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

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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. $\pm 2.15\%$ 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]
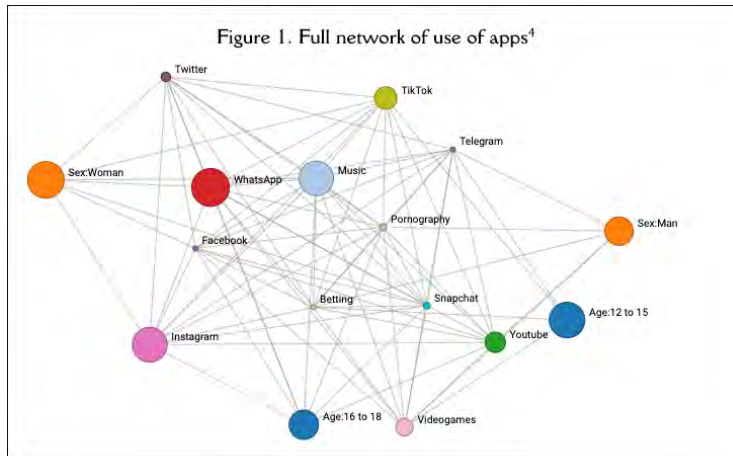
Note. Developed with NetCoin Project.

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
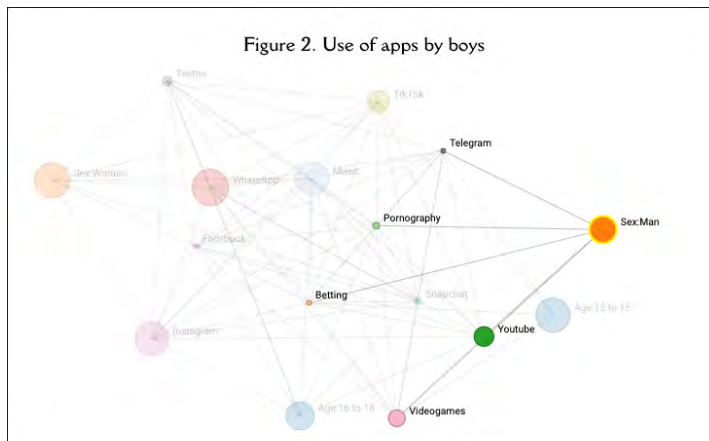
Note. Developed with NetCoin Project.

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
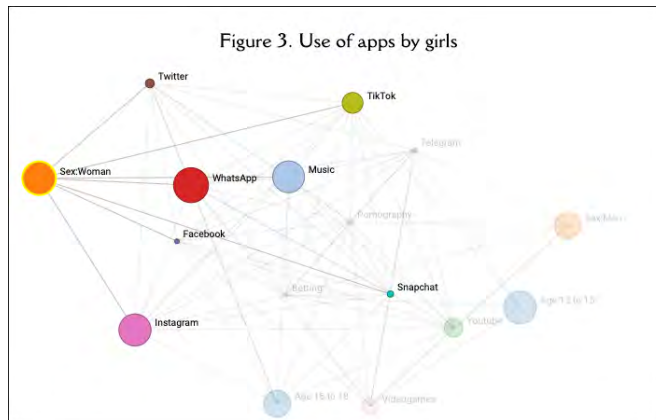
Note. Developed with NetCoin Project.

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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