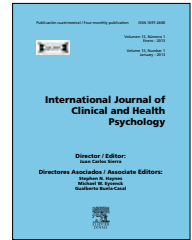




# International Journal of Clinical and Health Psychology

www.elsevier.es/ijchp



## ORIGINAL ARTICLE

# Validation of the Internet and Social Networking Experiences Questionnaire in Spanish adolescents

José A. Casas<sup>a</sup>, Rosario Ruiz-Olivares<sup>a</sup>, Rosario Ortega-Ruiz<sup>a,b,\*</sup>

<sup>a</sup>Universidad de Córdoba, Spain

<sup>b</sup>University of Greenwich, United Kingdom

Received May 7, 2012; accepted September 13, 2012

### KEYWORDS

Addiction to the Internet;  
Interpersonal relationship;  
Social networking;  
Self-esteem;  
Instrumental study

**Abstract** The aim of this paper is to validate the Internet Related Experiences Questionnaire (IREQ) with a sample of 525 participants from Compulsory Secondary Education, considering the possible addiction to the internet from both interpersonal and intrapersonal dimensions. Besides, associations between CERI scores and several variables such as sex, age as well as self-esteem were analyzed. Results show a good fit of the questionnaire through a Confirmatory Factor Analysis (CFA), where the interpersonal factor explains a higher percentage of the variance at the expense of the intrapersonal factor. Statistically significant differences between IREQ scores and age and a lineal positive association between self-esteem and possible interpersonal addiction to the internet were found. The possibility of these results to be affected by the social use of the Internet and the generalization in young people's lives is discussed. Moreover, the need of designing and implementing prevention programs for a healthy use of the internet is discussed.

© 2012 Asociación Española de Psicología Conductual. Published by Elsevier España, S.L. All rights reserved.

### PALABRAS CLAVE

Adicción a Internet;  
Relaciones interpersonales;  
Redes sociales;  
Autoestima;  
Estudio instrumental

**Resumen** El objetivo de este trabajo es validar el Cuestionario de Experiencias Relacionadas con Internet (CERI) con una muestra de 525 sujetos escolarizados en Educación Secundaria Obligatoria (ESO), a partir del cual se valora la posible adicción a Internet desde una dimensión intrapersonal e interpersonal. Además, se han relacionado las puntuaciones del CERI con variables como el sexo, la edad, así como la autoestima. Los resultados muestran un buen ajuste del cuestionario mediante un análisis factorial confirmatorio, donde el factor interpersonal explica un mayor porcentaje de la varianza en detrimento del factor intrapersonal. Existen diferencias significativas entre la puntuación del CERI y la edad, y tam-

\*corresponding author at: Facultad Ciencias de la Educación, Avda. San Alberto Magno, s/n, 14004 Córdoba, Spain.  
E-mail address: ortegarui@uco.es (R. Ortega-Ruiz).

bién una relación lineal positiva entre la autoestima y la posible adicción interpersonal a Internet. Se discute la posible influencia en estos resultados del uso social de Internet y su generalización en la vida de los jóvenes, junto con la necesidad de diseñar e implementar programas de prevención para un uso saludable de la conexión a Internet.

© 2012 Asociación Española de Psicología Conductual. Publicado por Elsevier España, S.L.  
Todos los derechos reservados.

The last few years have seen a dramatic increase in the degree to which Information and Communication Technology (ICT) use, and especially the use of the Internet, has become a normal, everyday part of human activity. People now use the Internet to carry out activities which until recently were only been done outside the virtual world, such as shopping, playing, establishing and developing personal relationships, etc. One thing all these activities have in common is that they give the person involved a feeling of immediate gratification (Marlatt & Gordon, 1985). In recent studies, this sense of gratification, together with the speed of the stimulatory effects typically generated by the Internet and ICT use, has aroused researchers' interest in potential medium and long term effects, and, in particular, the possible dangers of addiction (Echeburúa & Corral, 2010). Over the last few decades research into addiction has widened its scope to cover non-substance addiction, also known as behavioral addiction. In this respect, the Internet is one of the areas of greatest interest (Alonso-Fernández, 1996; Echeburúa, 1999; Holden, 2001; Lemon, 2002; Sim, Gentile, Bricolo, Serpelloni, & Gulamoydeen, 2012).

One ever-present consideration during these years of research has been what exactly constitutes normal and/or excessive Internet use (Sánchez-Carbonell, Beranuy, Castellana, Chamarro, & Oberst, 2008; Widyanto & Griffiths, 2006). An individual's personal idiosyncrasies can affect the extent to which his/her use of the Internet may be considered normal or abusive (Muñoz-Rivas, Navarro & Ortega, 2003). The different studies that have been carried out in this area show that Internet use can affect different areas of a person's life (Brenner, 1997; De Gracia, Vigo, Fernández Pérez, & Marco, 2002; Estévez, Bayón, Pascual, & García, 2001; Kim & Davis, 2009; Meerkerk, Van den Eijnden, Franken, & Garretsen, 2010; Morahan-Martin & Schumacher, 2000; Shapira et al., 2003). Just like addiction to psychoactive substances (Moral-Jiménez, Ovejero-Bernal, Castro, Rodríguez-Díaz, & Sirvent-Ruiz, 2011; Oliva, Parra, & Sánchez-Queijá, 2008), the excessive or addictive use of the Internet may generate addiction and loss of freedom, restrict the scope of a person's interests and eventually lead to a loss of control (Echeburúa & Corral, 2010).

A wide range of studies have been carried out into the danger of the Internet addiction. Some researchers link the excessive use of the Internet to other potentially addictive forms of conduct such as sex, gambling and spending (Viñas-Poch et al., 2002; Young, 1998), while others associate the Internet addiction with personality variables such as depression, anxiety and self-esteem (Jackson, Von Eye, Fitzgerald, Zhao, & Witt, 2010; Kim & Davis, 2009). In fact

self-esteem was found to be the factor most associated with addiction (Stieger & Burger, 2010). These studies have mainly been carried out on adolescent target groups. It has been found that, although young addicts may establish a higher number of contacts thanks to the ease of meeting people via Internet, they perceive the Internet use as having greater negative effects both on themselves and on their immediate social environment (Estallo, 2001; Kim & Davis, 2009). Some studies have found differences between men and women, suggesting that men tend towards an abusive use of the Internet more than women (McKenna & Bargh, 2000; McKenna, Green, & Gleason, 2002; Muñoz-Rivas et al., 2003; Schumacher & Morahan-Martin, 2001), but in others no significant differences between the sexes have been noted (Kim & Davis, 2009; Viñas-Poch, 2009). With regard to age, younger users seem to have a greater possibility of becoming addicted to the Internet than adults (Armstrong, Phillips, & Saling, 2000), although other studies carried out among adult university students suggest that such differences are not significant (Muñoz-Rivas et al., 2003; Ruiz-Olivares, Lucena, Pino, & Herruzo, 2010).

Some of the most interesting of these research projects are those which describe the Internet addiction by comparing its possible symptoms with those experienced by gambling addicts (Beard & Wolf, 2001; Labrador & Villadangos, 2010; Shapira et al., 2003; Tsai & Lin, 2003). Symptoms or diagnostic criteria established in this way include the urge to connect to the Internet when offline, instances in which forms of entertainment, social relationships or physical activity are restricted to being online, changeability in a person's mood, perhaps due to being online for many hours, and incapacity to disconnect, with the attendant increase in the user's own social isolation and destruction of their own closest relationships (Beard & Wolf, 2001; Muñoz-Rivas, Fernández, & Gámez-Guadix, 2010; Ortiz-Tallo, Cancino, & Cobos, 2011; Tsai & Lin, 2003).

Today, among younger people, the Internet is a vehicle for social networking and mean for developing relationships which are being established in such networks. According to the European study *EU Kids Online*, in Spain more than 97% of young people have a profile on a social network (Garmendia, Garitaonandia, Martínez, & Casado, 2011). The fascination exerted by social networks resides in the fact that a person can contact others and stay in touch for hours on end. But to do so they have to stay online for long periods of time, and what may have begun as a need for social contact might then develop into a possible addiction to that online activity (Beard & Wolf, 2001; Tsai & Lin, 2003). Some of the studies published most recently about social

networking show that the number of online contacts correlates to a greater subjective feeling of wellbeing among younger Internet users (Kim & Lee, 2011). This may increase the probabilities of eventual addiction to the Internet (Echeburúa & Corral, 2010).

A conceptual analysis of what exactly is meant by the Internet use, abuse or addiction is, as we have seen, a complex undertaking. Evaluation of the same is therefore inevitably difficult. To date, a number of questionnaires have been developed: the Internet Addiction Test -IAT- (Young, 1998), a test based on DSM-IV-TR criteria (American Psychiatric Association, 2000), evaluates how much the Internet use interferes with daily activity, social life, productivity, sleep and feelings; the Online Cognition Scale (OCS) by Davis, Flett, & Besser, (2002), evaluates online wellbeing, impulsiveness, depression and the extent to which being online distracts a person from real life. The OCS was the questionnaire used by Caplan (2003) to develop another very widely employed instrument: the Generalized Problematic Internet Use Scale. One of the most commonly used questionnaires in Spain is the PRI (*Cuestionario de Problemas Relacionado con Internet* - Internet-Related Problems Questionnaire) (De Gracia et al., 2002), which is based on problem gambling criteria included in the DSM-IV-TR. This was in turn used as the basis for Beranuy, Chamarro, Graner, and Carbonell-Sanchez's CERI (*Cuestionario de Experiencias Relacionadas con Internet* - Internet-Related Experiences Questionnaire, 2009), a test validated with university students which evaluates two dimensions: an intrapersonal aspect, taking into account factors such as rising tolerance, negative effects, the decrease in activities, loss of control, avoidance of other activities and the urge to be online; and another, interpersonal, dimension covering interpersonal relationships conducted via Internet (Beranuy et al., 2009). One of the most interesting points about this questionnaire is the incorporation of interpersonal relationship factors reflecting the growing importance of the new ways of socializing open to young people thanks to the Internet. These factors include the need to establish online friendships and the ease with which online relationships can be conducted.

Taking into account the above considerations, our objectives in this study are as follows: a) to validate the CERI (the Internet-related experiences questionnaire) with a sample group of secondary school students in the province of Cordoba (Spain); b) to relate the scores obtained in the CERI to variables such as sex and age; and finally, c) to establish the link between potential Internet addiction and self-esteem.

## Method

This instrumental study was carried out using a prospective, single group, *ex post facto*, transversal design (Montero & León, 2007). The target population comprised adolescents between the ages of 12 and 18 in the city and province of Cordoba. In 2009 this population was 65,470, according to figures from the *Instituto Nacional de Estadística* (National Institute of Statistics). To predetermine the size of the sample group, the following simulation was carried out using the *Epilnfo 2000* statistics package. This showed that for an

expected frequency of 1% and a margin of error of .05, information should be collected from at least 400 people.

## Participants

The study involved 525 students (50.30% girls and 49.70% boys) between the ages of 12 and 18 ( $M = 14.13$ ;  $SD = 1.41$ ), from 6 secondary schools in the city and province of Cordoba (Spain) randomly selected.

## Instruments

In our study we used the CERI (*Cuestionario de Experiencias Relacionadas con Internet* - Internet-Related Experiences Questionnaire) developed by Beranuy et al. (2009) ( $\alpha = .77$ ), which comprises 10 Likert type items with four answer options (1 to 4) reflecting a degree of frequency between never and quite a lot. The questionnaire covers two factors (see Table 1). One reflects *Intrapersonal Conflicts* ( $\alpha = .74$ ) and includes items such as "When you are not connected to the Internet do you feel nervous or worried", "Do you get angry or irritated when someone distracts you while you are connected" and "How often do you stop doing the things you were doing to be able to spend more time on the Internet". The other addresses *Interpersonal Conflicts* ( $\alpha = .75$ ) and includes items like "Do you find it easier or more comfortable to relate to people via Internet than face-to-face" and "How often do you make new friends online?". The score could be calculated by adding together the answers to all the items, to a maximum of 40 points, but the authors suggest no value or cut-off point for establishing criteria regarding the Internet abuse (Beranuy et al., 2009).

In this study we also used the Spanish version of Rosenberg's Self Esteem Scale (RSES) (Martín-Albo, Núñez, Navarro, & Grijalvo, 2007; Rosenberg, 1965), comprising 10 Likert-type ( $\alpha = .84$ ) items with four answer options ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). To minimize the acquiescence effect, five of the items were worded positively and five negatively. This way, the total score obtained in the scale is between 10 and 40, where 10 is the lowest level of self-esteem and 40 the highest.

## Procedure

Information was gathered during the 2009/2010 school year. Teachers were notified beforehand and set aside a tutorial session for the students to fill in the questionnaire. The anonymous, confidential, voluntary nature of the questionnaire was stressed to participants. Before data was gathered, the corresponding authorizations were obtained both from the school headmasters and from the families of the students involved.

## Analysis

Data was analyzed using SPSS statistical software, version 18.0, in Spanish. First the validity of the CERI questionnaire was checked by exploratory and confirmatory factor analysis, using the AMOS 18 statistics package to implement the Maximum Verisimilitude Method. Variance was analyzed by comparing variables such as sex and age. Finally a

**Table 1** Originals factors and items of Internet-Related Experiences Questionnaire**Factor 1: Intrapersonal conflicts**

- Item 1. *Cuando tienes problemas, ¿conectarte a Internet te ayuda a evadirte de ellos?* (When you are in trouble, does getting online help you to escape from them?)
- Item 2. *¿Con qué frecuencia anticipas tu próxima conexión a la red?* (How often do you anticipate your next connection?)
- Item 3. *¿Piensas que la vida sin Internet es aburrida, vacía y triste?* (Do you think life without internet is boring, empty and sad?)
- Item 4. *¿Te enfadas o te irritas cuando alguien te molesta mientras estás conectado?* (If someone disturbs you while you are connected, do you get angry or irritated?)
- Item 5. *¿Cuando navegas por Internet, te pasa el tiempo sin darte cuenta?* (When you are navigating through the internet, do you feel time flies?)
- Item 6. *¿Te resulta más fácil o cómodo relacionarte con la gente a través de Internet que en persona?* (Do you find relating to people through internet easier or more convenient than face to face?)

**Factor 2: Interpersonal conflicts**

- Item 7. *¿Con qué frecuencia haces nuevas amistades con personas conectadas a Internet?* (How often do you make new friends in the internet?)
- Item 8. *¿Con qué frecuencia abandonas las cosas que estás haciendo para estar más tiempo conectado a la red?* (How often do you give up things you are doing in order to be connected for longer?)
- Item 9. *¿Piensas que tu rendimiento académico o laboral se ha visto afectado negativamente por el uso de la red?* (Do you think your academic and professional performance have been negatively affected due to internet use?)
- Item 10. *¿Cuando no estás conectado a Internet, te sientes agitado o preocupado?* (When you are not connected to the Internet do you feel nervous or worried?)

student's *t*-test was carried out between sexes and the score obtained on the Rosenberg scale, and a linear regression between self-esteem and the factors on the Addiction Scale and age.

## Results

With regard to this study's first objective, that of validating the CERI instrument (Carretero-Dios & Pérez, 2007), exploratory and confirmatory analyses with the KMO test and Barlett's test produced satisfactory results. We also revised the residual matrix to verify that the percentage did not exceed 10%. The KMO coefficient of .87 shows that the matrix was of optimum suitability.

Having checked suitability, we then identified the underlying structure of the CERI questionnaire with an exploratory factor analysis using the Principal Component Analysis Method. We used varimax orthogonal rotation intended to separate the maximum possible factors resulting from the test (Carretero-Dios & Pérez, 2005).

The results obtained in this factor solution showed two differentiated dimensions or factors (like the solution obtained by the authors of the method): intrapersonal and interpersonal (Beranuy et al., 2009). However, the item distribution and variance percentage we obtained differed from the original questionnaire (see Table 2). From this factor, or scale dimension, solution it can be assumed that the two factors were equalized, each having 5 items. The first factor explains 25.08% of the variance and the second

**Table 2** Exploratory factor analysis, factor solution

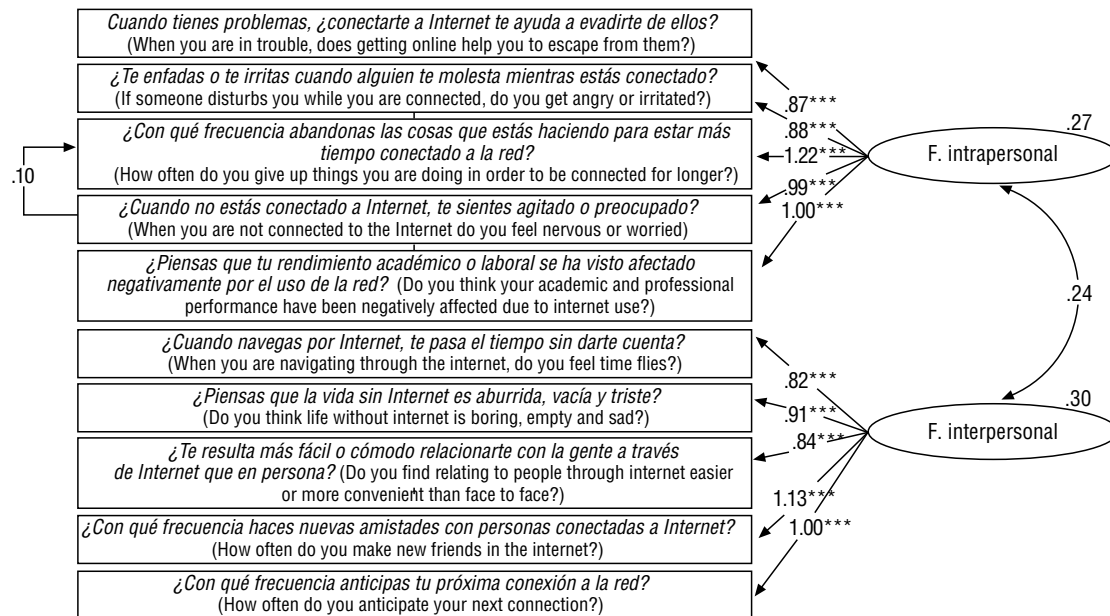
Items	M	SD	Skewne	Kurtosis	Loadings	$h^2$	r	$\alpha$
<b>Factor 1</b>								
Item 1	2.07	.98	.50	-.85	.56	.36	.46	.76
Item 4	1.85	.95	.85	-.31	.64	.41	.44	.76
Item 8	1.90	.89	.73	-.20	.78	.63	.62	.74
Item 9	1.71	.95	1.07	-.00	.71	.51	.40	.76
Item 10	1.34	.70	2.18	.21	.72	.53	.54	.75
<b>Factor 2</b>								
Item 2	2.49	.97	.08	-.94	.60	.40	.47	.76
Item 3	2.20	1.09	.32	-1.21	.54	.38	.48	.75
Item 5	3.07	.95	-.72	-.47	.61	.38	.41	.76
Item 6	2.43	1.12	.12	-1.35	.64	.42	.39	.77
Item 7	2.36	1	.21	-.99	.71	.51	.36	.77

SD, standard deviation.

**Table 3** Confirmatory factor analysis, model fit indices.

Indices	$p$	$X^2/df$	CFI	NFI	GFI	TLI	RMSEA	RMR	ECVI
CERI	.219	1.18	.99	.96	.98	.99	.02	.03	.18

CERI, Cuestionario de Experiencias Relacionadas con Internet; CFI, comparative fit index; GFI, goodness of fit index; RMR, root mean square residual; RMSEA, root mean square error of approximation.

**Figure 1** Confirmatory factor analysis: Graphic solution model shows two main factors.

explains 20.25% of the variance. The whole scale therefore accounts for 45.33% of the variance.

Confirmatory factor analysis of the items corroborated the model obtained in the exploratory analysis. The correlation matrix was analyzed using maximum likelihood estimation. The goodness of fit of the proposed model was evaluated using different indicators. More specifically, we used  $\chi^2$  divided by degrees of freedom (Hu & Bentler, 1999; Jöreskog & Sörbom, 1993), RMR (root mean square residual) and RMSEA (root mean square error of approximation) (Byrne, 2010). Other relative fit indicators used were the GFI (goodness of fit index) and the CFI (comparative fit index), NFI and TLI (Hair, Anderson, Tatham, & Black, 1995). Another parsimony index employed was the ECVI, in which the lowest values possible are those which fit the best (Hu & Bentler, 1999). Empirically corroborated goodness of fit indices for the model are shown in Table 3.

The results from the different fit indices used seem to show that the confirmatory factor model obtained in the CERI scale matches the data satisfactorily (Hu & Bentler, 1999).

Figure 1 shows a graph of the model together with the values for the interrelationships between variables.

The reliability of the different factors and the scale for the sample used was established by calculating Cronbach's coefficient alpha. The total value obtained was  $\alpha = .79$ , with  $\alpha = .72$  for the *Intrapersonal* Factor and  $\alpha = .64$  for the *Interpersonal* Factor. These reliability values are acceptable considering that it is the interpersonal factor which explains the most variance (30%) as opposed to the intrapersonal factor (27%).

Analysis of the items which constitute each factor in the questionnaire shows (Table 4) taking into account answer percentages with the options reflecting the highest frequency (sometimes and quite a lot) are higher in the interpersonal dimension, ranging between 20% and 40% for the "quite a lot" option in items like "Do you find it easier or more comfortable to relate to people via Internet than face-to-face" and "How often do you make new friends online?".

With regard to the second objective, which was to link the different scores obtained in the CERI with psychosocial variables such as sex and age, the student-t analysis found no significant sex-related differences in the total CERI scale score (see Table 5).

For the age variable, however, the analysis of variance (ANOVA) showed that there seem to exist significant

**Table 4** Response percentages to the Cuestionario de Experiencias Relacionadas con Internet items.

		1	2	3	4
		Never			Quite a lot
<i>Factor 1: Intrapersonal Dimension</i>					
Item 1	%	36.30	31.70	22.30	9.60
	n	189	165	116	50
Item 4	%	45.30	31.70	15.20	7.90
	n	236	165	79	41
Item 8	%	38.20	40	16	5.80
	n	196	205	82	30
Item 9	%	550	24.30	13.60	7.20
	n	283	125	70	37
Item 10	%	76.90	14.80	6	2.30
	n	400	77	31	12
<i>Factor 2: Interpersonal Dimension</i>					
Item 2	%	16	36.60	30	17.40
	n	81	185	152	88
Item 3	%	34.50	25.70	24	15.80
	n	177	132	123	81
Item 5	%	7.70	17.40	34	40.90
	n	40	90	176	212
Item	%	27	27.40	22.10	23.50
	n	139	141	114	121
Item 7	%	22.60	35.70	26.40	15.30
	n	117	185	137	79

**Table 5** *t* Student, sex differences in the dimensions of the *Internet-Related Experiences Questionnaire*.

	Sex	M (SD)	df	t	P	Cohen's d
F. Intrapersonal	Boy	1.72 (0.57)	(1, 525)	-1.78	.075	-.165
	Girl	1.82 (0.64)				
F. Interpersonal	Boy	2.46 (0.65)	(1, 525)	-1.66	.097	-.154
	Girl	2.56 (0.64)				
Total	Boy	2.09 (0.53)	(1, 525)	-1.96	.051	-.181
	Girl	2.19 (0.57)				

SD, standard deviation.

differences, with students in the second year of secondary education obtaining higher mean scores - above all in the interpersonal dimension and in the total scale score (see Table 6).

With regard to our third objective, that of establishing the relationship between the self-esteem variable and different CERI scale scores, the total mean score on the scale was  $M = 19.40$  ( $SD = 2.54$ ). Significant differences were found between boys and girls, with girls obtaining a higher score than boys  $M = 18.98$  ( $SD = 2.41$ ) and girls  $M = 19.81$  ( $SD = 2.53$ ), ( $t_{2,525} = -3.52$ ;  $p < .01$ ;  $d = -.34$ ).

The linear regression was established to explore the relationship between the factors in the CERI questionnaire: the intrapersonal and interpersonal dimensions and the age, with the self-esteem scale total. The best model for the self-esteem prediction ( $F_{(4, 525)} = 9.93$ ,  $p < .01$ ) was found,

obtaining an adjusted  $R^2$  value of .10 and including the variables Age ( $t_{4, 525} = -2.44$ ;  $p < .05$ ), Intrapersonal dimension ( $t_{4, 525} = -2.70$ ;  $p < .01$ ), Interpersonal dimension ( $t_{4, 525} = 4.31$ ;  $p < .01$ ), and Total dimension ( $t_{4, 525} = 2.15$ ;  $p < .05$ ).

Self-Esteem =  $44.78 - .667$  Age -  $1.955$  Intrapersonal Dimension +  $1.878$  Interpersonal dimension +  $.737$  Total Dimension.

## Discussion

In view of the primary objective of this study, which was to validate the Internet addiction instrument with a sample group of adolescent secondary school students from the province of Cordoba (Spain), the CERI questionnaire can be said to possess satisfactory levels of reliability and validity

**Table 6** Analysis of variance, differences in the academic levels at Cuestionario de Experiencias Relacionadas con Internet dimension's questionnaire.

	M (SD)		df	F	p	Tukey	Cohen's d
F. Intrapersonal	1.º ESO	1.74 (0.64)	(3, 525)	1.65	>.05		
	2.º ESO	1.85 (0.62)	(3, 525)	1.65	>.05		
	3.º ESO	1.70 (0.56)	(3, 525)	1.65	>.05		
	4.º ESO	1.83 (0.62)	(3, 525)	1.65	>.05		
F. Interpersonal	1.º ESO	2.46 (0.72)	(3, 525)	3.30	.02*	1.º≠2.º	.33
	2.º ESO	2.68 (0.60)	(3, 525)	3.30	.02*	1.º≠2.º	.33
	3.º ESO	2.44 (0.61)	(3, 525)	3.30	.02*	2º≠3º	.40
	4.º ESO	2.48 (0.62)	(3, 525)	3.30	.02*	2º≠3º	.40
CERI Total	1.º ESO	2.10 (0.61)	(3, 525)	2.77	.04*	2.º≠3.º	.38
	2.º ESO	2.27 (0.52)	(3, 525)	2.77	.04*	2.º≠3.º	.38
	3.º ESO	2.07 (0.52)	(3, 525)	2.77	.04*	2.º≠3.º	.38
	4.º ESO	2.16 (0.54)	(3, 525)	2.77	.04*	2.º≠3.º	.38

CERI, *Cuestionario de Experiencias Relacionadas con Internet*; SD, standard deviation.

for both exploratory and confirmatory analysis (Hair et al., 1999; Hu & Bentler, 1999; Jöreskog & Sörbom 1993). It would appear that one of the differences with this sample group of adolescents with regard to the original questionnaire is the organization of the items into the two dimensions being evaluated. The questionnaire therefore retained the two-factor solution with 5 items per factor. The intrapersonal factor included variables related to: avoiding problems by connecting to the Internet; anger or irritation when interrupted or disturbed while online; neglect of other activities in order to connect; unease when not online; lower academic performance. These variables appear essentially to correlate with the criteria established by some authors for diagnosing pathological gambling and substance abuse (Beard & Wolf, 2001; Tsai & Lin, 2003; Young, 2004). The interpersonal factor included variables to do with the non-perception of the passage of time; the belief that life is meaningless without the Internet; the ease of meeting people and establishing friendships via Internet; and looking forward to connecting with increasing excitement. These are the variables which obtained the highest percentages in the scoring (see Table 4) and a higher percentage of explained variance (30%).

These results seem to improve the questionnaire's validity with regard to its earlier results (Beranuy et al., 2009), giving greater weight to the interpersonal dimension than to the intrapersonal dimension. As we mentioned in the introduction, the change may be due to new customs and forms of behavior which have become habitual among adolescents: Internet use among young people is now very much related to social networking, as some studies have already demonstrated (Echeburúa & Corral, 2010; Kim & Lee, 2011).

With respect to the second objective – that of correlating different CERI scores in the light of the sex and age variables – no differences were found between boys and girls regarding excessive Internet use. This confirmed the research carried out by Beranuy et al. (2009), Kim & Davis (2009) and Viñas-Poch (2009). Over the last few years differences in Internet use between boys and girls seem to

have grown smaller. This might be interpreted in the sense that both sexes now have the same possibilities of succumbing to the abusive or addictive use of the Internet. For the age variable, significant differences were found between students in the first and second cycles of secondary education, above all in the interpersonal dimension and in the total CERI score. These results coincide with those obtained in other studies (Armstrong et al., 2000; Beranuy et al., 2009), which describe how younger users are more likely to develop a possible addiction to the Internet than older users; we believe that it may also be attributable to the use of the Internet as a vehicle for establishing and cultivating relationships via social networking (Kim & Lee, 2011).

With regard to the third objective in our study, that of establishing the relationship between the CERI questionnaire score and the self-esteem variable as evaluated using Rosenberg's questionnaire (1965), our results showed that the variables are indeed interrelated. Our results do coincide with those obtained in other studies with respect to the intrapersonal dimension of addiction, where low self-esteem and a negative perception of oneself were a constant characteristic of users displaying problems associated with inappropriate or abusive Internet use (Jackson et al., 2010; Kim & Davis, 2009; Stieger & Burger, 2010). However, the interpersonal dimension shows a positive relationship. Perhaps somewhat speculatively, we interpreted these results as an indication of the importance young people seem to attach to their presence in social networks (Reig & Fretes, 2011). It is possible that a positive outlook and high self-esteem may be related to greater presence in social networks, a more extensive use of the Internet connection and, consequently, a higher probability of addiction. However, more research is required to clarify the influence of this and other factors on possible addiction to the Internet.

This study was limited to a certain extent by factors originating in its very design, such as the collection of data in the classroom itself, the use of self-report questionnaires and the social desirability bias inherent to such

questionnaires - although this was presumably not very high since measures were taken to ensure the anonymity of those taking part (Ruiz-Olivares et al., 2010). Using questionnaires to measure personality variables also tends to result in the over-diagnosis of personality problems or disorders (Fernández Montalvo & Echeburúa, 2006).

Future research might include studies which address more variables of the psychosocial type and look at their possible relationship with the Internet abuse. In this regard, the cognitive distortion that has already been studied in the field of problem gambling (Labrador & Villadangos, 2010) is important but should be analyzed together with Internet's potential for interrelating with others, a factor particularly discernible in the new social networks. We believe that more research needs to be done on how social networking can influence the lives of our young people (Rodríguez-Franco et al., 2012). and what type of risks may be posed by remaining online for such long periods of time. Once results have been obtained in this area it will then also be necessary to design and implement action models aimed at preventing those possible risks.

## References

- Alonso-Fernández, F. (1996). *Las otras drogas*. Madrid: Temas de Hoy.
- American Psychiatric Association (2000). *Diagnostic criteria from DSM-IV-TR*. Washington, D.C.: American Psychiatric Association.
- Armstrong, L., Phillips, J. G., & Saling, L. L. (2000). Potential determinants of heavier internet usage. *International Journal of Human-Computer Studies*, 53, 537-550.
- Beard, K. W., & Wolf, E. M. (2001). Modification in the Proposed Diagnostic Criteria for Internet Addiction. *CyberPsychology and Behavior*, 4, 377-383.
- Beranuy, M., Chamorro, A., Graner, C., & Carbonell-Sánchez, X. (2009). Validación de dos escalas breves para evaluar la adicción a Internet y el abuso del móvil. *Psicothema*, 21, 480-485.
- Brenner, V. (1997). Psychology of computer use: Parameters of Internet use, abuse and addiction: The first 90 days of the Internet usage survey. *Psychological Reports*, 80, 879-882.
- Byrne, B. M. (2010). *Structural equation modeling with AMOS: basic concepts, applications, and programming*. New York, Routledge.
- Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic Internet use and psychosocial well-being. *Communication Research*, 30, 625-648.
- Carretero-Dios, H., & Pérez, C. (2005). Normas para el desarrollo y revisión de estudios instrumentales. *International Journal of Clinical and Health Psychology*, 5, 521-551.
- Carretero-Dios, H., & Pérez, C. (2007). Standards for the development and the review of instrumental studies: Considerations about test selection in psychological research. *International Journal of Clinical and Health Psychology*, 7, 863-882.
- Davis, R. A., Flett, G. L., & Besser, A. (2002). Validation of a new scale for measuring problematic Internet use: Implications for pre-employment screening. *Cyberpsychology and Behavior*, 5, 331-345.
- De Gracia, M., Vigo, M., Fernández Pérez, M. J., & Marco, M. (2002). Problemas conductuales relacionados con el uso de Internet: un estudio exploratorio. *Anales de Psicología*, 18, 273-292.
- Echeburúa, E. (1999). *¿Adicciones sin drogas?* Las nuevas adicciones: juego, sexo, comida, compras, trabajo, Internet. Bilbao: Desclée de Brouwer.
- Echeburúa, E., & Corral, P. (2010). Adicción a las nuevas tecnologías y a las redes sociales en jóvenes: un nuevo reto. *Adicciones*, 22, 91-96.
- Estallo, J. A. (2001). Usos y abusos de Internet. *Anuario de psicología*, 32, 95-108.
- Estévez, L., Bayón, C., Pascual, A., & García, E. (2001). Adicción a Internet: Presentación de un caso clínico. *Archivos de Psiquiatría*, 64, 81-90.
- Fernández-Montalvo, J., & Echeburúa, E. (2006). Uso y abuso de los autoinformes en la evaluación de los trastornos de personalidad. *Revista de Psicopatología y Psicología Clínica*, 11, 1-12.
- Garmendia, M., Garitaonandia, C., Martínez, G., & Casado, M. A. (2011). *Riesgos y seguridad en Internet: Los menores españoles en el contexto europeo*. Universidad del País Vasco/Euskal Herriko Unibertsitatea, Bilbao: EU Kids Online.
- Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1995). *Multivariate data analysis: With readings*. Prentice Hall.
- Holden, C. (2001). Behavioral addictions: Do they exist? *Science*, 294, 980-982.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling. A Multidisciplinary Journal*, 6, 1-55.
- Jackson, L. A., Von Eye, A., Fitzgerald, H. E., Zhao, Y., & Witt, E. A. (2010). Self-concept, self-esteem, gender, race and information technology use. *Computers in Human Behavior*, 26, 323-328.
- Jöreskog, K. G., & Sörbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language*. Hillsdale, NJ: Lawrence Erlbaum Associates Publishers.
- Kim, H. K., & Davis, K. E. (2009). Toward a comprehensive theory of problematic Internet use: Evaluating the role of self-esteem, anxiety, flow, and the self-rated importance of Internet activities. *Computers in Human Behavior*, 2, 490-500.
- Kim, J., & Lee, J. E. R. (2011). The facebook paths to happiness: Effects of the number of facebook friends and self-presentation on subjective well-being. *Cyberpsychology, Behavior, and Social Networking*, 14, 359-364.
- Labrador, F., & Villadangos, S. (2010). Menores y nuevas tecnologías: conductas indicadoras de posible problema de adicción. *Psicothema*, 22, 180-188.
- Lemon, J. (2002). Can we call behaviours addictive? *Clinical Psychologist*, 6, 44-49.
- Marlatt, G. A., & Gordon, J. R. (Eds.) (1985). *Relapse prevention: Maintenance strategies in the treatment of addictive behaviors*. New York: Guilford Press.
- Martín-Albo, J., Núñez, J. L., Navarro, J. G., & Grijalvo, F. (2007). The Rosenberg self-esteem scale: Translation and validation in university students. *Spanish Journal of Psychology*, 10, 458-467.
- McKenna, K. Y. A., & Bargh, J. A. (2000). Plan 9 from cyberspace: The implications of the Internet for personality and social psychology. *Personality and Social Psychology Review*, 4, 57-75.
- McKenna, K. Y. A., Green, A. S., & Gleason, M. E. J. (2002). Relationship formation on the Internet: What's the big attraction? *Journal of Social Issues*, 58, 9-31.
- Meerkerk, G. J., Van den Eijnden, R. J. J. M., Franken, I. H. A., & Garretsen, H. F. L. (2010). Is compulsive internet use related to sensitivity to reward and punishment, and impulsivity? *Computers in Human Behavior*, 26, 729-735.
- Montero, I., & León, O. G. (2007). A guide for naming research studies in Psychology. *International Journal of Clinical and Health Psychology*, 7, 847-862.
- Morahan-Martin, J., & Schumacher, P. (2000). Incidence and correlates of pathological Internet use among college students. *Computers in Human Behavior*, 16, 13-29.
- Moral-Jiménez, M., Ovejero-Bernal, A., Castro, Á., Rodríguez-Díaz, F. J., & Sirvent-Ruiz, C. (2011). Modificación de actitudes hacia el consumo de sustancias en adolescentes: Seguimiento de las



- diferencias inter-género. *International Journal of Clinical and Health Psychology*, 11, 291-311.
- Muñoz-Rivas, M. J., Fernández, L., & Gámez-Guadix, M. (2010). Analysis of the indicators of pathological internet use in Spanish university students. *Spanish Journal of Psychology*, 2, 697-707.
- Muñoz-Rivas, M. J., Navarro, M. E., & Ortega, N. (2003). Patrones de uso de Internet en población universitaria española. *Adicciones*, 15, 137-144.
- Oliva, A., Parra, A., & Sánchez-Queijá, I. (2008). Consumo de sustancias durante la adolescencia: trayectorias evolutivas y consecuencias para el ajuste psicológico. *International Journal of Clinical and Health Psychology*, 8, 153-169.
- Ortiz-Tallo, M., Cancino, C., & Cobos, S. (2011). Juego patológico, patrones de personalidad y síndromes clínicos. *Adicciones*, 23, 189-197.
- Reig, D., & Fretes, G. (2011). Identidades digitales: límites poco claros. *Cuadernos de Pedagogía*, 418, 58-59.
- Rodríguez-Franco, L., Borrego, J. L., Rodríguez-Díaz, F. J., Mollada, C. B., Pineda, C. E., Bellerín, M. Á. A., & Quevedo-Blasco, R. (2012). Labeling dating abuse: Undetected abuse among Spanish adolescents and young adults. *International Journal of Clinical and Health Psychology*, 12, 55-67.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton NJ: Princeton University Press.
- Ruiz-Olivares, R., Lucena, V., Pino, M. J., & Herruzo, J. (2010). Análisis de comportamientos relacionados con el uso/abuso de Internet, teléfono móvil, compras y juego en estudiantes universitarios. *Adicciones*, 22, 301-310.
- Sánchez-Carbonell, X., Beranuy, M., Castellana, M., Chamarro, A., & Oberst, U. (2008). La adicción a Internet y al móvil: ¿moda o trastorno? *Adicciones*, 20, 149-160.
- Schumacher, P., & Morahan-Martin, J. (2001). Gender, Internet and computer attitudes and experiences. *Computers in Human Behavior*, 17, 95-110.
- Shapira, N. A., Lessig, M. C., Goldsmith, T. D., Szabo, S. T., Lazortiz, M., Gold, M. S., & Stein, D. J. (2003). Problematic internet use: Proposed classification and diagnostic criteria. *Depression and Anxiety*, 17, 207-216.
- Sim, T., Gentile, D. A., Bricolo, F., Serpelloni, G., & Gulamoydeen, F. (2012). A Conceptual Review of Research on the Pathological Use of Computers, Video Games, and the Internet. *International Journal of Mental Health and Addiction*, 10, 748-769.
- Stieger, S., & Burger, C. (2010). Implicit and Explicit Self-Esteem in the Context of Internet Addiction. *Cyberpsychology, Behavior, and Social Networking*, 13, 681-688.
- Tsai, C. C., & Lin, S. S. J. (2003). Internet addiction of adolescents in Taiwan: An interview study. *CyberPsychology & Behavior*, 6, 649-652.
- Viñas-Poch, F. (2009). Uso autoinformado de Internet en adolescentes: perfil psicológico de un uso elevado de la red. *International Journal of Psychology and Psychological Therapy*, 9, 109-122.
- Viñas-Poch, F., Ferrer, J., Villar, E., Caparros, B., Pérez, I., & Cornella, M. (2002). Internet y psicopatología: las nuevas formas de comunicación y su relación con diferentes índices de psicopatología. *Clínica y Salud*, 13, 235-256.
- Widyanto, L., & Griffiths, M. (2006). Internet addiction: A critical review. *International Journal of Mental Health and Addiction*, 4, 31-51.
- Young, K. (1998). Internet addiction: The emergence of as new clinical disorder. *Cyberpsychology & Behavior*, 1, 237-244.
- Young, K. S. (2004). Internet addiction: A New clinical phenomenon and its consequences. *American Behavioral Scientist*, 48, 402-415.