

ADOLESCENTS AND INFORMATION AND COMMUNICATIONS TECHNOLOGIES: INTERNET, MOBILE PHONE AND VIDEOGAMES

Montserrat Castellana Rosell, Xavier Sánchez-Carbonell, Carla Graner Jordana
and Marta Beranuy Fargues
Universidad Ramón LLull (URL)

Information and Communications Technology (ICT) is generating profound changes in our society. Since its influence is particularly notable in adolescents, it becomes essential to describe possible maladjustments in order to assess the impact on psychosocial development, especially the processes of socialization and acquisition of personal identity. Likewise, it is clearly important to involve socializing agents –as significant others– in prevention, given their proven influence on adolescents' use of ICT, particularly Internet, mobile phones and videogames. Some preventive guidance is offered. In conclusion, we stress the need to define diagnostic criteria for addictive behaviour and to promote healthy habits, especially in adolescence.

Key words: ICT, adolescents, pathological use of Internet, mobile phone, videogames, addiction, behavioural addictions.

Las Tecnologías de la Información y la Comunicación (TIC) generan profundos cambios en nuestra sociedad. Como esta influencia es especialmente notable en los adolescentes, se hace imprescindible describir posibles desadaptaciones para evaluar el impacto en el desarrollo psicosocial, concretamente en el proceso de socialización y adquisición de la identidad personal. Así mismo no cabe duda de la importancia de implicar en la prevención a los agentes socializadores –en tanto que personas significativas– porque está demostrada su influencia en los usos que hace el adolescente de las TIC, especialmente de Internet, móvil y videojuegos. Se proporcionan orientaciones preventivas. Se concluye haciendo hincapié en la necesidad de definir criterios diagnósticos sobre el comportamiento adictivo y promoción de hábitos saludables, especialmente en la adolescencia.

Palabras clave: TIC, adolescentes, uso patológico de Internet, móvil, videojuegos, adicción, adicciones conductuales.

Today's society is developing within a rapidly-changing world, in an era of transformations and in a transitional period of adaptation to new technologies. Internet, mobile phones and videogames play a significant role in the socialization process, influencing behaviours and attitudes (Levis, 2002). Psychology, as a science and as a professional practice, cannot remain indifferent to this transformation (Saldaña, 2001).

In this context we are seeing the emergence of a new type of behavioural maladjustment arising from the spread of Information and Communications Technology (ICT). Although its tools were created as technologies for informing and communicating, their very design makes them liable to weaken one's capacity for control, a lack of which can lead, in conjunction with other personal and environmental factors, to the onset of addictive behaviour (Saldaña, 2001). Neither the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000) nor the International Classification of Diseases (World Health Organization, 1992) recognizes

behavioural addictions as mental disorders, with the exception of pathological gambling, which falls within the category of impulse-control disorders. Exacerbating this situation is the lack of consensus on the terms used to designate these phenomena. Authors speak variously of *internet addiction* (Young, 1998), *internet addiction disorder* (Grohol, 2005; Simkova & Cincera, 2004), *compulsive internet use* (Black, Belsare & Schlosser, 1999; Meerkerk, Van den Eijnden & Garretsen, 2006), *pathological internet use* (Davis, 2001), *problematic internet use* (Shapira & cols., 2000; Shapira & cols. 2003), and *unregulated internet usage* (LaRose, Lin & Eastin, 2003), to mention a few of the terms most widely employed. However, the use of ICTs

demands greater attention, particularly if it causes problems or interferes with everyday life, and most especially in relation to children and adolescents.

But ICTs are present in all areas of scientific, cultural and social reality, and constitute an essential element in the functioning of our everyday life. Adolescence is a stage that merits special attention as regards its relationship with ICTs not only because it is a particularly sensitive time of life in general, but also because adolescents are highly influenced by their social context and because these technologies are highly salient in their lives. Fascinated by

Correspondence: Montserrat Castellana Rosell. FPCEE Blanquerna. Universidad Ramón LLull (URL). C/Císter 34. 08022 Barcelona. España. E-mail: montserrater@blanquerna.url.edu

Internet, mobile phones and videogames, teenagers have found in them an extraordinary medium for relationships, communication, learning, satisfaction of curiosity, leisure and entertainment. This has gradually led to ICTs becoming an important and indeed essential element in their lives (Machargo, Luján, León, López & Martín, 2003).

BEHAVIOURAL AND TECHNOLOGICAL ADDICTIONS

The study of behavioural addictions is an emerging phenomenon for a variety of reasons. First of all, there is a growing tendency to consider a range of behaviours in terms of addiction –behaviours as diverse as shopping, work, sex or gambling (Alonso-Fernández, 2003; Echeburúa, 1999). Secondly, understanding the characteristics of behavioural addictions can help us to better understand the psychology of chemical addictions. And thirdly, technological evolution involves a period of adaptation to new forms of acquiring information and of communicating that can generate more or less permanent psychological disorders or maladjustments. Griffiths (1997) understands technological addictions as those which involve man-machine interaction, and divides them into passive (such as television) and active (Internet, mobile phones and videogames).

The diagnosis of ICT addiction is made on the same principle as that of addictions to substances. Three nuclear symptoms are identified (Echeburúa, 1999; Griffiths, 2000; Washton & Boundy, 1991):

- Inability to exercise control and powerlessness. The behaviour is carried out despite attempts to control it, and cannot be stopped once begun.
- Psychological dependence. Includes desire, anxious impatience, craving and attentional polarization or focalization (the activity takes on paramount importance, dominating thoughts and feelings).
- Harmful effects in different contexts for the person concerned (intrapersonal conflict: subjective feelings of distress) and/or their family and social environment (interpersonal conflict: work, study, leisure, social relationships, etc.).

The commonest non-essential symptoms are: a) Tolerance and withdrawal symptoms; b) Modification of mood. Increasing feeling of tension that immediately precedes onset of the behaviour. Pleasure or relief during the behaviour. Agitation or irritability if the behaviour is not possible; c) Euphoria and “trance” during the activity in question; d) Denial, concealment

and/or minimization/understatement; e) Feelings of guilt and reduction of self-esteem; and f) Risk of relapse and of restoration of the addiction

Below we consider a series of symptoms frequently found in adolescents who spend many hours on the Internet (Charlton, 2002; Davis, 2001; Echeburúa, 1999; de Gracia, Vigo, Fernández & Marcó, 2002; Greenfield, 1999; Kandell, 1998; Kubey, Lavin & Barrows, 2001; Morahan-Martin & Schumacher, 2000; Sandoz, 2004; Suler, 2004; Viñas & cols., 2002).

A notable indicator is that the intensity of the symptoms increases gradually. These adolescents spend long hours connected and can lose their sense of time, even though we cannot actually define a time limit that differentiates safe use from addictive use. They are incapable of interrupting the connection (‘one more minute’, ‘coming now’); they connect even when they were not intending to, offering various excuses, or they connect earlier and earlier, and for longer and longer periods. In this context friends and families begin to make comments, resulting in denial or minimization of the connection time, concealment of its true extent. They also neglect their appearance, lose sleep and change their eating patterns. Likewise, it can be seen how Internet is used for obtaining immediate satisfaction and an escape from problems. Being online gives such users an intense sense of intimacy, and they seek euphoria, a ‘high’ or a trance-like state through the Web.

Everything revolves around virtual reality. The Web dominates their life, becoming the focus of all their attention (Young, 1999). School and academic work and life can be severely affected (academic failure, dropping out, etc.), and they may resort to petty theft in order to purchase items and credits for games such as *Habbo Hotel* or *Everquest*. Guilt feelings appear, and self-esteem can fall. Adolescents may consider the Internet as the only place they can feel good, but in the long run they become lonely, with a reduction in psychological wellbeing (Young, 1998).

In order to recover the initial excitement, and given a tolerance effect, these users resort to tricks such as increasing the number of conversations open in a chat. Furthermore, physical and psychological withdrawal symptoms can be observed (mood changes, irritability, impatience, distress, sadness, anxiety) when they are obliged to come off the Internet, cannot connect, are finding the connection slow or fail to find who or what they are looking for (Griffiths, 2000). In some cases,

symptoms of “cybercrisis” can be observed, such as agitation or moving the hand as though to type despite not being at the computer (Wieland, 2005).

ADOLESCENCE AND NEW TECHNOLOGIES

Adolescence is a psychological, biological, social and cultural phenomenon. It is the period in which individuals develop towards the acquisition of psychological maturity through the construction of their personal identity (Castellana, 2003; 2005). It is also a period that is important for its very developmental characteristics: omnipotence, tendency to seek the cause of one’s problems in others (blaming external factors), little life experience, difficulty in recognizing subtle addictions and need to normalize risk behaviours.

Such characteristics make adolescents highly susceptible to experiencing addictive behaviours or other psychological disorders related to the use of ICT applications. In a sample of 3237 Norwegian adolescents aged 12 to 18, 1.98% fulfilled criteria of addiction and 8.66% those of high-risk use (Johansson & Götestam, 2004). Although for Matute (2003, p. 66) it makes more sense to talk about “inexperienced users” than about “possible addicts”, it should be borne in mind that adolescents’ need to communicate and to have access to information (currently pronounced, heterogeneous and ever-changing) and the fact that they are always inexperienced users increases their vulnerability. Whilst more experienced users devote more time to e-mail, work-related activities and news and information sources, these novice users spend more time in chats and accessing other leisure services (Matute, 2003).

Adolescents and Internet

The Internet can be defined as a web of webs for sharing data and resources via computer (Madrid, 2000). The decrease in connection charges, technological improvements and a massive rise in the number of computers in the home have led to an exponential increase in numbers of Internet users; therefore, it is becoming more and more important to consider users’ responses and to assess some of the Internet’s effects on their behaviour (Chamarro & Hernández, 2005).

Adolescents’ use of the Internet is highly relevant. Time spent on the Web differs according to age; moreover, there is a tendency for girls to spend more time connected than boys (Fundación Catalana per a la Recerca, 2004). As regards connection context, the majority access the

Internet from home (78.4%), in half of the cases using their own computer and Internet service; the rest connect from school (26%), from a library (8%) or from a cybercafé (5%) (Estallo, 2000). As a result of “chats”, 32% of minors have given out their telephone number, 17% have met someone in person, and 34% have “felt uncomfortable” on the Internet at some time (Fundación Catalana per a la Recerca, 2004).

Regarding the reasons why adolescents connect to Internet, it has been observed that these revolve around the possibility of linking up with their peer group regardless of physical distance, as well as that of talking about subjects that would be more difficult to broach face-to-face. The disinhibiting effect of anonymity and the absence of eye-to-eye contact permits them to express needs and emotions that may involve unpleasantness in other contexts, or to be honest and express emotions about personal matters that would be more difficult to discuss in person (King, 1996). Adolescents find themselves in a different world, without the limitations of the “real” world, in a place where embarrassment and shame are hidden and the intimacies of their internal life can emerge (Fiel, 2001).

Likewise, in this age group the attraction of the Internet increases because it makes possible a virtual relationship with friends and strangers and because the absence of non-verbal communication elements facilitates interaction and allows the concealment or masking of one’s identity; this can result in a pleasurable and potentially exciting experience, relieving boredom, tension, depression and anxiety (Fiel, 2001). The Web also permits one to correspond with peers at any time in the 24-hour day, to make contact with people whom one would not have met in other circumstances, to keep in contact with friends at minimal cost, and to be noticed and appreciated (Castellana, Sánchez-Carbonell, Beranuy & Graner, 2006).

Adolescents’ use of the Internet can become problematic when the number of hours they spend on it affects the proper development of their everyday life, causing drowsiness, mood alterations and reduction of time devoted to study and other obligations. As also occurs in the case of adults, they may become anxious or impatient due to the slowness of the connection or on being unable to contact a certain person and irritable in the case of an interrupted connection; moreover, they may find it difficult to drag themselves away from the screen (Echeburúa, 1999). The Internet-addicted adolescents interviewed by

Tsai and Lin (2003) showed compulsive use, withdrawal and tolerance symptoms and reported school-related, health, family, financial and time-management problems. Furthermore, the Internet is associated with greater psychological distress when the range of one's forms of entertainment and number of social relationships become reduced (Viñas, Juan, Villar & cols., 2002).

It should be borne in mind, though, that not all Internet applications have the same addictive capacity. Risk of Internet addiction in adolescence is directly related to the degree of social relation involved in each application, the nature of the relationship established with other internauts, the dimension to be explored, the extent of uncertainty involved, and the possibility of attaining a status that differentiates one from others (Sánchez-Carbonell & cols., in press). Other relevant factors include the nature of the interaction between the adolescent and the computer (Echeburúa, 1999; Griffiths, 2000) and the synchronicity of the response (practically in real time). For example, the role-play games referred to as Massively Multiplayer Online Games (MMOG) are highly addictive due to the high degree of communication, the type of interaction with the computer and the rapidity of response.

Excessive use of the Internet can become dangerous for adolescents. Table 1 sets out some ways in which schools and families can attempt to reorient the adolescent.

Adolescents and Mobile Phones

Adolescents have become the principal users of the various services offered by mobile phones, in which they are investing more and more time and money. For this generation, mobile phones are objects that have always existed, and this indeed makes them experts for choosing the context, place and time in which to use them.

We can find two sociological explanations for the success of the mobile phone among adolescents. On the one hand, Ling (2002) proposes a highly fertile concept according to which the acquisition of a mobile phone is considered as a "rite of passage"; like the traditional watch or pen given at the time of the first communion, the mobile phone is seen as an object of initiation to adolescence. On the other hand, Fortunati and Manganelli (2002) speak of "virtual brotherhood", a phenomenon based on a sense of fraternity that emerges among young people sharing feelings, emotions and ideas.

Whilst younger adolescents see the mobile phone as a

TABLE 1
PREVENTIVE MEASURES FOR IMPROVING INTERNET USE, BASED ON YOUNG (1999)

- ✓ Doing the opposite in Internet time: This technique consists in breaking the routine to adapt to a new timetable. For example, if the first thing the adolescent does on getting up in the morning is to check his/her e-mail, it might be suggested that they do it after breakfast.
- ✓ External switches: This involves using things that the adolescent must do or places he or she must go as signs indicating that it is time to disconnect. Possible aids for these natural alarms would be clocks or other devices with alarms that sound.
- ✓ Setting goals: In order to avoid relapses a realistic timetable can be drawn up that permits the adolescent to manage his/her time. A schedule of brief but frequent connections can be prepared. The fact of having a tangible timetable may bring about a sensation of control.
- ✓ Abstinence from a particular application: Once the application that is most problematic for the adolescent has been identified it should cease to be used. This does not mean they cannot use other Internet-related applications. For example, if the boy or girl's problem concerns chatrooms, these should no longer be visited, but there is no need for them to abstain from using e-mail or Web browsers.
- ✓ Using cue cards: We might suggest to the adolescent to make one list of the five main problems caused by Internet addiction and another of the five main benefits of being disconnected from the Internet or abstaining from using a certain application.
- ✓ Drawing up a personal inventory: We might suggest to the adolescent that he or she cultivates an alternative activity. They should draw up a personal inventory of the things they have ceased to do because of their addiction, subsequently classifying them as "very important", "important" or "not very important". They should be advised to pay special attention to the "very important" activities so that they realize what they have lost and they might like to recover.
- ✓ Educating them in the use of the Internet as a source of information and education: This involves incorporating Internet use in the adolescent's study methods, so that the Web becomes a communicative space associated with reflection and knowledge.
- ✓ Providing information about preventive tools and resources: There are a range of programs that can be installed on the computer to block access to potentially harmful content, to limit connection time or to record visited sites. The FireFox program has an application (pageaddict.com) that permits self-regulation of websites accessed and time spent on them.
- ✓ Talking about the Internet with the adolescent: Adults' assessments of adolescents' Internet use are mostly negative. Given these attitudes, adolescents keep their distance and try to avoid talking about these issues with adults. Such situations have a direct effect on adolescents' socialization process and leave them without adult reference points for considering the advantages and disadvantages of using these tools.
- ✓ Understanding excessive Internet use as a form of reaction to psychological unease or distress: This involves asking oneself why the adolescent focuses his or her leisure and peer-relation time on the Internet; it also means adopting an "active listening" attitude, despite their attempts at isolation.

form of games console, and an instrument of fun (Oksman & Rautiainen, 2002), older adolescents use it to organize and coordinate their lives (O'Keefe & Sulanowski, 1995). All types of use involve considerable financial cost, borne partially or totally by parents.

Mobile phones have a range of different meanings in the lives of adolescents. On the one hand, the mobile phone constitutes a natural and substantial part of their everyday life and is used for organizing their activities; moreover, it has become a means of forming social bonds and for defining one's own space in relation to others (Oksman & Rautiainen, 2002). But the mobile phone also plays a significant part in socialization because it permits adolescents to define their identity both individually, on the basis of personalizing the phone in terms of its form, colour, tones, etc., and collectively, through the creation of one's own group's language and practices related to texting and "missed calls". Mobile phones are used predominantly for making contact over short distances. Likewise, the mobile acts as a security barrier against parents, as they are unable to gain access to their child's phone (Lorente, 2002). In parallel to this, two reasons why parents might buy their children mobile phones are a need for control and as a means of reinforcing the bond with them (Kamibeppu & Sugiura, 2005).

According to Sánchez-Carbonell and cols. (in press), the reasons why mobile phones are so attractive for adolescents are many and various: a) it is a communication format that permits continuous and immediate contact with one's social relations network and the possibility of expanding it; b) time and privacy factors: the mobile is atemporal, permitting rapid contact at any time of the day or night, as well as "escape" from parental control; c) personal identity, since the degree of customization permitted by mobiles facilitates the creation of an identity through them; d) socialization, insofar as the mobile aids the process of emancipation from parents and is a status symbol among adolescents; e) instrumentality, as regards its use as an alarm clock, a watch, a sound/video recorder, an electronic diary, a games platform or a radio.

For adolescents, mobile phones have characteristics of use that are totally different from those relating to adults. According to Kasesniemi and Rautiainen (2001), essential activities in the adolescent mobile phone culture would

include intensive use of text messages (SMS), missed calls and games, while Mante and Piris (2002) highlight the high percentage of conversations with friends and the strong need for personalization or customization.

Moreover, we can observe maladaptive behaviours in relation to mobile phone use that modify adolescents' everyday lives and are indicators of risk. According to Gándara and Álvarez (2004), risk becomes involved when users are incapable of detaching themselves from their mobile even in technically difficult situations and are constantly checking their battery or coverage; moreover, risk is associated not so much with the need to call as the need to feel constantly available to be called. We should bear in mind, in the case of adolescents, their vulnerability vis-à-vis the use of mobile phones, given that they do not yet have full control over their impulses, are more easily influenced by advertising campaigns and have accepted the mobile phone as a status symbol—a notion that can cause negative feelings and problems of self-esteem in those without a phone or who do not receive as many calls or text messages as their peers (Muñoz-Rivas & Agustín, 2005).

The concept of *mobile phone addiction* is a highly debatable one. Although there is no scientific literature with reliable data on its prevalence, symptomatology or clinical cases, the media insist on the addictive potential of mobiles and advertise clinics providing treatment for such addictions (Beranuy & Sánchez-Carbonell, in press). Indeed, there is much less literature on addiction to mobiles than there is on addiction to the Internet (Guardiola, Sánchez-Carbonell, Beranuy & Bellés, 2006). The mobile phone does not have the immediate reinforcing capacity of the Internet. Thus, in this case it might be more prudent to speak of maladaptive use rather than of an addictive pattern—a use that could be reduced in both adults and adolescents with an appropriate educational approach.

Symptoms arising from excessive and maladaptive use of mobile phones might include: inability to control or interrupt their use (Muñoz-Rivas & Agustín, 2005); maintaining the behaviour despite being aware of its negative effects; deception, lying and/or stealing from parents in order to renew phone credit, this being one of the most salient effects, and which causes most alarm in parents (Criado, 2005); breaking rules or laws on using

¹ Highly popular among adolescents are "goodnight" text messages, thus creating a virtual network of nocturnal friends that is activated when its members are alone, normally before going to bed or to sleep.

the mobile in inappropriate circumstances or in places where it is prohibited (Adès & Lejoyeux, 2003; Muñoz-Rivas & Agustín, 2005); side effects on health, above all in relation to sleep, due to involvement in nocturnal networks¹ (Muñoz-Rivas & Agustín, 2005); and problems in the social, family and school contexts, such as arriving late or replying to a text message while in the classroom (Muñoz-Rivas & Agustín, 2005).

Many adolescents cannot avoid breaking off from a face-to-face conversation when they receive a call or an SMS; this has an excessive impact on their social relations (Kamibeppu & Sugiura, 2005; Bianchi & Phillips, 2005), as they are observed to be more attentive to telephonic relations than to personal ones (Adès & Lejoyeux, 2003). This influences communication styles, and may indeed help to explain why younger users who spend a lot of time on their mobiles are often lost for words in face-to-face situations (Criado, 2005), or to understand the difficulties observed for adolescents to put their thoughts and feelings into conversations in which they are physically present (Castellana, 2005).

Finally, the mobile phone is not only a technical device but is also a personal and social object, subject like no other to the influences of fashion, and as regards its use in adolescence –a period so determinant for individual and group identity– it has become a veritable element of social revolution.

Table 2 offers some preventive guidelines to help adolescents in the appropriate use of mobile phones.

Adolescents and Videogames

Videogames represent a form of entertainment that is constantly growing, currently constituting a multi-million-dollar business. Millions the world over (mainly children and adolescents) play videogames in their different types and formats (Levis, 2002).

There are several reasons why adolescents play videogames (Castellana, Sánchez-Carbonell, Beranuy & Graner, 2006): they permit them to live out an adventure in the first person, implementing strategies in a virtual context without consequences in real life; they are an appropriate form of leisure pursuit for those with an interest in IT and new developments; they are comfortable to play, accessible and cheap, and can be played in groups or alone, at home or in games centres and cybercafés; they can raise self-esteem, self-confidence and the capacity for achievement or improvement; and they are emotionally stimulating in view of their intensity and demand for rapidity of decision and reflexes.

Videogames can be classified according to their theme (Rodríguez, 2002): platform games (Supermario BROS), simulators (GT2, Fly Fortress), sport (FIFA), sports strategy (PCFutbol), non-sports strategy (The Sims), shooter (Quake), combat (Mortal Kombat), adventure (Tomb Raider) and role-play (Final Fantasy). The youngest players (aged 7-11) prefer combat and adventure games, while older children and adolescents (11-18) choose games based on simulation, role-play and sport.

With regard to gender, it has been observed that the entry of girls into the world of electronic games does not have the same pace or intensity as those of boys (Pifarré & Rubiés, 1997). A higher percentage of boys than girls acquire videoconsoles. Boys appear to be more interested in these types of games, through which they can demonstrate their skills, imagination and competitiveness, while girls are more interested in other types of technology, such as mobile phones (Malo & cols., 2005) or e-mail

TABLE 2
PREVENTIVE MEASURES FOR
IMPROVING MOBILE PHONE USE

Characteristics of adolescent mobile phone use	Preventive measures
<i>High percentage of adolescents with own phones</i>	Delay as much as possible the age at which children have their own phone
<i>High percentage of pre-paid phone credit cards</i>	Assume responsibility for the cost of calls, setting “weekly allowances”, chores in exchange for credit, and so on, with a view to educating the adolescent in the concept of effort and reward.
<i>Intensive use of games and SMS (texting)</i>	Educate the adolescent in self-regulation of the desire for immediate pleasure and in tolerance of waiting. Reach an agreement on the phone model they obtain seeking a balance between what they need and their ideal or “dream” model.
<i>Strong need for personalization/customization</i>	Just having a mobile is not sufficient. Allow them to customize it within certain limits.
<i>High percentage of conversation with friends</i>	Discuss this issue so that they become aware of the time invested.
<i>Restrictions on spaces for use</i>	Adolescents should be aware of where they cannot use a mobile phone. It is adults who must impose the restrictions, respectfully and through dialogue, and who must act, if necessary, as a figure of authority.

chats (Figuer & cols., 2005). As far as specific type of game is concerned, boys prefer simulator, sports, sports strategy and combat games, whilst girls show a preference for games with a less marked gender connotation, such as The Sims (Pifarré & Rubiés, 1997).

According to Estallo (1995), adolescents start using videogames more frequently due to a novelty effect, and in the majority of cases the excessive behaviour will subside spontaneously or with the help of the family. Nevertheless, many young people report how during a period in their life videogames affected their school performance, brought about tension in the family and reduced their social circle. They admit having concealed from their family symptoms such as loss of control (playing longer than they intended), loss of the sense of time and obsession with a particular game.

Videogames have been criticized since they first appeared, and continue to be viewed with the same suspicion and concern as they were over twenty years ago. The review by Estallo (1995) suggested that the commonest criticisms in relation to their use in adolescence were: first, that the time spent on them was at the expense of time devoted to study or to more positive

and educational leisure activities; second, that they can give rise to impulsive, aggressive and egoistic behaviour patterns in the most frequent users, especially when they have violent content; and third, that the addictive behaviour of such players inhibits the development of more constructive patterns of behaviour.

However, we should not overlook the arguments in favour of videogames: they entertain and amuse; they stimulate eye-hand coordination; they promote complex cognitive processes such as attention, visual perception, memory and information sequencing; they help the acquisition of strategies for 'learning to learn' in new contexts; they reinforce one's sense of mastery and personal control; they help reduce other problem behaviours; they can boost self-esteem; and they facilitate social relations between players (Estallo, 1995; Gee, 2004; Rodríguez, 2002). In Table 3 we propose some preventive measures.

CONCLUSIONS

The majority of popular knowledge about the Internet, mobile phones and videogames is based on the opinions reflected in the media, which all too frequently place the emphasis on hypothetical problems that are rarely corroborated by the findings of scientific research.

The degree of social alarm generated by abuse of ICT on the part of adolescents suggests a need for support to be given to research on how they use such technology, with the aim of preventing future problems related to its use and promoting healthy habits that will enable minors to interact with it in an appropriate way. In this regard, our preventive guidelines might serve as a good starting point. Finally, we should like to stress the need to define solid and proven diagnostic criteria in relation to addiction to the Internet, mobile phones and videogames that take into account the specific characteristics of each of these technologies.

ACKNOWLEDGEMENTS

This study was partially financed by the CER105C06/06-07 grant from the Blanquerna Faculty of Psychology and Education and Sports Sciences at the Ramon LLull University and by the Audiovisual Council of Catalonia.

REFERENCES

Adès, J. & Lejoyeux, M. (2003). *Las nuevas adicciones: Internet, sexo, deporte, compras, trabajo, dinero*. Barcelona: Kairós.

**TABLE 3
PREVENTIVE MEASURES IN RELATION TO
THE USE OF VIDEOGAMES**

- ✓ *Location.* Keeping the console or computer (like the television) in a common space facilitates interaction with parents and siblings, and makes it possible to observe in an informal way what the adolescents do when they are playing the games, which games they play, when they play and with whom they play.
- ✓ *Sharing.* Playing with them is a good way of participating in an activity that is motivating for them, sharing emotions, learning together and getting to know them better. Like walking in the mountains or travelling by car, it provides a good excuse for listening and for transmitting our point of view.
- ✓ *Duration.* Time devoted to videogames is usually measured in amount per day and per week. The total figure should also include time spent watching television and on the computer with non-educational motives. One hour a day would give an acceptable weekly total of seven hours. If videogame play is restricted to weekends, two hours each day or three hours on one day might be appropriate (not seven hours on the same day, for example). Individual playing time should be considered differently from group playing time.
- ✓ *Type of videogame.* Participate actively in the choice of videogames and reach an agreement in accordance with the family's values. Find out about the level of violence, and the minimum age and ability levels required. The criteria of specialist videogames magazines are neither educational nor ethical, but tend rather to be based on quality of the graphics, novelty and price.
- ✓ *Self-regulation.* The first step toward helping adolescents to self-regulate involves their becoming aware of the time they devote to these games. Talk to them and come to an agreement on the time to be spent, in the same way as agreements are reached in relation to other activities, such as studying and going out with friends.

- Alonso-Fernández, F. (2003). *Las nuevas adicciones*. Madrid: TEA.
- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders IV. Text Revision*. Washington: APA.
- Beranuy, M. & Sánchez-Carbonell, X. (In press). El móvil en la sociedad de la comunicación. In A. Talarn (Ed.), *Psicopatología en la sociedad global*. Barcelona: Herder.
- Bianchi, A. & Phillips, J. G. (2005). Psychological predictors of problem mobile phone use. *Cyberpsychology & Behavior*, 8(1), 39-51.
- Black, D. W., Belsare, G. & Schlosser, S. (1999). Clinical features, psychiatric comorbidity, and health-related quality of life in persons reporting compulsive computer use behavior. *Journal of Clinical Psychiatry*, 60, 839-844.
- Castellana, M. (2003). *La relació de l'adolescent amb les persones significatives*. Barcelona: p.a.u. education.
- Castellana, M., Sánchez-Carbonell, X., Beranuy, M. & Graner, C. (2006). La relació de l'adolescent amb les TIC: Un tema de rellevància social. *Full Informatiu del Col·legi Oficial de Psicòlegs de Catalunya*, 192, 22-23.
- Castellana, M. (2005). El adolescente & sus personas significativas. *ROL Enfermería*, 28 (9), 18-29.
- Chamarro, A. & Hernández, E. (2005). Nuevos estilos de vida en la sociedad red: una propuesta teórica enfocada a la intervención en salud. *Iberpsicología*, 10, 2- 15.
- Charlton, J. P. (2002). A factor-analytic investigation of computer 'addiction' and engagement. *British Journal of Psychology*, 93, 329-344.
- Criado, M. A. (2005). Enfermos del móvil. Consulted 30 November 2006 at: <http://www.el-mundo.es/ariadna/2005/218/1106327395.html>
- Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in Human Behavior*, 17, 187-195.
- de Gracia, M., Vigo, M., Fernández, J. & Marcó, M. (2002). Características conductuales del uso excesivo de Internet. *Revista de Psiquiatría de la Facultad de Medicina de Barcelona*, 29(4), 219-230.
- de la Gándara, J. J. & Álvarez, M. T. (2004). Patologías emergentes en salud mental. ¿Modas, enfermedades o trastornos psicosociales? *Semergen*, 30(1), 3-15.
- Echeburúa, E. (1999). ¿Adicciones sin drogas? Bilbao: Desclée de Brouwer.
- Estallo, J. A. (1995). *Los videojuegos. Juicios y prejuicios*. Barcelona: Planeta.
- Estallo, J. A. (2000). Usos & abusos de Internet. *Anuario de Psicología*, 32, 98-108.
- Fiel, G. (2001). Los grupos de charla de Internet como objeto de adicción: caso IRC. Consulted 16 November 2006 at: www.ub.edu.ar/investigaciones/tesinas/3_fiel_martinez.htm
- Figuer, C., González, M., Malo, S. & Casas, F. (2005). El món adolescent en l'entorn de l'ús de l'ordinador i Internet. *Perspectiva Escolar*, 299, 36-41.
- Fortunati, L. & Magnanelli, A. M. (2002). El teléfono móvil de los jóvenes. *Estudios de Juventud*, 57(2), 59-78.
- Fundació Catalana per a la Recerca. (2004). II estudio sobre los hábitos de uso de Internet entre jóvenes de 12 a 17 años. Día Internacional para una Internet Segura: Madrid, 6 de febrero de 2004.
- Gee, J. P. (2004). *Lo que nos enseñan los videojuegos sobre el aprendizaje y el analfabetismo*. Málaga: Ediciones Aljibe & Enseñanza Abierta de Andalucía.
- Greenfield, D. N. (1999). Psychological characteristics of compulsive internet use: a preliminary analysis. *Cyberpsychology & Behavior*, 2(5), 403-412.
- Griffiths, M. D. (1997). Technological addictions: Looking to the future. Artículo presentado en la 105th Annual Convention of the American Psychological Association, Chicago, Illinois.
- Griffiths, M. (2000). Does Internet and computer "addiction" exist? Some case study evidence. *Cyberpsychology & Behavior*, 3, 211-218.
- Grohol, J. (2005). More spin on "Internet addiction disorder". Consulted 16 November 2006 at <http://psychcentral.com/blog/archives/2005/04/16/internet-addiction-disorder/>
- Guardiola, E., Sánchez-Carbonell, X., Beranuy, M. & Bellés, A. (2006). ¿Qué se sabe de la adicción a las TIC? Un análisis a través de las bases de datos de bibliografía científica. In *10enes Jornades Catalanes d'Informació i Documentació*. Barcelona, 25-26 de mayo, 2006.
- Johansson, A. & Götestam, K. G. (2004). Internet addiction: characteristics of a questionnaire and prevalence in Norwegian youth (12-18 years). *Scandinavian Journal of Psychology*, 45, 223-229.
- Kandell, J. J. (1998). Internet addiction on campus: The vulnerability of college students. *Cyberpsychology & Behavior*, 1, 11-17.
- Kasesniemi, E. & Rautiainen, P. (2001). *Mobile Culture of Children and Teenagers in Finland*. Cambridge: Cambridge University Press.
- Kamibeppu, K. & Sugiura, H. (2005). Impact of the mobile phone on junior high-school students' friendships in the Tokyo metropolitan area. *Cyberpsychology & Behavior*, 8(2), 121-130.
- King, S.A. (1996). Is the Internet Addictive, or Are Addicts

- Using the Internet? Consulted 13 December 2006 at: <http://webpages.charter.net/stormking/iad.html>
- Kubey, R. W., Lavin, M. J. & Barrows, J. R. (2001). Internet use and collegiate academic performance decrements: early findings. *Journal of Communication*, 51, 366-382.
- LaRose, R., Lin, C., & Eastin, M. S. (2003). Unregulated Internet Usage: Addiction, Habit, or Deficient Self-Regulation? *Media Psychology*, 5, 225-253.
- Levis, D. (2002). Videojuegos: cambios y permanencias. *Comunicación y pedagogía*, 184, 65-69.
- Ling, R. (2002). Chicas adolescentes y jóvenes adultos varones: dos subculturas de teléfono móvil. *Estudios de Juventud*, 57(2), 33-46.
- Lorente, S. (2002). Juventud y teléfonos móviles: Algo más que una moda. *Estudios de Juventud*, 57(2), 9-24.
- Madrid, R. I. (2000). La Adicción a Internet. *Psicología Online*. Consulted 16 November 2006 at: <http://www.psicologia-online.com/colaboradores/nacho/ainternet.htm>
- Mante, E.A., Piris, D. (2002). El uso de la mensajería móvil por los jóvenes en Holanda. *Estudios de Juventud*: 57(2), 47-58.
- Machargo, J., Luján, I., León, M. E., López, P. & Martín, M. A. (2003). Videojuegos por los adolescentes. *Anuario de Filosofía, Psicología y Sociología*, 6, 159-172.
- Malo, S., Figuer, C., González, M. & Casas, F. (2005). El telèfon mòbil: un ràpid canvi tecnològic i també de relació. *Perspectiva Escolar*, 299, 28-35.
- Matute, H. (2003). *Adaptarse a Internet*. La Coruña: La Voz de Galicia.
- Meerkerk, G., Van den Eijnden, R. & Garretsen, H. (2006). Predicting compulsive internet use: it's all about sex! *Cyberpsychology & Behavior*, 9, 95-103.
- Morahan-Martin, J., Schumaker, P. (2000). Incidence and correlates of pathological Internet Use. *Computers in Human Behavior*, 16(1), 13-19.
- Muñoz-Rivas, M., Navarro, M. E. & Ortega, N. (2003). Patrones de uso de Internet en población universitaria española. *Adicciones*, 15(2), 137-144.
- Muñoz-Rivas, M. J. & Agustín, S. (2005). La adicción al teléfono móvil. *Psicología Conductual*, 13(3), 481-493.
- Oksaman, V. & Rautiainen, P. (2002). Toda mi vida en la palma de mi mano: la comunicación móvil en la vida diaria de niños y adolescentes de Finlandia. *Estudios de Juventud*, 57(2), 25-32.
- O'Keefe, G.J.; Sulanowski, B.K. (1995). More than just talk: Uses, gratifications, and the telephone. *Journalism & Mass Communication Quarterly*, 72, 922-933.
- Pifarré, M., Rubiés, T. (1997). Nenes, nens i videojocs. *Perspectiva escolar*, 220, 67-75.
- Rodríguez, E. (2002). *Jóvenes y videojuegos: espacio, significación y conflictos*. Madrid: Fundación de Ayuda contra la Drogadicción.
- Saldaña, D. (2001). Nuevas tecnologías: nuevos instrumentos y nuevos espacios para la psicología. *Apuntes de Psicología*, 19(1), 5-10.
- Sánchez-Carbonell, X., Castellana, M. & Beranuy, M. (in press). De los que padecen adicciones tecnológicas. In J. Riart (Ed.), *Tutoría y orientación en la diversidad*. (pp. 319-329). Madrid: Pirámide.
- Sandoz, J. (2004). Internet Addiction. *Annals of the American Psychotherapy Association*, 7, 34.
- Shapira, N. A., Goldsmith, T.D., Keck, E., Khosla, U.M. & McElroy, S.L. (2000). Psychiatric features of individuals with problematic Internet use. *Journal of Affective Disorders*, 57, 267-272.
- Shapira, N. A., Lessig, M. G., Goldsmith, T. D., Szabo, S. T., Lazoritz, M. & Gold, M. S. (2003). Problematic Internet Use: Proposed classification and diagnostic criteria. *Depression and Anxiety*, 17, 207-216.
- Simkova, B. & Cincera, J. (2004). Internet Addiction Disorder and Chatting in the Czech Republic. *Cyberpsychology & Behavior*, 7, 536-539.
- Suler, J. (2004). Computer and Cyberspace "Addiction". *International Journal of Applied Psychoanalytic Studies*, 1, 359-362.
- Tsai, C. C. & Lin, C. (2003). Internet Addiction of Adolescents in Taiwan: An Interview Study. *Cyberpsychology & Behavior*, 6, 649-656.
- Viñas, F., Juan, J., Villar, E., Caparrós, B., Pérez, I. & Cornellà, M. (2002). Internet y psicopatología: las nuevas formas de comunicación y su relación con diferentes índices de psicopatología. *Clínica y salud*, 13, 235-256.
- Washton, A. M. & Boundy, D. (1991). *Querer no es poder: Cómo comprender y superar las adicciones*. Barcelona: Paidós.
- World Health Organization (1992). *The ICD-10 Classification of Mental and Behavioural Disorders*. Geneva: O.M.S.
- Wieland, D.M. (2005). Computer Addiction: Implications for nursing psychotherapy practice. *Perspectives in Psychiatric Care*, 41(4), 153-161.
- Young, K.S. (1999). Internet addiction: symptoms, evaluation and treatment. In L. VandeCreek & T. Jackson (Ed.), *Innovations in Clinical Practice: A source book*. Sarasota, FL: Professional Resource Press.
- Young, K. (1998). Internet Addiction: The emergence of as new clinical disorder. *Cyberpsychology & Behavior*, 1(3), 237-244.