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How do teenagers interact with video games? Preferences and performative skills

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Abstract
Introduction. This article analyses the influence of video games on the socialisation processes of Spanish teenagers, especially regarding the development of safety habits, time investment and preferences of use. **Methods.** The study is based on a quantitative and descriptive approach and the use of a purpose-created 13-item survey questionnaire that examines video games and media use and was applied to a sample of 237 students aged 12 to 17. **Results**. Spanish teenagers are indifferent towards the adoption of safety habits when it comes to playing video games. **Discussion and conclusions**. Motivation to play video games is higher in teenage boys than girls, which makes us wonder about the causes of these gender-related preferences in videogame use and the development of safety habits.

Keywords
Video games; socialisation; teenagers; transmedia literacy.

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1. Introduction

The transition from the information society to the knowledge society is being favoured by the accelerated technological development of mobile networks and devices, which has enabled the emergence of a new media ecology (Scolari, 2012, 2015) and new cultural forms of appropriation and media interaction. The participation culture formulated by Jenkins (2006) increases as the development and hybridisation of new terminals, networks and media products empower teenagers and citizens with new ways to learn and (re)build popular culture. The emergence of Facebook (2004), YouTube (2005), Google Docs (2006), iPhone and iPad (2010), as well as the incorporation of new technologies such as cloud computing (Amazon AWS, 2006; iCloud 2010) show an acceleration in the technologies that prompt those new cultural practices.

Teenagers' access to these tools for consumption, communication, and individual and collective content creation and management, forces the school, the institution responsible for traditional literacy and media literacy, to face the new challenge posed by its failure to retain the leading role in learning management, which causes growing tensions that have been documented in research works on this subject (Area, 2010, Balanskat, Blamire & Kefala, 2006, Scolari, 2018, Segovia et al, 2016). Children and teenagers learn with technologies in non-school contexts, with different agents and strategies that are linked to new learning paradigms, such as connectivism, as promoted by George Siemens (2010), and the pedagogy of interactivity (Aparici & Silva, 2012).

This new situation, typical of the 21st century, poses new challenges to researchers in the field of communication and education, since many of the skills that young people learn in their interacting with modern technologies are acquired in non-school contexts, either in cooperation with their peers or autonomously through the network. These new scenarios in which boys and girls learn, create, communicate and play constitute a new paradigm regarding media literacy and education, which has an influence in the necessary conceptual review. This perspective amplifies the field with contributions such as those derived from the "transmedia literacy" project (Scolari, 2018) to identify the wide range of learning skills and strategies generated by the new cultural synergies and products like "transmedia storytelling" (Jenkins, 2006, 2010, Scolari, 2013), experiences with video games and virtual communities of YouTubers, fan fictions and gamers.

Consequently, it is necessary to adapt the approaches of "new media literacy" (Gee, 2004), "media and information literacy" (Wilson, 2012) and "multiliteracies" (Tyner, Gutiérrez & Torrego, 2015), given that their orientations are more linked to formal education, by complementing them with other perspectives that deal with learning in non-formal spaces, such as transmedia literacy (Scolari, 2018)

This is the starting point of this article, which is part of the R&D research project titled "Transliteracies. Teenagers' transmedia competencies and informal learning strategies" **[1]**, which analyses the collective acquisition and construction of transmedia competencies by Spanish teenagers outside the formal education system. The analysed learning practices are related to the basic knowledge that they obtain to navigate in digital networks, experiences in the creation and distribution of audiovisual or written works ("fanfictions") in collaborative platforms, and how teens learn to solve the problems that arise when they participate in video games or digital games.

In our case, we will focus on studying the relationship of teenagers aged 12 to 15 with video games, based on the data obtained through a purpose-created questionnaire that investigates their preferences, use habits and dedication, electronic devices used to play, the comparison of videogame use and other media use and leisure.

What and how do teens learn with video games?

As Paul Gee (2007) points out, video games, as cultural and digital products, are systems that integrate narratives, solution of problems, motor functions, conception of leadership, among others, and in recent years have become a mass consumption item in all age groups of the population.

The economic indicators show us that the impact of the videogame industry increases year after year in our country and that it is in the top four in the USA. According to the Spanish Association of Video Games (AEVI, 2017), in 2016 the revenue in this economic area (PC, consoles, mobile phones, tablets, etc.) amounted to 1.163 million euros, equivalent to 0.11% of the GDP. Within the audiovisual entertainment industries, the videogame industry occupies the first position, ahead of the cinema (601 million euros), with an increase of 7.4% in comparison to 2015. It is estimated that it involves 15 million video gamers, of which the 11-14 age group constitutes the majority.

In terms of videogame types, the majority are physical, followed by online games and games in mobile apps, although these figures change continuously because, for example, online videogame consumption increased by 30.82% with respect to 2015 (AEVI, 2017).

These references contextualise the impact that, as media products, video games have among teenagers, as it is evident that video games are already, together with social networks, part of the daily tasks of teenagers.

However, the attention paid to video games is educational settings is still limited and somewhat contradictory, given that the two lines of study that predominate are related to preventive aspects (risks of videogame use for childhood and adolescence) (Castellana Rosell et al, 2007; Chamarro, 2014) and media literacy in digital games or *ludoteracy* (Aranda, Sánchez-Navarro and Martínez, 2015, Aranda et al., 2017).

In this case, the interest focuses on video games as educational resources (serious games and gamification), a very fruitful field linked to "digital game-based learning" (Prensky, 2007), "edutainment" or educational entertainment (Lacasa, 2011) or "serious game" (Ritterfeld, Cody & Vorderer, 2009). However, there are also studies dealing with videogame as an object of study, that is,

focused on understanding the videogame itself, how to play it and how to produce digital games (Pousen and Gatzidis, 2010).

Transmedia literacy and video games

The use of video games for leisure favours gamers' learning through the solving of the problems they must face individually or cooperatively. These are identified in informal learning strategies, which sometimes are much more significant and creative than those that are generated in school contexts, as they respond to problems that can be complex and require the mobilisation of the player's knowledge, skills and emotions. The research study on video games, which had the participation of teenagers from Andalusia, Catalonia, Galicia, Madrid and Valencia, provides data that have allowed us to identify the skills and learnings that are linked to transmedia competencies related to content creation and management, the production of narratives and aesthetic criteria, competencies related to privacy and risk prevention, skills related to ideology and ethics, and performative skills, especially those connected with the game and ludic abilities.

The analysis of teenagers' practices and uses in relation to video games allow us to confirm that through them teenagers develop these competencies along with various of the learning strategies. This allows us to trace the relationships that are established at this age with video games, learnings and interactions with other gamers, which ultimately helps us identify key elements for proper transmedia literacy.

2. Objectives

This study is guided by the following objectives:

1. Analyse the opinions of teenagers from the Autonomous Communities of Andalusia, Catalonia, Galicia, Madrid and Valencia regarding their dedication, preferences and safety habits in relation to videogame use.
2. Identify differences between the 3 dimensions that make up the *transliteracy questionnaire* and the independent variables: sex, age, city of residence, family type, extracurricular activities and types; as well as availability and uses of electronic devices such as computer, laptop, mobile phone, digital tablet, Wi-Fi connection, videogame console and handheld game console.
3. Observe the existence, or lack thereof, of correlations between the different dimensions of the questionnaire.
4. Establish models to predict teenagers' safety habits according to their videogame dedication and preferences and depending on their dedication to media use.

3. Methods

3.1. Sampling and participants

A non-probabilistic convenience sampling procedure was used for this study (Cuenca and Lozano, 2016) because the method used in the classroom, as well as the application of the questionnaire, could

only be carried out with the groups of students to whom the team of researchers participating in this project had access during the 2015-2016 academic year.

The sample consisted of a total of 237 participants: 49 students from Andalusia, 57 from Catalonia, 39 from Galicia, 44 from the Valencian Community and 48 from Madrid.

Regarding the relationship between the age and sex of participants, their age ranged from 12 to 17. In this sense, 46% were 14 years old, and of them 59.6% were girls and 40.4% were boys. 24.1% were 15 years old, and of them 45.6% were girls and 54.4% were boys. Moreover 10.5% were 13 years old, of which 44% were girls and 56% were boys. Another 10.5% were 16 years old, of which 40% were girls and 60% boys. 12-year-old students represented 6.8% of the sample, of which 68.8% were girls and 31.3% were boys. Finally, 2.1% were 17 years old, of which 60% were girls and 40% were boys.

3.2. Data collection instrument

The instrument used to carry out this study is a purpose-created *Transliteracy Questionnaire*, whose purpose is to collect the opinions of teenagers about the time they spend using the media, their tastes and preferences in relation to social networks and video games, as well as their safety habits in relation to the use of such resources. To be precise, this study focuses on videogame use and, thus, on only a selection of 14 items of the questionnaire. The validation and reliability of the instrument have been measured and corroborated by different statistical analyses. Regarding the validity of the instrument, we carried out an exploratory factor analysis, using an optimal implementation of Parallel Analysis (PA) (Timmerman & Lorenzo-Seva, 2011), along with extraction of common "Robust Unweighted Least Squares" (RULS) factors considering a weighed Oblimin rotation procedure (Lorenzo-Seva, 2000), with a Kaiser-Meyer-Olkin (KMO) index of 0.76, a Bartlett's test for sphericity of p=0.000, and analysis of residuals with RMSR= .0529, which are considered adequate for the model (Aldas and Uriel, 2017). On the other hand, variance presents a non-normal distribution, measured through the Kolmogorov-Smirnov test (p=.000). The result of the extraction of the main components reflects the existence of 3 factors, where the total variance explained is 55.21%, which reveals an appropriate balance between the components of the instrument, which are representative of the theoretical concept.

To contrast and confirm the model extracted through EFA, we carried out a confirmatory factor analysis (CFA) through the AMOS 23 statistical program. This analysis allows us to explain the correlations between a set of variables observed through a reduced set of factors (Herrero, 2010). In this way, it is possible to check how each variable is related to its factor and whether factors are interrelated. The results obtained from the CFA, considering the Maximum Likelihood (ML) estimation for the extraction of common factors, in the first instance, yielded values below .900, in the case of relative adjustment, so it was necessary to check the weight factor of each of the items within the factors of the model. In this sense, item 3 of the "Time investment in video games" dimension, which referred to the time spent enjoying table games, obtained a factor value below .30. Regarding its relevance in the theoretical construct, it was not a fundamental item either because the study focuses on video games not board games, so we decided to eliminate it. Once said item was eliminated, a CFA was carried out again using the aforementioned extraction method, taking as reference the values of the discrepancy function (chi-square), of relative adjustment and the values based on decentralisation (RMSEA), which yielded adjustment indices appropriate according to the model ($\chi 2$= 63.532, gl.=38;

NFI= .913; IFI= .963; TLI= .919; CFI= .961 RMSEA= .053), which led to its acceptance, based on the results of the EFA and the theoretical dimensions considered in it (Browne & Cudeck, 1993, Byrne, 1994, Hu & Bentler, 1998, Schumacker & Lomax, 2004, Steiger, 2000).

Table 1: *Rotated component matrix for exploratory factor analysis (EFA)*

	Factor 1. Dedication to media use	Factor 2. Preferences in videogame use	Factor 3. Safety habits in videogame use
1. I watch television	.535		
2. I play video games	.561		
3. Play board games	.581		
4. I participate in blogs, websites, online forums...	.425		
4. I like to play video games with friends on line		.425	
5. When I go to my friends' house, we regularly play video games		.451	
6. If I like a movie, I also look for the book, video game, soundtrack...		.559	
7. I search on the Internet for gameplays of my favourite video games.		.574	
8. I like to make fan-fictions of my series, movies, video games, comics...		.730	
9. I like to do cosplay		.402	
10. When I want to learn how to do something, I search for tutorials on the Internet		.344	
11. Before posting a picture of myself on the web, I think twice			-.371
12. Watching the screen too long can harm my health (memory, sight, etc.)			-.375

13. There are websites where I participate without revealing who I am (nickname)			.326

Source: Authors' own creation.

Moreover, the measurement of the instrument's reliability was carried out by focusing on internal consistency (Merino-Soto, 2016), obtaining a Cronbach's alpha of 0.71, which indicates the acceptable reliability of the items included in the questionnaire.

3.3. Data collection Procedure

The questionnaire contained 13 items that were measured with a five-point Likert scale. The first dimension of the questionnaire investigated time spent with media (where 1=never and 5=every day), while the other two dimensions, which investigated agree teens' preferences and safety habits in videogame use (1=totally disagree and 5=totally). Participants were asked to share their opinion regarding these aspects, focusing on videogame use. In addition, students were asked to respond direct questions about personal data (sex, age, city of residence and family type), academic life (extracurricular activities and types) and availability and uses of devices (PC, laptop, mobile phone, digital tablet, Wi-Fi connection, videogame console and portable videogame console)

The instrument was given to the selected students at the beginning of the dynamics based on the use of social networks and video games. The completion of the survey took 15 minutes. The researchers of the project were responsible for carrying out this method and collecting the data in all the selected autonomous communities.

3.4. Data analysis

The analyses that we have carried out in this study to try to respond to the proposed objectives are the following:

- First, we performed a descriptive analysis of the 13 variables that made up the questionnaire through measures of central tendency (mean) and dispersion (standard deviation).
- Second, we carried out a descriptive analysis of the 3 dimensions of the questionnaire, calculating frequency distribution, and measurement of central tendency and dispersion.
- Third, we performed different analyses of variance to check whether there was a relationship between the dimensions of the questionnaire and the independent variables related to personal data (sex, age, city of residence and family type); academic information (extracurricular activities and types); and availability and use of devices (PC, laptop, mobile phone, digital tablet, Wi-Fi, videogame console and handheld videogame console). To this end, we carried out the Mann-Whitney and Kruskal-Wallis tests, using the statistical package *SPSS 23.*
- Fourth, we checked the relationship between the dimensions that made up the questionnaire through bivariate correlations.

- Finally, we performed multiple linear regressions to predict, first, the safety habits of Spanish teenagers based on time investment and preferences in relation to videogame use; and, second, to predict these indicators according to time spent in media consumption

4. Results

The descriptive results of the 13 items that make up the questionnaire used in this research to examine transmedia literacy through videogame use are presented in Table 2, which shows the means and standard deviations of these items:

Table 2: *Frequency distribution of the questionnaire items on transmedia literacy through videogame use*

Factors	Item	M	SD
Factor 1: Time spent with media	1. I watch television	4.38	1.12
	2. I play video games	2.97	1.36
	3. I participate in blogs, websites, online forums...	1.83	1.17
Factor 2. Preferences in videogame use	4. I like to play video games with friends on line	2.76	1.72
	5. When I go to my friends' house, we regularly play video games	2.72	1.53
	6. If I like a movie, I also look for the book, video game, soundtrack...	2.83	1.54
	7. I search on the Internet for gameplays of my favourite video games.	2.46	1.63
	8. I like to make fan-fictions of my series, movies, video games, comics...	1.91	1.22
	9. I like to do cosplay	1.51	1.02
	10. When I want to learn how to do something, I search for tutorials on the Internet	4.13	1.12
Factor 3. Safety habits in videogame use	11. Before posting a picture of myself on the web, I think twice	4.16	1.25
	12. Watching the screen too long can harm my health (memory, sight, etc.)	4.08	1.23

	13. There are websites where I participate without revealing who I am (nickname)	2.77	1,64

Source: Authors' own creation.

The following section shows the results divided according to the 3 dimensions of the questionnaire. In this sense, we present the descriptive data of each of the dimensions, as well as the existence of statistically significant differences, considering the independent variables of the study related to personal data, academic information, and availability and use of devices. Finally, the relationships between the dimensions of the questionnaire are presented, as well as the establishment of a predictive model for the safety habits of Spanish teenagers according to their dedication and preferences in relation to videogame use, as well as in terms of their dedication to media use.

4.1. Teenagers' dedication to media use

In this dimension, we included the 3 items that alluded to the opinions of teenagers regarding media consumption. Specifically, it refers to the time spent in watching television, playing video games and participating in blogs, websites, online forums, etc.

The results obtained in this dimension indicate that teenagers have a dedication of two or more times a month for media consumption ($\mu = 3.05$; $\sigma = .75$).

As for the differences that sex, extracurricular activities and free time, availability of devices and regular use established in relation to teenagers' dedication to media use, the Mann-Whitney test for independent samples pointed out, first, that there were statistically significant differences according to students' sex [*U*= 3758,000, (111, 126), z=-6.201, p<.01]. In this sense, the average media consumption ranges were higher in male students than in female students. Regarding the performance of extracurricular and leisure activities, the same test indicated that there were no statistically significant differences. Focusing on the availability of devices, as well as on their regular use, the test indicated the following (see tables 3 and 4):

Table 3: *Mean comparison for availability of devices in relation to media use dedication*

Device	Existence of statistically significant differences	Mann-Whitney U value	Result
PC	Yes	[U=4340.000, (78.157), z=-3.668, p<.01]	Higher average ranges in teenagers who have a PC compared to those who do not.

Laptop	No	[U=2090.500, (20.217), z=-.274, p>.05]	There are no statistically significant differences
Mobile phone	No	[U=555.000, (5.232), z=-.166, p>.05]	There are no statistically significant differences
Digital tablet	No	[U=3776.500, (39.198), z=-.218, p>.05]	There are no statistically significant differences
Wi-Fi connection	No	[U=707.500, (9.228), z=-1.594, p>.05]	There are no statistically significant differences
Console	No	[U=2905.500, (36.201), z=-1.899, p>.05]	There are no statistically significant differences
Portable console	Yes	[U=5242.000, (91.146), z=-2.754, p<.01]	Higher average ranges in teenagers who have a portable console compared to those who do not.

Source: Authors' own creation.

Table 4: *Mean comparison for regular use of devices in relation to media use dedication*

Device	Existence of statistically significant differences	Mann-Whitney U value	Result
PC	Yes	[U=4078.000, (166.70), z=-3,649, p<.01]	Higher average ranges in teenagers who regularly use PC compared to those who do not.
Laptop	No	[U=5624.000, (74.163), z=-.840, p>.05]	There are no statistically significant differences
Mobile phone	No	[U=776.000, (10.226), z=-1.692, p>.05]	There are no statistically significant differences
Digital tablet	Yes	[U=5613.000, (98.139), z=-2,327, p<.05]	Higher average ranges in teenagers who regularly use a digital tablet compared to those who do not use it.

Wi-Fi connection	No	[U=1604.000, (16.221), z=-.625, p>.05]	There are no statistically significant differences
Console	Yes	[U=4206.000, (130.107), z=-5,284, p<.01]	Higher average ranges in teenagers who regularly use a console versus those who do not.
Portable console	Yes	[U=1494.000, (212.25), z=-3,600, p<.01]	Higher average ranges in teenagers who regularly use a portable console compared to those who do not.

Source: Authors' own creation.

To determine the influence of age, city of residence, family type and extracurricular activities practiced by teenagers in their media use dedication, we carried out multiple mean comparisons through the analysis of the Kruskal-Wallis *K* test. The results obtained showed that there were no statistically significant differences between teenagers' age and dedication in media use.

Regarding the relationship between city of residence and the time spent in the use of media, the analyses yielded similar results, that is, there were no statistically significant differences.

Focusing on the family type, the same test yielded identical results to the previous ones, that is, there are no statistically significant differences between teenagers' family type and dedication to media use.

Finally, and referring to teenagers' type of extracurricular activities and free time and their relationship with the dedication to media use, the test indicated that there were no significant differences either.

4.2. Teenagers' preferences in videogame use

This dimension is composed of 7 items that investigate the opinions of teenagers in relation to their tastes and preferences in videogame use. Specifically, this dimension examines videogame use in online platforms and at home with friends, search for video games based on the viewing of a movie, viewing of tutorials to learn how to do things, viewing of gameplay videos of video games, and the production of fan-fictions and cosplay.

The results obtained in this dimension indicate that teenagers partially disagree about their preferences and tastes in videogame use ($\mu = 2.61$; $\sigma = .80$).

Moreover, the Mann-Whitney U test, which was conducted to identify possible differences in relation to sex, extracurricular activities and free time, availability and regular use of devices in relation to teens' preferences in videogame use, indicated, first of all, that there were statistically significant differences according to teens' sex [U=3607.500, (111.126), z=-6.437, p<.01]. In this sense, teenage boys had higher average ranges than girls in terms of preferences in videogame use. Regarding the performance of extracurricular and leisure activities, the same test indicated that there were no

statistically significant differences. Focusing on the availability and regular use of devices, the same test indicated the following (see Tables 5 and 6):

Table 5: *Mean comparison for availability of devices in relation to teenagers' preferences in videogame use.*

Device	Existence of statistically significant differences	Mann-Whitney U value	Result
PC	Yes	[U=4972.000, (78.157), z=-2,349, p<.05]	Higher average ranges in teenagers who have a PC compared to those who do not.
Laptop	No	[U=1966.000, (20.217), z=-.696, p>.05]	There are no statistically significant differences
Mobile phone	No	[U=550.500, (5.232), z=-.195, p>.05]	There are no statistically significant differences
Digital tablet	No	[U=3628.500, (39.198), z=-.595, p>.05]	There are no statistically significant differences
WiFi connection	Yes	[U=631.500, (9.228), z=-1.958, p=.05]	Higher average ranges in teenagers who have Wi-Fi connection compared to those who do not.
Console	No	[U=2937.500, (36.201), z=-1.799, p>.05]	There are no statistically significant differences
Portable console	Yes	[U=5273.500, (91.146), z=-2.672, p<.01]	Higher average ranges in teenagers who have a portable console compared to those who do not.

Source: Authors' own creation.

Table 6: *Mean comparison for regular use of devices in relation to teenagers' preferences in videogame use*

Device	Existence of statistically significant differences	Mann-Whitney U value	Result
PC	Yes	[U=4194.000, (166.70), z=-3.378, p<.01]	Higher average ranges in teenagers who regularly use a PC compared to those who do not.
Laptop	No	[U=5925.000, (74.163), z=-.217, p>.05]	There are no statistically significant differences
Mobile phone	No	[U=865.500, (10.226), z=-1.254, p>.05]	There are no statistically significant differences
Digital tablet	No	[U=6452.000, (98.139), z=-.691, p<.05]	There are no statistically significant differences
Wi-Fi connection	No	[U=16 43.000, (16.221), z=-.473, p>.05]	There are no statistically significant differences
Console	Yes	[U=4387.000, (130.107), z=-4.896, p<.01]	Higher average ranges in teenagers who regularly use a console versus those who do not.
Portable console	No	[U=2161.500, (212.25), z=-1.509, p>.05]	There are no statistically significant differences

Source: Authors' own creation.

Furthermore, the analyses of variance performed to determine the existence of significant differences between teenagers' age, city of residence, family type and extracurricular activities in relation to preferences in videogame use showed, first, that there were no statistically significant differences in relation to age.

Regarding the relationship between city of residence and preferences in videogame use, the analyses showed that there were statistically significant differences [X2 (4, N=237) = 10.854, p=.028]. The average range was higher in teenagers residing in the Valencia Community, followed by those living

in Catalonia, while the lowest values corresponded to those living in the Communities of Madrid and Andalusia, respectively.

Focusing on the family type, the same test showed that there were no statistically significant differences between teenagers' family type and preferences in videogame use.

Finally, with regards to teenagers' type of extracurricular activities and free time and their relationship with their preferences in videogame use, the previous test indicated that there were no significant differences.

4.3. Teenagers' safety habits in videogame use

This dimension is composed of 3 items examining habits of teenagers in relation to videogame use. Specifically, they refer to teens' reflection before uploading photos to the network, participation in forums without revealing their identity and considering spending a long time watching a screen harmful to health.

The results obtained in this dimension show that students are indifferent towards the development of safety habits in videogame use ($\mu = 3.67$; $\sigma = .80$).

Table 7: *Mean comparison for availability of devices in relation to teenagers' safety habits in videogame use.*

Device	Existence of statistically significant differences	Mann-Whitney U value	Results
PC	No	[U=5213.500, (78.157), z=-1.868, p>.05]	There are no statistically significant differences
Laptop	No	[U=1850.500, (20.217), z=-1.098, p>.05]	There are no statistically significant differences
Mobile phone	No	[U=529.500, (5.232), z=-.336, p>.05]	There are no statistically significant differences
Digital tablet	No	[U=3657.500, (39.198), z=-.524, p>.05]	There are no statistically significant differences
Wi-Fi connection	No	[U=906.500, (9.228), z=-.597, p>.05]	There are no statistically significant differences
Console	No	[U=3520.500, (36.201), z=-.259, p>.05]	There are no statistically significant differences

Portable console	No	[U=6445.000, (91.146), z=-.389, p>.01]	There are no statistically significant differences

Source: Authors' own creation.

Table 8: *Mean comparison for regular use of devices in in relation to teenagers' safety habits in videogame use.*

Device	Existence of statistically significant differences	Mann-Whitney U value	Result
PC	No	[U=5131.500, (166.70), z=-1.428, p>.05]	There are no statistically significant differences
Laptop	No	[U=5758.500, (74.163), z=-.562, p>.05]	There are no statistically significant differences
Mobile phone	No	[U=951.500, (10.226), z=-.852, p>.05]	There are no statistically significant differences
Digital tablet	No	[U=6639.500, (98.139), z=-.333, p<.05]	There are no statistically significant differences
Wi-Fi connection	No	[U=1633.500, (16.221), z=-.512, p>.05]	There are no statistically significant differences
Console	No	[U=6394.000, (130.107), z=-1.077, p>.05]	There are no statistically significant differences
Portable console	No	[U=2406.000, (212.25), z=-.759, p>.05]	There are no statistically significant differences

Source: Authors' own creation.

The Mann-Whitney U test conducted to identify possible differences on teens' preferences in videogame use depending on their sex, extracurricular activities and free time, availability and regular use of devices, indicated that there were no statistically significant differences according to sex.

Regarding to the performance of extracurricular and leisure activities, the same test indicated that there were no statistically significant differences either. Focusing on the availability of devices, as well as on their regular use, the aforementioned test indicated the following (see tables 7 and 8):

Furthermore, the analyses of variance performed through Kruskal-Wallis *K* test to find significant differences between teenagers' age, city of residence, family type and extracurricular activities in

relation to teenagers' safety habits in videogame use showed, first, that no statistically significant differences existed in terms of age.

Regarding the relationship of city of residence and teenagers' safety habits in videogame use, the analyses showed that there were statistically significant differences [X2 (4, N=237) = 10.404, p=.034]. The average range was higher among teenagers living in Catalonia, followed by those living in Madrid, while the lowest values were found in teenagers living in the Communities of Galicia and Andalucía, respectively.

Focusing on family type, the same test showed that there were no statistically significant differences between teenagers' family type and safety habits in videogame use.

Finally, and referring to the relationship between teenagers' type of extracurricular activities and free time and their safety habits in videogame use, the same test indicated that there were statistically significant differences [X2 (3, N=237) = 20.816, p=.000]. The average range was higher in teenagers who carried out academic and sports activities, while the lowest values were found in those who did not perform any type of activity.

4.4. Correlation analysis

In this section, we address the correlation study among the 3 dimensions of the questionnaire. The data resulting from the application of the Spearman correlation test, performed to verify the relationship between the 3 dimensions of the scale are shown in the following table (see Table 9).

Based on the data obtained from the analyses, we can say, on the one hand, that there is a relationship between dimension 1 (dedication to media use) and dimension 2 (preferences in videogame use), R=.417 and p=.000; given that there is a level of bilateral significance at ns=.01. The relationship between them is moderate, as indicated by Mateo (2004) and Pérez, García, Gil and Galán (2009). On the other hand, we can say that there is also a relationship between dimension 2 (preferences in videogame use) and 3 (safety habits in videogame use), since R=.195 and p=.003, given that there is a level of bilateral significance at ns=.01. The relationship between them is low, as pointed out by these authors.

Table 9: *Results of bivariate correlations for the questionnaire's dimensions*

Correlations

			Dedication	Preferences	Habits
Spearman's Rho	Dedication	Correlation coefficient	1.000	.417**	.083
		Sig. (bilateral)		.000	.201
		N	237	237	237
	Preferences	Correlation coefficient	.417**	1.000	.195**
		Sig. (bilateral)	.000		.003
		N	237	237	237
	Habits	Correlation coefficient	.083	.195**	1.000
		Sig. (bilateral)	.201	.003	
		N	237	237	237

**Correlation is significant at the 0.01 level (bilateral).

Source: Authors' own creation.

4.5. Predictive models for questionnaire's dimensions

This section addresses the variable "teenagers' safety habits in videogame use" based on the measures of the dimensions "dedication to media use" and "preferences in videogame use" using multiple linear regressions (Pardo and Ruiz, 2002) and the stepwise method, in order to observe the predictor variables and their relation to the criterion variable.

The results, as we can see in Table 10, allow us to observe that only the dimension "Preferences in videogame use" is a predictor of the dimension "safety habits in videogame use", since β=.202, $t(202)=2.889$, $p<.01$. Therefore, it is statistically significant, so we confirm the hypothesis of linear relationship between teenagers' preferences in videogame use and their safety habits in videogame use. However, the adjusted value of R^2 was .032, which indicates that only 3.2% of the variability of the dimension "safety habits in videogame use" is explained by the variable mentioned above.

Table 10: *Regression line coefficients for the dependent variable "Teenagers' safety habits in videogame use" according to the measures of the dimensions "Dedication to media use" and "Preferences in videogame use"*

Coefficients [a]

Model	Non-standardised coefficients		Standardised coefficients	t	Sig.	Collinearity statistics	
	B	Standard error	Beta			Tolerance	VIF
1 (Constant)	3.155	.233		13.543	.000		
Preferences	.201	.070	.202	2.889	.004	.842	1.187
Dedication	-.003	.074	-.003	-.041	.967	.842	1.187

a. Dependent variable: Habits

Source: Authors' own creation

Finally, we also tried to explain the variable "Teenagers' preferences in videogame use" according to the dimensions "dedication to media use" in order to observe the predictor variable and its relationship with the criterion variable.

Table 11: *Regression line coefficients for the dependent variable "Teenagers' preferences in videogame use" according to the measures of the dimension "Dedication to media use".*

Coefficients [a]

Model	Non-standardised coefficients		Standardised coefficients	t	Sig.	Collinearity statistics	
	B	Standard error	Beta			Tolerance	VIF
1 (Constant)	1.327	.200		6.619	.000		
Dedication	.422	.064	.397	6.635	.000	1.000	1.000

a. Dependent variable: Preferences

Source: Authors' own creation

As we can see in Table 1, the results indicate that the dimension "Teenagers' dedication to media use" is a predictor of the dimension "Preferences in videogame use", since β=.397, t(397) =6.635, p<.01.

Therefore, it is statistically significant, which confirms the hypothesis of linear relationship between teenagers' dedication to media use and preferences in videogame use. However, the adjusted value of R^2 was 154, which indicates that only 15.4% of the variability of the dimension "Teenagers' preferences in videogame use" is explained by teenagers' dedication to media use.

5. Discussion and conclusions

Through the project "Transliteracies. Teenagers' transmedia competencies and informal learning strategies" we have analysed the relationships of teenagers with social networks, video games and participatory culture to be able to identify formal and informal learning strategies and the resulting transmedia competencies. The analysis of the data provided by the 13 selected items of the *Transliteracy Questionnaire*, which collected the opinions of teenagers from Andalusia, Catalonia, Galicia, Madrid and Valencia on preferences, uses and habits in relation to video games, has allowed us to offer evidence in relation to the objectives established for this study.

Below, we will review the main findings according to the dimensions "dedication to media use", "preferences in videogame use" and "safety habits in videogame use".

5.1. Teenagers' dedication to media use

From the results obtained about media consumption, we highlight the coincidences with previous studies (Sinde, Medrano & Martínez, 2015) that show differences according to gender, where the average values of boys are higher than those of girls, which does not mean that the technological skills of girls are lower, but rather that these differences are attributable to the influence of the differentiated socialisation processes of boys and girls with respect to technologies, which influences motivational elements.

However, this discrepancy is not appreciated when we compare the dedication of boys and girls to other activities such as sports and leisure.

Likewise, we can point out that there are no differences with regards to teenagers' media consumption according to age (12-17 years), family type or place of residence (different Autonomous Communities). This allows us to conclude that the ways in which teenage boys and girls are involved in media consumption and youth culture are not affected in our country by elements such as geographical context or family models, although there are different ways of understanding it from a gender perspective (Bertomeu, 2011).

5.2. Teenagers' preferences in videogame use

Independently of age, boys are more motivated to use video games of diverse types than girls, which makes us wonder about the causes of these type of preferences in relation to video games. Studies carried out from a gender perspective (Cortés Picazo & Sánchez Sánchez, 2013; Gil-Juárez, Feliu & González, 2010) point out the continuity of the stereotyped male and female representational models typical of other media productions, with the permanence of sexists features in 21st century videogame. The increase in the number of female characters responds to the need to broaden the potential base of female consumers, but there is a lack of quality productions that offer characters like Lara Croft, which

offer alternative female models that challenge traditional representations of women. Some of the interviewed teenage girls mentioned that they played video games during childhood but abandoned games and platforms in their preadolescence due to lack of interest.

5.3 Teenagers' safety habits in videogame use

It is important to emphasise that the transmedia skills mentioned by participants include risk prevention and privacy protection, which implies a certain reflexive attitude on the part of teenagers when it comes to using the Internet, participating in online forums with strangers, as well as self-regulation of the time they spend in front of the screens. In this sense, coinciding with international studies, teenagers do worry about the risk of addiction, although the number of teens who are aware of the risks is greater than the number of teens who actually takes precautionary measures (Masanet & Establés, 2018).

In this sense, we emphasise that there is a greater concern about safety habits among teenagers from Catalonia and Madrid than among teenagers from Galicia and Andalusia, which leads us to think about the need to deepen the analysis of the data provided by interviewees to verify whether the influence of urban *vs.* rural habitat can influence this issue or whether it is a question linked to other factors. In the case of Andalusia, the participating teenagers belong to an institute located in a rural town of 3,000 inhabitants and another one located in the city of Córdoba. On the other hand, teenagers' family type does not provide differentiating elements on this subject.

What we can emphasise from the study is that there are relationships that link media use with the presence of habits as videogame players, which is logical if we take into account that teenagers are multipurpose media users, because their socialisation is linked to a dense media ecosystem, in which the presence of the smartphone stands out.

6. Note

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