

## Evaluation of the cognitive-behavioral model of generalized and problematic Internet use in Spanish adolescents

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### Abstract

**Background:** Problematic use of Internet is a growing concern that interferes in the family and academic life of adolescents. This study had three related objectives: 1) to analyze the psychometric properties of the Revised Generalized and Problematic Internet Use Scale (GPIUS2) among Spanish adolescents; 2) to examine the theoretical cognitive-behavioral model of generalized and problematic Internet use; and 3) to study the relationship between the type of Internet use and generalized and problematic Internet use. **Method:** Participants were 1,021 adolescents in Bizkaia (55.7% girls, mean age = 14.95 years, SD = 1.71). **Results:** Factor analyses confirmed the internal structure of four factors originally proposed for GPIUS2, called Preference for online social interaction, Mood regulation, Deficient self-regulation, and Negative consequences. Consistent with the theoretical model, preference for online social interaction and mood regulation increased the likelihood of reporting deficient self-regulation, which, in turn, was associated with negative consequences for the adolescents. **Conclusions:** The GPIUS2 is a reliable and valid instrument that can be used in adolescent samples. Furthermore, the results support the cognitive behavioral model of problematic Internet use in adolescents.

**Keywords:** problematic internet use, GPIUS2, adolescents, internet addiction.

### Resumen

**Evaluación del modelo cognitivo-conductual del uso problemático y generalizado de Internet en adolescentes españoles. Antecedentes:** el uso problemático de Internet es un problema creciente que interfiere en la vida familiar y académica de los adolescentes. Este estudio persiguió tres objetivos relacionados: 1) analizar las propiedades psicométricas de la Escala de Uso Problemático y Generalizado de Internet (GPIUS2) entre adolescentes; 2) examinar el modelo teórico cognitivo-conductual del uso problemático de Internet; y 3) estudiar la relación entre el tipo de empleo de la red y el uso problemático de Internet. **Método:** los participantes fueron 1.021 adolescentes de Bizkaia (55,7% chicas; edad media = 14,95 años). **Resultados:** los análisis factoriales apoyaron la estructura interna de cuatro factores propuesta originalmente para la GPIUS2, denominados Preferencia por la interacción social online, Regulación del estado de ánimo, Autorregulación deficiente y Consecuencias negativas. De forma consistente con lo hipotetizado, la Preferencia por la interacción social online y la Regulación del estado de ánimo a través de Internet incrementaron la probabilidad de informar de una Autorregulación deficiente, lo cual, a su vez, estuvo relacionado con diversas consecuencias negativas para los adolescentes. **Conclusiones:** el GPIUS-2 es un instrumento fiable y válido que puede utilizarse en muestras adolescentes. Además, los resultados apoyan el modelo cognitivo conductual del uso problemático de Internet en adolescentes.

**Palabras clave:** uso problemático y generalizado, GPIUS2, adolescentes, adicción a Internet.

Internet has become an almost essential resource in everyday life and in society. It is a tool that facilitates interpersonal communication, creating new social environments, labor, and economic development. This technological resource is particularly attractive to adolescents, as it encourages relationships and is used as a tool of leisure and entertainment (Smahel, Brown, & Blinka, 2012; van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engels, 2008).

However, the Internet is not without its problems. Numerous studies in recent years have shown that its overuse can interfere

with other areas of daily life (academic performance, family relationships, health habits, etc.) and it can cause a behavioral pattern similar to substance addictions (Echeburúa, Labrador, & Becoña, 2010; Kim & Davis, 2009; Young, Yue, & Ying, 2011). This pattern has been called compulsive use, problematic Internet use or Internet addiction (Kim & Davis, 2009; Smahel et al., 2012; Young & de Abreu, 2011). Although these terms are often used interchangeably, there is still significant controversy over the use of names such as Internet addiction (see, for example, Carbonell, Fúster, Chamarro, & Oberst, 2012). Therefore, in this study, following the terminology of Caplan (2003, 2010) among other authors, we use the terms *generalized and problematic Internet use* to refer to a pattern that includes recurrent urge to connect to the Internet, the need to be connected often, repeated attempts to stop using the Internet, replacing social and family relationships with connection to the Internet, using the Internet to escape problems,

and the emergence of negative consequences for everyday life due to the use of Internet.

The emergence of a generalized and problematic Internet use is of particular concern during adolescence because this is a critical period for the development of risky health behaviors (Jessor, 1991). Also, the use of Internet and possible negative consequences occur at earlier ages (Lenhart, Purcell, Smith, & Zickuhr, 2010).

Despite its importance, there are very few instruments drawn from the cognitive-behavioral model to assess generalized and problematic Internet use during adolescence. The main limitations of most previous measuring instruments, such as the Internet Addiction Test (IAT; Young, 1998), is that they present a one-dimensional structure (Davis, Flett, & Besser, 2002) or were developed from an atheoretical perspective (e.g., Problematic Internet Usage Questionnaire, PIUQ; Thatcher & Goolam, 2005), which has hampered the understanding of the etiology and development of this problem (Davis et al., 2002; Jia & Jia, 2009). In Spain, there are several validated scales for measuring problematic Internet use that have contributed to a better understanding of this phenomenon (for a recent review, see Carbonell et al., 2012). However, to our knowledge, there is no validated instrument among adolescents in our country, specifically developed from a cognitive-behavioral model.

Precisely from this model, Caplan (2002) developed an instrument to measure different components of dysfunctional use of this technological resource, the Generalized Problematic Internet Use Scale (GPIUS). This scale included seven subscales called Mood alteration, Perceived social benefits, Withdrawal, Negative outcomes, Compulsive use, Excessive time online, and Perceived social control. More recently, integrating the results of further research (Caplan, 2005; LaRose, Lin, & Eastin, 2003), Caplan (2010) proposed a revised version of the scale (GPIUS2) composed of fewer items (15 items) and 4 subscales, denominated Preference for online social interaction, Mood regulation, Negative outcomes, and Deficient self-regulation (including,

in turn, subscales of Cognitive preoccupation and Compulsive Internet use). The instrument presented evidence of adequate construct, convergent, and discriminant validity and an adequate internal consistency in a sample of U.S. adults aged 18 to 70 years, providing preliminary empirical support both to the theoretical model and the multidimensional structure of the GPIUS2. Also, a previous study in Mexican population (Gámez-Guadix, Villa, & Calvete, 2012) has provided preliminary evidence for validity and reliability of the GPIUS2. However, to date, there are no data about the psychometric properties of this instrument among the Spanish population. Therefore, the first goal of this study is to analyze the psychometric properties of the Spanish version of GPIUS2 among adolescents.

The subscales of the instrument evaluate several related components that have proven to be relevant in previous research about problematic Internet use. First, Preference for online social interaction refers to the belief that relationships through internet are safer, more comfortable and effective, and less threatening than face-to-face interaction (Caplan, 2007; Kim & Davis, 2009; Meerkerk, van den Eijnden, Franken, & Garretsen, 2010). Second, Mood regulation refers to the use of Internet to reduce feelings of isolation or emotional distress (LaRose et al., 2003; Spada, Langston, Nikcevic, & Moneta, 2008). Third, Deficient self-regulation is conceptualized as a construct that includes Cognitive preoccupation and Compulsive Internet use (Caplan, 2010). The Cognitive preoccupation component includes obsessive thought patterns related to the use of Internet (Caplan & High, 2006, Shapira et al., 2003), whereas the Compulsive use component refers to the inability to control or regulate access to the Internet (Caplan, 2010; Griffiths, 2000). Finally, in the fourth place, the model indicates the importance of the occurrence of Negative consequences of generalized and problematic Internet use. This component assesses the extent to which an individual experiences personal, social, academic, or work problems as a result of dysfunctional use of the Internet (Caplan, 2005; Morahan-Martin, 2007).

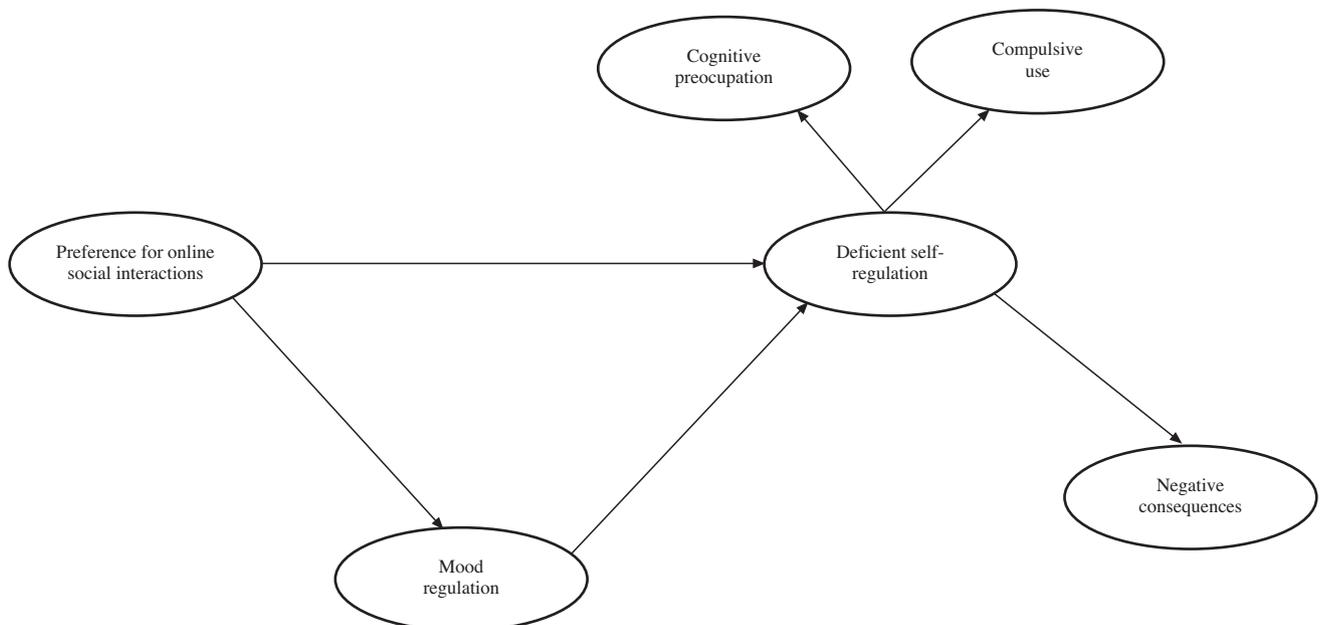


Figure 1. Cognitive-behavioral model of generalized and problematic Internet use (Caplan, 2010)

Method

According to the theoretical cognitive-behavioral model, these variables are related. The relationship between the different components is shown in Figure 1. As can be seen, the model hypothesizes that Preference for online social interaction and Mood regulation through the Internet increase the probability of presenting Deficient self-regulation, which, in turn, results in Negative consequences in diverse areas of the individual’s life. Also, according to the hypothesized model, Preference for online social interactions increases the likelihood of using the Internet to regulate negative mood. Several studies have provided preliminary empirical support for the basic assumptions of the model (Caplan, 2003, 2010). However, to date, there is little empirical evidence on adolescents. Therefore, a second goal of this study is to analyze the assumptions of the cognitive-behavioral model of generalized and problematic Internet use among Spanish adolescents.

Finally, little is known about the relationship between the type of use of the Internet (e.g., social networks, chats, games, search for information, meeting new people, etc.) and the development of generalized and problematic Internet use. The limited empirical evidence suggests that uses involving instant online communication with others (e.g., Messenger or chats), as opposed to using Internet to search for information, increase the likelihood of developing problematic use (e.g., van den Eijnden et al., 2008). However, evidence has been contradictory (Johansson & Götestam, 2004). Therefore, a third and final goal of this study was to analyze the relationship between the type of use made of the Internet and the presence of generalized and problematic use of this technological resource.

In summary, this study pursued three related goals: (a) to analyze some of the psychometric properties of the Spanish version of the GPIUS2, (b) to assess the adequacy of the theoretical cognitive-behavioral model of generalized and problematic Internet use among adolescents, and (c) to study the relationship between the type of use made of the Internet and the presence of generalized and problematic use of this technological resource.

Participants

Participants in this study were 1,021 adolescents (55.7% girls, 40% boys, and 4.3% did not indicate gender) with a mean age of 14.95 years (*SD* = 1.71). Students came from a total of 24 classrooms from different schools in the province of Bizkaia. The schools were chosen from all centers of Bizkaia using simple random sampling. The schools that gave permission for the study allowed us to evaluate various courses of secondary compulsory education and high school. Of the participants, 53% were in their third year of SCE, 24.2% in fourth course of SCE, and 22.8% in high school.

Measures

The GPIUS2 comprises 15 items that are grouped into the following four subscales: (a) Preference for online social interaction (3 items; e.g., “I prefer online social interactions over face-to-face communication”), (b) Mood regulation (3 items; e.g., “I have used the Internet to talk with others when I was feeling isolated”), (c) Negative outcomes (3 items; e.g., “My Internet use has made it difficult for me to manage my life”), and (d) Deficient self-regulation, which is a second-order factor that includes a subscale for Cognitive preoccupation (3 items; e.g., “When I have not been online for some amount of time, I become preoccupied with the thought of going online”) and a subscale for Compulsive Internet use (3 items; e.g., “I have difficulty controlling the amount of time I spend online”). The response format was a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). The entire scale is included in Table 1.

*Amount of time spent using the Internet.* We included nine questions about the amount of time that adolescents spend each day performing various activities on the Internet: checking email,

Table 1  
Revised generalized and problematic Internet use scale (GPIUS2; Caplan, 2010) in Spanish

Tomando en cuenta la siguiente escala, elige la opción que mejor describa lo que piensas respecto a tu uso de Internet a través del ordenador o del teléfono móvil					
1	2	3	4	5	6
Totalmente en desacuerdo	Bastante en desacuerdo	Un poco en desacuerdo	Un poco de acuerdo	Bastante de acuerdo	Totalmente de acuerdo
1. Prefiero relacionarme con otras personas a través de Internet más que comunicarme cara a cara				1 2 3 4 5 6	
2. He usado Internet para hablar con otros cuando me he sentido solo				1 2 3 4 5 6	
3. Cuando no me conecto a Internet durante algún tiempo, empiezo a preocuparme con la idea de conectarme				1 2 3 4 5 6	
4. Tengo dificultad para controlar la cantidad de tiempo que estoy conectado a Internet				1 2 3 4 5 6	
5. Mi uso de Internet ha dificultado el control de mi vida				1 2 3 4 5 6	
6. Me siento más cómodo comunicándome con otras personas por Internet que haciéndolo cara a cara				1 2 3 4 5 6	
7. He usado Internet para sentirme mejor cuando he estado triste				1 2 3 4 5 6	
8. Me sentiría perdido si no pudiera conectarme a Internet				1 2 3 4 5 6	
9. Me resulta difícil controlar mi uso de Internet				1 2 3 4 5 6	
10. He dejado compromisos o actividades sociales por mi uso de Internet				1 2 3 4 5 6	
11. Prefiero comunicarme con la gente a través de Internet en lugar de hacerlo cara a cara				1 2 3 4 5 6	
12. He usado Internet para sentirme mejor cuando me he sentido enfadado				1 2 3 4 5 6	
13. Pienso obsesivamente en conectarme cuando no lo estoy				1 2 3 4 5 6	
14. Cuando no estoy en Internet, es difícil resistir el impulso de conectarme				1 2 3 4 5 6	
15. Mi uso de Internet ha creado problemas en mi vida				1 2 3 4 5 6	

connecting to Facebook or other social networks, chatting, using WhatsApp or connecting to Messenger, playing games online, downloading movies or music, surfing the Internet, making online purchases, meeting new people through the Internet for meeting them in person, and finally, using the Internet to search for information or tasks. The response scale included 6 alternatives: 1 (*never*), 2 (*less than 30 minutes*), 3 (*between 30 minutes and one hour*), 4 (*between one and two hours*), 5 (*two to three hours*), and 6 (*more than 3 hours per day*).

*Procedure*

Before collecting the measures, the objectives and the research procedure were explained to the staff of each center and to the Students' Parent Associations. All adolescents were evaluated in groups during the regular class schedule. Participation was anonymous and voluntary, and only seven adolescents (0.6%) refused to complete the questionnaire. The research was reviewed and approved by the ethics in research committee of the University of Deusto.

*Data analysis*

To analyze the hypotheses of this study, we followed the two-step analysis procedure proposed by Anderson and Gerbing (1988) for the development and testing of theoretical models, which was also used by Caplan (2010) in the initial analysis of this model. The first step involves a confirmatory factor analysis of the measurement model, which includes the relationships between the observed variables and the latent variables. The second step includes a confirmatory analysis of the causal relationships between the constructs of the model as specified by the theory. To perform the confirmatory factor analysis, EQS 6.1 (Bentler, 2005) was used.

To study the adequacy of the estimated models, we used the standardized root mean square residual (SRMR), the non-normative fit index (NNFI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). For the NNFI and the CFI, values over .90 indicate acceptable fit, whereas values over .95 indicate a good fit. Values on the SRMR and the RMSEA near .05 indicate an excellent fit, whereas values between .05 and .08 indicate an acceptable fit (Byrne, 2006; Hu & Bentler, 1999).

**Results**

*Psychometric properties of the GPIUS2*

Table 2 presents the descriptive statistics (means and standard deviations) for the variables that make up the GPIUS2.

We employed the robust maximum likelihood (ML) estimation method, which includes the Satorra-Bentler scaled  $\chi^2$  index (S-B  $\chi^2$ ), and other corrected statistics due to a violation of the normality assumption that was observed in the data (normalized Mardia's coefficient = 91.02). The first item for each factor was fixed at 1. The total model estimated included the following four general factors: Preference for online social interactions, Mood regulation, Deficient self-regulation (which in turn includes Cognitive preoccupation and Compulsive use factors), and Negative consequences. The model also included a higher order factor called Generalized and problematic Internet use that explains the other variables included. Additionally, we tested a one-dimensional model consisting of a

single factor called Generalized and problematic Internet use. Cases with missing values for any of the variables ( $n = 91$ ) were excluded from the analyses. The model fits for the hypothesized model (four general factors and one higher order factor) was acceptable: S-B  $\chi^2$  (82) = 415.11,  $p < .001$ , SRMR = .04, RMSEA = .066, CIs [.060, .072], NNFI = .91, CFI = .93. In contrast, the unidimensional model displayed a poor fit: S-B  $\chi^2$  (92) = 2745.33,  $p < .001$ , SRMR = .27, RMSEA = .17, CIs [.171, .182], NNFI = .39, CFI = .46.

Figure 2 shows the standardized values of the factor loadings for the first model. As shown, the factor loadings ranged between .79 and .89 ( $p < .001$ ). Similarly, all the relationships between the latent variables were above .48 and statistically significant ( $p < .001$ ).

Internal consistency (Cronbach's  $\alpha$  coefficients) was adequate for all scales; Preference for online social relations:  $\alpha = .85$ ; Mood regulation:  $\alpha = .83$ ; Cognitive preoccupation:  $\alpha = .81$ ; Compulsive use:  $\alpha = .84$ , and Negative consequences:  $\alpha = .78$ . For the second-order factor (Deficient self-regulation), internal consistency was  $\alpha = .90$ . The internal consistency of the entire scale was also adequate ( $\alpha = .91$ ).

*Analysis of the theoretical model*

After analyzing the psychometric properties of the GPIUS2, we proceeded to examine the theoretical model displayed in Figure 1. As with the confirmatory factor analyses described above, we employed the robust maximum likelihood (ML) estimation method, which includes the Satorra-Bentler scaled  $\chi^2$  index (S-B  $\chi^2$ ), and other corrected statistics due to a violation of the normality assumption that was observed in the data. The fit for the estimated theoretical model was acceptable: SB  $\chi^2$  (84) = 458.01,  $p < .001$ , SRMR = 0.04, RMSEA = 0.069, CIs [.063, .075]; NNFI = .91, CFI = .92. The standardized coefficients of the final model are shown in Figure 3.

The analysis provided support for all of the relationships between the variables specified in the model. Regarding the direct relationships between variables, as shown in Figure 3, Preference for online social relationships was significantly associated with Deficient self-regulation and Mood regulation. In turn, greater Mood regulation was associated with higher scores on the Deficient self-regulation factor. Similarly, higher scores on the Deficient self-regulation factor were associated with higher scores on Negative consequences.

The indirect effects analysis provided by EQS supported the indirect relationships proposed by this model. The mediation between Preference for online social relationships and Negative outcomes through Deficient self-regulation was significant ( $\beta =$

	M	SD
Preference for online social interaction	1.86	1.07
Mood regulation through the Internet	2.45	1.42
Deficient self-regulation	2.40	1.31
Cognitive preoccupation	2.28	1.32
Compulsive Internet use	2.51	1.44
Negative outcomes	1.58	.95
Total GPIUS2	2.14	.95

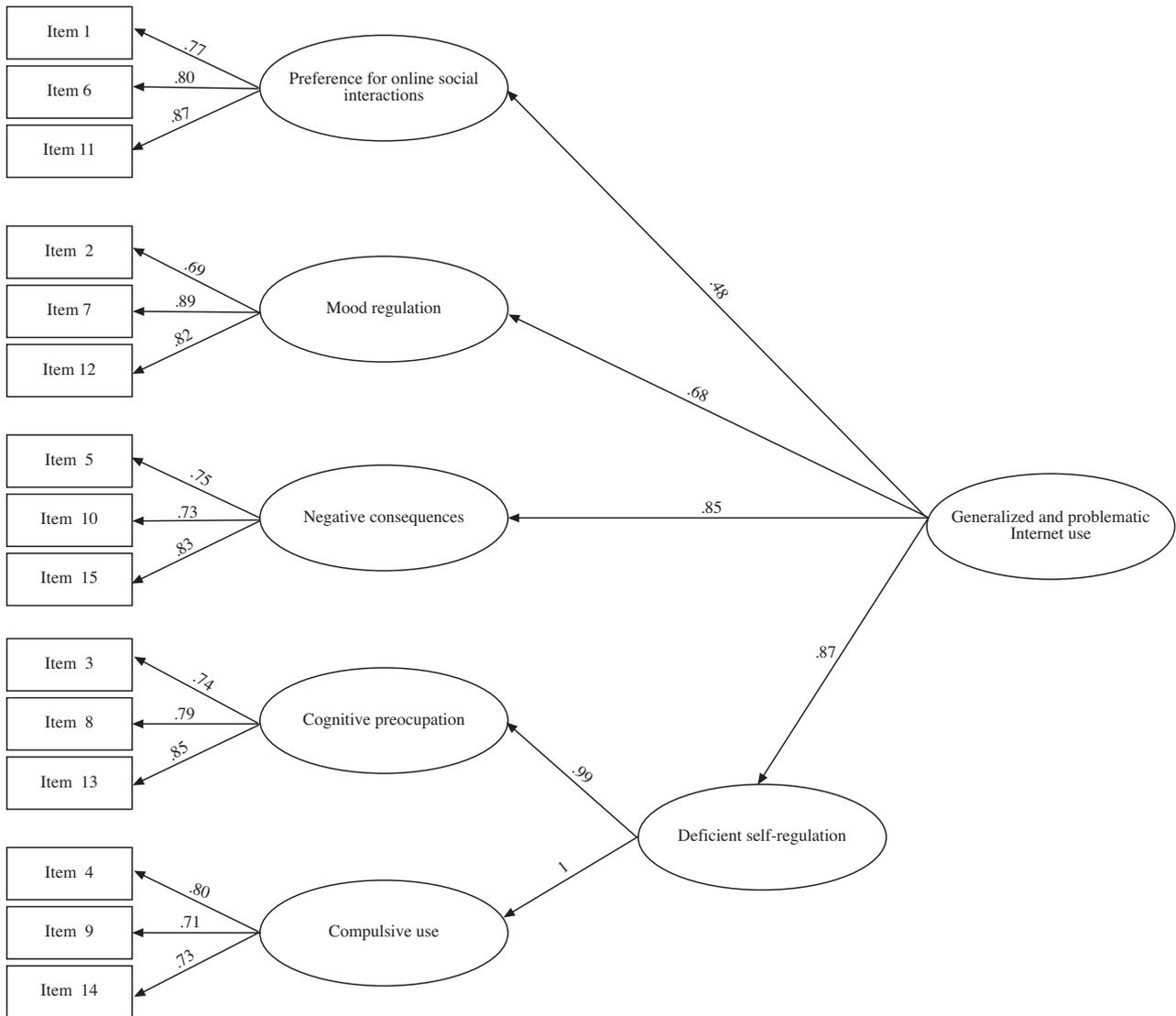


Figure 2. Confirmatory factor analysis of the measurement model of the Revised Generalized and Problematic Internet Use Scale (GPIUS2)  
 Note: All the relationships were statistically significant,  $p < .001$

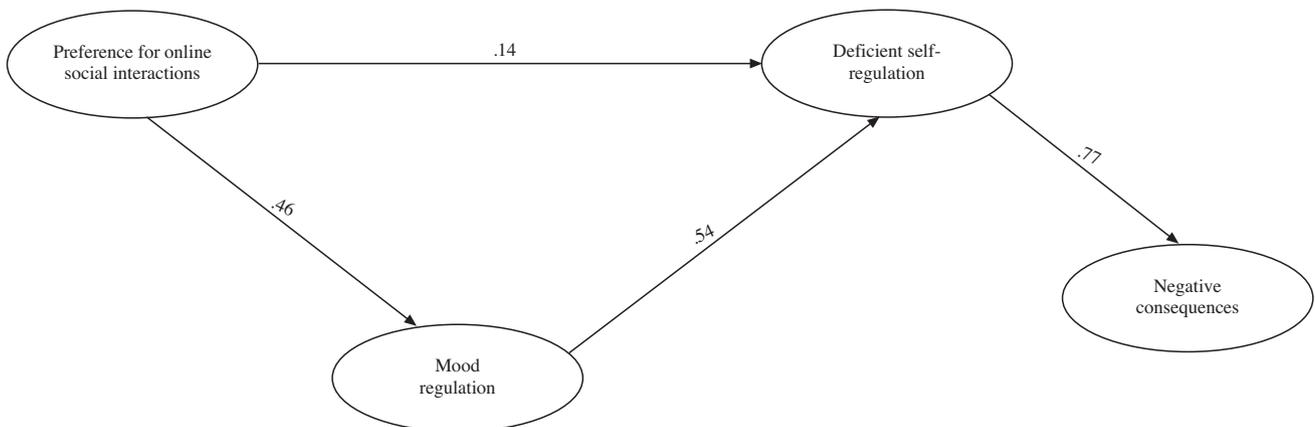


Figure 3. Estimated theoretical model  
 Note: All the relationships were statistically significant,  $** p < .01$

.30,  $p < .001$ ). Similarly, the mediation between Preference for online social relationships and Deficient self-regulation through Mood regulation was significant ( $\beta = .21, p < .001$ ). Finally, the data also supported an indirect relationship between Mood regulation and Negative outcomes as mediated by Deficient self-regulation ( $\beta = .41, p < .001$ ). The model explained 22% of the variance in Mood regulation ( $R^2 = 0.22$ ), 37% of the variance of Deficient self-regulation ( $R^2 = 0.37$ ), and 59% of the variance of the Negative consequences ( $R^2 = .59$ ).

*Type of Internet use and generalized and problematic Internet use*

To assess the relationship between the type of Internet use and the presence of generalized and problematic use we estimated two additional models. In the first model, we included the frequency of each type of Internet use as predictor variables and generalized and problematic Internet use as the dependent variable. In this model, the following activities were not significantly associated with generalized and problematic use of Internet: checking email, playing games online, downloading movies or music, surfing the Internet, shopping online, and using the Internet to search for information or to do tasks. Next, we tested a new model excluding the relationships that were not statistically significant. The final estimated model is shown in Figure 4. Three specific activities showed a statistically significant relationship with generalized and problematic use of Internet: (a) connecting to Facebook or other social networks; (b) chatting, using Whatsapp, or Messenger; and (c) meeting new people through the Internet for meeting them in person. This model displayed an adequate fit:  $SB \chi^2(21) = 70.14, p < .001, SRMR = .02, RMSEA = 0.052, CIs [.038, .065], NNFI = .94, CFI = .98$ .

Discussion

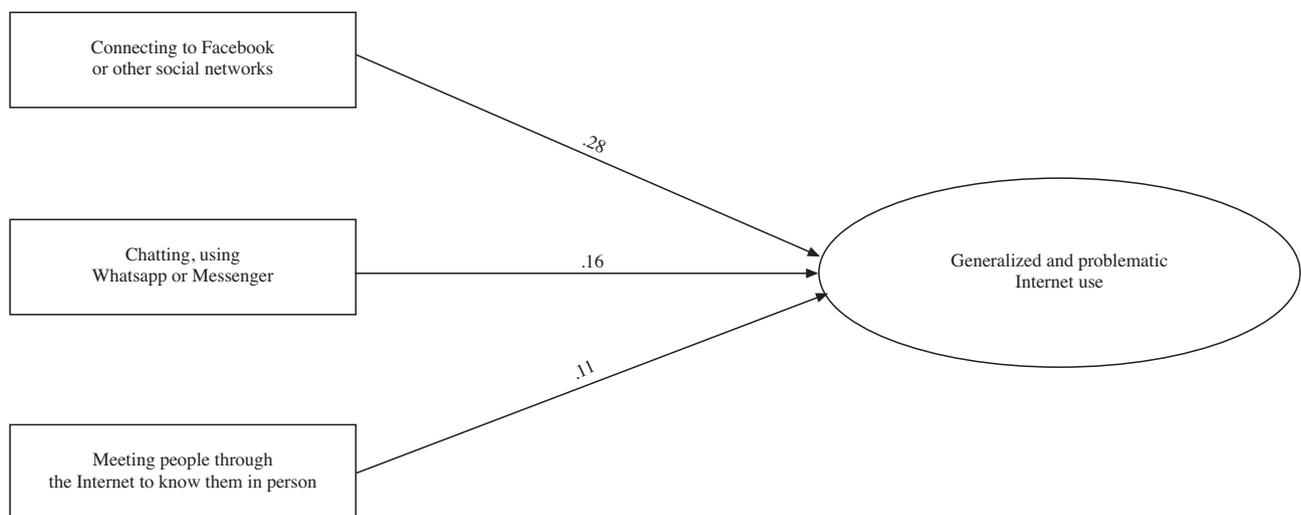
The first purpose of this research was to analyze the psychometric properties of the GPIUS2 among Spanish adolescents. The results showed that the GPIUS2 has adequate construct validity and reliability. Empirical support was obtained for the internal structure composed of four factors: Preference for online social interaction, Mood regulation, Deficient self-regulation (including

Cognitive preoccupation and Compulsive use) and Negative consequences. These factors were consistent with the structure originally proposed by the authors and in the line of the results of previous research (Caplan, 2010; Gámez-Guadix et al., 2012). Therefore, results supported a multidimensional structure, rather than a unidimensional one, for the GPIUS2. As in the original validation study, the instrument obtained adequate indices of internal consistency.

The study results also supported the hypotheses of the theoretical cognitive behavior model of generalized and problematic Internet use (Caplan, 2010; Caplan & High, 2011). Consistent with the hypotheses, the Preference for online social interactions showed a statistically significant relationship with Mood regulation and Deficient self-regulation. This finding is consistent with results from previous studies (Caplan, 2007; Kim & Davis, 2009). Moreover, Mood regulation also showed a statistically significant relationship with Deficient self-regulation, in line with the hypotheses and previous findings (LaRose, Mastro, & Eastin, 2001). These results suggest that individuals who use the Internet as a means to cope with diverse negative moods are more likely to report a deficit of self-regulation regarding the Internet (i.e., obsessive thoughts and compulsive behaviors). Finally, Deficient self-regulation was related to Negative consequences. Adolescents with a higher deficit of self-regulation are more likely to report negative consequences of Internet in various aspects of their daily lives, which is consistent with the hypotheses and with findings from previous studies (e.g., Caplan, 2010; Junghyun, LaRose, & Wei, 2009).

Besides the direct relationships between variables, the results also supported the hypothesized indirect relationships. Overall, the analysis of indirect effects suggests a central role of deficient self-regulation (i.e., obsessions and compulsions related to Internet use) as a mediating variable through which preference for online social interaction and mood regulation are associated with the occurrence of negative consequences, which is consistent with previous research (Caplan & High, 2011; LaRose et al., 2001).

A third goal of this study was to analyze the relationship between the type of Internet use and more problematic Internet use. The results showed that activities involving instant and interpersonal



**Figure 4.** Analyses of the relationship between type of Internet use and generalized and problematic Internet use (estimated final model)  
 Note: All the relationships were statistically significant, \*\*  $p < .01$

communication (i.e., social networks, chats and instant messaging applications, and using the Internet to meet new people) had a statistically significant relationship with generalized and problematic Internet use. All other activities, more closely related to finding information or entertainment (i.e., movies or music downloads, online games, etc.) were not related to generalized and problematic Internet use. These results are consistent with previous evidence indicating that online interpersonal communication might play a role in the development of problematic Internet use (Caplan, 2003; van den Eijnden et al., 2008). In this sense, the high capacity of reward and gratification obtained from the use of these applications could explain why it is more likely that, used in excess, they may lead to generalized and problematic Internet use (Chou & Hsiao, 2000).

A limitation of this study is the use of a cross-sectional design, which is why we recommend caution in establishing causal relationships between variables. Future studies should use a longitudinal design to analyze more precisely the temporal order of the variables included in the model. Also, this study only used self-report measures, which could have introduced bias in the data. Future studies should include the report of others (e.g., the impact of Internet use detected by parents), social desirability measures, or detection of random response patterns. Furthermore, this study analyzes only some of the psychometric properties of the GPIUS2 (factorial validity and internal consistency). Future studies should examine additional psychometric properties, such as convergent-discriminant validity and test-retest reliability of this instrument.

A relevant issue is that referring to the term used to name to the set of characteristics associated with problematic Internet use.

Although the literature has often used the term Internet addiction for this problem, in light of the empirical evidence, the existence of a clinical disorder comparable to substance addictions is controversial. Therefore, we recommend caution in equating problematic or excessive Internet use with a severe addiction disorder. The latter could be confined to secondary uses of the Internet (e.g., betting online) or the use of Internet communications involving altered identity (Carbonell et al., 2012).

In summary, this study extends previous empirical evidence on the cognitive-behavioral model of generalized and problematic Internet use among adolescents. Moreover, empirical support for this model provides a general framework for cognitive-behavioral therapy for this problem (Young, 2007). Furthermore, the results indicate that the GPIUS2 is a useful scale with adequate psychometric properties in samples of youth and adolescents. This instrument has several advantages, such as evaluating different components of generalized and problematic Internet use, having a solid theoretical basis, and being a short and simple instrument to complete. In terms of research, GPIUS2 can be used to analyze the nature and prevalence of this problem and its relationship with other variables. Given its brevity, the GPIUS2 is particularly suitable for application in school settings, where it can be used, for example, to evaluate problematic Internet use before and after implementation of preventive programs.

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