

# Relating on the Internet, Personality Traits and Depression: Research and Implications

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## Abstract

The Internet as a social media space implies its own terms as far as its operation, social interaction and influence are concerned. In this, excessive Internet use – especially among young people –, occasionally indicates the existence of certain disorders such as addiction, depression or even co-morbidity of disorders. This study aimed at investigating the extent to which Greek students are Internet over-users/addicted and furthermore answering the hypotheses whether Internet addiction is correlated to certain personality traits (namely openness and extraversion) and depression, controlling for certain demographics such as gender and faculty of studies (Social, Humanities Vs Exact Sciences). The sample consisting of  $N = 404$  students from the Social Sciences, Humanities and Exact Sciences departments of Greek universities and technical colleges were administered a self-reporting questionnaire on Internet addiction, personality traits-NEO-FFI, Depression (CES-D) and demographics. Results show that a rather low percentage of students fulfilled the criteria to be considered as Internet addicted, and this was associated mainly with openness and only marginally with neuroticism regarding the Big-Five Personality factors. Further analysis controlling for Depression, gender and type of studies showed that the association between Big-Five and Internet addiction was even weaker, pointing out that this association is confounded by the factors included in the analysis.

**Keywords:** Internet addiction, Big-Five personality traits, depression

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## Introduction

For a large percentage of predominantly young people – the Net Generation – (those born after 1977), most of their interpersonal relations and therefore communication is switching from real to virtual, implying the use of the computer as a means therein. Computer Mediated Communication (CMC) emerges as the most effective method of “synchronized” interaction, allowing picture, script and voice to appear simultaneously in high tech applications and Internet service. High speed and fast action are the properties young people usually choose to endorse. These being the main features of CMC, as a type of interaction it is thus perfectly suited to young people’s everyday life and represents the communication mode of our times, making it – among others the vehicle for globalization with the last implying its innate “openness”. In itself, the Internet extends the scope of human interaction. In spite of all the technological advances, human personal and social needs including the sharing of ideas and emotions, seeking and receiving social support, pursuing intimacy or friendship, remain unchanged (Douglas et al., 2008; Ridings & Gefen, 2004) however increasing social multiplicity stands in the way of these needs being met. In an extensive review Joinson (2003) presents studies that predominantly support the positive role of the Internet in fulfilling these needs proclaiming the Internet as the most useful means of our times.

Among the positive aspects of Internet use is undoubtedly the finding that the socially insecure, those suffering from depression, shyness, social withdrawal etc. disclose information about themselves more easily due to anonymity (Guadagno, Okdie, & Eno, 2008). Anonymity comprises the „impersonal“ nature of „meetings“ within the virtual reality of the Net with other users (Chak & Leung, 2004). Their findings indicate that the Internet is „an area within“ which shy people or those with an external locus of control can act.

Similarly, Campbell, Cumming, and Hughes (2006) argue that „chat“ users who are socially fearful may be using the Internet as a form of low-risk social approach and an opportunity to rehearse social behaviour and communication skills, which, may help them improve interaction with offline, face-to-face, social environments. Along the same line, McKenna and Bargh (1998), Rheingold (2000), Ridings and Gefen (2004), consider one of the main reasons the Internet is so inviting and tempting for the user is its interactive nature, providing help and friendship and allowing these to develop.

Yet, Internet is gradually attracting the attention of an increasing numbers of researchers in view of certain behavioral dysfunctions that have been associated with it in its social facets, notably those of excessive use and distancing users from their social surroundings as earlier studies claimed (Kraut et al., 1998; Stoll, 1995; Turkle, 1995) despite criticism of the methodologies employed (Amichai-Hamburger & Ben-Artzi, 2003; Shapiro, 1999).

Relative anonymity to name a dysfunctional way of use, provides the usual explanation for uninhibited web behaviour, this becoming a problem when it leads to deception or victimisation, demarginalized deviance and de-individuation (Joinson, 2003). Relative anonymity along with convenience and escape have been pinpointed by Young (1996, 1997, 1998) as the contributing causes for Internet addiction (see below) along with excessive use.

Furthermore, with regard to the quality of CMC, other important issues are also examined such as the lack of social context clues in communication<sup>1</sup> (Sproull & Kiesler, 1986), social information processing<sup>2</sup> (due to the lack of non-verbal clues in communication) etc.

An important, yet contradictory aspect of Internet use involves the formation of young peoples' identity within the virtual context of the Internet. Most young people involved in CMC experience this communication hyper-space as an appropriate place to express themselves, introduce themselves (interests, age, physical characteristics) and somehow formulate their identity (Joinson, 2003) in a creative way. For a number of them, whose inter-personal relations and social and personal identities are being negotiated in an extended „moratorium“ (Erikson, 1968), introversion finds a safe outlet for expression in the Internet (Matsa, 2009). Young people are usually easily able to isolate within the Internet context and develop feelings of power and information control, knowledge, and strategies when playing electronic games (Caplan, Williams, & Yee, 2009; Ko, Yen, Chen, Chen, & Yen, 2008; Turkle, 1995).

Nevertheless, excessive Internet use in the early days of its registration as a dysfunction led to the coining of definitions with an alternative use. „Dependency“, for example, has traditionally been used to describe biological addiction to one or more substances (Holden, 2001), and is also applied to „excessive“ Internet use. Internet dependency is thus defined as the user's inability to control Internet use, leading to feelings of stress, anxiety and dysfunctional behaviour in everyday activities (Shapira et al., 2003). Mitchell (2000) delineates the excessive use of internet as „compulsive overuse of the Internet and irritable or moody behaviour when deprived of it“.

As to whether Internet excessive use represents a disorder, scientific discussion has not established as yet to what extent this is the case, since there is no convergence between ideological and scientific grounds, regarding the way in which the various psychotherapeutic approaches perceive this dysfunction. In any case, and despite proposals for a new diagnostic category referring to abuse of the means (Bai, Lin, & Chen, 2001) it has so far not been included in the DSM-IV or in forthcoming new edition (Stavropoulos, 2008). It has, however, been observed that abuse of Internet services share several features in common with impulse control disorders (Beard & Wolf, 2001; Shapira et al., 2003; Treuer, Fabian, & Furedi, 2001) and Rice (2005), stressing the impulsive dimension as did Young (1997), defined Internet addiction as „the tendency towards impulsive Internet use, which hampers a person's ability to lead a normal life“.

Young (1996, 1997, 1998, as cited in Sadock, Sadock, & Ruiz, 2004, p. 958) has defined the Internet Addiction Criteria as follows:

1. Staying on-line for increasing periods of time
2. Failure to manage the oncoming feeling of excitement and/or depression
3. Staying on-line for longer than intended
4. Risk of losing a relationship or missing an opportunity as a result of use
5. Telling lies in an attempt to cover up the real extent of use
6. Use in an attempt to control negative feelings.

Young (1997, 1999) postulates that the Internet essentially provides a release for people who feel stressed by their external and internal everyday reality and face interpersonal communication difficulties. Similarly, research by Caplan (2005, 2007) and Morahan-Martin and Schumacher (2000, 2003) ascertain a positive association between problematic Internet use and interpersonal problems such as social skill deficiency, loneliness, and social anxiety while Fisoun, Floros, Siomos, Geroukalis, and Navridis (2012) have found Internet addiction to be linked to increased chances of having used an illicit substance among Greek adolescents. With regard to the fundamental criterion of time consuming over the Internet use this varies across researchers, this have been defined for the present study  $\geq 4$ hrs/day according to the criterion set by Young (1997).

Moreover, Internet behaviour has been associated in several studies with personality traits such as shyness, extraversion, openness etc. With respect to personality, the Big Five Theory (Costa & McCrae, 1992; Goldberg, 1990) underpins the present study, referring to the five broad aspects (dimensions) of personality traits: extraversion (the broad dimension of extraversion encompasses such more specific traits as being talkative, energetic, and assertive); agreeableness (includes traits such as being sympathetic, kind, and affectionate); conscientiousness (includes traits such as being organized, thorough, and resourceful); neuroticism (includes traits such as being tense, moody, and anxious); openness to experience (includes traits such as having wide-ranging interests, and being imaginative and insightful).

Each of the Big Five factors is quite broad and consists of a range of more specific traits. The Big Five structure was derived from statistical analyses of which traits tend to co-occur in people's descriptions of themselves or other people. The underlying correlations are probabilistic, and exceptions are possible (Srivastava, 2011). The Big Five factors in this study are examined for their relation with excessive Internet use (see, Aims of the Study, below).

Possibly the most critical predictable psychological factor in *Internet addiction*<sup>3</sup> is the need to mitigate intense negative feelings (Chou, 2001; Morahan-Martin, 2005). Depression has been examined in several studies as a factor related to Internet addiction. It has been claimed that depression finds an outlet in the use of Internet communication yet again the findings appear to relate either positively to it (Ko, Yen, Chen, Chen, & Yen, 2008; Kraut et al., 1998; Young & Nabuco de Abreu, 2010; Young & Rogers, 1998) or otherwise, i.e., dependent on the extent to which participants are new/late users (Kraut et al., 2002) or which personality trait prevails (extraverts /introverts) in their reports (Kraut et al., 2002).

Furthermore, male users according to research so far on Internet addiction or misuse seem to be those addiction prone, as men usually find it more difficult to disclose themselves or share emotions and experienced difficulties on various issues (Addis & Mahalik, 2003; Dong, Zhou, & Zhao, 2011; Tsitsika et al., 2009).

With regard to the demographic factor of type of studies, students of Social and Humanistic Sciences are considered more eager to disclose themselves as their studies and future career profess to be close to human needs with empathy and care in contrast to “hard core” scientists of Exact Sciences who are mostly engaged in technological activities with a positivistic conception of the world around them and presumably lacking the experience and /or skills expressing to others their emotional self.

### Aims of the Study

The purpose of the present study was to examine the extent to which Internet addiction is found among young university students in Greece, and further to examine the hypotheses of the association between Internet addiction and certain personality traits – namely extraversion and openness –, while also to examine the association of depression to Internet addiction among the Greek students.

Based on the literature outlined above, the hypotheses investigated are set below:

1. Internet addiction and certain Big-Five personality factors i.e., extraversion and openness will be positively associated.
2. Main effects of gender as well as of faculty of studies (Exact Sciences vs. Social Sciences /Humanities) will be shown on a positive association between Big-Five personality factors with Internet addiction.
3. Is the relationship between the Big-Five personality factors and Internet addiction confounded by depression and other factors such as type of studies and gender?

## Method

### Participants

The participants of this study were 404 students (21.8% men) with a mean age 20 ( $SD = 2.5$ ). The students were randomly selected from five Universities and two Technical High Schools from different cities of the country in order to gain an increased variance of the behaviour studied. In terms of urbanization (place of residence from 0-18 years old) 42.5% were born and lived either in Athens or in Thessaloniki (major urban areas), whilst the remaining 57.5% lived in urban/ semi-urban and rural areas. Moreover, 28.4% of the participants were studying Exact Sciences, with the remainder studying Social Sciences and Humanities.

## Instruments

**A. Internet Addiction Test (IAT – Young, 1997).** — The questionnaire developed by Young comprises 20 items that measure mild, moderate, and severe levels of Internet addiction. The Internet Addiction Test is the first validated and reliable measure of addictive Internet use. The participant is asked to rate the questions by answering on the following scale: 1 = Rarely, 2 = Occasionally, 3 = Frequently, 4 = Often, 5 = Always. The mean rate  $\pm$  typical deviation of the score indicating the degree of Internet addiction is  $20 \pm 13$ . It was found that 8.9% of participating students were marginally addicted to Internet use with only 0.5% addicted.

Given the above results with regard to rating “addiction” and “marginal addiction”, for the rest of the study the two categories were merged into one entitled “addiction/marginal addiction”. Cronbach’s alpha calculated for Internet Addiction Test was 0.93.

**B. The Centre for Epidemiologic Studies CES-D Depression Scale (CES-D – Radloff, 1977).** — The Dutch version (Bouma, Ranchor, Sanderman, & Van Sonderen, 1995) of the scale was used, consisting of 20 questions in four sub-scales: Depressed Affect, Somatic retarded Activity, Positive Affect and Interpersonal Affect. CES-D has been developed as a tool to detect the symptomatology of depression in general populations, rather than as a scale to diagnose clinical depression. It is reliable, valid and functional even in large samples and other professionals apart from medical doctors can also use it, i.e., psychiatrists (Bakker et al., 2000). The scale has good psychometric qualities and can be used in research without major risk of error although it can never replace clinical diagnosis (Bouma et al., 1995). The CES-D scale displays satisfactory convergence validity compared with other scales of depression and its sensitivity exceeds 0.90, whereas its potential to detect non-depressive cases is over 0.55 (Radloff, 1977; Weissman, Scolomskas, Pottenger, Prusoff, & Locke, 1977).

With regard to the CES-D scale it was found that 9.0% of participants suffer high levels of depression, 18% medium levels, 18.3% low levels of depression whilst 54.6% were found to be at a normal level. The mean CES-D score  $\pm$  SD:  $16 \pm 10$ .

The internal consistency of the CES-D was evaluated using the Cronbach’s alpha coefficient which was estimated at: 0.88.

**C. The NEO-FFI Personality Inventory (Costa & McCrae, 1992) (adjusted in Greek by D. Dimitriadou and T. Stalika).** — The inventory includes scales measuring Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness. The NEO-FFI Personality Inventory consists of 60 questions rated on a 5-point Likert scale (0 = Absolutely disagree, 1 = Disagree, 2 = Neutral, 3 = Agree, 4 = Absolutely Agree). Originally, the Cronbach’s reliability reported by Costa and McCrae (1992) across the five factors was .78. In the present study, Cronbach’s  $\alpha$  were estimated respectively as follows:  $\alpha = .65$  to  $\alpha = .85$  (see Table 1).

Table 1

Mean and Default Range of the NEO-FFI Personality Inventory Sub-Scales

	Default Range	Mean $\pm$ SD	Minimum	Maximum
Neuroticism	0-48	$26 \pm 8$	7	44
Extraversion	0-48	$30 \pm 6$	12	45
Openness to Experience	0-48	$27 \pm 6$	13	44
Agreeableness	0-48	$29 \pm 6$	13	43
NEO-FFI Conscientiousness	0-48	$33 \pm 7$	9	48

## Statistical Analysis Procedure

Continuous variables are presented as mean  $\pm$  standard deviation while categorical variables are summarized as relative frequencies (%). Normality of distribution was evaluated using the Shapiro-Wilk test. Associations between categorical variables were tested using the Chi-Square test. The associations between the continuous and binary variables (i.e., gender) were evaluated using Student's t-test. Simple logistic regression models were used in order to assess the association between the five dimensions of personality with the probability of an adolescent being Internet addicted. Multiple logistic regression was used to evaluate the aforementioned association after checking for potential confounders. The results are presented as Odds Ratios (ORs) and 95% confidence interval (95% CI).

All reported  $p$  values were based on two-sided hypotheses and compared to a significant level of 5%. All statistical calculations were performed using SPSS software, version 19.0 (SPSS Inc, Chicago, IL, USA).

## Results

### Internet User Characteristics

Some contextual factors and qualitative elements concerning Internet use by Greek students are cited below in terms of descriptives. The vast majority of participants seems to own a computer and 85% of them have Internet access from home. Nearly half of them (47.1%) reported spending 1-2 hrs/day on the Internet, whilst 13.9% spend more than 4hrs/day. They mainly use the Internet for information (57.4%) whilst the second reason (42.0%) appears to be e-mail communication, 5.1% for shopping, 14.4% for chatting and 1.7% for gambling. About 10% reported that if they have a (technical) problem with Internet access it makes them feel "very" ("5" on a scale of 1-5) anxious and annoyed. Almost all the participants (98.8%) believe that excessive Internet use can cause addiction in the user. Participants further reported that excessive use comprised the main cause for reduced physical activity (50.9%), and finally they felt that receiving misleading and tempting adverts and information was a reason for feeling insecure on the Internet.

### Factors Associated With Internet Use $\geq$ 4Hrs/Day

Univariate Analysis showed that male participants as well as students of the Exact Sciences are more likely to exceed 4hrs/day of Internet use compared with females ( $\chi^2(1, N = 397) = 8.467, p < .004$ ) and Social Science students ( $\chi^2(1, N = 391) = 7.253, p < .007$ ). The first hypothesis concerning the impact of gender and faculty (type) of Studies seems to be verified. No statistically significant results were found with regard to length of use (measured in hrs/day) and Big-Five or Depression (Table 2).

### Factors Associated With Addiction/Marginal Addiction

The results of the Univariate Analysis conducted show that males ( $\chi^2(1, N = 395) = 38.317, p < .001$ ) as well as participants studying the Exact Sciences ( $\chi^2(1, N = 389) = 31.834, p < .001$ ) those displaying a low/high depression and mainly those with a high reported depression score are most likely to be related to addiction/marginal addiction compared with females, students attending Social/ Humanities Sciences and those with normal level of (no) depression score ( $\chi^2(3, N = 389) = 29.023, p < .001$ ). The above verified the second hypothesis. Furthermore, using Univariate analysis, a statistically significant relation was found between all Big-Five factors and addiction/marginal addiction ( $p < .005$ ) contributing no further to the discussion of the findings (Table 3).



Table 2

*Factors Associated With Internet Use for More Than 4 Hours/Day. Results from Univariate Analysis*

	< 4 hrs/day	≥ 4 hrs/day	(CriterionValue) p-value
<b>Gender</b>			
Men	88.1%	11.9%	$\chi^2(1, N = 397) = 8.467$ $p = 0.004$
Women	75.6%	24.4%	
<b>Type of Studies</b>			
Exact Sciences	77.5%	22.5%	$\chi^2(1, N = 391) = 7.253$ $p = .007$
Social & Humanities	88.2%	11.8%	
<b>NEO-FFI Personality</b>			
Neuroticism	26 ± 8	28 ± 8	$t(395) = -1.660, p = .098$
Extraversion	30 ± 6	30 ± 6	$t(395) = -0.424, p = .668$
Openness to Experience	28 ± 6	27 ± 5	$t(395) = 1.003, p = .317$
Agreeableness	29 ± 6	28 ± 6	$t(395) = -1.471, p = .142$
NEO-FFI Conscientiousness	33 ± 6	33 ± 6	$t(395) = -0.129, p = .898$
<b>CES-D</b>			
Normal	88.1%	11.9%	$\chi^2(3, N = 391) = 4.745$ $p = .191$
Low level of Depression	78.6%	21.4%	
Medium level of Depression	85.7%	14.3%	
High level of Depression	79.4%	20.6%	

Table 3

*Factors Associated with Internet Addiction. Results of Univariate Analysis*

	Normal use of Internet	Internet Addicted	(Criterion value) p-value
<b>Gender</b>			
Women	94.2%	5.8%	$\chi^2(1, N = 395) = 38.317$ $p < .001$
Men	70.6%	29.4%	
<b>Type of Studies</b>			
Exact Sciences	74.1%	25.9%	$\chi^2(1, N = 389) = 31.834$ $p < .001$
Social & Humanities	94.3%	5.7%	
<b>NEO-FFI Personality Inventory</b>			
Neuroticism	26 ± 8	29 ± 6	$t(393) = -2.236, p = .026$
Extraversion	30 ± 6	28 ± 5	$t(393) = 2.313, p = .021$
Openness to Experience	28 ± 6	26 ± 6	$t(393) = 2.296, p = .022$
Agreeableness	29 ± 6	27 ± 5	$t(393) = 3.135, p = .002$
NEO-FFI Conscientiousness	33 ± 7	30 ± 7	$t(393) = 2.641, p = .009$
<b>CES-D</b>			
Normal	95.7%	4.3%	$\chi^2(3, N = 389) = 29.023$ $p < .001$
Low level of Depression	88.4%	11.6%	
Medium level of Depression	73.7%	26.3%	
High level of Depression	82.9%	17.1%	

*Note.* Internet addiction is defined as Young score > 64.

Simple Logistic Regression analysis conducted with addiction/marginal addiction to Internet use as dependent variable and the Big-Five factors as independent showed similarly that all factors are significantly related to addiction/marginal addiction (Neuroticism  $p < .027$ , Openness  $p < .023$ , Agreeableness,  $p < .002$  Conscientiousness  $p < .010$  and Extraversion  $p < .022$ ) (Table 4).

Table 4

Simple Logistic Regression Regarding **NEO-FFI** Personality Inventory Subscales Relation to Internet Addiction

	OR	95% CI	p-value
Neuroticism	1.05	1.00-1.10	.027
Extraversion	0.94	0.89-0.99	.022
Openness to Experience	0.94	0.88-0.99	.023
Agreeableness	0.92	0.87-0.97	.002
<b>NEO-FFI</b> Conscientiousness	0.95	0.91-0.99	.010

Note. OR: Odds Ratio; CI: Confidence Interval.

Yet, a Multiple Logistic Regression conducted to examine the association between Big-Five and addiction/marginal addiction after controlling for potential confounders such as depression, gender, and faculty (type) of Studies, shown that only openness appears to remain significantly ( $p < .045$ ) correlated to addiction/marginal addiction to Internet use while neuroticism ( $p < .082$ ) correlation to Internet addiction disappears. No statistically significant correlation with the other factors was found. With regard to the other factors controlling for confounding results indicate that the association between Big-Five and Internet addiction is confounded by the degree of depression (medium level depression  $p < .001$  and high level depression  $p < .001$ ) and gender ( $p < .001$ ). Thus it would appear, that the probability of an adolescent being marginally addicted/addicted increases as the degree of depression increases (Table 5).

## Discussion

The percentage of Internet addiction among individuals is similar to these findings (1.2% Internet addiction) reported by Morrison and Gore (2010) in a study of college students in UK. With regard to Greek adolescents it appears to be on the same line as shown in the study of Tsitsika et al. (2009) in Greece where the prevalence of 1.00% reported addictive Internet use while borderline Internet use among the study population was 12.8%.

However, the percentage of addiction in the present study is much lower than in other Greek studies concerning adolescents (Fisoun et al., 2012; Siomos et al., 2012).

With respect to gender, male participants seem to exceed time of Internet use  $\geq 4$ hrs/day and this is again on the same line as the findings of other studies (Morahan-Martin & Schumacher, 2000; Tsitsika et al., 2009). The Pew Internet and American Life Project (2000) reports in details how women's use of the Internet differs significantly from that of men while Boneva, Kraut, and Frohlich (2001) by studying in depth this dimension, showed that gender and the roles associated with it influences the amount and type of Internet use and the satisfaction gained from that use. As cited in the literature review above males' difficulties in sharing thoughts and difficulties in interpersonal relationships make them at least hesitant to ask for help if not impossible to disclose themselves (Addis & Mahalik, 2003; Tsitsika et al., 2009).

The finding that participants studying the Exact Sciences and those displaying a medium/high depression score are most likely to be related to addiction/marginal addiction, might signify that male students of Exact Sciences more than others, use it excessively as a replacement for real life socialization and as source of support /connectivity (Morrison & Gore, 2010; Pew Internet and American Life Project, 2000). Dupuis and Ramsey (2011) found that lack of social support is associated with depression and Internet overuse indicating the weakness to develop real life networks with others.



Table 5

Multiple Logistic Regression Regarding **NEO-FFI** Personality Inventory Subscales, CES-D, Gender, Type of Studies With Relation to Internet Addiction

	OR	95% CI	p-value
<b>NEO-FFI Personality Inventory subscales</b>			
Neuroticism	1.06	0.99-1.14	.082
Extraversion	1.00	0.94-1.08	.824
Openness to experience	0.94	0.88-0.99	.045
Agreeableness	0.98	0.91-1.06	.602
<b>NEO-FFI</b> Conscientiousness	0.99	0.94-1.05	.947
<b>CES-D</b>			
Normal	1.00	-	-
Low level of Depression	3.03	0.95-9.67	.062
Medium level of Depression	5.79	1.98-16.94	.001
High level of Depression	6.42	1.46-28.13	.014
<b>Gender</b>			
Women	1.00	-	-
Men	6.50	2.39-17.69	$p < .001$
<b>Type of Studies</b>			
Exact Sciences	1.00	-	-
Social & Humanities	0.42	0.17-1.06	.067

Note. OR = Odds Ratio; CI = Confidence Interval.

With regard to Big-Five personality traits, results indicate that openness is one of the most prevalent personality traits related to Internet use. Items that loaded substantially on the factor “openness” include the “open” characteristics (e.g., artistic, curious, original, wide interests) highlighted by [Costa and McCrae \(1992, 1994\)](#). [Pervin & John \(1997\)](#) discuss the Big Five Personality traits in a case-study claiming that openness signals availability for an expanded range of new experiences. They are sensitive towards beauty, art and nature. This trait undoubtedly suits the profile of most young people. Being different from extraversion which encompasses specific traits as being talkative, energetic, and assertive the aforementioned finding indicates possibly the lack of strengths in standing on their grounds and being assertive the students. Neuroticism (which includes traits such as being tense, moody, and anxious) fades from the equation as medium and high level of depression “invades” in it and gender points to men as being more vulnerable. Openness to experience (which includes traits such as having wide-ranging interests, and being imaginative and insightful) seems to be strongly associated with the no-space and no-time features of the Net, yet prone to lose control of use.

[Morrison and Gore \(2010\)](#) interpret similar findings as that, through the Internet, shy people or those disappointed by real relationships adopt a form of behaviour desperately seeking an „outlet“ to the world „out there“ in order to control it, to subjugate it, so that it doesn’t swallow them up first.

An attempt to differentiate oneself from the suffocating cycle of the „here and now“ with whatever that means for the individual (differentiation from ones parents, from an inadequate spouse or a deficient relationship with ones partner, the complex relationship with ones numerous selves in the age of identity creation) needs space to be tried out and the Internet provides an entire universe to that end ([Skandami, Chroni, Stavropoulos, & Matsa, 2011](#)). Holding that Internet addiction consists not a biological disease entity nor a mental disorder but rather an autonomous disorder which cannot be viewed in the narrow limits of a clinical symptom ([Matsa, 2009](#)) a systemic-

approach psychotherapy emphasizing the narrative process would contribute in ameliorating any symptoms of loneliness, anxiety and overall depression.

Often, overuse of Internet depicts the needs that young people strive to meet searching for emotional bonds, substantial social interaction and identity forming processes in surfing in the Internet, browsing sexually gratifying websites and online communities. The lonely are more likely to use the Internet to modulate negative moods (Morahan-Martin & Schumacher, 2003). Even if people with IAD show impaired executive control ability than the normal group as to report that their Internet use is causing disturbances in their daily functioning Dong, Zhou, and Zhao (2011) claim, being nurtured and enjoying empathy and care would help them cope with their impairment.

Considering that our current findings seem to be compatible to the findings of other studies both in Greece and in other countries, indicates quite consistently that excessive usage of Internet is more prevalent to people with low communication and socialisation skills which in turn deprive them from seeking real life contacts and forming meaningful relationships. As pointed out by Morrison and Gore (2010) the Internet provides an alternative mean of contact with the world „out there“, which, in a way compensates for the shortcomings of their difficulties to form contacts and engage with the real world. This alternative method of socialisation although useful in the short term cannot substitute reality and as a result it can contribute to subsequent development of abnormal patterns of communication and behaviour that potentially can lead to depression. By recognising the potential negative consequences of Internet addiction, especially amongst university and college students, from a psychotherapeutic perspective, these factors should be included on the assessment of any student that seeks psychological help from university services. It is anticipated that interventions that would address these difficulties in the form of individual or group training on social and communication skills would furnish students with skills that on the one hand would facilitate real social contacts and on the other hand the usage of the Internet in their lives will tend to serve mainly the purpose of learning and communication for instances where real life contact is not possible.

In the context of individual counselling/psychotherapy a systemic approach applied would lay over procedure in terms of “compliance” (meaning to establish bounds that the addicted lacks of) as well as over process developments: This would include a) a contract agreed by both the therapist and the client b) respect for the client’s needs and potential at the time of therapy, also acknowledging his weaknesses c) not labelling disorders – though these could be easily detected, as well as co-morbidity – when other more urgent issues such as human bonding needs to be worked out and respect for time consuming processes d) stability of presence e) encouraging the narration of episodes/ memories expressed in detailed emotional accounts as well as speaking of dreams in order to feel and conceive the importance of emotional reflections in human relationships f) eventual self-disclosure from the therapist to empower the “human face” of interaction and *deflect the false feeling of mitigating/controlling things* as the client usually does in his Internet interactions g) tolerating relapses h) flexibility in tasks i) book or film suggestions (as a technique implying the sharing of common things), aimed at *social skills* (“people in real life share things, ideas, feelings”) j) finally, setting tasks (correspondingly difficult) that give the client a clear target to reach, help him relatively easily feel he has achieved something in matters of use for his life / therapy.

All the above would promote bonding with significant other/others in order to find a meaning in real life rather than in virtual, often misleading or even deceiving, the latest due to the no limits space and the unknown intentions of distant others.

## Limitations

A possible limitation of this study is that it should be taken into account the type of Internet use, when examining Internet addiction, whether this is for fun/leisure/hobby (i.e., chat, games, e-mailing, information seeking, blogging) or work demands/promotion (i.e., blogging, writing reports, papers, studies, scientific work). Another limitation is that considering the sample regarding male participants this was not as much as it was designed in the first place to be. Therefore, an expansion of the male participants should be made in a future relevant study.

## Notes

- 1) As Sproull and Kiesler (1986) note “...when social context clues are weak, people’s feelings of anonymity tend to produce relatively self-centered and unregulated behavior” (p. 1495).
- 2) Walther (1992) claims that “given sufficient time and message exchanges for interpersonal impression formation and relational development to accrue, and all other things equal, relational communication in later periods of CMC, and face-to-face communication will be the same (p. 69).
- 3) The terms *Internet addiction*, *Internet abuse/misuse* are both used according to the references used in the paper; the author chooses to use the term *Internet addiction* so as not to evoke confusion in the reader because of the psychometric tool used in this research.

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