

INTERNET ADDICTION, SELF-ESTEEM, AND RELATIONAL PATTERNS IN ADOLESCENTS

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Abstract

Objective: We examined the relationships between Internet addiction symptoms, specific relational patterns, and self-esteem in a sample of adolescents. We hypothesized that Internet addiction symptoms were related to low self-esteem, dysfunctional thoughts about the self and the world, and inadequate internalized relational configurations.

Method: The sample included 153 adolescents, ranging in age between 14 and 17 years old. All the participants filled questionnaires on internet use/abuse, self-esteem, and object relation models.

Results: We found an inverse relationship between self-esteem and Internet addiction scores. We did not find significant associations between problematic Internet use and specific object relation models.

Conclusions: It seems appropriate that psychodynamic research on problematic Internet use should focus on variables that may have a negative impact on self-esteem (e.g., real life experiences) and that may foster problematic Internet use among adolescents.

Key words: Internet addiction, self-esteem, relational patterns

Declaration of interest: none

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Introduction

The current technological progress comes with important risks, opens to extraordinary perspectives, and, at the same time, raises new worries and skepticisms. As for any other technological innovation, beside the initial enthusiasms - justified by Internet's tremendous potential - the risks tied to its use and abuse are increasingly investigated. From the moment it became publicly accessible, in the '90s of the past century, Internet has become a fundamental tool in the lives of individuals, mainly because its uses affect many branches of the everyday life, including education, communication, shopping, health etc. (Yilmaz et al. 2014). According to the Pew Research Center, 95% of adolescents (ages 12-17) and young adults (ages 18-29) in the USA are on-line (Madden et al. 2013). Among USA adolescents, the estimates of average time spent at the computer, although not necessarily online, is reported to be between 1.4 to 2.6 hours per day (Bleakley et al. 2014, Rideout et al. 2010). The accessibility to the net has been also facilitated by the introduction of mobile technologies, such as smartphones (Madden et al. 2013). This is also reflected in the emergence of problematic behaviors connected to the abuse of the Internet, so that in the last years of the past century it was hypothesized the existence of a new type of addiction, the Internet Addiction Disorder (Bleakley et al. 2016). This terminology was coined by Goldberg, who, about twenty years ago, adapted the diagnostic criteria for substance addictions of the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition (APA, 1994) to the excessive use of the Internet. He defined

Internet Addiction Disorder as a form of disordered usage of the Internet, which generates clinically significant impairments, and which is manifested by symptoms such as tolerance and abstinence appearing for at least twelve months (Goldberg 1996). Young (1996) conceived instead Internet addiction as a particular form of addiction based on an impulse control disorder, not caused by an intoxicating substance, that generates negative consequences in the main areas of functioning in everyday life. Moreover, Young proposed some diagnostic criteria for the Internet Addiction Disorder, including symptoms of obsession, tolerance and abstinence related to the Internet, the excessive use of the Internet and the lack of interests for other activities (Park et al. 2012).

However, today there is a wide discordance on the terminology and definitions regarding the internet addiction, and if it actually is a condition or diagnosable disorder (Mitchell 2000): nevertheless, the popular profile of a person who is "addicted" to the Internet generally describes an individual who has little or no control of his or her personal life because of the excessive use of the Internet, and has a specific emotional difficulty in dealing with this shortage (Caviglia et al. 2010, Del Villano et al. 2014, Perrella et al. 2013, Perrella et al. 2016). In this context, the conceptualization proposed by Shapira and colleagues (2000) may be appropriate, as they focus on the emotional aspects related to the experience of loss of control, with particular attention to the considerable anxieties and worries that accompany the excessive use of the network. The American Psychiatric Association, in June 2007, suggested the importance of exploring further if the

addiction to Internet should be classified as a distinct set of symptoms. Nevertheless, the addiction to the Internet has not been recognized as a clinical disorder *per se* until today, and only Internet Gaming Disorder was included as a condition that requires further study in the DSM-5 (APA 2013). However, regarding the behavior related to the Internet use, it has been proved that a low self-esteem is a significant predictor related to the potential development of a pathological use of the Internet. It seems that the "self-esteem factor" is crucial, in such way that the individuals with low self-esteem have negative evaluations of themselves, and, in order to retire or run away from these stressful thoughts or feelings, tend to engage in addictive behaviors such as Internet abuse. Many studies have investigated the link between Internet Addiction and self-esteem. The data in literature show that a relation is present (Callea et al. 2016; Greenberg et al. 1999; Griffiths 2000, 2008; Miller 1990; Pace et al. 2015; Richter et al. 1991). According to Padwa and Cunningham (2010), the most common form of Internet Addiction among young people is the online game addiction: when adolescents experience success in achieving the goals that the games gradually offer, they perceive a greater sense of power. In other words, according to these researchers the use and misuse of the Internet can emerge as a way in which individuals make up their perceived deficiencies by achieving a positive evaluation of self (Aydm and San 2011). The computer may be used in this context as a sort of "electronic friend" that compensates for the lack of real relationships. Indeed, one of the main reasons that studies in literature underline about the excessive use of Internet concerns the need to socialize, as a possible strategy to counter depression, social isolation and other psychological or physical deficiencies. Many teenagers who excessively use the Internet have, in fact, problems of shame and intimacy in relationships, and they may be particularly attracted by the opportunity to socialize without being exposed directly and without getting personally involved. The observation of some cases of Internet abuse might even help to identify a computer-dependent prototype, as proposed by some scholars (Mazalin and Moore 2004): he is typically a male teenager, with little or no social life, with little self-confidence and low self-esteem, showing problems with personal identity and high levels of social anxiety. The prototypical teenager with Internet addiction is also characterized by social withdrawal, so that the virtual relationships almost totally replace the real ones. The importance of the peer group as a protective factor seems to fail in the case of Internet addiction, as the adolescent is locked up in its virtual world and virtual relationships, living even another life, different - if not opposite - to the real one (Griffiths 1997). There is little need to explain that such prototypical descriptions are limited in many ways, for both their reductionism and their limited empirical support; yet, it seems necessary to understand if and when the excessive use of the Internet results problematic, pathological or invalidating for the adolescents or those around him (Couyoumdjian et al. 2006).

There is also the possibility that the relational patterns of the adolescents are important to understand the risk of developing Internet addiction symptoms. In this context, attachment theory may help elucidating the developmental pathways that lead to low self-esteem and excessive Internet use (Schimmenti et al. 2014). A child with a secure attachment would have, compared to a child with insecure attachment, a greater level of self-esteem, a better ability in self-regulation, better coping strategies of stress and difficulties, greater safety

in exploring of the surrounding world, a more positive attitude towards study, work, and relationships with peers (Zarrella et al. in press). Following this theoretical framework, an unsatisfactory childhood attachment may push the individuals to seek tools and means on the outside to make up their own underdeveloped self-regulating strategies. The problems with affect regulation can make the transition from childhood to adolescence particularly difficult, as this life stage already involves huge changes in the individual's life. The adolescent crisis can indeed generate by itself a greater propensity to problematic behaviors, such as the use of psychoactive substances or, in this case, seeking retreats in the virtual world. Indeed, Internet allows to explore the unknown, without fearing too much about its consequences.

On the basis of these considerations, The aim of this study was to evaluate the potential connection between the use and misuse/abuse of the Internet, the presence of specific inadequate or dysfunctional relational patterns, and the construct of self-esteem. We hypothesized that the abuse of Internet may be related to feelings of inadequacy and insecurity, low self-esteem, distorted thoughts about the self and about the world, and derogating, disturbing and oppositional relational configurations. Specifically, we tested whether there was a significant correlation between self-esteem, the concept of self, and dimensions of problematic Internet use such as evasion, dissociation, impact on real life, experimentation and addiction. This hypothesis was based on the idea that specific models of object relations, a psychodynamic construct that describes the quality of the individuals' relevant relationships with self and the others, would be related with self-esteem and specific Internet addiction symptoms.

Method

Participants

The sample consists of 153 adolescents, (91 males and 62 females) aged between 14 to 17 years (mean 15.19; SD 0.35), attending the first or second year of high school.

Measures

Each subject was administered the Use, Abuse and Addiction to the Internet (*Uso Abuso e Dipendenza da Internet*, UADI), the Multidimensional Self Concept Scale (*Test di Valutazione Multimediale dell'Autostima*, TMA) and the Object Relations Model (*Modello delle Relazioni d'Oggetto*, MRO).

The *Use, Abuse and Addiction to the Internet*, a measure developed by Del Miglio, Gamba and Cantelmi (2002), is a measure of Internet addiction validated on the Italian population. It consists of 5 factors (explaining 40.6% of the total variance in the original validation study) comprising 75 items on a Likert-based scale. The UADI scales are the following: (a) *Evasion* (EVA) is a collection of items describing a use of the Internet for evasion, as an act of compensation in relation to the difficulties of everyday real life; (b) *Dissociation* (DIS) describes some dissociative symptoms (bizarre sensory experiences, depersonalization, derealization) along with the tendency to alienation and escape from reality; (c) *Impact on real life* (IMP) contains items describing the consequences on the real life (possible changes of habits, social relations, mood) of Internet use; (d)

Experimentation (SPE) describes the use of the Internet as a private space, as a social laboratory for testing the self, as a ground for playing and regression, as a tool for research of emotions; (e) *Dependence* (DIP) contains items that relate to certain behaviors and symptoms of addiction, in particular tolerance (increasing the connection period), abstinence, compulsiveness and hyper-involvement.

Bracken's Multidimensional Self Concept Scale (1992), based on Shavelson's (1976) model of self-esteem, is a self-assessment scale on specific dimensions of the concept of self, composed of 150 items based on a 4-point Likert scale, divided into 6 subscales of 25 items each. The measure is conceptually based on the hypothesis that self-esteem is a learned response style, which reflects the evaluation made by the individuals of their experiences and past behavior, and which will predict to some extent their future behavior. In fact, the TMA is considered as a reliable measure for the assessment of the socio-emotional adaptation of children aged 9 to 19 years, of every ethnicity and religion, and the six scales can be conceived as key areas to outline the self-concept and self-esteem (Bannister and Agnew 1977, Coppersmith 1967, Rosenberg 1979, Shavelson et al. 1976). The six scales of TMA are: interpersonal relations, competence of control over the environment, emotiveness, academic achievement, family life, and body perception.

The Object Relations Model (Grasso 1976, Grasso and Ardizzone 1997) is a projective psychological test. This instrument is designed for children and adolescents between 10 and 19 years, is administered both individually and in groups, and investigates how the Ego deals with the outside world through its internal dynamics. The instrument consists of 42 incomplete sentences, and it investigates 14 models of object relations that can be included into 4 four basic dimensions: 1. Dimension of self: frustration, future, past, fear, guilt; 2. Dimension of family: father, mother, family; 3. Psychosexual dimension: women, men, couples; 4. Interpersonal dimension: friendship, conditions of inferiority and superiority. The subject is asked to complete the sentences by writing the first thing that he/she can think of. The assessment of the protocol is the allocation, for each item, of a score (articulated into 7 levels) which expresses the quality of the relationship that the subject has with the object "proposed" by the item (a value of 1 indicates the maximum negative polarity, a value of 7 the maximum positive polarity). The scores are based on 3 benchmark criteria (modes) that allow the researcher to score each item: lived ego, ego efficiency, and ego definition. From the attribution of these scores, it becomes possible to distinguish between positivity or negativity in the object relationship, and to identify the area of relational pathology and relational defensiveness. Finally it is possible to see if the relational model of the subject can be placed in one of the clusters identified by the test authors; each cluster identifies ties of similarity between the factors, allowing to interpret these ties as an expression of particular mental and behavioral patterns. The identified clusters are: Cluster 1, "Relational adequacy", includes subjects who show adequate maturational processes, able to establish a good object relationship resulting from a reasonably balanced reality testing; Cluster 2, "Avoidance of involvement in the relationship", includes subjects characterized by a position of neutrality and avoidance towards the object that can sometimes alternate with an attitude of slight devaluation of self or others; Cluster 3, "Relational hyper-adaptation", includes individuals

that, behind identity of apparently functional façade (false self), mask high internal fragility; Cluster 4, "Refusal/opposition", includes those who reject all, or part, of the test and that, therefore, cannot be assessed; in individuals who fall in Cluster 5, "Relational maladjustment tending to expression of aggression" prevails a derogating and aggressive attitude towards the object, within a framework characterized by an inadequate reality exam and use slightly adaptive defenses; Cluster 6, "Greatly disturbed relationship with the object", the subjects belonging to this cluster show difficulties in the object relationship, which appears characterized by aggressiveness and a significant disturbance in the reality exam, if not real deconstruction; Cluster 7, "Relational adequacy with object devaluation", includes individuals that retain a good level of fitness which, however, is associated with a hypercritical tendency towards the other and/or with an expressive tendency of devaluation of the self; Cluster 8, "Avoidance attitude with false adaptation", those who fall in this category are characterized by an attitude of avoidance regarding relational implications: this approach of object relations, however, appears to be closely intertwined with elements of ambivalence towards the object, regarding which the subject seems to alternate feelings of over-evaluation and devaluation. The Cluster 1 and, in some respects, the Cluster 7 are the most compatible with being adequate conditions. Clusters 2, 3 and 8, however, refer to a range of situations which, while not being characterized by explicit signals of unbalance of the object relation, underlie latent forms of discomfort. The subjects belonging to these, therefore, are placed in a hinge situation between conditions of relational adequacy and psychopathological risk. Finally, clusters 5 and 6 refer to forms of object relationship more characterized by an inadequate reality examination.

Procedure

The ethics committee of the University Department approved this study. Before submitting the tests to students, each of them as minors has been delivered a request for authorization, to be signed by their parents, in order to ensure the will of the subjects participating in the study. The tests were administered in first and second high-school classes, during school hours on days previously agreed with the principals and teachers of the respective schools. To ensure anonymity, each participant was assigned a code and it was explained that one had the chance to withdraw from the study at any time. Participation in the study was voluntary and participants did not receive any reward.

Statistical analysis

Data were analyzed with the IBM Statistical Package for the Social Sciences, version 20.0. The alpha significance level was set at .05. In order to compare the average scores of males and females on the different scales, the data were analyzed with t-test for independent measures. In order to investigate the relationship between UADI and TMA we calculated Pearson's *r* correlation coefficient. To investigate the relationship between the MRO and both UADI and TMA scores, two MANOVAs that considered the MRO clusters as between-subject factors and the relative scales as dependent variables were carried out.

Results

Regarding the UADI, we found significant differences between males and females in the scores on: Evasion: $M = 48.60$ and $M = 45.54$, for males and females respectively, $t(148) = 2.56$, $p = .012$; and Experimentation: $M = 51.25$ and $M = 47.48$, for males and females respectively, $t(148) = 3.21$, $p = .002$. For what concerns TMA, we found significant differences between males and females in the scores on Family: $M = 49.26$ and $M = 53.75$, for males and females respectively, $t(148) = -3.35$, $p = .001$; and Body self-esteem, $M = 46.84$ and $M = 49.48$, for males and females respectively, $t(148) = 2.75$, $p = .007$.

Preliminary analyses showed that the patterns of associations between individual UADI scales justified the use of the different scales in the study. Then, we analyzed the associations between UADI and TMA scores, and we found evidence of a relationship between self-esteem and Internet addiction symptoms. TMA total scores significantly and positively correlated with the Impact on real life scores ($r = .208$, $p < .05$), while the correlations with Evasion ($r = -.361$, $p < .01$), Dissociation ($r = -.348$, $p < .01$), Experimentation ($r = -.242$, $p < .01$) and Dependence scores ($r = -.171$; $p < .05$) were negative. It is worth noting that we found further associations that supported the hypothesis of a relationship between self-esteem and problematic Internet use. For example, Dissociation scores showed significant and negative correlation with all the TMA scale scores. Evasion scores correlated significantly and negatively with all the TMA scale scores, exception given for the Body dimension scale; similarly, Impact on real life scores, there were significant and positive correlations with TMA Interpersonal, Emotiveness, Family, and Total scores; Experimentation scores showed significant and negative correlations with TMA Interpersonal, Competence, Emotiveness, Family and Total scores; Dependence shows significant and negative correlations with TMA Interpersonal, Body, and Total scores (see **table 1**).

For what concerns gender differences, significant and negative correlations between the TMA total scores and Evasion ($r = -.370$, $p < .01$) and Dissociation ($r = -.314$, $p < .01$) scores emerged among males. For females, the pattern of associations between self-esteem and problematic Internet Use was even more evident: significant and negative correlations between TMA total scores and Avoidance ($r = -.376$, $p < .01$), Dissociation ($r = -.419$, $p < .01$) and Experimentation ($r = -.358$, $p < .01$) scores emerged, while we also found a significant and positive correlation between TMA total scores and Impact on real life scores ($r = .299$, $p = .05$) was

observed.

Finally, as regards the MANOVAs, the results showed that the MRO clusters were not associated with both UADI, Wilks's lambda = 0.79, $F(30,526) = 1.09$, $p = .347$, and TMA scores, Wilks's lambda = 0.76, $F(36,583) = 1.06$, $p = .385$.

Discussion

The purpose of the study was to examine whether it was possible to establish a link between personal characteristics, such as age and gender, and the social, emotional and internal dimensions of adolescents who use the Internet.

A significant finding of our study concerns the presence of gender differences in the UADI scales of Evasion and Dependence. Our results on an adolescent sample seem to confirm other findings in the literature, showing that males may have a higher tendency to develop a problematic Internet use, perhaps because of the specific use that they make of the Internet, as they are more dedicated to activities considered with a higher "toxicological gradient", such as video games, virtual sex and gambling (Morahan-Martin 2005).

Furthermore, we hypothesized that Internet abuse was related to low self-esteem. Intercorrelations between UADI and TMA scores supported this hypothesis. In fact, it was observed that self-esteem, which in the current study is configured as one-dimensional construct, correlates negatively with Internet abuse. Many studies examined the association between self-esteem and pathological Internet use: based on the results of these studies, we can conclude that there is a negative relationship between these two variables (Aydm and San 2011), although in literature, consensus has not been reached regarding a cause-effect relationship, in other words if low self-esteem is cause or consequence of Internet addiction (Niemz et al. 2005, Shaw and Gant 2002). Early studies by Griffiths (2000) provide important insight regarding the relationship between self-esteem and Internet addiction: Griffiths has shown that individuals may try to overcome their difficulties by means of virtual reality, which allows them to create different "personalities" and social identities: these individuals, considering themselves in a negative way, may increase the use of the Internet by creating with the latter a relationship of dependency. Thus, adolescents may perceive the Internet as a way to counter a negative evaluations of their self, a way through which they are able to perceive, albeit for a limited period of time, a positive evaluation of themselves. Sher

Table 1. Correlations between UADI scores and TMA scores ($N = 153$)

UADI scales	TMA scales						
	Interpersonal	Competence	Emotiveness	Academic achievement	Family	Body dimension	Total
Evasion	-.279**	-.296**	-.271**	-.308**	-.396**	-.143	-.361**
Dissociation	-.303**	-.342**	-.288**	-.198*	-.336**	-.184*	-.348**
Impact on real life	.167*	.13	.221**	.071	.281**	.074	.208*
Experimentation	-.177*	-.249**	-.209*	-.134	-.247**	-.065	-.242**
Dependence	-.180*	-.16	-.154	-.131	-0.084	-.165*	-.171*

Note. UADI = Use, Abuse and Addiction to the Internet; TMA = Bracken's Multidimensional Self Concept Scale; * = significant at the 0.05 level (2-tailed); ** = significant at the 0.01 level (2-tailed);

(1991) states that an inadequate parenting style is able to facilitate the development of an Internet addiction: less competent parents could therefore not be able to protect the teen from school failure, poor social relationships, lack of self-confidence, and low self-esteem.

Some literature findings (Chng et al. 2015, Siomos et al. 2012) suggest that adolescents who exhibit problematic Internet use are more likely to live in households with less parental support. There is evidence that adolescents with less parental monitoring receive more online harassment, either by receiving emails or instant messages or on social media (Khurana et al. 2014). However, our results on the object relation models of the adolescents in this sample seem to be in contrast with literature. Analysis of variance showed that UADI scores were not affected by MRO clusters. Consequently, the hypothesis that internalized models of relationships would relate with problematic Internet use was not confirmed in our adolescent sample. In fact, in our study the different relational models, from the most adaptive (e.g., 1, and 7) to the most maladaptive (e.g. 3 and 6), did not influence the use of the Internet. This may suggest, contrarily to what is suggested in the literature (e.g., Schimmenti and Caretti 2010), that the models of object relationships structured in childhood could not directly interfere with the way the individual use the Internet.

This study has some limitations that do not allow generalizations to other samples and that need to be highlighted. The most important limitation is that we examined Internet abuse, self-esteem, and object relation models in a sample of adolescents from the normal population. It is possible that the pattern of associations between these variables would change among adolescents who are in treatment, or are seeking help, for Internet abuse. Moreover, longitudinal studies are needed to better understand the direction of the relationship between Internet abuse and low self-esteem.

Conclusions

Teenagers are considered the best candidates to be “addicted” to the Internet (Mossbarger 2008, Yen et al. 2007). The problematic use of the Internet is in fact often associated with a myriad of negative psychological consequences for both adolescents and adults (Bleakley et al. 2016). It therefore becomes important to understand what conditions can be considered as predisposing of Internet abuse, in order to understand how to reduce the negative impact that problematic Internet use brings with itself. Our study suggests that when an adolescent shows a problematic use of the Internet, it might be important to intervene by strengthening his or her self-esteem. Moreover, to the best of our knowledge, this was the first study investigating the relationship between specific object relation models and Internet abuse. However, as we found that object relations did not affect the adolescents’ use of the Internet in our sample, it could be appropriate both for diagnostic and therapeutic purposes to extend the psychodynamic research on problematic Internet use in other directions, for examples by a closer examination of the personal and life history of adolescents who display an excessive use of the Internet.

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