



Validation of a new Short Problematic Internet Use Test in a nationally representative sample of adolescents



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ABSTRACT

The study aimed to develop a short screening instrument (6 items) to assess the problematic internet use among adolescents. The Short Problematic Internet Use Test (SPIUT) has been developed based on a review of existing literature and tested using CIUS (Compulsive Internet Use Scale) as a concurrent scale. Data were collected within ESPAD-Italia (European School Survey Project on Alcohol and Other Drugs), a cross-sectional school survey conducted to monitor risk-behaviors in a representative sample of Italian students (15–19 years). The SPIUT has been validated in two steps: (a) construct validity, optimal scaling analysis, and assessment of differences in mean scores related to hours spent online (Study 1, internet users = 10,153); (b) reliability test of CIUS and concurrent validity of SPIUT (Study 2, internet users = 21,205). The SPIUT showed good psychometric properties. After Multiple Correspondence Analysis optimal weights for each item were found, improving internal consistency and reliability. Significant increase in mean score with increasing daily hours spent online was found and high correlation with the CIUS. A utilization of the SPIUT in school surveys could help us to understand the risk-profile of problematic internet users among adolescents.

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1. Introduction

Supported by the spread of access and the proliferation of connectivity options (phone, tablet, etc.), the internet is becoming an important leisure time activity, particularly for adolescents. Adolescents have found new sources of communication, information, or entertainment; in this framework the excessive use of the internet deserves particular attention. In general, the amount of time spent online as a unique parameter to assess problematic use is not enough, since students could be theoretically connected to the internet all the time, through Wi-Fi and their mobile phone or tablet. Moreover, students use the internet to study or learn (reading newspapers, searching for information), communicate (chatting, sending messages) and entertain themselves (watching videos, listening to music, playing games). Obviously, internet use *per se* is not indicative of problematic use. Some studies which relate to social networks have highlighted positive outcomes as the increase (or maintenance) of social capital linked to social network

use among students (Ellison, Steinfield, & Lampe, 2007) pointing out that adolescents, who already have strong social skills, may consider the internet as just another venue to get in touch with peers (Kraut et al., 2002), and that online self-disclosure accounts for the positive relationship between online communication and social connectedness (Valkenburg & Peter, 2009). However, for someone unable to control online activities it may become problematic; in fact, high levels of internet use could interfere with daily life, leading to adverse effects on the adolescent's psychological well-being, reducing school performance, causing sleep deprivation, experiencing social withdrawal, and family problems (for an overview see Flisher, 2010).

In recent years, several studies focused on the excessive use of the internet and its detrimental consequences, with a great effort to identify diagnostic criteria in order to assess problematic use (Beard & Wolf, 2001; Caplan, 2002; Davis, 2001; Shapira et al., 2003; Young, 1998). However, the risk associated with excessive use of the internet by adolescents is still under investigation, and some forms of it have gained additional interest after the identification, in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), of "Internet Gambling Disorder" as a condition warranting more clinical research and experience, before it might be considered for inclusion in the main book as a formal disorder.

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Problematic use of the internet presents an objective complexity of definition as it shares characteristics of addiction, dependence, and compulsive or impulse-control disorder. Many terms have been used to describe problematic internet use, including “internet addiction,” “internet addiction disorder,” “internet dependency”, “compulsive internet use”, “pathological internet use”, and “compulsive computer use.” Probably, the term “problematic internet use” is more inclusive and less related to a specific target. As a matter of fact, a universal definition of its diagnostic criteria is still lacking. Nevertheless, several instruments have been developed to assess internet addiction or compulsive internet use disorder (Lortie & Guitton, 2013), and among them the most used are the IAT (Internet Addiction Test; 20 items) (Young, 1998) and the CIUS (Compulsive Internet Use Scale; 14 items) (Meerkerk, Van Den Eijnden, Vermulst, & Garretsen, 2009), both primarily developed for the general population.

The European School Survey Project on Alcohol and Other Drugs (ESPAD) is a cross-sectional study that involves a large number of European countries. The principal goals of the ESPAD project is to offer a comprehensive picture of young Europeans’ use of tobacco, alcohol, cannabis and other substances in order to provide data that can be used in the evaluation of European action plans and strategies. In recent years, according with the changing in adolescents’ life-styles, ESPAD is expanding to new behaviors, adding to the questionnaire short screening instruments (e.g. Lie/Bet for gambling (Molinaro, Vieno, Siciliano, & Santinello, 2014) and CAST for problematic cannabis use (Hibell et al., 2012)), going beyond the target of collecting data only in terms of prevalence and frequency. Given our interest in investigating the problematic use of the internet within the ESPAD project, tailored to explore risky behaviors among adolescents, we need to add some other items dealing also with this topic. However, covering important areas of interest, the length of the questionnaire has some serious limitations, and the two above-mentioned instruments (IAT and CIUS scales), due to the high number of items, are not suitable to be included in the questionnaire. In addition, for the IAT scale, the problematic nature of several items was reported. Previous works suggest that some items of the IAT require changes because of advances in technology and in internet activities, or because they are not suitable to study this disorder among adolescents (Jelenchick, Becker, & Moreno, 2012; Korkeila, Kaarlas, Jaaskelainen, Vahlberg, & Taiminen, 2010). For example, lower reliability was found in answering to the question about “checking e-mail before something else that you need to do”, because the increasing availability of the internet through wireless connections and mobile devices makes this behavior no longer abnormal. In this regard, given the continuous change of technologies and activities, instruments assessing problematic internet use should be independent from them. Furthermore, other questions referred to lifestyle characteristics unusual among youths (questions on preferring the internet to intimacy with their partner, or suffering job performance because of the internet) (Jelenchick et al., 2012).

The overall concept of problematic internet use presents an objective complexity of definition. Despite animated debates on the nature of excessive internet use and whether or not it involves addiction, there is a growing interest in investigating its potential risk especially when referring to teenagers more exposed to internet use and with less cultural defenses than adults. As an abusive behavior, affecting multiple aspects of functioning (social, cognitive, and physical), excessive internet use still requires to be studied and a challenge is to address the need for reliable tools to assess this not yet well known condition.

Thus, taking into account all these aspects, we developed and validated a new shorter screening test to assess problematic internet use and which is suitable to study this topic among adolescents. The new Short Problematic Internet Use Test (SPIUT)

has been developed based jointly on: (1) an evaluation of several aspects of internet overuse found related to the increased risk for “addiction” to the digital world among adolescents, (2) a review of existing materials and items, in particular from the IAT and (3) considering the Griffiths criteria revised by Meerkerk et al. (2009) for compulsive internet use: e.g. withdrawal symptoms, loss of control, preoccupation/salience, conflict, coping, lying to hide internet use. However, studies underline that “Lying about involvement” does not necessarily play an important role in compulsive internet use (Widyanto & McMurrin, 2004), and we chose not to consider it for this reason. Given its wide use and its excellent reliability, we used the CIUS as concurrent scale to test our new instrument.

The choice of the items used in the scale derives from the need to have a tool independent of internet activities and connection devices – because they surely will change over time – and able to investigate some aspects of adolescents’ life, potentially impacted by problematic internet use. Thus, the SPIUT questionnaire screens for the following outcomes: (1) loss of sleep for internet use late at night (thus non concerning leisure time), (2) experience of withdrawal symptoms, (3) diversion of usual activities such as homework and real social life, preferring to stay connected instead of spending time with friends in other different activities (e.g. going out) and (4) excessive time spent on-line to the point of being urged to reduce the use of internet by parents and/or friends.

The SPIUT has been validated in two steps: construct validity was carried out in Study 1 and the external validity was carried out in Study 2, comparing the new scale with the CIUS. In Study 2, construct validity of the CIUS was also tested. Given that a dose–response relationship between the time spent online and the level of addiction has been observed (Durkee et al., 2012; van Rooij, Schoenmakers, van de Eijnden, & van de Mheen, 2010), we also tested the reliability of both scales by comparing the hours spent online during a weekday in different online activities (e.g. chatting, gaming, etc.).

2. Material and methods

2.1. Sampling and data collection

This study uses data from ESPAD-Italia, a national school survey conducted every year to monitor drug, alcohol, tobacco use, and other risk-behaviors among Italian students. Utilizing the ESPAD methodology (Hibell et al., 2012), self-administered questionnaires were completed by a representative sample of high school students, aged 15–19 years. In a sub-sample, questions about internet behavior were asked within a special section on leisure time activities. Data for Study 1 were drawn from 2011 database. The response rate of schools participating in the survey was 89%. The present analyses have been restricted to adolescents reporting internet use at least once in a month and who completed the entire SPIUT scale. The final sample comprised 10,153 internet users (49% males, mean age of 17 ± 1.4 years). Data for Study 2 were drawn from 2012 database. Questions about internet habits and both SPIUT and CIUS scales were asked. The response rate of schools participating in the survey was 92%. The present analyses have been restricted to adolescents reporting internet use at least once in a month and who completed both scales. The final sample comprised 21,205 internet users (48.5% males, mean age of 17.1 ± 1.4 years).

2.2. Instruments and measures

To measure the frequency of internet use, students were asked “How often (if at all) do you use the internet for leisure activities (chats, music, games etc)?” with a 5-point response categories (never, a few times a year, once or twice a month, at least once a

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