erroneous and related to gender stereotyping.

RESUMEN

Este trabajo realiza una exploración de los estilos de liderazgo comunicados en las cuentas oficiales de Instagram por catorce mujeres políticas electas en cargos gubernamentales ejecutivos, con actuación durante la pandemia de la COVID-19. Siete son o han sido jefas de gobierno, seis alcaldesas, y una presidenta de una comunidad autónoma en España. Ellas son Angela Merkel (Alemania), Jacinda Ardern (Nueva Zelanda), Sanna Marin (Finlandia), Mette Frederiksen (Dinamarca), Erna Solberg (Noruega), Katrin Jakobsdottir (Islandia), Tsai Ing-Wen (Taiwan), Anne Hidalgo (París), Virginia Raggi (Roma), Ada Colau (Barcelona), Claudia López (Bogotá), Claudia Sheinbaum (Ciudad de México), London Breed (San Francisco) e Isabel Díaz Ayuso (Comunidad de Madrid). La técnica de investigación utilizada es el análisis comparado y de contenido aplicado a 2.330 unidades de análisis durante un periodo de seis meses. El estudio analiza el estilo de liderazgo duro o blando comunicado por las lideresas con relación a cuatro variables: ideología política, pertenencia generacional, nivel de gobierno y técnicas usadas en la comunicación. Los resultados evidencian que los valores de las variables afectan a los estilos de liderazgo, por tanto, la suposición de que las mujeres políticas tienen un único estilo de liderazgo es errónea y atiende a un estereotipo de género.

KEYWORDS | PALABRAS CLAVE

Political communication, female leadership, personalisation, Instagram, stereotypes, COVID-19.
Comunicación política, liderazgo femenino, personalización, Instagram, estereotipos, COVID-19.

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1. Introduction and state of the question

Women are facing diverse challenges in exercising and communicating their leadership styles. Leadership—particularly, the political leadership—has been culturally conceived as based on attributes that have been chosen to characterise the stereotype of masculinity. Traits that are commonly associated with the leadership role, such as power, authority, efficiency, and achievement, are also more frequently assigned to the male gender role (Morales & Cuadrado, 2011). This phenomenon is evident when analysing some of the frames used by the media to refer to women's political leadership. There are frequent "frames" such as "the newcomer", which underestimates women's capacities to hold political positions, or "women leaders as agents of change", which suggests that women are only necessary at exceptional points in time or areas where certain transformations are required (Norris, 1997). Women political leaders also receive more negative coverage, with a predominance of stereotypical themes and traits (Van-der-Pas & Aaldering, 2020). During election campaigns, media coverage is also unequal and biased: not only do male candidates receive more invitations and mentions in the media, but coverage of female candidates is characterised by strong stereotyping (Baxter, 2017; Winfrey & Schnoebelen, 2019), mainly focused on their physical appearance and domestic roles related to care work (García-Beaudoux et al., 2020). While there is a changing trend in most current policy arenas in the direction of parity, gender-biased coverage of women's leadership has seen little changed (Wagner et al., 2019).

According to role congruity theory (Eagly & Karau, 2002; Eagly, 2005), women sometimes choose to exercise and communicate styles aligned with stereotypically male standards in order to overcome the bias that exists against their leadership because of the cultural role expectations held about both the female gender and leadership. To this end, they reinforce the communication competency of hard leadership skills, such as technical skills, or talents related to managerial, executive, and strategic planning tasks. This behaviour is often socially penalised, as stereotypically masculine conduct is punished and scolded when it is engaged in by women (Eagly & Karau, 2002). Waters et al. (2019) have warned that media coverage of women politicians reinforces female stereotypes, and that this poses a threat to them: women leaders who are not perceived as "feminine" because they tend to speak their minds or publicly state their ambition, risk being criticised for defying the gender role imposed on them.

In short, a woman who exhibits behaviour regarded as male will face social disapproval because she fails to meet the expectations associated with her gender. However, if she exercises and communicates a form of leadership characterised by strong soft skills, such as empathy, emotional intelligence or interpersonal intelligence, the quality and extent of her hard skills and her leadership ability will be questioned (García-Beaudoux et al., 2020). This study also addresses the phenomenon of personalisation, as it is one of the communication tools that helps to convey government messages and actions. The presence of the political leader turned into a political symbol representing a party has been a trend since television became a mass medium. The humanisation, celebrification, and hyper-personalisation of political figures have increased with the growing use of social media such as Facebook, Twitter, and Instagram (Berrocal-Gonzalo et al., 2022; Mazzoleni & Bracciale, 2019), in which the charm of high-profile political figures is used to communicate political content (Dader, 2012). Moreover, this tendency to place the leader at the centre of the political process is not only characteristic of the activities of candidates during an election campaign (Moreno-Díaz, 2022; Ferré-Pavia & Codina, 2022), but also of some political leaders in office. Personalisation as a communication strategy entails a somewhat simplified understanding and interpretation of political facts (Rebolledo, 2017) and is part of the phenomenon known as politainment (Schultz, 2012), which is understood as the blending of political information and entertainment. Two communication tactics that are particularly suited to both the logic of personalisation and of simplification are storytelling and "storydoing". Whereas leaders use storytelling to facilitate electoral or governmental political communication (D'Adamo & García-Beaudoux, 2016), they use "storydoing" to use images that show them playing a key role in actions in various scenarios. In this way, a visual record is created that portrays consistency between saying and doing, with the aim of increasing their credibility and legitimacy (Sarasqueta, 2020).

Personalisation and political leadership style are particularly evident in social networks because of their strong visual component. Instagram is a platform of particular interest for two reasons. While its visual

nature and applications facilitate the personalisation of politics (Gómez-García et al, 2019), it is also used as an information medium, especially by young people, which provides fertile ground for exploring the styles of political leadership to which youth are exposed. Digital media have been recognised as a new agent of socialisation, particularly in relation to the political socialisation that may be taking place within social media, especially regarding young people (De-la-Garza-Montemayor et al., 2019). Smith (2016) noted that Instagram is the second most engaged social network, as 60% of its users' log in daily and the biggest population group among Instagram users is between 18 and 24 years old (Fondevila-Gascón et al., 2020).

Political communication has become a necessary element not only to win elections, but also to promote and legitimise government actions (Rubio, 2011). The use of social media as a means of communication allows political leaders to connect with citizens, encourage their participation, promote dialogue, and leverage the feedback, comments or opinions received (Herrera-Aguilar & O'Quinn-Parrales, 2019). Social networks create spaces for deliberation and accountability where there were none before. New technologies have transformed politics and the way citizens and politicians communicate with each other.

2. Material and methods

This paper explores the characteristics of the leadership styles communicated through the official Instagram profiles of fourteen women elected for executive government positions. They come from four continents: Oceania, Asia, Europe and America. Seven are, or were, heads of government, six are or were mayors, and one is the president of an autonomous region in Spain. This is a sample of women political leaders who served in executive political roles during the health emergency resulting from the COVID-19 pandemic. The sample is diverse in terms of variables such as age, geographical origin, political ideology, interests, education and experience.

The analysis is based on the premise that, in relatively general terms, the media frame the presentation of women's leadership using headlines leaning towards homogenising genders, such as "the female leadership style"; "a new style of leadership"; "is the female leadership style more successful?".[1] The results presented in this article question this expectation of uniformity.

This study examines variations in the variable " leadership styles as conveyed" by women leaders in relation to four other categories: political ideology, generational affiliation, level of government, and preferred techniques for communicating government actions. The relationship between the leadership style conveyed in social networks and the degree of personalisation exhibited by each of the women leaders in their publications is also explored. The purpose of investigating the relationship between these two variables (leadership style as conveyed in the media and personalisation) is to find out how the personal image is used when communicating government actions. The study is descriptive and exploratory in nature and was conducted over a cross-sectional time horizon. The method used was comparative analysis (Nohlen, 2013) combined with content analysis (Krippendorff, 1990; Neuendorf, 2002; Igartua, 2006). The content posted on the feeds of the verified Instagram accounts of fourteen elected female politicians in government executive positions was systematically compared.

The sample was selected according to three criteria. They were all women leaders who: (a) held elected governmental executive positions; (b) governed a population of over 800,000 people; and (c) headed national or local governments during the COVID-19 pandemic. As the States and Autonomous Regions they led are very diverse, the intensity of the crisis faced, and their communication needs are likely to have been different as well. However, the COVID-19 pandemic provided some communication scenarios that were common to all of them, such as the need to communicate measures related to the use of masks, rules for isolation, use of public space, and vaccination protocols, among others.

Several studies have shown differences in the ways that political leaders used communication during the pandemic. Watkins and Clevenger (2021) found that some focused on the dissemination of useful information and specific crisis management measures, while others downplayed the crisis or provided ineffective information. Waylen (2021) argued that the effectiveness of the new rules and measures communicated by some leaders to deal with the crisis was negatively affected in the cases of those with a hypermasculine leadership style, such as Boris Johnson. Drylie-Carey et al. (2020) compared the public

communication of Boris Johnson, Emmanuel Macron, Pedro Sánchez and Giuseppe Conte during the COVID-19 health crisis and found that the image each of them portrayed on Twitter was vastly different from one another.

The sample for this study consisted of the following fourteen women leaders: seven heads of government, six mayors and one president of a Spanish autonomous region. They were Angela Merkel (Germany), Jacinda Ardern (New Zealand), Sanna Marin (Finland), Mette Frederiksen (Denmark), Erna Solberg (Norway), Katrin Jakobsdottir (Iceland), Tsai Ing-Wen (Taiwan), Anne Hidalgo (Paris), Virginia Raggi (Rome), Ada Colau (Barcelona), Claudia López (Bogotá), Claudia Sheinbaum (Mexico City), London Breed (San Francisco) and Isabel Díaz Ayuso (Madrid Autonomous Region). The following table details the type of government, year of birth, generation to which they belong, political affiliation, and region that they govern.

Table 1. Sample description

Leader	Type of government	Year of birth	Generation	Political ideology	Region
Ada Colau	Local	1974	Generation X	Left	Europe (Spain, Barcelona)
Angela Merkel	National	1954	Baby Boomer	Centre	Europe (Germany)
Anne Hidalgo	Local	1959	Baby Boomer	Left	Europe (France, Paris)
Claudia López	Local	1970	Generation X	Left	America (Colombia, Bogota)
Claudia Sheinbaum	Local	1962	Baby Boomer	Left	America (Mexico, Mexico City)
Erna Solberg	National	1961	Baby Boomer	Right	Europe (Norway)
Isabel Díaz Ayuso	Local	1978	Generation X	Right	Europe (Spain, Madrid)
Jacinda Ardern	National	1980	Generation X	Left	Oceania (New Zealand)
Katrin Jakobsdottir	National	1976	Generation X	Left	Europe (Iceland)
London Breed	Local	1974	Generation X	Centre	America (United States, San Francisco)
Mette Frederiksen	National	1977	Generation X	Left	Europe (Denmark)
Sanna Marin	National	1985	Millennial	Left	Europe (Finland)
Tsai Ing-wen	National	1956	Baby Boomer	Centre	Asia (Taiwan)
Virginia Raggi	Local	1978	Generation X	Right	Europe (Italy, Rome)

The study analyses the communication posted on their verified Instagram accounts. Each publication was considered a unit of analysis. The comparison required a total of 2,330 units of analysis to be reviewed. These units constituted the total number of publications made by the fourteen women leaders selected during the period from 1 January to 30 June 2021. The review covered all the posts they made, including photos, videos, albums, and badges, with their respective texts on their Instagram feeds. The decision about coding the posts in the feeds and not those shared through the stories was based on permanence: the stories had a maximum duration of 24 hours, while the content posted in the feed makes it possible to outline and communicate a profile that will be permanent. Selecting six months as a cut-off period was intended to allow an evaluation to be made of how they communicated their leadership style in a context shared by all of them, namely, the health crisis associated with the COVID-19 pandemic and the start of mass vaccination, an unprecedented, highly complex operation which also constituted a unique communication challenge.

The choice of Instagram as the platform to analyse was based on the fact that, in the political arena, it is considered a platform with the ability to improve the exchange that takes place between leaders and citizens; to set agendas and trends; and to mobilise and enhance the construction of leadership, as it is a network that facilitates personalisation (Towner & Lego-Muñoz, 2017; García-Beaudoux & Slimovich, 2021; Pineda et al., 2020).

The hypothesis underpinning this study is that the leadership styles communicated by women leaders are not homogeneous in terms of gender, but vary according to variables such as their positions on the ideological spectrum, the level of government they exercise and their generational affiliation. Similarly, it is expected that there will be differences in the degree of personalisation of their communication and in the preferred techniques for communicating government actions to citizens. The research objectives were as follows:

- O1. To investigate whether there were statistically significant differences between women leaders in the type of leadership according to their ideological tendency.
- O2. To examine whether there were statistically significant differences in exercising leadership between the women leaders selected according to the generation to which they belonged.
- O3. To observe whether there were statistically significant differences in the type of leadership between the women leaders selected according to the level of government.

- O4. To determine whether there were statistically significant differences in the type of leadership between the women leaders selected according to the degree of personalisation.
- O5. To establish whether there were statistically significant differences in the type of leadership between the women leaders selected according to the narrative technique used.

The variables and their indicators, included in the research design, were selected after an extensive literature review, and resulted from categories created and used by the authors of previous similar research (D'Adamo et al., 2015; D'Adamo & García-Beaudoux, 2016; García-Beaudoux, 2017), which have also been cited and used by other researchers (Quevedo-Redondo & Portalés-Oliva, 2017; López-Rabadán & Doménech-Fabregat, 2018).

Variable 1: Generational affiliation.

- Conceptual and operational definition: According to their date of birth, the women leaders were classified into one of the following three generations: "Baby Boomer" (people born between 1949 and 1968), "Generation X" (people born between 1969 and 1980), "Millennial" (people born between 1981 and 1993).

Variable 2: Ideological self-positioning.

- Conceptual and operational definition: Position of the women leaders selected in the ideological spectrum from left to right, according to how they defined themselves in media interviews, social networks and election campaign information.

Variable 3: Level of government.

- Conceptual and operational definition: This variable could have one of two values: national level (for presidents and prime ministers) or local level (for mayors and the president of an Autonomous Region).

Variable 4: Leadership style as conveyed in the social networks.

- Conceptual definition. This was defined as a variable that could have two dimensions: a style characterised by the communication of hard skills and a style characterised by the communication of soft skills.

1) Hard leadership skills are those skills that focus on communicating competencies, technical and/or strategic skills.

2) Soft skills are those that focus on conveying communication skills, interpersonal and social skills, emotional intelligence, and the ability to cooperate and/or work in a team (García-Beaudoux et al., 2020).

- Operational definition.

(1) Hard leadership skills were operationally defined by the presence of the following indicators in the images or texts: efficiency, management skills, administrative skills and/or strategic planning skills of the women leaders.

(2) Soft leadership skills were operationally defined by the presence of the following indicators in the images or texts: aspects of personal lives, showing emotion, relationships with their work team, and/or direct interactions with citizens (García-Beaudoux et al., 2020).

(3) A leadership style was considered to be mixed when the images and texts analysed showed an equal proportion of hard leadership indicators (efficiency, management skills, administrative skills, strategic planning skills), and soft leadership indicators (aspects of personal lives, showing emotion, relationships with their work team, and/or direct interactions with citizens).

Variable 5. Personalisation of communication.

- Conceptual definition. This is communication in which organisations, public institutions or political measures are not presented in and for themselves but are represented by political leaders who give them a face and a voice (Marcinkowski & Greger, 2002).
- Operational definition. Presence of the women leaders selected in the images and/or videos posted. This variable could have only these two values.

Variable 6. Thepreferred technique for communicating government actions.

- Conceptual definition. The communication technique most frequently used by women leaders to publicly share government information, decisions and/or actions.

- Operational definition. Two indicators were used: communication of hard data, statistics and arguments that appeal to logic; communication through storytelling techniques (narration of own- or third-party stories, individual or community cases, or anecdotes) (D'Adamo & García-Beaudoux, 2016) or "storydoing" (narrative based on the active participation of the leader as a key player in political, social or community events) (Sarasqueta, 2020).

3. Analysis and results

Regarding the political ideology variable, the result of a chi-square test showed that the women leaders who defined themselves as being on the right of the political spectrum communicated a leadership style characterised by hard skills, while those who positioned themselves on the left of the ideological spectrum communicated a leadership style that focused on soft skills.

Table 2. Leadership styles by ideological positioning

Type of leadership	Ideological position	Observed frequency	Expected frequency	Adjusted Standard Residuals	X^2	DF	Sig.
Soft	Left	478	422.2	4.9	164.86	4	.000
	Centre	149	140.9	0.9			
	Right	196	259.7	-6			
Mixed	Left	58	106.2	-7			
	Centre	6	35.4	-5.7			
	Right	143	65.3	12.2			
Hard	Left	630	637.4	-0.6			
	Centre	234	212.6	2.4			
	Right	378	392	-1.3			

A chi-square test was also carried out in order to assess whether there were differences in the leadership styles as communicated on Instagram according to the generational affiliation of the women politicians selected. The results showed that baby boomer leaders tended towards communication characterised by hard skills, millennial leaders communicated more soft-skilled leadership, and Generation X leaders had a balanced mix of hard and soft skills communication.

Table 3. Leadership styles by generational affiliation

Type of leadership	Ideological position	Observed frequency	Expected frequency	Adjusted Standard Residuals	X^2	DF	Sig.
Soft	Baby Boomer	283	277.5	0.5	109.82	4	.000
	Generation X	491	507.5	-1.5			
	Millennials	49	38	2.3			
Mixed	Baby Boomer	11	69.8	-9.1			
	Generation X	196	127.6	10.2			
	Millennials	0	9.6	-3.3			
Hard	Baby Boomer	472	418.7	4.7			
	Generation X	714	765.9	-4.5			
	Millennials	56	57.4	-0.3			

A chi-square test was also conducted which showed that the women who held executive positions at the local level (mayors and the president of an autonomous region) communicated a leadership style characterised by hard skills, while soft skills predominated in the communication by those who governed at the national level.

Table 4. Leadership styles by type of government (national or local)

Type of leadership	Type of government	Observed frequency	Expected frequency	Adjusted Standard Residuals	X^2	DF	Sig.
Soft	Local	428	555.3	-11.9	202.71	2	.000
	National	395	267.7	11.9			
Mixed	Local	207	139.7	10.5			
	National	0	67.3	-10.5			
Hard	Local	898	838	5.4			
	National	344	404	-5.4			

Regarding the preferred techniques used for communicating government actions, the chi-square test showed that the female leaders who were inclined to use storytelling and "storydoing" generally communicated predominantly using soft skills, while those who used statistics and logical arguments used leadership styles with a predominance of hard skills in their communication.

Table 5. Differences in preferred communication techniques by type of leadership							
Type of leadership	Communication techniques	Observed frequency	Expected frequency	Adjusted Standard Residuals	X^2	DF	Sig.
Soft	Storytelling	209	140.8	8.1	256.018	4	.000
	"Storydoing"	334	256.2	7.9			
	Data	50	196	-15.7			
Mixed	Storytelling	40	39.7	230.5			
	"Storydoing"	58	72.2	-2.3			
	Data	69	55.2	2.4			
Hard	Storytelling	162	230.5	-7.8			
	"Storydoing"	356	419.6	-6.2			
	Data	453	320.9	13.6			

A chi-square test was then carried out which showed that the women leaders in the sample who did not resort to personalisation in their communication exhibited either a hard or a mixed leadership style, while women leaders who used personalisation were characterised by a soft leadership style in their public communications.

Table 6. Differences in types of leadership by degree of personalisation							
Type of leadership	Degree of ideological positioning	Observed frequency	Expected frequency	Adjusted Standard Residuals	X^2	DF	Sig.
Soft	None	260	358.6	-8.7	77.284	4	.000
	Intermediate	351	286.5	5.9			
	Strong	212	177.9	3.6			
Mixed	None	103	90.2	1.9			
	Intermediate	70	72.1	-0.3			
	Strong	34	44.7	-1.9			
Hard	None	627	541.2	7.3			
	Intermediate	370	432.4	-5.5			
	Strong	245	268.4	-2.4			

Thus, it was observed that the tendency to communicate hard or soft leadership styles was not uniform but varied according to the political ideology of the women leaders, their generational affiliation, and the level of the position they held (local or national). Additionally, although all of them used Instagram as a platform to communicate their government actions to citizens, the degree of personalisation was not consistent. The main communication characteristics identified for each leader are outlined below:

- Ada Colau: soft leadership style, 61.6%; personalisation of communication, 75.6%; and argumentation, 15.1%.
- Angela Merkel: hard leadership style (66.7%); personalisation of communication (92.2%); and "storydoing" (82.9%).
- Anne Hidalgo: soft leadership style (50%) and hard leadership style (50%); personalisation of communication (71.1%); and "storydoing" (60.5%).
- Claudia López: hard leadership style (61.1%); personalisation of communication (69.5%); and argumentation, 34.7%.
- Claudia Sheinbaum: hard leadership style (69.4%); no personalisation of communication (73.4%); and argumentation (20.7%).
- Erna Solberg: soft leadership style (75%); personalisation of communication (77.4%); and "storydoing" (69.8%).
- Isabel Díaz Ayuso: soft leadership style (67.3%); personalisation of communication (87.8%); argumentation (2%); and "storydoing" (2%).
- Jacinda Ardern: soft leadership style (53.2%); personalisation of communication (55.6%); "storydoing" (52.4%).
- Katrin Jakobsdottir: soft leadership style (68%); personalisation of communication (87.2%); and "storydoing" (53.2%).
- London Breed: hard leadership style (64.2%); personalisation of communication (52.2%); and argumentation (55.2%).
- Mette Frederiksen: soft leadership style (62.9%); personalisation of communication (82.1%); storytelling, 51.2%.
- Sanna Marin: hard leadership style (53.2%); personalisation of communication (96.2%); storydoing, 59%.
- Tsai Ing-wen: soft leadership style (49.2%); personalisation of communication (67.7%); "storydoing" (50%).

- Virginia Raggi: hard leadership style (53.6%); no personalisation of communication (60.3%); and argumentation (47.3%).

4. Discussion and conclusions

The above results lead to the conclusion that the leadership style communicated by the sample of women politicians elected to government executive positions varied according to the values of other variables, such as their generational affiliation, their political ideology and the level of government where they held a position. Regarding the variations in the communication of a hard or soft leadership style, it can be assumed that the characteristics and expectations of the different types of the target audiences had some influence on the decision, depending on the national or local level of the public position held. Local audiences mainly demand displays of managerial skills, which reinforces the need to convey a leadership style marked by hard skills.

As for the degree of personalisation in the communication of their government actions, those women leaders who leant towards a hard leadership style did not show a tendency to personalise; while those who were characterised by communicating a soft leadership style tended to personalise when relaying government measures and decisions. Instagram's rationale favours the phenomenon of the personalisation of politics, promotes the use of anecdotes and narrative techniques such as storytelling or "storydoing" for the communication of political government actions and encourages the posting of simple visual messages in the form of photos, albums, selfies, videos and collages that seek to humanise and give prominence to high-profile politicians (Berrocal-Gonzalo et al., 2022; Ekman & Widholm, 2017). However, according to the results of this analysis, the trend toward personalisation of communication is not homogeneous. In fact, the different techniques chosen to communicate government messages and actions, as well as the varying degree of personalisation of communication, was found to be strongly related to the leadership style of the women politicians in the sample.

Regarding the role of Instagram and other social networks such as TikTok as a political socialisation tool for young people, it would be interesting to design a study to investigate whether this segment of the population tends to prefer the softer leadership styles communicated by political leaders who are closer in age to them, or whether young people have a greater preference for leadership styles. Women leaders from three different generations are represented in the sample analysed, Sanna Marin being the only millennial. Her Instagram profile exhibits a high degree of personalisation. Her personal image is often associated both with the communication used in her representative and governmental tasks and with aspects of her private life.

The study shows that not all women politicians have the same style when it comes to leading a government project. The communication of both male and female leaders in the context of the COVID-19 pandemic was heterogeneous (Palau-Sampio & Carratalá, 2022). The leadership styles communicated by the women leaders analysed varied according to their generational affiliation in the type of (hard or soft) skills they chose to convey, as well as in the degree of personalisation and the techniques they prefer to use when disseminating their government's decisions and actions. The assumption that women politicians share a gender-defined leadership style contributes to a new stereotype that denies women's diversity. This is dangerous because it limits their access to, threatens their permanence in, and justifies their exclusion from positions of power and decision-making spaces, and therefore restricts their political influence. It is prejudicial to consider that this style does not meet what is needed to successfully manage and lead these positions and processes. This is an obstacle that can take a heavy toll on women politicians' career development, leadership and equal political participation. Future work will need to broaden the discussion by incorporating new variables that serve to explore whether there are any differences in leadership styles based on the geographical region involved, the degree of polarisation used in women leaders' communication, or on the strategies they use to express their emotions publicly.

Notes

[1] The New York Times, why are women–led–nations doing better with COVID-19?https://nyti.ms/3HuNgxN; The Guardian, https://bit.ly/3VRZd54.

Authors' Contribution

Idea, V.G.B., S.B.; Literature review (state of the question): V.G.B., S.B., O.D'A., L.B.; Methodology, V.G.B., L.B.; Data analysis, V.G.B., S.B., O.D'A., L.B.; Results, V.G.B., S.B., O.D'A., L.B.; Discussion and conclusions, V.G.B., S.B., L.B.; Drafting (original draft), V.G.B., S.B.; Final revisions, V.G.B., S.B., L.B.; Project design and sponsorship, V.G.B., S.B.

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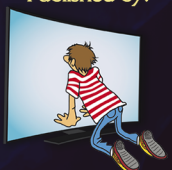

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