



TESE DE DOUTORAMENTO  
MODALIDADE DE COMPENDIO DE  
ARTIGOS

**PROBLEMATIC USE OF INTERNET  
AND NEW TECHNOLOGIES IN  
GALICIAN ADOLESCENTS**

Patricia Gómez Salgado

PROGRAMA DE DOUTORAMENTO EN PSICOLOXÍA DO TRABALLO  
E AS ORGANIZACIÓNS, XURÍDICA-FORENSE E DO CONSUMIDOR  
E USUARIO

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## **AUTORIZACIÓN DA TITORA E DOS DIRECTORES DA TESE**

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## MODALIDADE DE COMPENDIO DE ARTIGOS

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Pola presente **DECLARAMOS:**

Que a tese presentada por Dona Patricia Gómez Salgado é idónea para ser presentada, de acordo co artigo 41 do *Regulamento de Estudos de Doutoramento*, pola modalidade de compendio de ARTIGOS, nos que o doutorando tivo participación no peso da investigación e a súa contribución foi decisiva para levar a cabo este traballo.

E que está en coñecemento dos coautores, tanto doutores como non doutores, participantes nos artigos, que ningún dos traballos reunidos nesta tese serán presentados por ningún deles noutra tese de Doutoramento, o que asino baixo a miña responsabilidade.

En Santiago de Compostela, a 14 de setembro de 2015.

Asdo. : Antonio Rial Boubeta

María Teresa Braña Tobío



*Aos que xa non están mais nunca deixarán de estar,*

*Eugenio, Carmen e Lola*





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# **Problematic use of Internet and New Technologies in Galician adolescents**

## **ABSTRACT**

The arrival of the Internet implied the access to new ways of learning, leisure, communication, and social and economic interaction for society as a whole. However, beyond its undoubted benefits, certain risks or dangers to which adolescents are especially vulnerable have been demonstrated. Phenomena such as sexting, sextortion, cyberbullying or grooming are only some examples of these complex circumstances under which today's children grow up, relate and socialize. Providing effective responses to such globalized phenomenon as problematic Internet use among adolescents means to assume a shared responsibility not only between parents and institutions, but also at the research level. The compendium of papers that are presented here pursues complementary specific objectives: (1) to advance at the theoretical level in the terminological and conceptual contradictions about the subject under consideration; (2) to progress in the evaluation field: providing population data from Galicia that allows for measuring the true magnitude of the problem, and developing a screening or early detection instrument with sufficient psychometric support; and (3) to promote a greater understanding of the problem, through both identification and characterization of possible risk profiles, as well as analyses of different variables related to problematic use of Internet and New Technologies among adolescents. An enormous effort at the empirical level, reflected in the realization of three studies with 2339, 1709, and 44051 adolescents respectively, has enabled initial objectives to be translated into the consolidation of this specific line of research, and into the availability of data and interesting applied tools for professionals and researchers.

## **KEYWORDS**

adolescents, early detection, scale, screening, problematic Internet use

# O uso problemático de Internet e as Novas Tecnoloxías entre os adolescentes galegos

## RESUMO

A chegada de Internet supuxo para o conxunto da sociedade o acceso a novas formas de aprendizaxe, ocio, comunicación e interacción económica e social. Porén, máis aló dos indubidables beneficios reportados, son evidenciados certos riscos ou perigos aos que os adolescentes son especialmente vulnerables. Fenómenos como o *sexting* e a sextorsión, o *ciberbullying* ou o *grooming* son só un exemplo deste complexo escenario no que os nenos e nenas de hoxe medran, se relacionan e socializan. Facilitar respostas eficaces a un fenómeno tan globalizado como é o uso problemático de Internet entre os adolescentes pasa por asumir que se trata dunha responsabilidade compartida por pais e institucións, pero tamén a nivel de investigación. O compendio de traballos que aquí se presentan persigue obxectivos particulares complementarios: (1) avanzar a nivel teórico nas contradicións terminolóxicas e conceptuais en torno ao tema obxecto de estudo; (2) progresar no campo da avaliación, proporcionando datos poboacionais a nivel galego que permitan calibrar a verdadeira magnitude do problema e se plasmen tamén no desenvolvemento dun instrumento de *screening* ou detección precoz con suficiente aval psicométrico; e (3) favorecer unha maior comprensión do problema, grazas tanto á identificación e caracterización de posibles perfís de risco, así como á análise de diferentes variables asociadas ao uso problemático de Internet e as Novas Tecnoloxías, entre os adolescentes. Un inxente esforzo a nivel empírico, plasmado na realización de tres traballos con 2339, 1709 e 44051 adolescentes respectivamente, fixo posible que os obxectivos iniciais se traduzan na consolidación dunha liña de investigación específica e na posta a disposición de profesionais e investigadores de datos e ferramentas de enorme interese a nivel aplicado.

## PALABRAS CHAVE

adolescentes, detección precoz, escala, cribado, uso problemático de Internet

# El uso problemático de Internet y las Nuevas Tecnologías entre los adolescentes gallegos

## RESUMEN

La llegada de Internet ha supuesto para el conjunto de la sociedad el acceso a nuevas formas de aprendizaje, ocio, comunicación e interacción económica y social. Sin embargo, más allá de los indudables beneficios reportados, son evidenciables ciertos riesgos o peligros a los que los adolescentes son especialmente vulnerables. Fenómenos como el *sexting* y la *sextorsión*, el *ciberbullying* o el *grooming* son solo un ejemplo de este complejo escenario en el que los niños y niñas de hoy crecen, se relacionan y se socializan. Facilitar respuestas eficaces a un fenómeno tan globalizado como es el uso problemático de Internet entre los adolescentes pasa por asumir que se trata de una responsabilidad compartida por padres e instituciones, pero también a nivel de investigación. El compendio de trabajos que aquí se presentan persiguen objetivos particulares complementarios: (1) avanzar a nivel teórico en las contradicciones terminológicas y conceptuales en torno al tema objeto de estudio; (2) progresar en el campo de la evaluación, proporcionando datos poblacionales a nivel gallego que permitan calibrar la verdadera magnitud del problema y se plasmen también en el desarrollo de un instrumento de *screening* o detección precoz con suficiente aval psicométrico, y (3) favorecer una mayor comprensión del problema, gracias tanto a la identificación y caracterización de posibles perfiles de riesgo, así como al análisis de diferentes variables asociadas al uso problemático de Internet y las Nuevas Tecnologías, entre los adolescentes. Un ingente esfuerzo a nivel empírico, plasmado en la realización de tres trabajos con 2339, 1709 y 44051 adolescentes respectivamente, ha hecho posible que los objetivos iniciales se traduzcan en la consolidación de una línea de investigación específica y en la puesta a disposición de profesionales e investigadores de datos y herramientas de enorme interés a nivel aplicado.

## PALABRAS CLAVE

adolescentes, detección precoz, escala, cribado, uso problemático de Internet



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## **1. INTRODUCTION**



# 1. INTRODUCTION

In 2010, our research group PSICOM initiated a line of research line focused on the Internet use by adolescents, being conscious of the different challenges the Net and New Technologies mean, especially for a collective considered particularly vulnerable due to the critical moment they are experiencing. These first five years of empirical studies and research works conclude with the presentation of this doctoral dissertation, compiling the most relevant findings published thus far.

## 1.1 INTERNET AND NEW TECHNOLOGIES: OPPORTUNITIES AND RISKS

Internet has become a very renowned tool in today's society, despite being relatively young. Internet, boosted by New Technologies' rise, has taken the leap from a strictly scientific and professional field to become a cultural and social tool that knows no bounds. These new tools have resulted in substantial changes in our society, providing unprecedented opportunities in such disparate areas as education and training, economy and marketing, or leisure and entertainment. However, their greatest contribution is related to accessing to information, relating and communicating that will not return to be similarly conceived any more.

Internet becomes an indispensable part of daily life, which results in an expanding and extensive Internet use. The reduction of connection costs, the major technological advances and the generalized use of personal computers, laptops, tablets and smartphones during the last years have brought along an exponential growth in the number of Internet users, primarily among young people.

According to the most recent data from the European Union Countries, 78% of population aged 16 to 74 has used Internet in the last three months (Eurostat, 2015). If considering only teenagers aged between 16 and 19, this percentage reaches 97% (Eurostat, 2015). The figures are similar in Spain. Following up the results of the last Survey on the Equipment and Use of Information and Communication Technologies in Households, 76.2% of the Spanish population aged 16 to 74 has used the Internet in the last three months (National Statistics Institute, 2014b). This percentage amounts to 92% in the case of minors aged between 10 and 15, and 98.3% if we only consider persons aged between 16 and 24 (National Statistics Institute, 2014b). Considering our region of Galicia separately, the rate is lower for people aged 16 to 74 (69.3%); however, the numbers are slightly higher for children between 10 and 15 years old (94.7%), and youngsters (100%) (National Statistics Institute, 2014b).

Moreover, during the time young people are attending Compulsory Education most of them make regularly use of computers and the Internet for a multiplicity of activities. New Technologies are used by schools not only to support the teaching of traditional subjects but also to develop Information and Communication Technologies skills. In Spain, 99.8% of schools have Internet access, and the average number of students per computer destined to teaching and learning tasks is three (National Statistics Institute, 2014a).

All these data emphasize the widespread reception that Internet and New Technologies have among adolescents, who have found extraordinary means for connecting, interacting, learning, amusing themselves and satisfying their spare-time needs. It is hardly surprising, therefore, that these media have been established as a relevant element in their daily routines.

Although all these vertiginous changes have mainly contributed to improve our quality of life, it is also true that the massive installation of Internet and New Technologies in our quotidian life has roused critical issues around possible problems related to their use. The Internet, like any other tool, involves certain risks derived from a possible excessive or inappropriate use. In addition to general potential threats related to loss of privacy, fraud, contacts with strangers, sexting or sextortion, there are some particularly worrying dangers that emerge specifically in the context of Internet use by children and adolescents. These situations include access to inappropriate contents for their age (violence, sex...), cyberbullying or grooming. Another highly controversial aspect that has caused a great social alarm concerns the potential addictive use of Internet and these technologies.

All these new phenomena are markedly disquieting in the case of adolescents, owing to three main reasons. The first one is because teenagers are precisely those who use Internet the most. In addition, adolescence is a decisive period when healthy lifestyles become established, among which could a sensible use of Internet be included. Practices and behaviors at this stage will continue into adulthood and could promote or jeopardize later periods of someone's life. The evolutionary moment they are going through has traditionally represented a critical period in onset and experimentation of risk behaviors (Cava, Murgui, & Musitu, 2008), so it constitutes a development stage at high risk for developing Internet Addiction (IA) or Problematic Internet Use (PIU) (Leung, 2007). Finally, these situations are usually associated with complications, conflicts or problems at other levels.

Thus, for instance, different investigations have associated an excessive use of the Internet to behavioral problems and hyperactivity (Kormas, Critselis, Janikian, Kafetzis, & Tsitsika, 2011). Furthermore, the relation between this conduct and other risk behaviors such as higher rates of alcohol or tobacco consumption (Y. S. Lee, Han, Kim, & Renshaw, 2013; Wang et al., 2011) or substance abuse (Heo, Oh, Subramanian, Kim, & Kawachi, 2014; Y. S. Lee et al., 2013) has been demonstrated.

So much so that problematic Internet use by adolescents has come to be considered one of the serious troubles to confront nowadays, from both a socio-health and educational perspective. From our point of view, addressing this problem in a comprehensive and coherent manner necessarily involves initiating an effective and efficient prevention, which means giving concrete responses through the research to three strategic disputes or challenges: (1) the theoretical one, (2) other related to the measurement and evaluation field, and (3) another one associated to the understanding of the phenomena.

### **1.1.1 Problematic Internet use: controversy concerning criteria and terminology**

After almost 20 years of research, an underlying theoretical problem that needs solution remains in existence: the conceptual delimitation of the phenomenon itself. Rising up to this first challenge means resolving an apparently easy question: what are we talking about when speaking about problematic Internet use? The truth is that the experts have not reached an agreement on whether the use of Internet is able to generate an addictive disorder or not. To

elucidate an acceptable answer, not only developing an extensive and in-depth literature review, but also achieving a consensus among the scientific community would be involved.

First of all, it is necessary to take into consideration that the social concern over the use of Internet has increased in the last few years because of the sensationalism used by the mass media when addressing the issue. This has contributed to generate certain suspicion, skepticism and even rejection among some researchers and professionals who consider inappropriate to speak about Internet addiction in an orthodox way (Estallo, 2001; Grohol, 1999; Matute, 2001), and that talking about hypothetical diseases or disorders is a media opportunism that only leads to create an unnecessary social alarm.

In favor of the more skeptic ones, neither the most recent version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) nor the International Statistical Classification of Diseases and Related Health Problems (ICD-10) compile such category. Even so, it is convenient to point out that two relevant changes have been incorporated in the newest version of the DSM (American Psychiatric Association, 2013). On the one hand, Internet Gaming Disorder has been included in Section III as a condition warranting more clinical research and experience before considering its inclusion in the handbook as a formal disorder, so this has raised the clinical legitimacy of the problem. This category is included to reflect the scientific literature on persistent and recurrent use of Internet games, and a preoccupation with them, resulting in clinically significant impairment or distress. However, the condition criteria do not contain general use of the Internet, or social media at this time. On the other hand, the chapter of *Substance-Related and Addictive Disorders* also includes Gambling Disorder as the sole condition in a new category on behavioral addictions. The former version (DSM-IV) classified Pathological Gambling but in a different chapter. This new denomination and location reflect research findings that gambling disorder is similar to substance-related disorders in clinical expression, brain origin, comorbidity, physiology, and treatment. Moreover, this fact leads to think that other behavioral addictions might be integrated under this heading in the coming editions of the manual (Cía, 2013; Petry & O'Brien, 2013).

Although empirical research over the last decade has notably increased, the classification of the phenomenon is still controversial as no gold standard of assessment has emerged (Kuss, Griffiths, Karila, & Billieux, 2014). In the absence of a common, precise and technical framework, different approaches have been carried out to develop a suitable definition. The first strategy consists in adapting diagnostic criteria for related disorders. Goldberg (1995), the first one who talked about Internet Addiction Disorder even in a jocular way, makes a proposal based on adapting the criteria for substance dependence (DSM-IV). Young (1998) follows a similar strategy, adapting the criteria for pathological gambling (DSM-IV). Later, Ko et al. (2005) propose specific diagnostic criteria of Internet Addiction for adolescents taking into account diagnostic criteria for substance use disorder and impulse control disorder (DSM-IV-TR), previous research and clinical experiences.

Other authors have been trying to provide evidence that the behavior of some individuals in relation to the Internet simply fulfils the general criteria of any addiction. In Spain, Echeburúa (1999) states that any normal and pleasant behavior tends to be repeated, and therefore it is susceptible to become an addictive behavior. According to this author, the common characteristics for any addictive behavior are: loss of control, strong psychological

dependence, withdrawal symptoms, loss of interest in other rewarding activities, severe interference on daily life, initial control by positive reinforcement, and final control by negative reinforcement. On the other hand, Griffiths (2000) affirms that any behavior could be operationally defined as an addiction if accomplishing the six core components of addictions: salience, mood modification, tolerance, withdrawal symptoms, conflict and relapse.

In addition to these common criteria of any addiction, Greenfield (1999) claims that Internet has three specific characteristics that make it potentially addictive: speed, accessibility and intensity. This fact is related to the difference between addiction in the Net and addiction to the Net. For instance, some compulsive buyers, gambling addicts, or sex addicts might have found a new way to direct their desires through the Net, although this does not mean that they are part of addicts to the Internet.

Moreover, some theoretical or qualitative approaches have been carried out, trying to glimpse the most appropriate framework to place this concept in (Douglas et al., 2008; Yellowlees & Marks, 2007). Recently, some reviews about the definition of the diagnosis and international standardization proposals have been developed (King & Delfabbro, 2014; Petry et al., 2014).

But the controversy concerning criteria is not all. This discussion can be added to the lack of agreement among experts regarding its designation. Even among those who agree that a hazardous use of Internet can occur, the terminological heterogeneity used to refer to it is manifest. The used nomenclature to define such use is enormously varied, and by extension the underlying conception to this term too. Internet Addiction (Chou & Hsiao, 2000; Goldberg, 1995; Kandell, 1998; Young, 1998b), compulsive Internet use (Greenfield, 1999; Meerkerk, Van Den Eijnden, Vermulst, & Garretsen, 2009), pathological Internet use (Davis, 2001; Morahan-Martin & Schumacher, 2000), problematic Internet use (Caplan, 2002; Shapira et al., 2003), excessive Internet usage (Hansen, 2002), unregulated Internet usage (LaRose, Lin, & Eastin, 2003) or Internet dependency (Anderson, 2001; K. Chen, Tarn, & Han, 2004; Rahmani & Lavasani, 2011) are the most utilized concepts in the scientific literature when referring to this problem.

Although reaching an international consensus remains to be addressed nowadays, the existence of problems derived from a maladaptive Internet use have been evidenced through research findings and an increasing number of families and individuals who seek assistance from associations, social services or healthcare network, for this reason. So, in spite of the theoretical difficulties of dealing accurately with an ambiguous topic, the problem is out there, and a progressively more concerned society demands responses.

### **1.1.2 Problematic Internet use in adolescents: a measurement and evaluation challenge**

The next relevant challenge to be solved is set in the measurement and evaluation field. In particular, a further descriptive knowledge of the general Internet use and the problematic Internet use in adolescents is necessary, in order to gauge the true magnitude of the problem, as well as validated tools that facilitate the early detection of risk cases.

As a starting point, describing objectively the real dimension of the issue is essential, in order to know the true extent of the problem. The terminological heterogeneity still

unresolved only anticipates the epidemiologic discrepancy found by different investigations, since the subject of study and the diagnostic criteria change. Some researchers merely account for the frequency of general Internet use; other investigators decide to incorporate the New Technologies use to the analyses; in other studies the excessive, problematic, pathological or addictive Internet use are also analyzed; and in other cases the authors study closely the use of specific contents (social networks, videogames, online gambling, online betting...) too.

At this point, the first question that arises is what the actual state of the matter is. Is it an alarming situation? Could it be more correctly defined as dangerous? Is it necessary simply to utilize certain caution? Is it actually under control? Or are really the risks nonexistent? In order to answer these questions reliably is necessary to have objective indicators, and an appropriate temporal and spatial comparison context that guarantees a comprehensive perspective.

If the focus is on the empirical studies carried out with young people in Spain, it should be firstly pointed out the work by Viñas et al. (2002). These authors executed one of the first studies with university students at a national level. Their objective was to know the rate of Internet use among undergraduates and to find out if an excessive use was related to a higher degree of psychopathology. As an interesting fact, 40.8% of undergraduates hardly use Internet at that time. Moreover, a positive correlation between Internet use (mainly chat) and various psychopathological indicators (sleep alterations, anxiety and depression) is found.

One year later, Muñoz-Rivas, Navarro, and Ortega (2003) published a study about university students too. They analyze patterns of Internet use, motives to connect, and interference with daily life. Their results reveal that 3.7% of the undergraduates are connected more than 20 hours per week, and 17% perceive some kind of interference from their Internet use (10.9% neglect obligations, 3.6% declare family problems, 2.4% mention academic and/or occupational performance problems, and 0.2% lose friends).

In 2007, Jenaro, Flores, Gómez-Vela, González-Gil, and Caballo are the first ones trying to evaluate the prevalence of pathological use of Internet and the cell phone among university students. Furthermore, possible psychological, behavioral and health correlates are identified. Their results show that 6.2% of the students are pathological internet users; 10.4%, pathological cell phone users, and 3.9 per cent make a pathological use for both. According to their results, no significant associations between Internet or cell phone over-use and substance abuse/dependency or pathological gambling are found. However, Internet over-users are more likely to suffer psychiatric disorders such as insomnia, social dysfunction, anxiety or depression. On the contrary, García et al. (2008), who focused their research in the use and abuse of Internet among undergraduates, do not observed Internet abuse at all among their participants.

Later, Estévez, Bayón, de la Cruz, and Fernández-Liria (2009) try to evaluate the possible Internet Addiction of students aged between 14 and 18. Depending on the test used, rates of at-risk users vary between 20% and 43%, and percentages of problematic users are between 3.7% and 3.3%. The following year, Muñoz-Rivas, Fernández, and Gámez-Guadix (2010) carry out a study among young people (18-30), exploring patterns of Internet use and abuse. Their findings show a rate of 9.9% excessive users. Labrador and Villadangos (2010) try to evaluate the subjective perception of risk derived from New Technologies use among minors

aged 12-17. In this case, 5.09% of them “always” notice problems related to Internet use. Moreover, it is showed that New Technologies make them feel similar effects as those considered characteristic from addictions.

Following the results of a study carried out by Carbonell et al. (2012) with young people between 12 and 25 years old, frequent problems with Internet are reported by 6.1% of the participants. Oliva et al. (2012) detect 0.76% of adolescents and young people with severe level of Internet addiction and 21.88% with moderate addiction. More recently, Lopez-Fernandez, Freixa-Blanxart, and Honrubia-Serrano (2013) find 15.5 percent of at-risk users, and 5 percent of problematic users in a 12-to18-year-old sample.

But the disparity is not only a thing of Spanish studies. Values also differ considerably in light of Europe-wide studies results. At this level, a series of initiatives whose purpose is studying the Internet use by European teenagers have been developed. Three great projects with large sample sizes from different EU countries have arisen as a result of the participation and collaboration of researchers and experts of different nationalities.

One of these initiatives, promoted by the European Commission led the development of a multinational research network denominated EU Kids Online project, whose general objective was to enhance knowledge of European children's online opportunities, risks and safety. The number of investigators and countries involved has become progressively more extensive, since, in reality, this project encompasses three different steps (EU Kids Online I (2006-2009), EU Kids Online II (2009-2011) and EU Kids Online III (2011-2014)). Their results from a survey on a sample of 25142 children from 25 European Countries show that 30% of 11-16 year-old-children have experienced one or more forms of excessive Internet use «fairly» or «very often» (Livingstone, Haddon, Görzig, & Ólafsson, 2011) and 1% could be said to show pathological levels of Internet (Smahel et al., 2012).

A second initiative, funded by the European Commission's *Safer Internet Programme*, has crystallized in the EU NET ADB research project. It aims to augment the knowledge base of the Internet addictive behavior risk among adolescents in Europe. A representative sample of 13,284 adolescents aged 14-17 from 7 European countries were surveyed, and additionally 124 qualitative in-depth interviews were conducted. This study reports that 1.2% of the total sample present Internet addictive behavior (IAB), while 12.7% are said to be at risk (Tsitsika, Tzavela, Mavromati, & EU NET ADB Consortium, 2012). However, great prevalence differences by countries were detected. For instance, in the case of Spain, the percentage of adolescents at risk for IAB is 21.3%, and the rate of teenagers with IAB reaches 1.5%.

The third initiative was conducted within the framework of the EU funded project *Saving and Empowering Young Lives in Europe* (SEYLE). The study was carried out on a sample of 11.956 young people from 11 different European countries. A prevalence of 13.5% of Maladaptive Internet Use among adolescents is reported, and the rate of Pathological Internet Use is estimated as 4.4% (Durkee et al., 2012). These percentages are similar to those results based only on the Spanish sample (13.3% and 4.3%, respectively).

The interest in estimating the prevalence of the problematic or addictive Internet use has also contributed to develop a great number of studies beyond the boundaries of our continent, mainly in the Asian region. The figures outside Europe also support disparity. In China, Lam,

Peng, Mai, and Jing (2009) report 10.2% of moderately addicted users and 0.6% of severely addicted to the Web among secondary-school students, whilst Cao, Sun, Wan, Hao, and Tao (2011) speak, in relation to Chinese adolescents, of 8.1% problematic users of Internet. Other study carried out in six Asian countries finds that Internet addiction prevalence among adolescents ranges from 1.2% in South Korea, 2.2% in China, 2.4% in Malaysia, 3% Hong-Kong, 3.1% in Japan to 4.9% in Philippines, while the percentage of problematic Internet users were of 12.5%, 17.1%, 35.1%, 31.6%, 44.4% and 46%, respectively (Mak et al., 2014). At the same time, the range of prevalence found in studies with adolescents and university students in the USA is from 0% to 26.3% (Moreno, Jelenchick, Cox, Young, & Christakis, 2011). Finally, it is also worth mentioning that a recent meta-analysis, including 89,281 participants from 31 nations across seven world regions, tried to amalgamate data to give more conclusive evidence, and estimates an Internet Addiction global prevalence of 6.0% (Cheng & Li, 2014).

This review through the research performed shows that discrepancy is a global issue and that the enormous amount of scientific works generated to this date is contrasted by the lack of agreement on the figures, being at times even contradictory. At this point, it is evidenced that this vast amount of information makes it largely complicated to integrate and compare the results, and to establish a correct diagnosis of the current situation. If we analyze the possible causes of this variability in prevalence rates across studies, four main reasons emerge.

The first one has been already mentioned: heterogeneity in terms, definitions of the subject of study, and diagnostic criteria. The second reason that could explain, at least some of the discrepancies, is the diversity of timeframes when studies were or are carried out. A third cause involves different methodological issues. One element of confusion that impairs the comparability is the different target population selected by each study (high-school students, university students, young people, minors, adolescents...). Other difficulty to generalize the results comes from limitations of the samples used (of small size or taken from a very particular population segment such as a specific city or university). In addition, data collection procedure varies enormously: from paper-and-pencil self-administered questionnaires at school, online forms, household surveys, to personal interviews. And last but not least, the fourth obstacle in the road to comparability is the use of different evaluation tests or screening scales.

In this context, one of the greatest challenges for research is the development of screening instruments, permitting early detection of possible risk cases. It should be noticed that building diagnostic or screening tools in a field where the conceptualization of the phenomenon is full of controversy is no simple task, and leads to the emergence of many and diverse instruments (Brenner, 1997; Ceyhan, Ceyhan, & Gürcan, 2007; Chow, Leung, Ng, & Yu, 2009; Demetrovics, Szeredi, & Rózsa, 2008; Jenaro et al., 2007; Morahan-Martin & Schumacher, 2000; Thatcher & Goolam, 2005; Young, 1998a, 1998b), developed through different authors' strategies such as creating their own items or adapting diagnostic criteria for substance abuse or dependence, or for pathological gambling (DSM-IV-TR).

In Spain, Echeburúa (1999) was the first researcher proposing a tool. He develops the *Test de adicción a Internet* composed of nine yes/no items. Three years later, de Gracia, Vigo, Fernández, and Marcó (2002) design a 19-items scale denominated *Problemas relacionados con el uso de Internet* (PRI). This tool is built on adapting items from the Internet-Related

Addictive Behavior Inventory (Brenner, 1997) and Internet Related Problem Scale (Armstrong, Philips, & Sailing, 2000), and based on the diagnostic criteria for substance abuse and pathological gambling. After that, Jenaro et al. (2007) develop the *Internet Over-use Scale* (IOS) for measuring the Pathological Internet Use through 23 items. García et al. (2008) present the *Cuestionario de Uso y Abuso de Internet* of 47 items. Beranuy, Chamarro, Graner, and Carbonell (2009) proposed to develop an improved version of the PRI to evaluate the Internet Addiction. This resulted in the *Questionnaire of Experiences Related to Internet* (CERI). Recently, Labrador, Villadangos, Crespo, and Becoña (2013) present the *Cuestionario de uso problemático de nuevas tecnologías* (UPNT) of 26 items, and Lopez-Fernandez et al. (2013) develop a 30-items scale named Problematic Internet Entertainment Use Scale for Adolescents (PIEUSA).

In the international context, the most widely-used scale is the *Internet Addiction Test* (Young, 1998a), although it has attracted some criticism (Estallo, 2001). On the other hand, according to a recent review of epidemiological research since 2000 (Kuss et al., 2014), the most frequently used scale is the Taiwanese *Chen Internet Addiction Scale* (Chen, Weng, Su, Wu, & Yang, 2003). This scale deserves special mention since it is the first one to draw-up clinically validated criteria for adolescents, showing acceptable psychometric properties.

The enormous variety of possible tools to use reinforces the importance of choosing as appropriate. In our case, the desirable tool must have solid guarantees that permit early detection of problematic Internet users among Spanish adolescents. Keeping this in mind, in spite of the large number of scales available, many of them present some type of limitation: (1) they are not adapted to the adolescent population or the items are unsuitable for the specific reality of this target group (Armstrong et al., 2000; Nichols & Nicki, 2004); (2) they do not provide sufficient data on their psychometric properties, or they are not as reliable as they should be (Frangos, Frangos, & Sotiropoulos, 2011; García et al., 2008; Orman, 1996); (3) the samples used for their empirical validation are too small (Lam-Figueroa et al., 2011; Morahan-Martin & Schumacher, 2000); (4) their factor structure is unclear (Chang & Law, 2008; Widyanto & McMurrin, 2004); (5) they are difficult to use as screening tools, given their large numbers of items (Davis, Flett, & Besser, 2002; Lei & Yang, 2007; Lopez-Fernandez et al., 2013) or because they do not provide cut-off points (Beranuy et al., 2009; Meerkerk et al., 2009); (6) there is no suitably adapted version in Spanish (Demetrovics et al., 2008); or (7) they were developed in a culture very different from that of Spain (S.-H. Chen et al., 2003; Huang, Wang, Qian, Zhong, & Tao, 2007).

### **1.1.3 The challenge of a broader and deeper understanding of the problematic Internet use in adolescents**

The third challenge of searching an effective and comprehensive prevention consists in, beyond the description, deepening the understanding of the problem. This involves identifying and characterizing different typologies of adolescents, and studying the possible variables related to problematic Internet use.

Although adolescents have many commonalities in relation to Internet, it might be thought that not everyone shares the same attitudes, perceptions and uses but different profiles or groups exist. Further than global rates or average values, the first step is to characterize adolescents according their belonging to different existing groups by gender, age, socioeconomic status, and so on. However, these *a priori* segmentations based on hardly

modifiable socio-demographic variables provide limited results from a practical point of view. The second necessary step is therefore going further and advancing to a comprehensive segmentation, incorporating the adolescent's attitudes and perceptions, their pattern of use or their parent's involvement.

Reviewing the literature about segmentation of Internet user profiles, some insufficiencies have been revealed. In general, there are not many studies that look for segmenting Internet users. In particular, some *a priori* or classic segmentations have been effectuated (Aslanidou & Menexes, 2008; Li & Kirkup, 2007), and few studies have tried to identify comprehensive profiles. Roberts, Foehr, Rideout, and Bordi (2004) find six adolescent users' typologies by using cluster analyses based on a variety of new media: *Media Lite*, *Interactor*, *VidKid*, *Restricted*, *Indifferent*, and *Enthusiasts*. S. Lee (2010) differentiate among three groups of college students based on their online life-styles: a *Social group*, an *Individual group*, and a *Loner group*, whereas Eynon and Malmberg (2011) create a typology of young people formed on their uses of the Internet outside school or college: the *Peripherals*, *Normatives*, *All-rounders* and *Active Participants*. As a framework and summary of the research, a meta-analysis and review of the literature on media-user typologies (Brandtzæg, 2010) proposes eight different user types: *Non-users*, *Sporadics*, *Debaters*, *Entertainment users*, *Socializers*, *Lurkers*, *Instrumental users*, and *Advanced users*. Moreover, other small group of studies is found to be focused on characterizing and defining only those users who have problems. Tsitsika et al. (2012) establish four kinds of Internet users at risk: the *Stuck online*, the *Juggling it all*, the *Coming full cycle*, and the *Killing boredom*, while Chen and Tzeng (2010) identify three profiles for the college female heavy Internet users and three profiles for their male counterparts.

The second strategy to get as complete an understanding as possible is to identify possible related variables. Different studies have generated valuable knowledge about diverse variables that could be classified in five groups: socio-demographic variables, Internet usage habits, psychopathological comorbidity indicators, interpersonal variables, and psychological variables.

Regarding socio-demographic variables, in general the available data show that problematic Internet use is more frequent among men than women (Muñoz-Rivas et al., 2010; Wang et al., 2011). However, some studies evidence a contrary trend (Durkee et al., 2012). Certain controversy about age also exists. Some research works find higher prevalence in the youngest minors (Carbonell et al., 2012; Estévez et al., 2009); while others find them among older adolescents and young adults (Jafari et al., 2014; Muñoz-Rivas et al., 2010). In either case, all the researchers coincide with defining the adolescence as a period of great vulnerability to develop problematic Internet use or a possible Internet addiction (Kaltiala-Heino, Lintonen, & Rimpelä, 2004; Kandell, 1998; Kuss, van Rooij, Shorter, Griffiths, & van de Mheen, 2013).

In relation to Internet use habits, some confusion remains. A positive correlation between frequency and length of Internet use with problematic Internet use is evidenced (Kuss, Griffiths, & Binder, 2013; Lin, Ko, & Wu, 2011), although it is also pointed out that time spent on the Internet is not, on its own, a clear indicator of problematic Internet use (Carbonell et al., 2012). Concerning the psychopathological comorbidity, numerous studies relate an excessive Internet use to anxiety (de Gracia et al., 2002; Estévez et al., 2009),

depressive symptomatology (Estévez et al., 2009; Lin et al., 2011), and even suicidal ideation (Heo et al., 2014; Viñas et al., 2002).

From an interpersonal point of view, an increase of family conflicts (Sánchez-Martínez & Otero, 2010), and a declining relationship with family, teachers and peers (Wang et al., 2011) is demonstrated. Moreover, with regard to psychosocial variables, problematic internet use is associated with social skills deficit (García et al., 2008) and social isolation (Caplan, 2002). Respecting psychological variables, the personality traits of the problematic Internet users have been studied. A higher neuroticism and openness, and a lower extraversion and agreeableness are supported (Kuss, Griffiths, et al., 2013). In summary, many authors have laid on the table the complexity of the subject of study and the different participant variables, although comprehensive explanatory models sufficiently supported empirically are still to come.

The present doctoral dissertation, and by extension the line of research initiated in 2010 by the research group PSICOM, lies within this intricate framework. This work is therefore a consequence of the effort performed during these last years by a Galician research team, with the essential intention of being useful to the society we belong to.





## **2. RESEARCH AIMS**



## 2. RESEARCH AIMS

The key objective of this line of research is no other than contributing to a deeper knowledge and a greater understanding of the problem that Internet use among adolescents might become, so that the knowledge thus generated spreads at a preventive level, through the development of instruments, effective strategies, and useful plans for society as a whole.

Achieving this general objective implies conceiving the three mentioned challenges (at a theoretical, evaluative, and understanding level) in terms of specific research aims:

- 1) To advance in today's terminological and conceptual contradictions and/or confusions of the problematic Internet use in adolescents.
- 2) To progress in evaluation terms, which means:
  - a. To develop a suitable tool with satisfactory psychometric properties that allows for the screening or early detection of adolescents at risk of problematic Internet use.
  - b. To have population data of prevalence of the problematic internet use in adolescents in Galicia (North West region of Spain) available.
- 3) To promote a greater understanding of the problematic Internet use in adolescents, through two complementary techniques:
  - a. Comprehensive *post hoc* segmentation of different adolescent users of Internet and possible risk profiles, based on their uses, attitudes and perceptions towards the Internet.
  - b. Analysis of different variables related to problematic use of Internet among adolescents, and modelling of such use.

The papers compiled within the framework of this doctoral dissertation allows for achieving, to a large extent, the first and second objectives. Regarding the third objective, some possible keys have been pointed out, but it remains unfinished.

Table 1. Challenges and corresponding research aims

Challenges	Research aims
1. Theoretical	To advance in today's conceptual controversy
2. Evaluation	a) To develop screening tools b) To have population data of prevalence
3. Understanding	a) Comprehensive <i>post hoc</i> segmentation b) Related variables, and modelling





### **3. METHOD**



### 3. METHOD

From an empirical point of view, the research aims have been tackled through three different studies:

#### 3.1 STUDY 1 (2010-2011)

In this first study, a selective methodology was chosen, carrying out a survey with Compulsory Secondary Education students from Galicia. For the sample selection, a two-stage sampling design was used. 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 (individuals) was stratified by gender and grade.

The final sample consisted of 2,339 Compulsory Secondary Education students between the ages of 11 and 18 ( $M = 13.77$ ,  $SD = 1.34$ ) from 29 schools around Galicia. Of these, 1171 were girls and 1168 boys; 1619 attended public schools and 720 attended private or subsidized schools; 1239 studied lower secondary education (1<sup>st</sup> and 2<sup>nd</sup> grade) and 1100 were in upper secondary education (3<sup>rd</sup> and 4<sup>th</sup> grade).

Data collection was performed by means of the application of an *ad hoc* questionnaire that included three different blocks of questions: (1) a set about Internet usage habits, motivations and barriers, information about the Internet, devices and applications availability, knowledge and use of social networks and parents' role in this context; (2) a scale of attitudes and perceptions toward Internet and Social Networks, comprising 12 Likert type items with five answer options ranging from 1 Strongly disagree to 5 Strongly agree; and (3) a last block of questions collecting socio-demographic data (Gender, Age, Grade, School and Province).

Data were collected in their own classrooms through that self-administered individual questionnaire, in small groups (no more than 20 individuals), after prior detailed explanation of the corresponding instructions. Every participant was informed about the purpose of the study, and repeatedly assured of the complete anonymity and confidentiality of their responses. Participation was entirely voluntary and unpaid, and the time for filling out the questionnaire ranged between 20 and 25 minutes. The information was collected by a group of researchers from the Universidade de Santiago de Compostela with extensive experience in the performance of this type of work. The Bioethics Committee of the Universidade de Santiago de Compostela approved this study, and it was carried out with the consent and cooperation of both the school leadership team and the respective parents' associations.

The next data table contains the fact sheet of the study:

Table 2. Fact sheet of Study 1

<b>Area:</b> Galicia
<b>Universe:</b> Finite (N: 89263 adolescents that were in Compulsory Secondary Education in Galician schools, according to data from the Local Ministry of Education and University Planning)
<b>Type of sampling:</b> A two-stage sampling: by cluster random sampling for the selection of the first stage units (schools), and by quotas of gender and grade for the selection of the second-level units (individuals)
<b>Maximum allowable error:</b> $\pm 2\%$
<b>Worst-case hypothesis:</b> $p = q = 0.5$
<b>Significance level:</b> $= 0.05$
<b>Sample size:</b> 2339 individuals
<b>Data collection:</b> <i>Ad hoc</i> self-administered questionnaire
<b>Field work:</b> November 2010

### 3.2 STUDY 2 (2012-2013)

This second study consisted of two complementary stages, one qualitative and other quantitative. The development of the qualitative study involved the constitution of a multidisciplinary team of experts with 12 professionals (3 clinical psychologists, 3 psychiatrists, 3 community education workers and 3 experts in drug-dependence prevention), with the aim of carrying out a critical review of the existing literature, providing evidence of the content validity of the scale to be elaborated; and establishing criteria for analyzing its discriminative capacity.

The Delphi technique was used for working with the experts, being structured in three stages. First of all, an initial meeting was organized for discussing the state of the issue and the possible criteria indicating the problem. After that, the experts individually presented their own reflections on the problem and their mature proposals for the items to be included in the scale, and the response format to be used. Finally, they agreed on the indicators or reference criteria for considering an adolescent's behavior as "risk", as well as other technical elements such as the order of presentation of the items.

In the case of the quantitative study, a purposive sampling was used, in an effort to access the largest and most heterogeneous sample possible. Through contact with 11 secondary schools in 7 different municipalities (both urban and rural) of the province of A Coruña (north-western Spain), it was possible to gather a sample of 1709 adolescents (835 girls and 874 boys). Their ages were between 11 and 17 years ( $M = 13.74$ ;  $SD = 1.43$ ). Of these, 30.2% were in first grade, 25.2% in second grade, 23.8% in third grade and 20.8% in fourth grade.

An *ad hoc* questionnaire, divided in two different blocks, was used for data collection. The first block included a group of questions about Internet usage habits, parents' role in this context, academic achievement, possible consequences derived from the Internet use, and socio-demographic information. The second block contained a problematic Internet use screening scale.

Data were collected in the classrooms of the schools participating in the study, in small groups (20 or less), after an explanation of the corresponding instructions. Data collection was

carried out by the experts in drug-dependence prevention who developed the content of health programs at different schools, which was an extra activity of the module on responsible use of New Technologies. Special emphasis was placed on the confidentiality of information and anonymity of responses was guaranteed. Participation in the study was completely voluntary and unpaid. Finally, it should be pointed out that the study was approved by the Bioethics Committee of the Universidade de Santiago de Compostela, and the cooperation and consent of both the schools' head teachers and parents' associations were obtained.

The next data table contains the fact sheet of the study:

**Table 3. Fact sheet of Study 2**

<p><b>Area:</b> Galicia</p> <p><b>Universe:</b> Finite (N: 2043 adolescents that were in Compulsory Secondary Education in the 11 schools contacted)</p> <p><b>Type of sampling:</b> A purposive sampling, trying to access the largest and most heterogeneous sample possible</p> <p><b>Sample size:</b> 1709 individuals</p> <p><b>Data collection:</b> <i>Ad hoc</i> self-administered questionnaire</p> <p><b>Field work:</b> November 2013</p>
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### 3.3 STUDY 3 (2014-2015). *MOCIDADE ONLINE PROJECT*

In this third study, a selective methodology was used, carrying out an online survey of the Compulsory Secondary Education students from Galician secondary schools (both public and private/subsidized). In an effort to access the most of the population, contact was established with the total number of secondary schools in Galicia (493). Rate of participation in the study was 51.7% (183 public schools and 72 private schools), which is translated into a sample size of 44051 adolescents between 12 and 17 years old. ( $M = 14.37$ ;  $SD = 1.36$ ). Of them, 49.2% were female and 50.8% male; 28.6% were in first grade, 27.2% in second grade; 23.8% in third grade and 20.8% in fourth grade.

Data collection was carried out through an *ad hoc* online questionnaire. It was composed of a total of 34 questions, organized in three different blocks: (1) a set of questions about usage habits of Internet, social networks and cell phone; (2) a problematic internet use screening scale; and (3) a block about hazardous uses and risk practices.

The questionnaire was installed in the software platform of the Local Ministry of Culture, Education and University Planning, under the supervision of the Agency for Technological Upgrading of Galicia (AMTEGA). Every school designated a coordinator, responsible for training tutors who would take small groups of students (20 or less) to the computer rooms in order to fill out the questionnaire. Moreover, a system of single-use login credentials and absolutely confidential passwords for each center and student was developed. Every participant was informed about the purpose of the study, and repeatedly assured of the complete anonymity and confidentiality of their responses. The participation was absolutely voluntary and unpaid, and the average time for filling out was 8 minutes and 24 seconds. This study was approved by the Bioethics Committee of the Universidade de Santiago de Compostela too.

The next data table contains the fact sheet of the study:

**Table 4. Fact sheet of Study 3**

**Area:** Galicia

**Universe:** Finite (N: 87990 adolescents that were in Compulsory Secondary Education in Galician schools, according to data from the Local Ministry of Culture, Education and University Planning)

**Type of sampling:** A purposive sampling, trying to achieve the total participation of the secondary schools in Galicia (493)

**Sample size:** 44051 individuals

**Data collection:** *Ad hoc* online questionnaire

**Field work:** May 2014





## **4. RESULTS**



## 4. RESULTS

The doctoral dissertation is a compendium of the four published papers listed below. For each one of them, its complete bibliographical reference (authors, year, title, journal, volume, and pages) is reported. Moreover, the impact factor, the 5-year impact factor and the relative ranking within categories of the journals, according to 2015 Journal Citation Reports® Social Sciences Edition (Thomson Reuters, 2015) are provided. Full papers can be found in the following pages.

### 4.1 PAPERS THAT ARE PART OF THE DOCTORAL DISSERTATION

- **Paper 1** ([http://scielo.isciii.es/pdf/ap/v30n2/psico\\_adolescencia5.pdf](http://scielo.isciii.es/pdf/ap/v30n2/psico_adolescencia5.pdf))

Rial, Gómez, Braña, & Varela (2014). Actitudes, percepciones y uso de Internet y las redes sociales entre los adolescentes de la comunidad gallega [Attitudes, perceptions and Internet and social networks use among Galician (Spain) teens]. *Anales de Psicología*, 30, 642-655. doi:10.6018/analesps.30.2.159111

Paper accepted and published in *Anales de Psicología*. Impact factor 2014: 0.504; 5-year impact factor: 0.634 (96/129 in Psychology, Multidisciplinary area).

- **Paper 2** (<http://www.psicothema.com/pdf/4155.pdf>)

Gómez, Rial, Braña, Varela, & Barreiro (2014). Evaluation and early detection of problematic Internet use in adolescents. *Psicothema*, 26, 21-26. doi:10.7334/psicothema2013.109

Paper accepted and published in *Psicothema*. Impact factor 2014: 1.21; 5-year impact factor: 1.097 (58/129 in Psychology, Multidisciplinary area).

- **Paper 3** (<http://journals.cambridge.org/download.php?file=%2FSJP%2FSJP18%2FS1138741615000554a.pdf&code=608ab86dc04923f300062d1042e9273c>)

Rial, Gómez, Picón, Braña, & Varela (2015). Identification and characterization of adolescent Internet user's profiles. *The Spanish Journal of Psychology*, 18, e50, 1-10. doi:10.1017/sjp.2015.55

Paper accepted and published in *The Spanish Journal of Psychology*. Impact factor 2014: 0.586; 5-year impact factor: 0.92 (93/129 in Psychology, Multidisciplinary area).

- **Paper 4** (<http://www.adicciones.es/index.php/adicciones/article/view/193/272>)

Rial, Gómez, Isorna, Araujo, & Varela (2015). PIUS-a: Problematic Internet Use Scale in adolescents. Development and psychometric validation. *Adicciones*, 27, 47-63.

Paper accepted and published in *Adicciones*. Impact factor 2014: 1.154; 5-year impact factor: 1.006 (26/36 in Substance abuse area).

#### 4.2 OTHER PAPERS

At this point, it is also worth to mention a fifth paper (Rial, Golpe, Gómez, & Barreiro, 2015; see Appendix I), based on data from the second empirical study, that has been already published in a journal non indexed in the Journal Citation Reports®. This paper sought to contribute to get a better characterization and understanding of the problematic Internet use in adolescents, through a detailed theoretical revision of the different related variables, and an empirical analysis of the role of some modulating, predicting or consequential variables.

In the same way, several papers are being prepared, based on data from the third study: paper 6 entitled *Screening of Problematic Internet Use in adolescents from Galicia (Spain): current data and related variables*; paper 7 denominated *Validation and psychometric analysis of the PIUS-a online version*; paper 8 called *Problematic use of Internet and social networks in adolescents: An analysis from the gender perspective*; and paper 9 entitled *Adolescent Internet user profiles based on their pattern of use and parental mediation*.

#### 4.3 COMPLEMENTARITY OF THE PAPERS

Every empirical study, through the publication of different papers, is related to the achievement of the research aims. The next table tries to facilitate the understanding of this relation.

**Table 5. Resulting papers from empirical studies, and corresponding challenges and research aims**

	Empirical studies	Challenges	Research aims	Resulting papers
Internet use by adolescents line of research	Study 1 (2010-11)	1. Theoretical	To advance in today's conceptual controversy	- Paper 1 & Paper 2 & Paper 3
		2. Evaluation	a) To develop a screening tool	- Paper 2
			b) To have population data	- Paper 1
	3. Understanding	a) Comprehensive <i>post hoc</i> segmentation	- Paper 3	
	Study 2 (2012-13)	1. Theoretical	To advance in today's conceptual controversy	- Paper 4 & Paper 5
		2. Evaluation	a) To improve and validate the screening tool	- Paper 4
		3. Understanding	b) Related variables	- Paper 5
	Study 3 (2014-15)	1. Theoretical	To advance in today's conceptual controversy	- Paper 6 in progress & Paper 7 in progress & Paper 8 in progress & Paper 9 in progress
		2. Evaluation	a) To validate an online version of the screening tool	- Paper 7 in progress
			b) To have population data	- Paper 6 in progress
3. Understanding		a) Comprehensive <i>post hoc</i> segmentation	- Paper 9 in progress	
	b) Related variables	- Paper 6 & Paper 8 in progress		



## **5. DISCUSSION**



## 5. DISCUSSION

The main findings, expounded in the four papers that are part of this doctoral dissertation, are briefly discussed in this section, as well as their implications at the theoretical and practical level. At the same time, it is worth to mention that data from more than 44000 adolescent participants in the third empirical study (*Mocidade Online project*) gave room to other papers still in revision, and therefore they have not been included in this dissertation.

The first paper (Rial, Gómez, Braña, & Varela, 2014) involved the first empirical approach with the problem under study. Firstly, it enabled to make progress in the terminological difficulties and the notional controversy around problematic Internet use itself. In particular, the deep bibliographic review fostered the identification of the landmarks of scientific literature, and the theoretical reflection made a first position at the conceptual level possible.

Additionally, the information collected facilitated a sound understanding and assessment of the reality and allowed to gauge the magnitude of the problem in adolescents from Galicia, inasmuch as descriptive data at the population level are reported. The results have verified that Internet has a very high level of implementation among adolescents (9 out of 10 secondary students regularly use Internet, and 60% use it every day). The most mentioned place for connection is their family home (85%), and 55% state to have connection in their own room. However, more than half of the parents (52.8%) do not control or supervise their children's Internet use, as already advised by the results from the EU Kids Online project (Livingstone et al., 2011). Moreover, parental control was found to be significantly lower when parents are not Internet users (something that occurs in one out of four cases). These data inform about the residual role that parents seem to play, and the existing generation-digital gap.

This first work simultaneously permitted to explore the attitudes and perceptions toward Internet and Social Networks of Galician adolescents. This was made possible through the development of a three-factor scale (Positive endoattitude, Negative exoattitude, and Risk of Dependence) with acceptable psychometric properties in general terms. The results reveal that adolescents share the idea that people their age generally make hardly recommendable Internet use. However, when talking about themselves, they do not feel to be at risk of any problem at this level.

Moreover, it was intended to analyze the possible differences at a socio-demographic level. This first *a priori* segmentation reveals the universalization or globalization of the Internet use. The most remarkable differences in relation to gender reside in the dissatisfaction due to not being connected as much as they would like, which was higher among the girls, although there are not significant differences in frequency and hours of use. Linked to this fact, a higher frequency of arguments with their parents because of Internet use as well as a higher parental control is found in the case of girls. On the whole, this suggests a larger precocity and a more protective attitude from their parents among women.

On the other hand, students in 3<sup>rd</sup> and 4<sup>th</sup> grade (the oldest ones) are more autonomous when using the Internet. They are online significantly more frequently and during more time than the adolescents in 1<sup>st</sup> and 2<sup>nd</sup> grade. In addition, the arguments with their parents are more frequent, which emphasize the need to develop educational-preventive actions at an early age. According to the ownership of the center, a higher frequency of Internet use among adolescents who attend private or subsidized centers rather than public schools is found.

Regarding the practical implications, this first work stresses the need for complementary involvement of three social actors, since it is a shared responsibility. Firstly, considering that Internet is mainly used at home, parents should exert effective control over their children's Internet use, which means that increasing information and sensitivity is needed. Secondly, the results obtained warn about the need to work with schools, so that they turn into relevant source of information and training about Internet. The third action line should be developed by institutions, carrying out different measures such as facilitating the regular realization of studies for keeping track of the problem, promote the development and validation of screening tests, and conduct information and awareness-raising campaigns.

The second paper (Gómez, Rial, Braña, Varela, & Barreiro, 2014) aimed to response one of the highlighted needs in the previous paper: development and validation of a screening tool for problematic Internet use in adolescents. This scale should have sufficient theoretical and empirical support, and appropriate psychometric properties, thus enabling three different actions: (1) to grade the adolescents on a risk continuum, (2) to detect rapidly the problematic cases and refer them to convenient services; and (3) to keep track regularly of the prevalence of the phenomenon and the effectiveness of the preventive measures carried out.

Despite the availability of different tools (Ceyhan et al., 2007; S.-H. Chen et al., 2003; García et al., 2008; Young, 1998b), their limitations led to elaborate a new specific, brief and easy-to-use scale for adolescents from Galicia (and by extension, from Spain), with adequate psychometric support. To this end, part of the data from the first study was analyzed in psychometric terms, validating a first screening scale in paper-and-pencil format.

The Confirmatory Factor Analysis (CFA) carried out confirmed the unidimensionality of the test and the convenience of deleting one of its items. The value of the goodness-of-fit indices for the scale composed of the eight remaining items were appropriate, and the scale as a whole also showed to have suitable internal consistency ( $\alpha = .83$ ). In spite of the lack of a gold standard for diagnostic criteria, its screening capacity was explored, obtaining values of 80% of sensitivity and 81.2% of specificity, and a prevalence of problematic Internet use of 19.9% in adolescents from Galicia.

In short, this paper allowed to make available a brief scale, adapted to the Galician adolescent population, with adequate psychometric support, and interesting potential at the applied level. At the same time, we were aware of its limitations (mainly from a theoretical point of view), so that this scale was conceived as the starting point to develop a better assessment of the construct, that should be backed up not only with literature review but also with highly qualified experts' judgment, and an empirical validation in a new sample.

In the case of the third paper (Rial, Gómez, Picón, Braña, & Varela, 2015), its main objective was to deepen the understanding of problematic Internet use in adolescents, trying to know the different typologies or profiles of adolescents according to their attitudes toward the Internet, and if these different groups were also diverse from a behavioral and socio-demographic point of view. Based on data from the first study, this segmentation was carried out through a cluster analysis using the scale of attitudes and perceptions toward Internet and Social Networks from the first study as input (Rial et al., 2014).

From this attitudinal point of view, four segments or profiles were identified, which were also different from a behavioral point of view. The first group (labelled as *first steppers*) is occasionally online, for less than one hour, which is perceived as enough by them. The second group (*trainees*) accesses the Internet weekly, principally for checking social networks, and they rarely have arguments with their parents because of their Internet use. The *sensible users* (third group) are online every day during one or two hours, and their parents usually control their Internet use as well as occasionally have arguments with their children. The fourth group (*heavy users*) access every day for more than 2 hours and, although the arguments with their parents because of Internet are frequent, there is lack of parental control. These four groups could correspond to four of the user types proposed by Brandtzæg (2010): *Sporadics*, *Socializers*, *Instrumental users* and *Advance users*, respectively.

Furthermore, the paper reveals that the socio-demographic differences among groups were reduced, that is, that profiles are not clearly defined from a socio-demographic standpoint. This indicates that families, schools, institutions, and society as a whole should be watchful and hold a proactive attitude through the problem. Nevertheless, this does not determine a uniform phenomenon. An in-depth analysis of the results, with special attention to differences among sensible and heavy users, manifests that beyond frequency and hours of use, distinctions in attitudes toward Internet are key. This implies that education and empowerment of adolescents are the best tools to promote a responsible use of the Net, as stated by the European Commission (2012). Another remarkable element from this work is parental supervision, crucial in this context. Parents are called upon to develop a more active role, observing their children's Internet usage habits, supervising and controlling their use, setting limits and rules and helping and educating in a responsible utilization.

It should be lastly noticed that in this third paper we took a step forward in the conceptual controversy. It is proposed that, although speaking about *Internet Addiction* could be permissible and while waiting for the necessary scientific consensus, the most prudent solution is to use the term *Problematic Internet Use* (Ceyhan et al., 2007; Demetrovics et al., 2008; Pulido-Rull, Escoto-de la Rosa, & Gutiérrez-Valdovinos, 2011; Thatcher & Goolam, 2005)

The fourth paper aimed to validate a more rigorous screening instrument: the PIUS-a scale, based on data from a new empirical study (Study 2), with a sample of 1709 students of Compulsory Secondary Education from Galicia (Spain).

The four phases contained in the Standards for educational and psychological testing (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999) were followed for the construction and development of the scale. Firstly, the purpose of the scale and the scope of the construct to be

measured were defined. Afterwards, some aspects of the scale such as scoring system or item and response format were designated. Next, the phase of development, assessment and selection of the items was carried out, and finally the setup of the final version and its empirical validation was effectuated.

These four stages were developed through various complementary strategies. The first of them entailed an extensive literature review about the main scales previously proposed, in addition to the DSM-5 diagnostic criteria for Gambling Disorder and Internet Gaming Disorder. The second strategy was to develop a qualitative study, which consisted in setting up a multidisciplinary team of experts with clinical psychologists, psychiatrists, community education workers and experts in drug-dependence prevention. The objective sought with the creation of this group was triple: (1) to critically revise the existing literature, highlighting the current limitations; (2) to provide evidence of the content validity of the scale and the items (using the 8-item scale (Gómez et al., 2014) as a starting point); and (3) to determine criteria for analyzing its discriminative capacity, given the lack of consensus-based diagnostic criteria. To this end, the Delphi technique was used.

The process described above produced an initial version of the scale with 14 items. The factor analyses carried out made possible to present a new unidimensional scale (PIUS-a), brief and simple (with just 11 items), adapted to the cultural context of Galicia (Spain) and the language of young people – qualities that give great potential for everyday practice to practitioners and researchers in this field. The scale has acceptable psychometric properties, in terms of internal consistency ( $\alpha = .81$ ), and evidence of internal structure and content, achieving a satisfactory balance between levels of sensitivity (81%) and specificity (82.6%).

At this point, it is worthy of note that another paper, based on data from the second empirical study, has also been published (Rial, Golpe, et al., 2015; see Appendix I). This paper sought to contribute to get a better characterization and understanding of the problematic Internet use in adolescents. In order to achieve it, a detailed theoretical revision of the different related variables was carried out and, at an empirical level, the role of some related variables was investigated. In particular, it was analyzed to what extent this phenomenon could be modulated by different socio-demographic or family factors, associated with some predicting variables such as certain Internet usage habits, or with some consequential variables.

The main results showed that the percentage of problematic Internet users was significantly higher among girls, which is in line with other results from Spain (Durkee et al., 2012). Regarding Internet usage habits, most of adolescents with a risk profile make a daily use of the Internet, during more than two hours and, to a large extent, at nights. Moreover, the problematic users reveal higher rates of problems such as lack of sleep, itching eyes, bad temper or anxiety, matching the results of precedent studies (Whang, Lee, & Chang, 2003; Yang & Tung, 2007). A significant negative correlation between score on the screening scale and academic performance was found, a similar result consistent with other researchers (Heo et al., 2014; Kormas et al., 2011). Finally, the parental role is again highlighted. When parents are not Internet users, the percentage of problematic Internet use among their children is higher. This result should encourage the parents to be trained to use and know the Internet.



## **6. LIMITATIONS & FUTURE PROSPECTS**



## 6. LIMITATIONS & FUTURE PROSPECTS

We are aware that our studies must be considered in light of their limitations, but at the same time we are conscious that institutions, schools, families and society as a whole are demanding a proactive approach to confront a situation that could become a real problem.

First of all, it should be considered that in general we have large sample sizes coming from Compulsory Secondary Education students from Galicia (the Northwest region of Spain), since our main objective is related to adolescents from this region. However, we understand that there might be some cultural differences in relation to other regions from Spain or other countries from the European Union, which could complicate or limit the generalization of our findings.

On this point, future research could lead to replicate our studies in other regions from Spain or other countries from the EU in order to compare our results, and especially spread and validate our screening scale. In addition, it would be of interest to carry out new screening studies with samples of pre-adolescents, since new generations are beginning to use Internet at an earlier age, and early detection should be done as soon as possible.

Secondly, our studies always relied on adolescents' self-report. This means that it is impossible to figure out if adolescents have underreported or overreported their Internet use. Nevertheless, self-report of alcohol and other drug use has been shown to be usually reliable or even better than other methods of substances use detection (Babor, Kranzler, & Lauerma, 1989; Winters, Stinchfield, Henly, & Schwartz, 1990), so there are good grounds for considering that self-report measures are appropriate for this context too. Additionally, the use of a social desirability scale or an instrument to detect random response patterns could have been very useful.

Regarding the developed scales, in our studies only a general cutoff point has been established, lacking different cutoff points according to the gender and/or age of the adolescents. Furthermore, different limitations emerge from the still-unresolved conceptual controversy and the lack of consensus on official defining diagnostic criteria of the problematic Internet use in adolescents. The absence of a gold standard makes us develop our own alternative criteria for assessing the discriminative capacity of the scale, which could be seen as arbitrary. This caused that some of its psychometric properties such as sensitivity and specificity values could be questionable. Another limitation is the impossibility of accessing clinical samples to properly test the scale properties.

In this context, one of our priorities is to lead a continuous improvement of our screening scale, in order to achieve more conclusive data. This is translated into the commitment of new validations when duly consensus-based criteria are achieved, which finally will allow its clinical validation, and a further enhancement of its discriminative capacity. It should be noted that the PIUS-a scale has been recently adapted to the online format, and tested in the third empirical study, proving its psychometric balance and the delimitation of different cutoff

points in accordance with adolescents' gender or age. Moreover, its enormous value in regular monitoring of the problematic Internet use among adolescents in our region has been manifested.

In relation to deepening into understanding the problem and contributing to the identification of different related variables, although some remarkable elements have been identified through bivariate statistics and *post hoc* segmentation, a model was not proposed. In the search for explanatory or underlying variables, our future research should go one step further and carry out a statistical model (using Partial Least Squares approach) on how adolescents can become problematic Internet users with precedents and consequents. In order to achieve this goal, a new pilot study is currently being developed.

Finally, although our ultimate aim was to promote a more effective prevention, only some general observations and rough outlines were offered along our papers. Therefore our future research will seek to translate the findings derived from our studies into specific and explicit proposals.

Nowadays, several papers are currently in a drafting phase, since the third study has allowed for accessing current prevalence data of the problem, for carrying out new *post hoc* segmentations, and also for deepening the understanding of the problem, especially from a gender perspective. Furthermore, new works are going to be presented in different forums, such as *The First European conference on addictive behaviours and dependencies*.

Given that adolescents' digital reality might change day by day, our efforts are focused not only on getting a greater understanding of the current problem, but also on being vigilant of any new trend to be incorporated into the analysis. Only this way, scientific findings could lead the formulation of prevention strategies and the coordination of assistance measures.



## **7. CONCLUSIONS**



## 7. CONCLUSIONS

The main aim of this doctoral dissertation was to contribute to an in-depth knowledge and a better understanding of the problematic Internet use among adolescents. Achieving this general objective implied reaching three specific objectives: (1) to advance in today's terminological and conceptual contradictions; (2) to progress in evaluation terms, through the development of an appropriate screening tool, and the availability of population data of prevalence; and (3) to promote a greater understanding through comprehensive *post hoc* segmentations of different users and possible risk profiles, and the analysis of different related variables. Beyond these particular objectives, this doctoral dissertation was conceived with a remarkable applied approach, since its ultimate aim lies in contributing to develop effective plans and preventive strategies with rigorous scientific support.

The findings generated and gathered along the different papers allow to establish a series of forceful ideas or main conclusions:

1. The use of Internet among adolescents is not a fad. This dissertation enabled the confirmation of its expansion and increase, verifying that it is a globalized and widespread phenomenon.
2. Beyond its undoubted benefits, it was also confirmed that the Net has a dark side, as testified by the figures on different risk practices and problematic Internet use.
3. Despite the terminological confusion still unresolved, progress has been made in the conceptualization of the problem. As a result, we suggest the utilization of the term Problematic Internet Use rather than other alternatives.
4. A new scale (PIUS-a) that allows for a rapid screening of problematic Internet users among adolescents has been developed, validated and presented (Rial, Gómez, Isorna, Araujo, & Varela, 2015). This tool has adequate psychometric support and it is at the disposal of professionals and researchers. By using this scale, it is possible to grade adolescents on a risk continuum, to estimate population prevalence data, and to regularly monitor the problem, serving as an effectiveness measure/indicator of the different actions or preventive strategies.
5. The problematic Internet use in adolescents has been found to be a phenomenon as globalized as the Internet use itself, which involves an additional difficulty when designing strategies and prevention plans.
6. When trying to identify different typologies of adolescent Internet users, certain differences could be established based on the socio-demographic variables, but the most relevant elements are others, which underlines the importance of a comprehensive *post hoc* segmentation. The different segments or groups of

adolescent Internet users identified through a cluster analysis are non-pure types. The essential differences precisely lie in attitudes toward the Internet, their motivations, and parental role.

7. The generation digital gap between parents and their children has been demonstrated. Given the key importance of parental role in this context, disseminating information and raising awareness are needed.
8. Parents, schools and institutions should focus their efforts on the empowerment of children, adolescents and youngsters, and on the education in values and life skills, given that it is a shared responsibility.

The presentation of this dissertation represents only a step to keep moving forward in the development of our research line. Preoccupation and commitment for achieving responses and resolutions that guarantee children to grow up free and safe do not stop here. The pending challenges, mainly regarding modelling and prevention works, are included in the PSICOM agenda.





## **8. REFERENCES**



## 8. REFERENCES

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## **9. APPENDICES**



## 9. APPENDICES

### 9.1 APPENDIX I (<http://www.haaj.org/index.php/haaj/article/view/223/238>)

Rial, A., Golpe, S., Gómez, P. & Barreiro, C. (2015). Variables asociadas al uso problemático de Internet entre adolescentes: recomendaciones para una mejor prevención [Variables related with problematic Internet use among adolescents]. *Health and Addictions*, 15, 25-38.

### 9.2 APPENDIX II

RESUMO

### 9.3 APPENDIX III

RESUMEN





## **APPENDIX II**



## RESUMO

### INTRODUCCIÓN

Os datos máis recentes poñen de manifesto un crecente e extensivo uso de Internet na sociedade actual e entre os adolescentes en particular. Internet brinda novas oportunidades académicas e de formación, profesionais e de mercado, de ocio e diversión e, sobre todo, de relación e comunicación (Eurostat, 2015; Instituto Nacional de Estadística, 2014). Sen poñer en cuestión os indubidables beneficios que trae consigo, non son menos certas as evidencias dun lado escuro de Internet. *Sexting*, sextorsión, *ciberbullying*, *grooming*, uso problemático ou adicción a Internet son algunhas das novas realidades que teñen emerxido neste contexto. O uso de Internet e as Novas Tecnoloxías (NT) converteuse nun fenómeno especialmente preocupante no caso dos adolescentes, relacionándose a miúdo coa aparición de problemas de conduta, hiperactividade, ansiedade, sintomatoloxía depresiva ou inclusive ideación suicida.

Abordar este problema dun xeito integral pasa por dar resposta a tres problemas que, ao noso entender, coexisten neste eido de investigación: un problema teórico ou conceptual, un problema instrumental ou de avaliación, e un terceiro problema de comprensión do fenómeno obxecto de estudo e de identificación das variables que subxacen a este.

En primeiro lugar, existe unha eiva teórica latente que precisa de solución: a delimitación conceptual do propio fenómeno e a unificación a nivel terminolóxico. Para solucionar este problema é precisa unha revisión profunda da literatura, tentando resolver a confusión existente e propoñendo alternativas de consenso entre a comunidade científica. Algúns investigadores téñense enfrontado ao fenómeno con certo escepticismo, considerando que non é posible falar de maneira ortodoxa de *Adicción a Internet* (Estallo, 2001; Grohol, 1999; Matute, 2001). Por outra banda, entre aqueles que cren que o uso de Internet si pode chegar a ser problemático, atopamos que a terminoloxía empregada para referirse ao fenómeno é moi variada, e por extensión a concepción subxacente do mesmo. *Adicción a Internet* (Young, 1998a), *Uso Compulsivo* (Meerkerk, Van Den Eijnden, Vermulst e Garretsen, 2009), *Uso Patolóxico* (Morahan-Martin e Schumacher, 2000), *Uso Problemático* (Caplan, 2002), *Uso Excesivo* (Hansen, 2002), *Uso non Regulado* (LaRose, Lin e Eastin, 2003) ou *Dependencia de Internet* (Rahmani e Lavasani, 2011) son algúns dos termos máis utilizados.

Se nos remitimos aos manuais diagnósticos de referencia (CIE-10 e DSM-5), observamos que ningún recolle aínda esta categoría. Non obstante, no DSM-5 introducíronse dúas novidades que apuntan cara unha nova dirección. Por unha parte, incluíuse o *Internet Gaming Disorder* na sección III do manual, onde se sitúan aquelas entidades diagnósticas emerxentes que necesitan de máis investigación e experiencia clínica. Por outra parte, pasouse a clasificar a ludomanía como unha adicción de comportamento, o cal leva a pensar que outras condutas capaces de xerar a psicopatoloxía propia da adicción poderían ser incorporadas tamén baixo ese epígrafe en vindeiras edicións do manual (Cía, 2013; Petry e O'Brien, 2013).

O segundo reto aínda por resolver é o da operativización do constructo, isto é, os instrumentos de avaliación. Precísanse ferramentas debidamente validadas a nivel empírico e dotadas de propiedades psicométricas axeitadas, que fagan posible o *screening* e detección precoz dos casos de risco e que, asemade, permitan dispoñer de datos de prevalencia a nivel poboacional. As discrepancias existentes a día de hoxe tanto a nivel teórico como metodolóxico teñen o seu correspondente a nivel epidemiolóxico, reflectindo datos de prevalencia moi heteroxéneos e a miúdo contraditorios. Esta variabilidade débese en boa medida aos múltiples instrumentos de avaliación, tests ou escalas empregados (Beranuy, Chamorro, Graner e Carbonell, 2009; Ceyhan, Ceyhan e Gürcan, 2007; Chow, Leung, Ng e Yu, 2009; de Gracia, Vigo, Fernández e Marcó, 2002; Demetrovics, Szeredi e Rózsa, 2008; Jenaro, Flores, Gómez-Vela, González-Gil e Caballo, 2007; Thatcher e Goolam, 2005; Young, 1998a, 1998b). Moitas destas escalas presentan algún tipo de limitación: non están adaptadas á poboación adolescente, non aportan suficientes datos das súas propiedades psicométricas, as mostras utilizadas na validación empírica son moi reducidas, a súa estrutura factorial non está de todo clara, non se proporcionan os puntos de corte para ser empregadas como escalas de *cribado*, non se dispón dunha versión adaptada ao noso idioma ou teñen sido desenvolvidas nunha cultura que pouco ten que ver coa nosa.

O terceiro reto na busca dunha prevención integral efectiva consiste en afondar nunha maior comprensión do problema, a través de dúas estratexias ou camiños complementarios: (1) a identificación e caracterización de diferentes tipoloxías ou perfís de adolescentes, no tocante á relación que manteñen coa Rede e as NT, e (2) o estudo de posibles variables asociadas ao seu uso problemático. En canto a primeira das estratexias algúns estudos téñense centrado en levar a cabo una segmentación clásica ou *a priori* a partir de variables sociodemográficas (Aslanidou e Menexes, 2008; Li e Kirkup, 2007), acadando resultados moi limitados dende un punto de vista práctico. Por iso, máis aló destas diferenzas sociodemográficas, resulta necesario avanzar cara unha segmentación integral, máis inclusiva, que incorpore as actitudes e percepcións dos adolescentes ou o papel exercido polos seus pais. En canto á segunda estratexia, son moitos os autores que poñen enriba da mesa a complexidade do tema obxecto de estudo e os diferentes tipos de variables que interveñen (Heo, Oh, Subramanian, Kim e Kawachi, 2014), se ben están por chegar aínda modelos explicativos integradores e suficientemente avalados empiricamente.

É, en definitiva, neste complexo e apaixonante contexto onde se enmarca a presente tese de doutoramento e, por extensión, a liña de investigación iniciada no ano 2010 polo grupo PSICOM. O presente traballo é consecuencia, polo tanto, do esforzo realizado nestes últimos anos por un equipo de investigadores da comunidade galega, co afán fundamental de sermos útiles á sociedade da que formamos parte.

## **OBXECTIVOS**

O obxectivo deste traballo non é outro que o de poder contribuír a un coñecemento máis profundo e a unha mellor comprensión do problema que pode chegar a supoñer o uso de Internet e as NT entre os adolescentes, de maneira que o coñecemento xerado transcenda a nivel preventivo, no desenvolvemento de instrumentos e estratexias eficaces e útiles para o conxunto da sociedade.

Acadar este obxectivo xeral implica concibir os tres grandes retos sinalados (a nivel teórico, de avaliación e de comprensión do problema), en termos de obxectivos específicos de investigación:

- 1) Avanzar nas contradicións ou confusións conceptuais ou teóricas existentes a día de hoxe.
- 2) Avanzar en termos de avaliación, o que implica:
  - a. desenvolver unha ferramenta axeitada en termos psicométricos e prácticos para o *screening* e detección precoz dos casos de risco.
  - b. dispor de datos poboacionais de prevalencia do uso problemático da Rede e levar a cabo un seguimento periódico da mesma.
- 3) Favorecer unha mellor comprensión do problema, a través de dúas vías complementarias:
  - a. Segmentación integral dos adolescentes en canto aos usos, actitudes e percepcións que teñen da Rede.
  - b. Análise de diferentes variables relacionadas co uso problemático de Internet e modelización do mesmo.

As publicacións compendiadas no marco desta tese permitiron acadar en boa medida os obxectivos 1 e 2, mentres que no caso do obxectivo 3 sinaláronse algunhas posibles claves, pero está aínda por completar ou desenvolver.

## METODOLOXÍA

Dende un punto de vista empírico, os obxectivos apuntados foron abordados complementariamente mediante a realización de tres estudos, cos seus traballos de campo correspondentes:

### **1. Estudo 1 (2010-2011)**

No primeiro estudo utilizouse unha metodoloxía selectiva, que se materializou na realización dunha enquisa entre a poboación de estudantes de Educación Secundaria Obrigatoria (ESO) da comunidade autónoma de Galicia. Para a selección da mostra utilizouse unha mostraxe bietápica: por conglomerados para a selección das unidades de primeiro nivel (centros), e por cotas para a selección das unidades de segundo nivel (individuos). A mostra final estivo composta por un total de 2339 estudantes.

Os datos foron recollidos nas propias aulas dos centros, en grupos de 15-20 individuos, mediante un cuestionario *ad hoc* que cada participante debía cubrir de forma individual, voluntaria e anónima. Dito cuestionario estaba dividido en tres bloques: (1) un bloque sobre hábitos de uso de Internet, motivos e barreiras, información, dispoñibilidade de aplicacións e dispositivos, coñecemento e utilización de redes sociais, e o papel dos pais neste contexto; (2) unha escala de actitudes cara Internet e as redes sociais; e (3) un último bloque sobre aspectos sociodemográficos.

### **2. Estudo 2 (2012-2013)**

Este segundo estudo constou de dúas fases complementarias, unha cualitativa e outra cuantitativa, cuxo obxectivo común foi o desenvolvemento dunha escala de *screening* do uso problemático de Internet entre os adolescentes.

O desenvolvemento do estudo cualitativo implicou a creación dun grupo de expertos de carácter multidisciplinar, formado por 12 profesionais con ampla experiencia no tema (psicólogos clínicos, psiquiatras, educadores e técnicos de prevención de toxicomanías), e tivo como obxectivo levar a cabo unha revisión crítica da literatura existente, dotar de evidencias de validez de contido á escala e establecer os criterios que permitisen analizar a súa capacidade discriminadora.

No caso do estudo cuantitativo, optouse por unha mostraxe intencionada, tratando de acceder a unha mostra do maior volume e heteroxeneidade posible. Froito do contacto con 11 centros de ESO en 7 concellos diferentes da provincia da Coruña, foi posible acceder a unha mostra de 1709 adolescentes. Para a recollida de datos utilizouse novamente un cuestionario *ad hoc* dividido en dous bloques. No primeiro recollíase información sobre variables sociodemográficas, hábitos de uso de Internet e posibles consecuencias derivadas, o papel dos pais e o rendemento académico. No segundo bloque incluíase a escala de *screening* de uso problemático de Internet obxecto de validación. Os datos foron recollidos nas propias aulas e en grupos reducidos. Fíxose especial fincapé na confidencialidade da información e garantíuselles aos participantes o anonimato das súas respostas.

### **3. Estudo 3 (2014-2015). Proxecto Mocidade Online**

Neste estudo volveuse utilizar una estratexia selectiva, materializada na realización dunha *macro-enquisa online* entre os mozos e mozas que cursaban ESO en centros de Galicia. Coa intención de poder chegar á maior parte da poboación, estableceuse contacto coa totalidade dos centros de ESO da nosa comunidade (493), acadando unha cota de participación do 51,7%, o que derivou nun tamaño mostral de 44051 adolescentes.

Os datos foron recollidos nas aulas de informática dos centros a través dun cuestionario *online* implementado na plataforma informática da Consellería de Cultura, Educación e Ordenación Universitaria da Xunta de Galicia e coa supervisión da Axencia para a Modernización Tecnolóxica de Galicia (AMTEGA). Creouse ademais un sistema de credenciais e contrasinais para cada centro e alumno/a, absolutamente confidenciais e dun só uso. O cuestionario estivo composto por un total de 34 preguntas, estruturadas en tres grandes bloques: (1) un bloque sobre hábitos de uso de Internet, redes sociais e teléfono móbil; (2) unha escala de *screening* do uso problemático de Internet; e (3) un bloque sobre usos perigosos e prácticas de risco.

## **RESULTADOS E DISCUSIÓN**

Cada un dos estudos empíricos realizados ten propiciado a publicación de diferentes artigos. Neste apartado preséntanse de maneira resumida os achados recollidos en cada un deles e as súas implicacións tanto a nivel teórico como práctico. Convén sinalar, non obstante, que os datos do último estudo empírico (no que participaron máis de 44000 adolescentes) deron lugar a outros traballos que están sendo revisados en diferentes revistas internacionais e que, polo tanto, non foron incluídos na tese de doutoramento.

**ARTIGO 1: Rial, Gómez, Braña e Varela ( 2014).** Actitudes, percepciones y uso de Internet y las redes sociales entre los adolescentes de la comunidad gallega. *Anales de Psicología*, 30, 642-655.

Este traballo supuxo unha primeira aproximación empírica ao problema obxecto de estudo e permitiu avanzar na controversia conceptual existente, ademais de posibilitar a identificación dos grandes hitos da literatura neste eido. Asemade, os datos recollidos permitiron calibrar a magnitude do problema entre os adolescentes galegos e explorar as súas actitudes e percepcións cara a Rede. Os resultados amosados constataban que Internet tiña un nivel de implantación moi elevado entre os adolescentes, pero que curiosamente máis da metade dos pais (52,8%) non controlaban ou supervisaban o uso que os seus fillos fan de Internet, resultado advertido xa no proxecto *EU Kids Online* (Livingstone, Haddon, Görzig e Ólafsson, 2011). En canto ás actitudes e percepcións, este primeiro traballo serviu tamén para elaborar unha escala de actitudes e percepcións cara Internet e as Redes sociais, composta por 3 dimensións (Exoactitude negativa, Endoactitude positiva e Risco de Dependencia), cun aceptable comportamento psicométrico en termos xerais. Os resultados poñían de manifesto que os/as adolescentes comparten a idea de que a “xente da súa idade” fai un uso, polo xeral, pouco recomendable de Internet, aínda que eran incapaces de recoñecer que eles mesmos/as poderían ter un problema a ese nivel.

Por último, pretendíase analizar tamén posibles diferenzas a nivel sociodemográfico. Esa primeira segmentación *a priori* puxo de relevo a universalización ou globalización do uso de Internet. No tocante ao Xénero, atopouse unha maior frecuencia de discusións cos pais (e un maior control exercido por parte destes), no caso das mulleres. En termos de Idade os adolescentes de entre 14-16 anos (segundo ciclo de ESO) conéctanse significativamente máis e durante máis tempo a Internet, e as discusións cos seus pais son máis habituais, o que recalca a necesidade de desenvolver accións educativo-preventivas en idades máis temperás. Segundo a titularidade do centro, encontrouse tamén que a frecuencia de conexión é maior entre os/as adolescentes que asisten a centros privados e concertados fronte aos que acoden a centros públicos.

Por último, en relación ás implicacións prácticas deste primeiro traballo, sublíñase a importancia de exercer unha responsabilidade compartida do problema, que abrangue aos propios pais, aos centros educativos e ás institucións, aportando recomendacións en cada caso.

**ARTIGO 2: Gómez, Rial, Braña, Varela e Barreiro (2014).** Evaluation and early detection of problematic Internet use in adolescents. *Psicothema*, 26, 21-26.

Con este segundo traballo, enmarcado tamén no Estudo Empírico 1, tentábase dar resposta a unha das necesidades resaltadas no anterior artigo: o desenvolvemento e validación dunha ferramenta de *screening* do uso problemático de Internet entre adolescentes. Esta habería de contar con suficiente aval teórico e empírico e con propiedades psicométricas axeitadas, posibilitando así tres accións: (1) escalar aos adolescentes nun *continuum* de risco, (2) a rápida detección dos casos problemáticos e a súa derivación aos servizos oportunos, e (3) o seguimento periódico tanto da prevalencia do fenómeno como da eficacia das medidas preventivas postas en marcha.

A pesar da existencia de diferentes ferramentas dispoñibles, as limitacións detectadas animaban á elaboración dun novo instrumento específico para os adolescentes galegos (e por extensión españois), que fose breve e fácil de usar, e que contase coas garantías psicométricas necesarias. Para tal fin analizáronse en termos psicométricos parte dos datos recollidos no

Estudo 1, poñendo a proba unha escala de *screening* de nove ítems. A análise Factorial Confirmatoria (AFC) levada a cabo constatou a unidimensionalidade da escala e a conveniencia de eliminar un dos seus ítems, acadando unha bondade de axuste elevada e unha consistencia interna tamén axeitada ( $\alpha = .83$ ). Tentouse explorar ademais a súa capacidade de *screening*, obtendo unha sensibilidade e especificidade do 80% e o 81,2%, respectivamente e unha prevalencia do uso problemático de Internet do 19,9% dos adolescentes galegos.

En definitiva, este traballo permitía dispoñer dunha primeira escala breve, adaptada á poboación de adolescentes galegos e que conta con suficiente aval empírico, o cal lle confería un interesante potencial a nivel aplicado. Eramos conscientes tamén das súas limitacións (fundamentalmente de natureza teórica), polo que a escala debía ser vista como o punto de partida para acadar unha mellor avaliación do constructo, coa que poder detectar precozmente verdadeiros casos de uso problemático.

**ARTIGO 3: Rial, Gómez, Picón, Braña e Varela (2015).** Identification and characterization of adolescent Internet user's profiles. *The Spanish Journal of Psychology*, 18, e50, 1-10.

O obxectivo do terceiro artigo foi profundar no coñecemento do problema, tentando coñecer as diferentes tipoloxías ou perfíles de adolescentes en función das súas actitudes cara a Rede e do uso que fan de Internet. Esta segmentación levouse a cabo tamén en base aos datos do Estudo 1, aplicando unha análise de conglomerados ou *clusters* a partir das puntuacións na escala de actitudes e percepcións cara Internet e as Redes sociais presentado no traballo de Rial, Gómez, Braña e Varela, 2014 composta por 3 dimensións: Exoactitude negativa, Endoactitude positiva e Risco de Dependencia. Dende este punto de vista actitudinal identificáronse catro segmentos ou perfíles diferentes, que se correspondían con diferentes perfíles de uso de Internet. O primeiro grupo (etiquetado como “Os que están a dar os seus primeiros pasos”) accedía a Internet ocasionalmente, e durante menos dunha hora, tempo que lle resultaba suficiente. Os “Aprendices” (segundo grupo) accedían a Internet semanalmente, sobre todo para conectarse ás Redes Sociais e raramente tiñan discusións cos seus pais debido ao seu uso de Internet. No caso dos “Usuarios prudentes” (terceiro grupo), accedían a Internet polo xeral tódolos días, durante unha ou dúas horas, os seus pais controlaban o uso que fan da Rede e ocasionalmente tiñan discusións sobre iso. O cuarto grupo, denominado “Usuarios excesivos”, accedía a Internet cada día durante máis de dúas horas e carecía de control parental, con discusións frecuentes na casa.

Asemade comprobouse que as diferenzas sociodemográficas entre grupos eran reducidas, o que significa que os perfíles non tiñan unha compoñente sociodemográfica clara, polo que as familias, os centros educativos, as institucións e a sociedade no seu conxunto debían estar alerta e manter unha actitude proactiva cara o problema.

A análise en profundidade dos resultados acadados, prestando especial atención ás diferenzas entre os grupos de “usuarios prudentes” e “usuarios excesivos”, revelaba ademais que as diferenzas nas actitudes cara Internet son claves, máis alá da frecuencia e tempo de conexión habitual. Isto significa que a *Educación* é a mellor ferramenta para fomentar un uso saudable da Rede. Outro dos elementos salientables deste traballo é a importancia da supervisión parental, crucial neste contexto. Por iso, ínstase aos pais a desenvolver un papel máis activo, observando os hábitos dos seus fillos, exercendo unha supervisión e control

efectivo do uso que fan de Internet, establecendo normas e regras e “axudando” e educando no seu aproveitamento responsable.

Por último, neste artigo os autores dan un paso adiante na controversia conceptual existente, propoñendo que aínda que sería lícito falar de *Adicción a Internet*, en aras do rigor e a ortodoxia, e á espera do necesario consenso da comunidade científica, a solución máis prudente é empregar o termo *Uso Problemático*, tal e como fan tamén autores como Ceyhan et al. (2007), Pulido-Rull, Escoto-de la Rosa e Gutiérrez-Valdovinos (2011) ou Thatcher e Goolam (2005).

**ARTIGO 4: Rial, Gómez, Isorna, Araujo e Varela (2015).** PIUS-a: Problematic Internet Use Scale in adolescents. Development and psychometric validation. *Adicciones*, 27, 47-63.

A realización dun novo estudo empírico (Estudo 2), levado a cabo sobre unha mostra de 1709 estudantes de ESO da comunidade galega, posibilitou a validación dun instrumento de *screening* máis rigoroso: a escala EUPI-a.

Para a construción e o desenvolvemento desta escala seguíronse as catro fases recollidas nos *Standards da American Educational Research Association, American Psychological Association e o National Council on Measurement in Education* (1999). Estas fases desenvolvéronse a través de tres estratexias complementarias. A primeira delas foi unha revisión da literatura sobre as principais escalas precedentes, ademais de ter en conta os criterios diagnósticos establecidos no DSM- 5 para a ludomanía e o *Internet Gaming Disorder*. A segunda estratexia foi o desenvolvemento dun estudo cualitativo, que consistiu na creación dun grupo de expertos de carácter multidisciplinar (con psicólogos clínicos, psiquiatras, educadores e técnicos de prevención de toxicomanías). O obxectivo que se perseguía coa creación deste grupo era triplo: (1) realizar unha revisión crítica da literatura existente, apuntando as limitacións actuais neste ámbito; (2) dotar de evidencias de validez de contido a escala e os ítems que a compoñen (utilizando como ferramenta de partida a escala de 8 ítems presentada no traballo de Gómez, Rial, Braña, Varela e Barreiro (2014); e (3) establecer criterios que permitiran analizar a súa capacidade discriminadora, tendo en conta a ausencia de criterios diagnósticos consensuais.

Como resultado elaborouse unha versión inicial de 14 ítems. As análises factoriais realizadas permitiron presentar unha escala de carácter unidimensional (EUPI-a), breve e sinxela (tan só 11 ítems) adaptada ao contexto cultural do noso país e á propia linguaxe da mocidade, o cal lle confire un interesante potencial na práctica diaria de profesionais e investigadores. A escala goza dunhas propiedades psicométricas aceptables, tanto en termos de consistencia interna ( $\alpha = .81$ ), como de validez de contido, acadando un interesante equilibrio en termos de *screening*, entre os niveis de sensibilidade (81%) e especificidade (82,6%).

Recentemente a escala EUPI-a foi adaptada ao formato *online* e probada nun terceiro estudo (Estudo 3), cunha mostra de máis de 44000 adolescentes, constatándose a súa estabilidade psicométrica e a súa utilidade para o seguimento periódico do Uso Problemático de Internet nunha comunidade.

## CONCLUSIONES

A elaboración dos diferentes traballos comprendidos nesta tese de doutoramento e, por extensión, o desenvolvemento da liña de investigación en que se enmarca, permitiu constatar que o uso de Internet entre os adolescentes non é unha moda pasaxeira, senón que vai en aumento, que se trata dun fenómeno globalizado e que posúe un lado escuro ou problemático, algo que se fixo patente tamén na revisión da inxente cantidade de traballos publicados nos últimos anos.

O estudo do uso problemático de Internet entre adolescentes revelou tres importantes retos a acometer. En primeiro lugar, era preciso avanzar na controversia conceptual existente, a través da revisión e a reflexión teórica reflectida en cada un dos artigos compendiados. En segundo lugar, era necesario avanzar no terreo da avaliación, o que habería de permitir calibrar a verdadeira magnitude do problema e posibilitaría un seguimento periódico do mesmo. Para iso era preciso dispoñer dun instrumento psicométrico axeitado, con suficiente aval tanto teórico como empírico. O terceiro reto consistía en profundar na comprensión do problema, identificando e caracterizando as diferentes tipoloxías ou perfís de adolescentes segundo o uso e a relación que manteñen coa Rede e, na medida do posible, analizando as posibles variables asociadas ao seu uso problemático. Máis aló destes tres obxectivos particulares, esta tese foi concibida cun marcado enfoque aplicado, xa que o seu fin último non é outro que o de tentar contribuír modestamente ao desenvolvemento de estratexias de prevención eficaces e debidamente avaladas pola investigación científica.

No tocante ás controversias teóricas ou conceptuais, nesta tese propónse a adopción do termo *uso problemático de Internet* como solución máis práctica. No eido da avaliación, as distintas fases da presente investigación teñen derivado na presentación dunha nova escala (EUPI-a) que posibilita un áxil cribado de usuarios problemáticos de Internet entre os adolescentes, dotada das garantías psicométricas necesarias e que está a disposición dos profesionais e investigadores. O uso desta escala permite ademais estimar niveles de prevalencia para diferentes poboacións e facer un seguimento periódico do problema, servindo como indicador do grao de eficacia acadado por diferentes accións ou estratexias preventivas.

O uso problemático de Internet tense constatado como un fenómeno tan globalizado como o propio uso da Rede, o cal supón unha dificultade engadida de cara a prevención. Aínda que se poidan apuntar certas diferenzas en base a variables sociodemográficas, existen elementos relevantes que permiten unha segmentación *post hoc* máis potente, como poden ser os factores motivacionais e actitudinais. Os diferentes segmentos atopados a través da análise de conglomerados reflectiron perfís cuxas diferenzas esenciais residen precisamente nas actitudes reveladas cara o uso de Internet, nas motivacións, ou no papel exercido polos pais. Estes resultados poñen na *Educación* o foco dos esforzos a desenvolver que, en canto responsabilidade compartida, deben ser materializados polos pais, os centros educativos e as institucións.

A presentación desta tese supón un punto e seguido no desenvolvemento da liña de investigación que iniciamos hai xa cinco anos. A teima por acadar respostas e solucións non remata aquí. Os retos pendentes, no tocante fundamentalmente á modelización do uso problemático de Internet e ao traballo preventivo, están incluídos na axenda de PSICOM.



## **APPENDIX III**



## RESUMEN

### INTRODUCCIÓN

Los datos más recientes ponen de manifiesto un creciente y extensivo uso de Internet en la sociedad actual y entre los adolescentes en particular. Internet brinda nuevas oportunidades académicas y de formación, profesionales y de mercado, de ocio y diversión y, sobre todo, de relación y comunicación (Eurostat, 2015; Instituto Nacional de Estadística, 2014). Sin poner en cuestión los indudables beneficios que trae consigo, no son menos ciertas las evidencias de un lado oscuro de Internet. *Sexting*, sextorsión, *ciberbullying*, *grooming*, uso problemático o adicción a Internet son algunas de las nuevas realidades que han emergido en este contexto. El uso de Internet y las Nuevas Tecnologías (NT) se ha convertido en un fenómeno especialmente preocupante en el caso de los adolescentes, relacionándose a menudo con la aparición de problemas de conducta, hiperactividad, ansiedad, sintomatología depresiva o incluso ideación suicida.

Abordar este problema de una manera integral pasa por dar respuesta a tres problemas que, a nuestro entender, coexisten en este campo de investigación: un problema teórico o conceptual, un problema instrumental o de evaluación, y un tercer problema de comprensión del fenómeno objeto de estudio y de identificación de las variables que subyacen a este.

En primer lugar, existe una deficiencia teórica latente que necesita solución: la delimitación conceptual del propio fenómeno y la unificación a nivel terminológico. Para solucionar este problema es necesaria una revisión profunda de la literatura, intentando resolver la confusión existente y proponiendo alternativas de consenso entre la comunidad científica. Algunos investigadores se han enfrentado al fenómeno con cierto escepticismo, considerando que no es posible hablar de manera ortodoxa de *Adicción a Internet* (Estallo, 2001; Grohol, 1999; Matute, 2001). Por otra parte, entre aquellos que creen que el uso de Internet sí puede llegar a ser problemático, encontramos que la terminología empleada para referirse al fenómeno es muy variada, y por extensión la concepción subyacente del mismo. Adicción a Internet (Young, 1998a), Uso Compulsivo (Meerkerk, Van Den Eijnden, Vermulst y Garretsen, 2009), Uso Patológico (Morahan-Martin y Schumacher, 2000), Uso Problemático (Caplan, 2002), Uso Excesivo (Hansen, 2002), Uso no Regulado (LaRose, Lin, y Eastin, 2003) o Dependencia de Internet (Rahmani y Lavasani, 2011) son algunos de los términos más utilizados.

Si nos remitimos a los manuales diagnósticos de referencia (CIE-10 y DSM-5), observamos que ninguno recoge todavía esta categoría. No obstante, en el DSM-5 se han introducido dos novedades que apuntan hacia una nueva dirección. Por una parte, se ha incluido el *Internet Gaming Disorder* en la sección III del manual, donde se ubican aquellas entidades diagnósticas emergentes que necesitan de más investigación y experiencia clínica. Por otra parte, se ha pasado a clasificar la ludopatía como una adicción comportamental, lo que lleva a pensar que otras conductas capaces de generar la psicopatología propia de la

adicción podrían ser incorporadas también bajo ese epígrafe en futuras ediciones del manual (Cía, 2013; Petry y O'Brien, 2013).

El segundo reto aún por resolver es el de la operativización del constructo, es decir, los instrumentos de evaluación. Se necesitan herramientas debidamente validadas a nivel empírico y dotadas de propiedades psicométricas adecuadas, que hagan posible el *screening* y detección precoz de los casos de riesgo y que, simultáneamente, permitan disponer de datos de prevalencia a nivel poblacional. Las discrepancias existentes a día de hoy tanto a nivel teórico como metodológico tienen su correspondiente a nivel epidemiológico, reflejando datos de prevalencia muy heterogéneos y a menudo contradictorios. Esta variabilidad se debe en buena medida a los múltiples instrumentos de evaluación, tests o escalas empleados (Beranuy, Chamarro, Graner y Carbonell, 2009; Ceyhan, Ceyhan y Gürcan, 2007; Chow, Leung, Ng y Yu, 2009; de Gracia, Vigo, Fernández y Marcó, 2002; Demetrovics, Szeredi y Rózsa, 2008; Jenaro, Flores, Gómez-Vela, González-Gil y Caballo, 2007; Thatcher y Goolam, 2005; Young, 1998a, 1998b). Muchas de estas escalas presentan algún tipo de limitación: no están adaptadas a la población adolescente, no aportan suficientes datos de sus propiedades psicométricas, las muestras utilizadas en la validación empírica son muy reducidas, su estructura factorial no está de todo clara, no se proporcionan los puntos de corte para ser empleadas como escalas de *cribado*, no se dispone de una versión adaptada a nuestro idioma o han sido desarrolladas en una cultura que poco tiene que ver con la nuestra.

El tercer reto en la búsqueda de una prevención integral efectiva consiste en ahondar en una mayor comprensión del problema, a través de dos estrategias o caminos complementarios: (1) la identificación y caracterización de diferentes tipologías o perfiles de adolescentes, en lo tocante a la relación que mantienen con la Red y las NT, y (2) el estudio de posibles variables asociadas a su uso problemático. En cuanto a la primera de las estrategias algunos estudios se han centrado en llevar a cabo una segmentación clásica o *a priori* a partir de variables sociodemográficas (Aslanidou y Menexes, 2008; Li y Kirkup, 2007), alcanzando resultados muy limitados desde el punto de vista práctico. Por ello, más allá de estas diferencias sociodemográficas, resulta necesario avanzar hacia una segmentación integral, más comprensiva, que incorpore las actitudes y percepciones de los adolescentes o el papel ejercido por los padres. En cuanto a la segunda estrategia, son muchos los autores que ponen encima de la mesa la complejidad del tema objeto de estudio y los diferentes tipos de variables que intervienen (Heo, Oh, Subramanian, Kim y Kawachi, 2014), si bien están por llegar todavía modelos explicativos integradores y suficientemente avalados empíricamente.

Es, en definitiva, en este complejo y apasionante contexto donde se enmarca la presente tesis doctoral y, por extensión, la línea de investigación iniciada en el año 2010 por el grupo PSICOM. El presente trabajo es consecuencia, por tanto, del esfuerzo realizado en estos últimos años por un equipo de investigadores de la comunidad gallega, con el afán fundamental de ser útiles a la sociedad de la que formamos parte.

## OBJETIVOS

El objetivo de este trabajo no es otro que el de poder contribuir a un conocimiento más profundo y a una mejor comprensión del problema que puede llegar a suponer el uso de Internet y las NT entre los adolescentes, de manera que el conocimiento generado trascienda

a nivel preventivo, en el desarrollo de instrumentos y estrategias eficaces y útiles para el conjunto de la sociedad.

Alcanzar este objetivo general implica concebir los tres grandes retos señalados (a nivel teórico, de evaluación y de comprensión del problema), en términos de objetivos específicos de investigación:

- 1) Avanzar en las contradicciones o confusiones conceptuales o teóricas existentes a día de hoy.
- 2) Avanzar en términos de evaluación, lo que implica:
  - a. desarrollar una herramienta adecuada en términos psicométricos y prácticos para el *screening* y detección precoz de los casos de riesgo.
  - b. disponer de datos poblacionales de prevalencia del uso problemático de la Red y llevar a cabo un seguimiento periódico de la misma.
- 3) Favorecer una mejor comprensión del problema, a través de dos vías complementarias:
  - a. Segmentación integral de los adolescentes en cuanto a usos, actitudes y percepciones que tienen de la Red.
  - b. Análisis de diferentes variables relacionadas con el uso problemático de Internet y modelización del mismo.

Las publicaciones compendiadas en el marco de esta tesis permitieron alcanzar en buena medida los objetivos 1 y 2, mientras que en el caso del objetivo 3 se señalaron algunas posibles claves, pero está aún por completar o desarrollar.

## METODOLOGÍA

Desde un punto de vista empírico, los objetivos apuntados fueron abordados complementariamente mediante la realización de tres estudios, con sus trabajos de campo correspondientes:

### **1. Estudio 1 (2010-2011)**

En el primer estudio se utilizó una metodología selectiva, que se materializó en la realización de una encuesta entre la población de estudiantes de Educación Secundaria Obligatoria (ESO) de la comunidad autónoma de Galicia. Para la selección de la muestra se utilizó un muestreo bietápico: por conglomerados para la selección de las unidades de primer nivel (centros), y por cuotas para la selección de las unidades de segundo nivel (individuos). La muestra final estuvo compuesta por un total de 2339 estudiantes.

Los datos fueron recogidos en las propias aulas de los centros, en grupos de 15-20 individuos, mediante un cuestionario *ad hoc* que cada participante debía cubrir de forma individual, voluntaria y anónima. Dicho cuestionario estaba dividido en tres bloques: (1) un bloque sobre hábitos de uso de Internet, motivos y barreras, información, disponibilidad de aplicaciones y dispositivos, conocimiento y utilización de redes sociales, y el papel de los padres en este contexto; (2) una escala de actitudes hacia Internet y las redes sociales; y (3) un último bloque sobre aspectos sociodemográficos.

## **2. Estudio 2 (2012-2013)**

Este segundo estudio constó de dos fases complementarias, una cualitativa y otra cuantitativa, cuyo objetivo común fue el desarrollo de una escala de *screening* del uso problemático de Internet entre los adolescentes.

El desarrollo del estudio cualitativo implicó la creación de un grupo de expertos de carácter multidisciplinar, formado por 12 profesionales con amplia experiencia en el tema (psicólogos clínicos, psiquiatras, educadores y técnicos de prevención de drogodependencias), y tuvo como objetivo llevar a cabo una revisión crítica de la literatura existente, dotar de evidencias de validez de contenido a la escala y establecer los criterios que permitiesen analizar su capacidad discriminativa.

En el caso del estudio cuantitativo, se optó por un muestreo intencionado, tratando de acceder a una muestra del mayor volumen y heterogeneidad posible. Fruto del contacto con 11 centros de ESO en 7 ayuntamientos diferentes de la provincia de A Coruña, fue posible acceder a una muestra de 1709 adolescentes. Para la recogida de datos se utilizó nuevamente un cuestionario *ad hoc* dividido en dos bloques. En el primero se recogía información sobre variables sociodemográficas, hábitos de uso de Internet y posibles consecuencias derivadas, el papel de los padres y el rendimiento académico. En el segundo bloque se incluía la escala de *screening* del uso problemático de Internet objeto de validación. Los datos fueron recogidos en las propias aulas y en grupos reducidos. Se hizo especial hincapié en la confidencialidad de la información y se garantizó a los participantes el anonimato de sus respuestas.

## **3. Estudio 3 (2014-2015). Proyecto Mocidade Online**

En este estudio volvió a utilizarse una estrategia selectiva, materializada en la realización de una *macro-encuesta online* entre los chicos y chicas que cursaban ESO en centros de Galicia. Con la intención de poder llegar a la mayor parte de la población, se estableció contacto con la totalidad de centros de ESO de nuestra comunidad (493), alcanzando una cuota de participación del 51,7%, lo que derivó en un tamaño muestral de 44051 adolescentes.

Los datos fueron recogidos en las aulas de informática de los centros a través de un cuestionario *online* implementado en la plataforma informática de la Consellería de Cultura, Educación e Ordenación Universitaria de la Xunta de Galicia y con la supervisión de la Axencia para a Modernización Tecnolóxica de Galicia (AMTEGA). Se creó además un sistema de credenciales y contraseñas para cada centro y alumno/a, absolutamente confidenciales y de un solo uso. El cuestionario estuvo compuesto por un total de 34 preguntas, estructuradas en tres grandes bloques: (1) un bloque sobre hábitos de uso de Internet, redes sociales y teléfono móvil; (2) una escala de *screening* del uso problemático de Internet; y (3) un bloque sobre usos peligrosos y prácticas de riesgo.

## **RESULTADOS Y DISCUSIÓN**

Cada uno de los estudios empíricos realizados ha propiciado la publicación de diferentes artículos. En este apartado se presentan de manera resumida los hallazgos recogidos en cada uno de ellos y sus implicaciones tanto a nivel teórico como práctico. Es conveniente señalar, no obstante, que los datos del último estudio empírico (en el que participaron más de 44000 adolescentes) han dado lugar a otros trabajos que están siendo revisados en diferentes revistas internacionales y que, por tanto, no fueron incluidos en la tesis doctoral.

**ARTÍCULO 1: Rial, Gómez, Braña y Varela (2014).** Actitudes, percepciones y uso de Internet y las redes sociales entre los adolescentes de la comunidad gallega. *Anales de Psicología*, 30, 642-655.

Este trabajo supuso una primera aproximación empírica al problema objeto de estudio y permitió avanzar en la controversia conceptual existente, además de posibilitar la identificación de los grandes hitos de la literatura en este campo. Al mismo tiempo, los datos recogidos permitieron calibrar la magnitud del problema entre los adolescentes gallegos y explorar sus actitudes y percepciones hacia la Red. Los resultados mostrados constataban que Internet tenía un nivel de implantación muy elevado entre los adolescentes, pero que curiosamente más de la mitad de los padres (52,8%) no controlaban o supervisaban el uso que sus hijos hacen de Internet, resultado advertido ya en el proyecto *EU Kids Online* (Livingstone, Haddon, Görzig y Ólafsson, 2011). En cuanto a las actitudes y percepciones, este primer trabajo sirvió también para elaborar una escala de actitudes y percepciones hacia Internet y las Redes sociales, compuesta por 3 dimensiones (Exoactitud negativa, Endoactitud positiva y Riesgo de Dependencia), con un aceptable comportamiento psicométrico en términos generales. Los resultados ponían de manifiesto que los/as adolescentes comparten la idea de que la “gente de su edad” hace un uso, por lo general, poco recomendable de Internet, aunque eran incapaces de reconocer que ellos mismos/as podrían tener un problema a ese nivel.

Por último, se pretendía analizar también posibles diferencias a nivel sociodemográfico. Esa primera segmentación *a priori* puso de relieve la universalización o globalización del uso de Internet. En lo tocante al Género, se encontró una mayor frecuencia de discusiones con sus padres (y un mayor control ejercido por parte de estos), en el caso de las mujeres. En términos de Edad los/las adolescentes de entre 14-16 años (segundo ciclo de ESO) se conectan significativamente más y durante más tiempo a Internet, y las discusiones con sus padres son más habituales, lo que recalca la necesidad de desarrollar acciones educativo-preventivas en edades más tempranas. Según la titularidad del centro, se encontró también que la frecuencia de conexión es mayor entre los/las adolescentes que asisten a centros privados y concertados frente a los que acuden a centros públicos.

Por último, en relación a las implicaciones prácticas de este primer trabajo, se subraya la importancia de ejercer una responsabilidad compartida del problema, que atañe a los propios padres, a los centros educativos y a las instituciones, aportando recomendaciones en cada caso.

**ARTÍCULO 2: Gómez, Rial, Braña, Varela y Barreiro (2014).** Evaluation and early detection of problematic Internet use in adolescents. *Psicothema*, 26, 21-26.

Con este segundo trabajo, enmarcado también en el Estudio Empírico 1, se intentaba dar respuesta a una de las necesidades resaltadas en el anterior artículo: el desarrollo y validación de una herramienta de *screening* del uso problemático de Internet entre adolescentes. Esta habría de contar con suficiente aval teórico y empírico y con propiedades psicométricas adecuadas, posibilitando así tres acciones: (1) escalar a los adolescentes en un *continuum* de riesgo, (2) la rápida detección de los casos problemáticos y su derivación a los servicios oportunos, y (3) el seguimiento periódico tanto de la prevalencia del fenómeno como de la eficacia de las medidas preventivas puestas en marcha.

A pesar de la existencia de diferentes herramientas disponibles, las limitaciones detectadas animaban a la elaboración de un nuevo instrumento específico para los adolescentes gallegos (y por extensión españoles), que fuese breve y fácil de usar, y que contase con las garantías psicométricas necesarias. Para tal fin se analizaron en términos psicométricos parte de los datos recogidos en el Estudio 1, poniendo a prueba una escala de *screening* de nueve ítems. El análisis Factorial Confirmatorio (AFC) llevado a cabo constató la unidimensionalidad de la escala y la conveniencia de eliminar uno de sus ítems, alcanzando una bondad de ajuste elevada y una consistencia interna también adecuada ( $\alpha = .83$ ). Se intentó explorar además su capacidad de *screening*, obteniendo una sensibilidad y especificidad del 80% y el 81,2%, respectivamente y una prevalencia del uso problemático de Internet del 19,9% de los adolescentes gallegos.

En definitiva, este trabajo permitía disponer de una primera escala breve, adaptada a la población de adolescentes gallegos y que cuenta con suficiente aval empírico, lo cual le confiere un interesante potencial a nivel aplicado. Éramos conscientes también de sus limitaciones (fundamentalmente de naturaleza teórica), por lo que la escala debía ser vista como el punto de partida para alcanzar una mejor evaluación del constructo, con la que poder detectar precozmente verdaderos casos de uso problemático.

**ARTÍCULO 3: Rial, Gómez, Picón, Braña y Varela (2015).** Identification and characterization of adolescent Internet user's profiles. *The Spanish Journal of Psychology*, **18**, e50, 1-10.

El objetivo del tercer artículo fue profundizar en el conocimiento del problema, intentando conocer las diferentes tipologías o perfiles de adolescentes en función de sus actitudes hacia la Red y del uso que hacen de Internet. Esta segmentación se llevó a cabo también en base a los datos del Estudio 1, aplicando un análisis de conglomerados o *clusters* a partir de las puntuaciones en la escala de actitudes y percepciones hacia Internet y las Redes sociales presentado en el trabajo de Rial, Gómez, Braña y Varela, 2014 compuesta por 3 dimensiones: Exoactitud negativa, Endoactitud positiva y Riesgo de Dependencia. Desde este punto de vista actitudinal se identificaron cuatro segmentos o perfiles diferentes, que se correspondían con diferentes perfiles de uso de Internet. El primer grupo (etiquetado como “Los que están dando sus primeros pasos”) accedía a Internet ocasionalmente, y durante menos de una hora, tiempo que le resultaba suficiente. Los “Aprendices” (segundo grupo) accedían a Internet semanalmente, sobre todo para conectarse a las Redes Sociales y raramente tenían discusiones con sus padres debido al uso de Internet. En el caso de los “Usuarios prudentes” (tercer grupo), accedían a Internet por lo general todos los días, durante una o dos horas, sus padres controlaban el uso que hacen de la Red y ocasionalmente tenían discusiones sobre ello. El cuarto grupo, denominado “Usuarios excesivos”, accedía a Internet cada día durante más de dos horas y carecía de control parental, con discusiones frecuentes en casa.

Al mismo tiempo se comprobó que las diferencias sociodemográficas entre grupos eran reducidas, lo que significa que los perfiles no tenían un componente sociodemográfico claro, por lo que las familias, los centros educativos, las instituciones y la sociedad en su conjunto debían estar alerta y mantener una actitud proactiva hacia el problema.

El análisis en profundidad de los resultados alcanzados, prestando especial atención a las diferencias entre los grupos de “usuarios prudentes” y “usuarios excesivos”, revelaba además que las diferencias en las actitudes hacia Internet son claves, más allá de la frecuencia y tiempo de conexión habitual. Esto significa que la *Educación* es la mejor herramienta para fomentar un uso saludable de la Red. Otro de los elementos destacables de este trabajo es la importancia de la supervisión parental, crucial en este contexto. Por eso, se insta a los padres a desarrollar un papel más activo, observando los hábitos de sus hijos, ejerciendo una supervisión y control efectivo del uso que hacen de Internet, estableciendo normas y reglas y “ayudando” y educando en su aprovechamiento responsable.

Por último, en este artículo los autores dan un paso adelante en la controversia conceptual existente, proponiendo que aunque sería lícito hablar de *Adicción a Internet*, en aras del rigor y la ortodoxia, y a la espera del necesario consenso de la comunidad científica, la solución más prudente es emplear el término *Uso Problemático*, tal y como hacen también autores como Ceyhan et al. (2007), Pulido-Rull, Escoto-de la Rosa y Gutiérrez-Valdovinos (2011), o Thatcher y Goolam (2005).

**ARTÍCULO 4: Rial, Gómez, Isorna, Araujo y Varela (2015).** PIUS-a: Problematic Internet Use Scale in adolescents. Development and psychometric validation. *Adicciones*, 27, 47-63.

La realización de un nuevo estudio empírico (Estudio 2), llevado a cabo sobre una muestra de 1709 estudiantes de ESO de la comunidad gallega, posibilitó la validación de un instrumento de *screening* más riguroso: la escala EUPI-a.

Para la construcción y el desarrollo de esta escala se siguieron las cuatro fases recogidas en los *Standards de la American Educational Research Association, American Psychological Association y el National Council on Measurement in Education* (1999). Estas fases se desarrollaron a través de tres estrategias complementarias. La primera de ellas fue una revisión de la literatura sobre las principales escalas precedentes, además de tener en cuenta los criterios diagnósticos establecidos en el DSM- 5 para la ludopatía y el *Internet Gaming Disorder*. La segunda estrategia fue el desarrollo de un estudio cualitativo, que consistió en la creación de un grupo de expertos de carácter multidisciplinar (con psicólogos clínicos, psiquiatras, educadores y técnicos de prevención de drogodependencias). El objetivo que se perseguía con la creación de este grupo era triple: (1) realizar una revisión crítica de la literatura existente, apuntando las limitaciones actuales en este ámbito; (2) dotar de evidencias de validez de contenido la escala y los ítems que la componen (utilizando como herramienta de partida la escala de 8 ítems presentada en el trabajo de Gómez, Rial, Braña, Varela y Barreiro (2014); y (3) establecer criterios que permitieran analizar su capacidad discriminativa, teniendo en cuenta la ausencia de criterios diagnósticos consensuados.

Como resultado se elaboró una versión inicial de 14 ítems. Los análisis factoriales realizados permitieron presentar una escala de carácter unidimensional (EUPI-a), breve y sencilla (tan solo 11 ítems) adaptada al contexto cultural de nuestro país y al propio lenguaje de los jóvenes, lo que le confiere un interesante potencial en la práctica diaria de profesionales e investigadores. La escala goza de unas propiedades psicométricas aceptables, tanto en términos de consistencia interna ( $\alpha = .81$ ), como de validez de contenido, alcanzando un interesante equilibrio en términos de *screening*, entre los niveles de sensibilidad (81%) y especificidad (82,6%).

Recientemente la escala EUPI-a ha sido adaptada al formato *online* y probada en un tercer estudio (Estudio 3), con una muestra de más de 44000 adolescentes, constatándose su estabilidad psicométrica y su utilidad para el seguimiento periódico del Uso Problemático de Internet en una comunidad.

## CONCLUSIONES

La elaboración de los diferentes trabajos comprendidos en esta tesis doctoral y, por extensión, el desarrollo de la línea de investigación en la que se enmarca, permitió constatar que el uso de Internet entre los adolescentes no es una moda pasajera, si no que va en aumento, que se trata de un fenómeno globalizado y que posee un lado oscuro o problemático, algo que se hizo patente también en la revisión de la ingente cantidad de trabajos publicados en los últimos años.

El estudio del uso problemático de Internet entre adolescentes reveló tres importantes retos a acometer. En primer lugar, era preciso avanzar en la controversia conceptual existente, a través de la revisión y la reflexión teórica reflejada en cada uno de los artículos compendiados. En segundo lugar, era necesario avanzar en el terreno de la evaluación, lo que habría de permitir calibrar la verdadera magnitud del problema y posibilitaría un seguimiento periódico del mismo. Para ello era necesario disponer de un instrumento psicométrico adecuado, con suficiente aval tanto teórico como empírico. El tercer reto consistía en profundizar en la comprensión del problema, identificando y caracterizando las diferentes tipologías o perfiles de adolescentes según el uso y la relación que mantienen con la Red y, en la medida de lo posible, analizando las posibles variables asociadas a su uso problemático. Más allá de estos tres objetivos particulares, esta tesis fue concebida con un marcado enfoque aplicado, ya que su fin último no es otro que el de intentar contribuir modestamente al desarrollo de estrategias de prevención eficaces y debidamente avaladas por la investigación científica.

En lo tocante a las controversias teóricas o conceptuales, en esta tesis se propone la adopción del término *uso problemático de Internet* como solución más práctica. En el campo de la evaluación, las distintas fases de la presente investigación han derivado en la presentación de una nueva escala (EUPI-a) que posibilita un ágil cribado de usuarios problemáticos de Internet entre los adolescentes, dotada de las garantías psicométricas necesarias y que está a disposición de los profesionales e investigadores. El uso de esta escala permite además estimar niveles de prevalencia para diferentes poblaciones y hacer un seguimiento periódico del problema, sirviendo como indicador del grado de eficacia alcanzado por diferentes acciones o estrategias preventivas.

El uso problemático de Internet se ha constatado como un fenómeno tan globalizado como el propio uso de la Red, lo que supone una dificultad añadida de cara a la prevención. Aunque se puedan apuntar ciertas diferencias en base a variables sociodemográficas, existen elementos relevantes que permiten una segmentación *post hoc* más potente, como pueden ser los factores motivacionales y actitudinales. Los diferentes segmentos encontrados a través del análisis de conglomerados reflejaron perfiles cuyas diferencias esenciales residen precisamente en las actitudes reveladas hacia el uso de Internet, en las motivaciones, o en el papel ejercido por los padres. Estos resultados ponen en la *Educación* el foco de los esfuerzos

a desarrollar que, en cuanto responsabilidad compartida, deben ser materializados por los padres, los centros educativos y las instituciones.

La presentación de esta tesis supone un punto y seguido en el desarrollo de la línea de investigación que iniciamos hace ya cinco años. El empeño por alcanzar respuestas y soluciones no finaliza aquí. Los retos pendientes, en lo tocante fundamentalmente a la modelización del uso problemático de Internet y al trabajo preventivo, están incluidos en la agenda de PSICOM.











A so globalized phenomenon such as problematic Internet use among adolescents needs effective responses from parents, institutions and researchers. This doctoral dissertation pursues specific objectives regarding this issue: to advance in the terminological and conceptual contradictions; to progress in the evaluation field: providing population data and developing a screening instrument with sufficient psychometric support; and to promote a greater understanding of the problem, through identification and characterization of possible risk profiles and analyses of variables related. A great effort at the empirical level, reflected in three studies with 2339, 1709, and 44051 adolescents respectively, has enabled the availability of data and interesting applied tools for professionals and researchers.

