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Identification and Characterization of Adolescent Internet User's Profiles

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Abstract. The percentages of adolescent Internet use in general terms have been measured for nearly two decades now; however, it might be thought that not every teenager behaves online in the same way. This study aims to identify the different types or profiles of adolescents and to characterize them from an attitudinal, behavioral and socio-demographic viewpoint. A questionnaire was applied to a representative sample of 2,339 Compulsory Secondary School students (M = 13.77 years old) from Galicia (a North-Western region of Spain) for this purpose. A two-stage cluster analysis, based on the response pattern in relation to their attitudes toward Internet, was carried out. Four different segments with specific characteristics were identified: the *first steppers*, the *trainees*, the *sensible users*, and the *heavy users*. Besides the relevance of descriptive data, these results are of particular interest at an applied level, because they could lead to a better fit of programs to prevent risky behaviors and problematic Internet use in adolescents.

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The Internet plays an increasingly noticeable role in adolescents' daily lives. It has become the perfect tool for learning and information retrieval, for personal and academic developing, for communication and interacting, and for self-expression and leisure. The recent data show the high level of Internet use in adolescents. In Spain 92.0% of 10–15 year-old-children use Internet (National Statistics Institute, 2014). This figure rises to 96% in Germany (Statistisches Bundesamt, 2012), and 95% of adolescents aged 12–17 years are Internet users in the US (Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013). While recognizing the great benefits of Internet, adolescent Internet use is an issue of concern for professionals, researchers and administrations (Choi et al., 2009; Muñoz-Rivas, Fernández, & Gámez-Guadix, 2010; Ybarra, Alexander, & Mitchell, 2005).

On the one hand, adolescents can be particularly vulnerable to some dangers and risks associated with the Internet use (Huang et al., 2014; Kormas, Critselis, Janikian, Kafetzis, & Tsitsika, 2011). According to the European study *EU Kids Online*, 14% of 9–16 years old have seen pornography online, 15% of children aged 11–16 say that they have seen or received sexual messages on the Internet, and 3% say they have sent or posted such messages. In relation to online bullying, 6% have been sent nasty or hurtful messages online, and 3% have sent such messages to others (Livingstone, Haddon, Görzig, & Ólafsson, 2011).

On the other hand, the possible problematic or addictive Internet use has attracted significant research interest since Young (1996) presented the first paper referring to Internet addiction. The vast volume of scientific literature published bears witness to the interest shown in the subject, but more than 15 years later, there is no consensus on prevalence data of this phenomenon in adolescents (Chou, Condron, & Belland, 2005; Moreno, Jelenchick, Cox, Young, & Christakis, 2011). Values differ considerably in light of recent European studies results. For instance, the *EU Kids Online* survey showed that 1% of children aged 11–16 could be said to show pathological levels of Internet use (Smahel et al., 2012). Tsitsika, Tzavela, Mavromati, & EU NET ADB Consortium (2012) found that 1.2% of adolescents aged 14–17 years presented with Internet Addictive Behavior (IAB), and 12.7% with at risk IAB. In the meanwhile, the percentage of adolescents with pathological Internet use was an estimated 4.4%, and maladaptive Internet use prevalence among adolescents was estimated at 13.5% by Durkee et al. (2012). In the Asian countries the Internet addiction prevalence among adolescents ranges from 1.2% in South Korea, 2.2% in China, 3.1% in Japan to 4.9% in Philippines (Mak et al., 2014). A recent meta-analysis, including 89,281 participants from 31 nations across seven world regions, tries to amalgamate data to give more conclusive evidence, and estimates an Internet Addiction global prevalence of 6.0% (Cheng & Li, 2014).

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Limitations of both the academic-scientific and institutional studies hamper the comparability of results, the data integration and the correct current situation diagnosis. The variability in prevalence rates across the studies may be attributed to variations in definitions of the concept, diagnostic instruments and the samples used. First of all, there is a wide terminological heterogeneity to overcome: *Internet addiction* (Young, 1996), *compulsive Internet use* (Greenfield, 1999), *pathological Internet use* (Morahan-Martin & Schumacher, 2000), *problematic Internet use* (Caplan, 2002), *Internet dependency* (Rahmani & Lavasani, 2011) are some of the most commonly used terms. Since such disorders are not nowadays neither listed in the International Classification of Diseases (ICD-10) nor in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), a current prudent solution is the use of the term *problematic Internet use*, for the sake of the rigor and while it is waiting for the necessary consensus (Gómez, Rial, Braña, Varela, & Barreiro, 2014; Thatcher & Goolam, 2005). However it is interesting to mention that the *Internet Gaming Disorder* was included in the Section III of the DSM- 5 (American Psychiatric Association [APA], 2013) – describing clinical conditions possibly to be defined as formal disorders in future editions of DSM. Moreover some review of definitions of diagnosis and international attempts to standardize that diagnosis have been recently carried out (King & Delfabbro, 2014; Petry et al., 2014).

Different tests, tools and scales have been developed to try to measure the magnitude of the problem, according to different conceptual frameworks (Chen, Weng, Su, Wu, & Yang, 2003; Demetrovics, Szeredi, & Rózsa, 2008; Young, 1996), although some of them do not have adequate psychometric properties (Aboujaoude, 2010). Furthermore, the generalization of the results from the sample to the population is affected by small sample sizes or samples taken from a very specific environment (for instance, a city or a university in particular). Additionally, the samples are extracted from different target population: young people, adolescents, students, minors… and the data collection procedure used in any study varies from personal interviews, household surveys, face-to-face questionnaires to online forms.

It is worth noting that, although the currently available data suffer from the above-mentioned limitations, much progress has been made in the understanding of the phenomenon in general terms (Ólafsson, Livingstone, & Haddon, 2013; Spada, 2014). However, irrespective of these percentages or average values estimated by different studies and research projects, there is room for thinking that all adolescents do not behave online in the same way but there are different use patterns and users profiles. There is a growing need of better understanding of the issue, which means that it would be interesting to introduce a new focus of interest that has hardly been explored until now: the identification and characterization of different adolescent Internet users' profiles.

As a result of the literature review about this topic, some needs and lacks have been detected. First of all, there are not many studies, and especially they did not use a Spanish adolescent sample. Some *a priori* or classic segmentations have been carried out, based upon socio-demographic variables such as gender, age or cultural context (Aslanidou & Menexes, 2008; Li & Kirkup, 2007; Lin & Yu, 2008). However, fewer studies have stated as their aim the identification of Internet users' profiles (Hill, Beatty, & Walsh, 2013; Lee, 2010), and they are usually focused on characterizing and defining only those users who have problems. Thus, for instance, Tsitsika et al. (2012) based on the qualitative information from 124 interviews of adolescents with signs of Internet Addictive Behavior (IAB), found four types of Internet users at risk: the *stuck online*, the *juggling it all*, the *coming full cycle*, and the *killing boredom*. Roberts, Foehr, Rideout, and Bordi (2004) differentiated among six adolescent users' typologies by using cluster analyses: *Media Lite*, *Interactor*, *VidKid*, *Restricted*, *Indifferent*, and *Enthusiasts*. Chen and Tzeng (2010) identified three profiles for the college female heavy Internet users and three profiles for the college male heavy Internet users, and Lee (2010) found three groups of college students depending on their online life-styles: a *Social group*, an *Individual group*, and a *Loner group*. A recent meta-analysis and review of the research literature on media-user typologies (Brandtzæg, 2010) suggested eight different user types: *Non- users*, *Sporadics*, *Debaters*, *Entertainment users*, *Socializers*, *Lurkers*, *Instrumental users*, and *Advanced users*.

This paper seeks to take a step forward in this field and proposes an *ad hoc* segmentation, to combine classic socio-demographic variables with others, such as adolescents' attitudes and perceptions. It is of utmost importance to know the here-and-now data, considering the dynamism of the digital reality and the possible sociocultural connotations which could affect the adolescent's online behavior. The objective of this study is therefore to identify and characterize the different adolescents' categories or profiles in relation to Internet, nowadays in Spain. To achieve this goal means to reach three specific objectives. Firstly, the existence of different adolescents segments in terms of attitudes and perceptions toward Internet and Social Networks will be confirmed. Secondly, given that attitudes towards use are related to actual behavior (Ajzen, 1991) it will be checked to what extent those different attitudinal segments are also different in relation to their Internet use. Thirdly, the characterization

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of each segment will be further developed, adding new variables that result in a more comprehensive analysis and characterization.

This type of segmentation conducted through an identification of variables associated (firstly from an attitudinal perspective, and then from behavioral and socio-demographic viewpoints) will yield two benefits. It will result in a correct differentiation and a precise characterization of each and every profile, and it will result in a deeper understanding of adolescents' Internet usage, especially their risk-taking behaviors.

Method

Participants

In pursuit of its purpose, a selective methodology and a cross design were used. A survey of the Compulsory Secondary Education students from Galicia was carried out. A two-stage sampling design was used that resulted in the selection of 29 first-stage units and 2,339 sample individuals. The selection of the first-stage units (schools) was done by cluster random sampling with stratification according to type of school (public or private/subsidized), area (rural or urban), and Galician provinces, respecting population quotas. The second stage frame was stratified by gender, and grade. The final sample consisted of 2,339 Compulsory Secondary Education students from Galicia, 1,171 girls and 1,168 boys, between the ages of 11 and 18 (M = 13.77, SD = 1.34). Of these, 1,619 attended public schools and 720 attended private or subsidized schools; 1,239 studied in lower secondary education (1st and 2nd grade) and 1,100 were in upper secondary education (3rd and 4th grade).

Instruments

Data collection was undertaken through the application of a questionnaire developed for a broader study that included three different blocks: (1) a set of questions about Internet usage habits, motivations and barriers, information about the Internet, devices and applications availability, knowledge and use of Social Networks and the parents' role in this context; (2) a scale of attitudes and perceptions toward Internet and Social Networks (the scale has not a specific name), comprising 12 Likert type items with five answer options ranging from 1 *Strongly disagree* to 5 *Strongly agree*, (Rial, Gómez, Braña, & Varela, 2014); and (3) a last block including socio-demographic data (Gender, Age, Grade, School and Province).

The above-mentioned scale is grouped in three factors (*Negative exo-attitude*, *Positive endo-attitude* and *Risk*) confirmed by a Confirmatory Factor Analysis (GFI = .97; AGFI = .96; CFI = .95; NFI = .94; TLI = .93; RMSEA [CI] = .053 [.047 – .058]), and it has adequate internal consistency (α = .80). The first Factor of the attitudes scale (*Negative exo-attitude*) covered different aspects related to how the subjects see the relationship between adolescents and Internet and Social Networks (see Table 1). The second Factor (*Positive endo-attitude*) covered the relationship between oneself and these, and finally the third factor (*Risk*) analyzed the evidence of possible problematic Internet use.

Procedure

Data were collected in their own classrooms through an individual questionnaire, in small groups (no more than 20 individuals), after prior detailed explanation of the corresponding instructions. The information was collected by a group of researchers from the Universidad de Santiago de Compostela with extensive experience in carrying out this type of work. The Bioethics Committee of the Universidad de Santiago de Compostela approved this study. Participants were informed about the purpose of the study, and repeatedly assured of the complete anonymity and confidentiality of their responses. This study was carried out with the consent and cooperation from both the school leadership and respective parents' associations, and the participation was entirely voluntary.

Data analysis

The initial sample was composed by 2,339 subjects, although 327 had missing data in some of the attitudinal variables. A two-stage cluster analysis was carried out over the 2,012 left, in order to identify profile subtypes. In the first exploratory stage (CLUSTER procedure of the PASW Statistic 18), Euclidian distances were chosen as similarity measures because of the metric character of the data (Hair & Black, 2002). Three different clustering methods were used. A preliminary single-linkage procedure to identify potential outliers was first performed (Mooi & Sarstedt, 2011). A total of 16 outliers were identified and eliminated from the analyses, so that the final sample comprised 1,996 subjects. Ward's algorithm was applied to the final sample, as this is more powerful than other agglomerative clustering techniques that use F values to maximize differences among clusters (Hair & Black, 2002). The coefficients (within-cluster sum of squares) were checked in the agglomeration schedule in order to look for significant changes at each combination step (Burns & Burns, 2009). The dendrogram gave support to the quantitative criterion, finding that the four-cluster option was the optimal solution. Finally, data were analyzed with the Average Linkage (Within Group) procedure to establish the reliability of the Ward solution (Hair & Black, 2002). The resulting dendrogram

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Table 1. *Items of the Attitude Scale*

NEGATIVE EXO - ATTITUDE
1. I think more and more people around my age are hooking on the Internet and Social Networks.
2. Some of my friends make excessive or inappropriate use of the Internet and Social Networks.
3. Many people use Social Networking to flirt and flounce.
POSITIVE ENDO - ATTITUDE
4. It is important for me to connect daily to Facebook, Tuenti…
5. Internet and Social Networks are a good way to meet people and make friends.
6. I like adding more and more friends to my Facebook or Tuenti profile.
7. I like making comments on Facebook or Tuenti, and being answered.
RISK
8. Sometimes I have lost hours of sleep due to Internet use.
9. Sometimes I get online more than I should.
10. At times, I get in a bad mood because of not being able to connect to the Internet.
11. When I am online, I feel time flies, and when I realize I have been on the Internet for hours.
12. I have neglected my homework due to Internet use.

was structurally similar to the previous one, with 67% agreement in terms of assignment of participants to specific clusters.

In the second stage of the cluster analysis, a *k*-means clustering was conducted (QUICK CLUSTER of the PASW) by using the means of the four-cluster solution as the starting points (seeds). This procedure was used to improve assignment of subjects to clusters and to obtain the final solution. Iterative procedures such as the *k*-means procedure are more powerful and reliable than hierarchical procedures but need prior specification of the number of clusters and of the initial centers. After the *k*-means analysis, 32% of individuals were assigned to another cluster, getting groups with greater internal homogeneity and more balanced in size.

The resulting groups or subtypes were compared on demographic and cognitive variables not included in the original clustering process to validate and adequately characterize each of the clusters. Qualitative or ordinal variables were analyzed with cross-tables, using chi-square analyses to assess global significance and adjusted residuals e^{adj} (Haberman, 1973) to assess the significance in each cell. Quantitative variables were analyzed with the ANOVA procedure, choosing Scheffé post hoc test. The values of *F* and Chi-squared statistical tests, with details of the degree of significance and size of effect (Partial Eta-squared and Cramer's *V*) were specified.

Results

Table 2 shows that the clustering solution provides statistically significant distances between the four clusters on most of the attitudinal variables used to define the four clusters. The Group A has the lowest levels in all variables except *Hooked on Internet/networks*, *Excessive/unsuitable use* and *Accessing more than should*, which are slightly lower on Group B. The second group differentiates especially from Group A on *Connecting daily*, *Used to meet people*, *Like adding friends* and *Like making comments*. Again the third group shows higher levels than Group B on almost all variables, particularly on *Accessing more than should* and *Time flying when connected*. The Group C has consistently the highest levels on all variables except *Excessive/unsuitable use*, higher on Group C. Particularly high with respect to the rest of the groups is *Losing hours of sleep*.

All clusters are balanced with respect to their *size.* Statistically significant differences in the three sociodemographic variables were found. In relation with gender, groups A and D comprise a similar percentage of male and female teenagers (see Table 3). Group B has an almost 10% higher rate in men than women, just the opposite that happens in group C. Nevertheless, major differences exist with regard to age and educational level, variables that can be interpreted in the same line. The average age increases significantly with group number. Means start at 13.4 years old in Group A and end up in 14.2 years old in Group D. Groups A and B are mostly composed of younger adolescents (1st and 2nd year) while groups C and D are mostly composed of older subjects (3rd and 4th year).

Further, the four groups are significantly related to the use their members make of Internet and Social Networks (Table 3). Main variables associated with the attitudes towards Internet are *parental involvement* (Cramer's V = .455), *use of Social Networks* (*V* = .425), *accessing time per day* (V = .377), *reasons why they do not*

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Table 2. *Means and Standard Deviations of Clustering Variables by Group*

	Group A		Group B		Group C		Group D	
Items of the attitude scale	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Hooked on Internet/networks	4.21^{bcd}	1.01	3.95^{acd}	1.15	4.52^{abd}	.74	4.74^{abc}	0.59
Excessive/unsuitable use	3.60^{bcd}	1.33	2.73^{acd}	1.36	4.21^{abd}	.99	3.95^{abc}	1.29
Used to flirt and flounce	3.70^{cd}	1.29	3.76^{cd}	1.22	4.29^{abd}	.97	4.58^{abc}	0.82
Connecting daily	1.77^{bcd}	0.94	3.36^{ad}	1.15	3.44^{ad}	1.14	4.35^{abc}	0.97
Used to meet people	2.26^{bcd}	1.08	3.98^{acd}	1.08	3.57^{abd}	1.22	4.23^{abc}	1.06
Like adding friends	1.76^{bcd}	0.97	3.69^{acd}	1.13	2.99^{abd}	1.27	3.94^{abc}	1.20
Like making comments	2.17^{bcd}	1.25	4.01^{ad}	1.08	4.08^{ad}	1.10	4.42^{abc}	0.94
Losing hours of sleep	1.24^{bcd}	0.69	1.46^{acd}	.86	1.75^{abd}	1.03	4.02^{abc}	1.16
Accessing more than should	1.98^{cd}	1.11	1.88^{cd}	.93	3.65^{abd}	1.12	4.18^{abc}	1.21
Bad mood when not connected	1.40^{bcd}	0.80	1.84^{acd}	1.08	2.54^{abd}	1.28	3.81^{abc}	1.26
Time flying when connected	2.25^{bcd}	1.29	2.79^{acd}	1.28	3.90^{abd}	1.11	4.39^{abc}	0.98
Studies neglected	1.29^{cd}	0.68	1.44^{cd}	.79	2.01^{abd}	1.09	3.36^{abc}	1.35

Note: $^{a, b, c, d}$ Clusters with means statistically different (Scheffé Test; $\alpha = .05$).

connect more time (V = .376) and *frequency of use* (V = .371). Adjusted residuals e^{adj} are approximately independent and distributed as standard normal. Values greater than 1.96 or less than -1.96 represent a significant departure from the expected value at a 95% confidence level. These residuals are useful in visualizing contingency table data, making it immediately apparent which cells are out of line with expectations, in which direction, and by how much. For instance, Table 4 shows that Group A (37.8% of its members) and Group B (56.0%) have a significantly lower percentage of people accessing the Internet on a daily basis (negative superscript), while Group C (70.2%) and Group D (82.7%) have a significantly higher percentage. These data have been used to profile the four groups and get the most distinct characteristics of each of them.

The four cluster solution is highly interpretable. Group A teenagers, the youngest ones, can be characterized as *First Steppers*. They access the Internet very seldom and still do not show much interest on it. They are starting to learn the basics about Social Networks and still hardly used them on a regular basis. Group B teenagers make up the next step in the evolutionary process of familiarity with social media. They access Internet weekly, mainly to be on Social Networks and particularly on Tuenti, a Spanish-based Social Network specifically designed for and fancied by university and High School people. They are starting to get some expertise with social media tools and would like to know a bit more about them. Thus, this stage has been labeled as *Trainees*.

Group C has been labeled as *Sensible Users* in order to differentiate them from the following group. Both (Groups C and D) consider they have already a good knowledge about Internet and Social Networking, but this group shows a responsibility in their use which seems to lack the last one. Sensible users access Internet for about 1–2 hours a day and do not spend more time because they have to devote time on their homework. Their parents show a real control over their use of the Internet and do not let them access after sleep time. Finally, Group D reports the highest levels of use and mastery of the Internet, not only on Social Networking (webcam included) but also downloading, watching online contents, buying goods or services or even betting, and from multiple devices. They are the *Heavy Users*. The key distinctive feature with respect Group C is that there is no real parental control over their use, keeping connected to the Internet till wee hours. The complete description of each of the four groups is summarized in Table 5.

Discussion

The Internet and associated technologies have profoundly changed the lives and habits of teenagers around the world since the emergence of the World-Wide Web in the mid-1990s. The growing body of research in this area merely reflects the increasing social, media and institutional concern around adolescent Internet use. Much of the studies conducted have focused on developing assessment tools of Internet Addiction such as the Internet Addiction Test (Young, 1998) or the Revised Chen Internet Addiction Scale (Chen et al., 2003). At the same time, there has been much attention paid to the general description of the Internet use among adolescents (Aslanidou & Menexes, 2008; Ólafsson et al., 2013). However, it might be thought that attitudes, perceptions and Internet uses are not uniform within this group. Nevertheless, there

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Table 3. *Descriptive Statistics of Demographic Variables by Group*

			Group A	Group B	Group C	Group D	TOTAL
Size			$N_1 = 521$ (26.1%)	$N_2 = 432$ (21.6%)	$N_3 = 604$ (30.3%)	$N_4 = 439$ (22.0%)	$N = 1.996$ (100.0%)
Gender	$\chi^2_{(3,1996)} = 7.483$; $p < .010$; $V = .061$	Male	51.1%	54.4%$^{+}$	46.0%$^{-}$	49.2%	49.8%
		Female	48.9%	45.6%$^{-}$	54.0%$^{+}$	50.8%	50.2%
Education level	$\chi^2_{(3,1996)} = 47.363$; $p < .001$; $V = .154$	1st–2nd year	58.2%$^{+}$	53.0%$^{+}$	41.2%$^{-}$	40.3%$^{-}$	48.0%
		3rd–4th year	41.8%$^{-}$	47.0%$^{-}$	58.8%$^{+}$	59.7%$^{+}$	52.0%
Age	$F_{(3, 1984)} = 30.545$; $p < .001$; $\eta^2_p = .044$		13.4^{bcd}	13.7^{acd}	14.0^{abd}	14.2^{abc}	13.8

Note: $^{a, b, c, d}$ Significantly different clusters (Scheffé test; α = .05).

$^{+,-}$ Significant (positive or negative) associations between the cluster and the category of variable (standardized residuals; α = .05).

Table 4. *Descriptive Statistics of Main Usage Variables by Group (α = .05)*

				Group A	Group B	Group C	Group D	Total
		χ^2 (*df*, *N*)	*V*	% *N*	% *N*	% *N*	% *N*	% *N*
Frequency of use	Never/almost never	273.822*** $_{(9, 1994)}$	.371	11.9^{+}	4.2^{-}	2.0^{-}	1.8^{-}	5.0
	Occasionally			14.2^{+}	9.1	3.3^{-}	3.0^{-}	7.3
	Weekly			36.1^{+}	30.7^{+}	24.5	12.5^{-}	26.2
	Daily			37.8^{-}	56.0^{-}	70.2^{+}	82.7^{+}	61.4
Hours per day	Less than 1	237.020*** $_{(9, 1665)}$	.377	41.8^{+}	28.8	21.5^{-}	13.6^{-}	25.5
	1–2			47.9	50.7	52.7^{+}	32.6^{-}	46.4
	2–3			7.0^{-}	13.7^{-}	16.5	30.4^{+}	17.2
	More than 3			3.3^{-}	6.8^{-}	9.3	23.5^{+}	10.9
Moment of the day	21:00–24:00	125.689*** $_{(3, 1896)}$	.257	25.5^{-}	33.3^{-}	40.7	60.8^{+}	40.0
	24:00 onwards	94.709*** $_{(3, 1896)}$	.223	2.0^{-}	3.6^{-}	3.5^{-}	15.5^{+}	5.9
Enough time?	No	26.587*** $_{(6, 1996)}$	.115	30.5^{-}	35.0	35.6	44.9^{+}	36.2
Why not more time?	No internet connection	97.929*** $_{(57, 691)}$	.376	24.7^{+}	20.7	12.2	7.9^{-}	15.5
	Have to do homework			24.7	15.2	25.9^{+}	16.2	20.7
	Not allowed			20.7^{-}	26.2	30.7	41.9^{+}	30.7
Parental involvement	Controlling use	54.563*** $_{(6, 1996)}$	.165	44.1	35.4	53.8^{+}	48.3	46.1
	Lots of arguments	413.620*** $_{(12, 1996)}$	.455	1.2^{-}	.7^{-}	6.3	18.5^{+}	6.4
	Hardly any arguments			23.8^{-}	34.7	41.9^{+}	32.1	33.5
Uses	Finding information related to studies	50.286*** $_{(3, 1896)}$	.163	70.6^{+}	60.9	63.0	47.8^{-}	60.9
	Social Networking	342.033*** $_{(3, 1896)}$	.425	59.5^{-}	92.5^{+}	93.9^{+}	95.8^{+}	85.7
	Downloading music, movies…	85.248*** $_{(3, 1896)}$	.212	51.4^{-}	60.9^{-}	70.9^{+}	78.7^{+}	65.8
	Watching series, movies…	35.140*** $_{(3, 1896)}$	.136	42.0^{-}	38.6^{-}	48.6	57.3^{+}	46.8
	Buying music tickets, music…	18.229*** $_{(3, 1896)}$	.098	6.3^{-}	6.0^{-}	9.3	13.2^{+}	8.8
	Visiting betting sites	24.867*** $_{(3, 1896)}$	.115	.2^{-}	1.7	.7^{-}	3.9^{+}	1.5

Note: * = $p < .05$; ** = $p < .01$; *** = $p < .001$.

$^{+,-}$ Significant (positive or negative) associations between the group and the category of variable (adjusted residuals; α = .05).

is little research examining the identification and characterization of different Internet users' profiles (Chen & Tzeng, 2010; Hill et al., 2013; Tsitsika et al., 2012).

The aim of this study has therefore been to carry out a complete and comprehensive segmentation of the adolescent Internet users' profiles. This was done through the application of a cluster analysis on the scores from the attitudes and perceptions towards Internet and Social Networks of a representative sample of adolescents from Galicia (a North-Western region of Spain). As a result, four different segments of adolescents were found from an attitudinal point of view. Group A was characterized by the lowest scores both on Factor 2 (*Positive endo-attitude*) and Factor 3 (*Risk*). Group B was defined by a low score on Factor 1 (N*egative exo-attitude*) and a moderately high score on

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Table 5. *Internet Usage Aspects that Differentiate Best between the Groups*

Group A FIRST STEPPERS	Group B TRAINEES	Group C SENSIBLE USERS	Group D HEAVY USERS
Accessing the Internet **occasionally**, weekly or less often, and during less than 1 hour.	Accessing the Internet **weekly**.	Accessing the Internet **every day** for about 1–2 hours.	Accessing the Internet **every day** for more than two hours.
Accessing time is enough for them. **Do not use it more because of lack of interest** or ignorance. Do not have Internet connection at home.	Their parents do not control their Internet use. Hardly any discussion because of their use.	Do not access more time because they have to spend time doing **homework**. **Their parents control their use of the Internet**, and occasionally they have discussions about it.	They would spend all day online if their parents would let them. Discussions are common at home, although **there is no parental control** over the Internet use.
Used for seeking information related to the studies. Social Networks are used to talk to friends that cannot see in person more often. Also used to play on network games.	Accessing Internet mainly **to be on Social Networks**. These are used specifically to make new friends.	Internet is used for **Social Networking and downloading** music or movies. Social Networking is used to keep them in touch with friends and also to help each other with homework and projects.	Accessing the Internet for **several goals: Social Networking, downloading** music or movies, **watching** movies, **buying** goods or services and even **entering on betting sites**. Social Networks are used for uploading photos, videos and also sharing personal information.
	No accessing the Internet after 9 pm.	Accessing at home, in their room, but **leave networks at 9pm**.	They **access the Internet in many different places/ devices**: At home, in a cybercafé, mobile device… Characteristically **from 21:00 until the wee hours**.
They think the information they have about the Internet is low. Would like to know more about online safety and how to find information on the web.	They would like to know more about Social Networks.	Their knowledge about the Internet is perceived as high, but would like to know more about network security.	They believe that the information they have on the Internet is very high.
They have a single email address, checked very seldom (every fortnight or less). Without Messenger. They **know Social Networks (Tuenti), but check them also very seldom**, once a week or less.	They have a single e-mail account, and a Social Network account (**Tuenti**) that it **is checked weekly**.	They have more than one email account and webcam. They know Twitter and Myspace, have Messenger and Facebook accounts but **the only Social Network really used daily is Tuenti**.	They have more than one email account, which they check every day. **Webcam is used daily**. Messenger is used regularly. **They used Tuenti, Facebook and Twitter every day**.

Factor 2. The Group C had moderately high scores on both Factor 1 and 3, and the Group D featured the highest scores on the three factors.

Considering that attitudes are antecedent to related behaviors (Ajzen, 1991), it was expected that different patterns of scores on the attitude scale were corresponded with different profiles of Internet usage. So, it was checked and confirmed that these attitudinally different groups were also different in relation to their behavior online. Each segment was also enriched incorporating other variables, and through this more comprehensive analysis, the four profiles were characterized in more detail. The *first steppers* (group A) access the Internet occasionally, and during less than 1 hour, but this accessing time is enough for them. The *trainees* (group B) access the Internet weekly, mainly to be on Social Networks, and hardly have any discussion because of their use. The sensible users (group C) access the Internet every day for about 1–2 hours, their parents control their Internet use, and occasionally

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they have discussions about it. The *heavy users* (group D) access the Internet every day for more than 2 hours, there is no real parental control and discussions are common at home. Comparing our results with those achieved by other studies, it is found that these four groups could match four of the user types proposed by Brandtzæg (2010): *Sporadics*, *Socializers*, *Instrumental users* and *Advanced Users*, respectively.

Taking into account these findings, there are two main conclusions that could be extracted. Firstly, it should be noted that, although demographic variables have become statistically significant, the differences were reduced. The defined profiles do not have a notable demographic component, but Internet use is widespread among every adolescent. The Internet use is a globalized phenomenon among adolescents. Society, institutions and families should therefore be alert and maintain a proactive and continuous attitude because any adolescent could become a problematic Internet user.

However it must be kept in mind that it is not a uniform phenomenon, since it is possible to distinguish different profiles through a more-in-depth analysis of the data. An applied reading of the results obtained makes it possible a better understanding of adolescent use of the Internet and a comprehensive knowledge about variables associated with some risky behaviors. Specifically, it is crucial to analyze the differences between the *Sensible users* (a group with safe practices of use) and the *Heavy users* (a profile related to the most intensive and extensive use of the Internet, and to some risky behaviors). These two groups are composed of regular users who have a high knowledge of the Network, but they differ in two important aspects.

The first difference appears in their attitudes towards Internet and their motivations of use. This implies that, as stated by the European Commission (2012), the education and empowerment of the children are the best tools to reach a responsible use of Internet among adolescents. Far from forbidding and reproaching (effective only in the short term), education in values and life skills, and working the assertiveness and self-esteem of young people are the best weapons to confront what comes with Internet life.

The other feature in which these two groups mainly differ is the reported parental supervision. The role that parents play is crucial. They should carefully observe the Internet habits of their children, take active control of the potentially dangerous uses, set limits and rules, and seek help (for both their children and themselves) if Internet use becomes a problem and seriously interferes with everyday life.

This study should be considered in light of its limitations. First of all, there could be limitations to the generalizability of our findings to Spain as a whole, since our sample came from a specific region of Spain (Galicia). Secondly, this study relied on adolescents' self-report, so it is impossible to figure out if the adolescents have underreported or overreported their Internet use. However, self-report of alcohol and other drug use has been shown to be usually reliable or even better than other methods of substance use detection (Babor, Kranzler, & Lauerman, 1989; Winters, Stinchfield, Henly & Schwartz, 1990), so there are good grounds for considering the self-report measures also appropriate for this context. Likewise using a social desirability scale or a scale to detect random responses could be very useful.

Despite the limitations, these results could be used as a reference point for future research, which must go one step further and try to model the identified risky behaviors, with the aim of being able to predict them. In this regard, it will be important that researchers consider differentiating the results between the video games users, and the social networking users, since there are different psychological underpinnings and manifestations. On the other hand, the associations between the emergence of PIU with mental health disorders such as depression, anxiety, bipolar disorder, or Asperger syndrome should be taken into account for future research (Gámez-Guadix, 2014; Ho et al. 2014), as well as the cross-cultural and parenting aspects (Snodgrass, Dengah II, Lacy, & Fagan, 2013; Yang, Sato, Yamawaki, & Miyata, 2013). This greater understanding of the multifaceted teenagers' reality must be taken into account when prevention strategies are formulated and the assistance measures are coordinated, considering that each group or profile identified will require different therapeutic approaches.

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