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RUNNING HEAD: Internet Behavior

Summer 2006 (06/07 Program)

Psychosocial Characteristics Related to Internet Behavior

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### Abstract

The idea that one can suffer from Internet Addiction (IA) is currently being debated in the field of psychology, with mounting evidence to suggest that such an addiction is possible. The goal of this study is to investigate whether several common psychosocial characteristics are associated with IA behavior. Forty-five people participated in the study by completing a battery of questionnaires on IA, personality, and aspects of psychosocial adjustment. Significant correlations were found between IA behavior and self-esteem, loneliness, age, conscientiousness, and sleep deprivation. Such findings suggest that people who report high amounts of IA behavior may be experiencing significant psychosocial impairments.

## Introduction

In this day and age the internet is seemingly ever-present, with the estimated number of U.S. adult internet users approaching 140 million (Nielsen//Netratings, 2006). Although people experience many benefits with internet access, an increasing number of problems have been reported amongst those who engage in excessive use. Studies have shown that neglect of academic, work, and domestic responsibilities, as well as financial problems, can result from extreme internet use (Widyanto & McMurrin, 2004). Since its overuse can cause such significantly impairing problems, many have argued that the internet could be a focus for addiction.

Psychological evaluation of purported “Internet Addiction” (IA) is a very new field. Currently, the *Diagnostic and Statistical Manual of Mental Disorders (4th edition, text revision)*; American Psychiatric Association, 2000) does not list Internet or Computer Addiction as a disorder. However, there are several psychologists who are campaigning for IA to be recognized as a bona-fide psychological disorder. In support of this movement, research is ongoing to identify what the symptoms of IA and its causal factors are.

One of the leading researchers in the field is Kimberly Young, who wrote *Caught in the Net* (1999) and currently is the director of the Center for Online Addiction, which she founded in 1995. Young describes many symptoms of IA, including: lying to friends and family about time spent online, jeopardizing or loss of a significant relationship due to time spent online, jeopardizing or loss of a job, educational, or career opportunity due to time spent online, failed attempts to cut back on the amount of time spent online, and constantly thinking about the next time you will be online (Young, 1998). Young further

argues that accessibility, control and excitement are the three key factors in developing IA (Young, 1998). Easy access to the internet in turn provides access to gambling, shopping, pornography, and gaming, hassle free, day or night allowing for immediate gratification and satisfaction of related impulses. Control literally refers to the increase in personal control that internet users experience when they make online decisions. For example, brokers are no longer needed when people use the internet to control their investing. Young suggests that this ability to take control over one's own assets could turn into a major obsession amongst some individuals. The excitement factor refers to the frequent reinforcement that is inherent in many internet activities (e.g., instant messaging with an online acquaintance), as well as the physical rush that is experienced upon winning a game or bet or making a purchase (Young, 1998).

John Suler has also undertaken research which examines the characteristics of IA through the investigation of virtual online communities known as palaces. Suler defines IA somewhat differently, equating it with a dissociation between on- and offline behavior. He proposes that for such individuals the internet becomes a "walled-off" substitute or escape from their real life (Suler, 2004). Internet activity in such cases fulfills the psychological and intrapersonal needs that an individual could not attain in real-life. Suler proposes that the more needs being addressed by internet activities the greater the hold the internet will inevitably have on the person (Suler, 1999)

#### *Aims of Current Study*

What type of person is unable to get their psychosocial needs met through real-life activities and would prefer to find satisfaction of their needs online? Are there certain personality characteristics that are associated with people addicted to the internet?

The current study aims to discover if there are certain personality traits or other psychosocial characteristics associated with greater risk of IA.

*Hypotheses.* It was hypothesized that 1) there would be a negative correlation between a measure for IA and self-esteem, and dating and assertion skills. It was also hypothesized that 2) there would be a positive correlation between IA score and sleep deprivation, social phobia, and loneliness. Other hypotheses included: 3) percentage of online friends compared to “real-life” friends would be positively correlated with IA scores, 4) age would be negatively correlated with IA score, 5) participants that reported playing Massively Multiplayer Online Role-Playing Games (MMORPG’s) would score higher on IA than those that did not, and 6) neuroticism would be positively correlated with IA score, while conscientiousness would be negatively correlated with IA score.

## Methods

### *Participants*

The sample for the study consisted of 46 individuals, 75% of which were male. The average age was 29.4 yrs (SD = 10.6 yrs) and ranged from 18 yrs to 67 yrs. Only a small percentage of the sample (8%) reported themselves as having an ethnicity other than white/Caucasian; 24% reported still being in high school or college, while virtually all other participants reported being employed in various careers. Other descriptive statistics regarding the sample are presented in Table 1.

The participants were recruited through advertisements on public website forums, word of mouth, and by fliers posted throughout the UMR campus. A prize drawing for ten \$20.00 dollar gift certificates to Amazon.com was offered as an incentive to participate.

### *Design and Materials*

An online survey was used to gather data regarding participants' demographic information, online activities (i.e., how the participant spent most of their time online, and how many hours per week they spent online), friendship behaviors, and psychosocial characteristics including personality, social phobia, sleep deprivation, internet addiction, assertion and dating skills, self-esteem and loneliness. Participants gained access to the survey via a web page they were directed to through advertisements that fully described the nature of the survey. Completion of the survey was anonymous except for contact information to facilitate the prize drawing.

### *Measures*

To measure IA symptoms, the 20-item version of the *Internet Addiction Test* (IAT; Young, 1998) was used. Scale scores range from 20 to 100. A score of 49 or below is considered to be normal (or experiencing only mild problems); a score of 50 to 79 is considered problematic, while any score above 80 is indicative of significant lifestyle impairment caused by internet behavior. An example item from the scale is "How often does your job performance or productivity suffer because of the Internet?" Each response is given using a five point Likert scale (1 = *Rarely*, 2 = *Occasionally*, 3 = *Frequently*, 4 = *Often*, 5 = *Always*). The development of the IAT was initially modeled on a measure of compulsive gambling (Widyanto & McMurrin, 2004). Coefficient alpha derived from this sample was adequate ( $\alpha = 0.77$ ).

The *Social Avoidance and Distress Scale* (SADS; Watson & Friend, 1969), was used to measure participants' level of distress in social situations. Internal consistency has been found to be very high ( $\alpha = 0.94$ ), and it has been repeatedly found to have good

convergent and discriminant validity (Leary, 1991). The SADS consists of 28 true/false items; high scores on the SADS are associated with social avoidance and low confidence in social relationships. SADS scale sample items are, “I feel relaxed even in unfamiliar situations,” “I try to avoid talking to people unless I know them,” and “I tend to withdraw from people.”

Personality traits of participants were measured using the 44-item *Big Five Inventory* (BFI; John & Srivastava, 1999). This inventory measures the widely used five-factor personality dimensions (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism). Each of the five subscales has been shown to be internally consistent, (Extraversion  $\alpha = 0.88$ ; Agreeableness  $\alpha = 0.83$ ; Conscientiousness  $\alpha = 0.81$ ; Neuroticism  $\alpha = 0.83$ ; Openness  $\alpha = 0.79$ ; John & Srivastava, 1999). Example items from the scales include: “Tends to find fault in others” [Agreeableness], “Is talkative” [Extraversion], and “Can be somewhat careless” [Conscientiousness]. Participants respond to items on a five point Likert scale (1 = *disagree strongly*, 2 = *disagree a little*, 3 = *neither agree nor disagree*, 4 = *agree a little*, 5 = *agree strongly*), which are then summed to derive trait-level scale scores.

Sleep deprivation was measured using the 17-item questionnaire, *How Large is Your Sleep Debt?* (Coren, 1996). Example items from the scale include, “Do you feel getting out of bed in the morning is sometimes a struggle?” and “Do you sometimes sleep through the alarm?” Responses are *yes* or *no*, and the total score is the sum of all *yes* answers (range = 0 – 17). A score of less than 4 indicates adequate sleep; impairment is categorically described for higher scores up to 14 indicating serious, clinically significant



sleep loss. Analysis using the current sample showed internal consistency was adequate ( $\alpha = 0.73$ ).

The *Rosenberg Self-Esteem Scale* (RSE; Rosenberg, 1965) was used to measure participants' global self-esteem, and is a 10-item self-report measure. Example items from this scale include "I certainly feel useless at times" and "I take a positive attitude with myself." Items are rated on a four point Likert scale (4 = *strongly agree*, 3 = *agree*, 2 = *disagree*, 1 = *strongly disagree*). Scores range from 10 to 40, with higher scores indicating more positive self-regard. According to Rosenberg (1979), the RSE has yielded test-retest correlations ranging from  $\alpha = 0.85 - 0.88$ .

Loneliness was measured using the *UCLA Loneliness Scale* (Russell, 1996). The measure consists of 20 items. "How often do you feel part of a group of friends?" and "How often do you feel you are no longer close to anyone?" are examples of item used on the scale. Responses to each phrase are based on a four point Likert scale (4 = *never*, 3 = *rarely*, 2 = *sometimes*, 1 = *always*). Scores can range from 20 to 80 with higher scores indicating greater loneliness. This scale has shown to be highly reliable, both in terms of internal consistency ( $\alpha = .89$  to  $.94$ ) and test-retest reliability over a 1-year period ( $r = .73$ ).

Assertion and dating behaviors were skills using the *Dating and Assertion Questionnaire* developed by Levenson and Gottman (1978). The questionnaire has two sections. The first section contains a list of nine short phrases to which the participant must respond on a four point Likert scale (4 = *I never do this*, 3 = *I sometimes do this*, 2 = *I often do this*, 1 = *I do this almost always*) that deals with how often they would perform

the behavior described by the phrase. An example is “Assume a role of leadership.” The second portion consists of nine short scenarios with which a person may be confronted. An example item from the second portion is “You go out on a date with someone for the first time. You have enjoyed this date and would like to see your date again. The evening is coming to a close and you decide to say something.” The participant must respond on a similar 5-point Likert scale reflecting their comfort level with each scenario. High scores indicate greater difficulty with dating and assertion behaviors. This form has shown good test-retest reliability (six week) and internal consistency for both dating and assertion subscales ( $r = .70$ ,  $\alpha = .92$ ; and  $.62$ ,  $\alpha = .85$ , respectively) .

#### *Procedure*

Participants were directed by study advertisements to a webpage that contained a statement that described the purpose of the study, directions on how to complete the study, informed consent information, information about the prize incentive, and contact information if they had any problems or questions regarding the study. After reading the webpage, participants followed a web link to the online survey, “Internet Behavior.” The survey began with a reminder of informed consent and instructed the participant that their continuation with the survey indicated consent to participate. The survey took approximately 20 min to complete, after which participants submitted their information by clicking on the webpage’s “submit” button. These research procedures were approved by the institutional review board of the University of Missouri-Rolla.

#### *Data Analytic Strategy*

A priori and post hoc hypotheses were tested using Pearson correlations, which illustrated the strength and direction of relationship (i.e., positive or negative) between the IAT score and all dependent variables.

### Results

As expected, statistically significant, negative correlations were discovered between the IAT score and self-esteem [ $r(43) = -0.35, p < .05$ ], age [ $r(41) = -0.46, p < .01$ ], and conscientiousness [ $r(43) = -0.40, p < .01$ ; see Figures 1 - 3]. However, no significant correlation was discovered between IAT score and dating and assertion skills [ $r(43) = -0.06, ns$ ].

A positive correlation was found between IAT score and both sleep deprivation [ $r(43) = 0.54, p < .01$ ] and loneliness [ $r(43) = .37, p < .05$ ; see Figures 4 - 5]. Marginally significant correlations were discovered between IAT score and both ratio of on-line friends to offline friends, [ $r(42) = .27, p = .08$ ] and as a MMORPG player, [ $r(43) = .25, p = .09$ ]. However, no significant correlation was found when IAT score was compared to social phobia or neuroticism [ $r(43) = .15$  and  $.18$ , respectively, both *ns*]. Although not explicitly stated in the a priori hypotheses, time spent online (hours per week) was compared to the IAT score as a post hoc analysis. This was conducted in order to gauge how closely related hours spent online was related to addictive tendencies. Not surprisingly, a positive correlation was found between hours spent online and IAT score, [ $r(43) = .509, p < .01$  (See Figure 6)].

### Discussion

The goal of this study was to determine if specific psychosocial characteristics were correlated with internet addiction, and several findings were illustrative in this

regard. The hypothesis that higher IA would be associated with both lower self-esteem and dating and assertion skills was partially supported by the findings. Support was also garnered for the hypothesis that loneliness is positively correlated with IAT. These findings show that increase in internet addictive behaviors is related to specific, common measures of psychological adjustment.

However, the nature of these findings makes it impossible to conclusively assert that addiction to the internet is responsible for lower self-esteem and higher loneliness; the opposite may be true: those who suffer from loneliness and low self-esteem might be increasingly drawn into the virtual world of the internet to find social comfort and safety. This idea is supported by Suler's (2004) characterization of why the internet can be addictive: it may be a place where people fulfill needs that they are not fulfilling in their offline lives through companionship in virtual relationships or self-esteem bolstering "role-play" (of various sorts) with other internet users.

Findings also supported the hypothesis that increased conscientiousness would correlate negatively to IAT score. Kimberly Young suggests that one reason people become addicted to the internet is that they receive immediate gratification of their impulses (1998). Conscientious individuals who tend to have a high level of impulse control would probably be less likely to fall prey to such urges, and thus may have some natural resistance against IA.

Age was also shown to be related to IA, as predicted. This is most likely due to the fact that younger people simply spend more time online. Individuals who have careers or full-time jobs would most likely not be able to sustain both an internet

addiction and a career. On the other hand, high school and college students have schedules that could better allow excessive use of the internet, leading to symptoms of addiction. This is not to say that people who work full-time cannot become addicted; however, it is a possible explanation for why more young people develop IA characteristics than older individuals.

As predicted sleep deprivation was positively correlated to IAT score. Are sleep deprived people more susceptible to IA, or do behaviors associated with IA cause sleep deprivation? A definite answer is not at hand, but the most likely scenario is that as IAT score increases—along with the associated behaviors of IA, including excessive online activity—sleep is sacrificed. The associated finding that number of hours spent online per week positively correlates with IAT is an important because it suggests that time spent online by itself could possibly be a good predictor of IA risk.

It was thought that individuals who had a higher percentage of online friends compared to offline friends and those that played MMORPG's would report higher IA scores than other peers. However, only marginally significant correlations were found. This hypothesis was based on the belief that both online friendships and MMORPG's would reinforce one's desire to spend increasing amounts of time online and therefore increase addictive behavior. One reason why the correlation between online friendship and IAT score may not have been as high as expected is that "friendship" was not explicitly defined in the survey. Different people have varying definitions of friendship and, accordingly, probably reported their friendship relationships in disparate ways. One possible reason why only a weak relationship was observed between MMORPG playing and IAT score could be that behaviors such as gambling, chatting, and viewing

pornography could also provide the same amount—if not more—stimulation to an internet user than playing an MMORPG; such alternate behaviors might have been prevalent in the non-MMORPG sample.

Some hypotheses were not supported by the data. It was proposed that correlations would exist between IAT score and dating and assertion skills, social phobia, and neuroticism. It was thought that people who scored low on such measures, lacking social confidence and being more susceptible to depression and anxiety, would seek out the anonymity of the online world to express themselves and to engage in relationships without the threat of embarrassment or rejection inherent to offline relationships.

One possible explanation for the lack of findings concerning dating and assertion behaviors, social phobia, and neuroticism is that the full range IAT scores was not represented in this sample. According to Young, in order to have significant lifestyle impairment due to internet behavior one must score an 80 or above on the IAT (1998). The highest score recorded in this study was 58. Accordingly, few of the participants in the study were likely to be experiencing widespread impairment—whether related to social phobia, an otherwise highly anxious nature, or a lack of dating or assertion ability—making correlation with IA statistically unlikely for these variables. However, other people with IAT scores in the range of 80 to 100—suggesting clinically significant maladjustment due to internet usage—might very well experience problems with dating and assertion behaviors, social phobia, and neuroticism. The sample in this study may simply not have been “addicted enough” to detect this kind of impairment.

*Limitations*

Problems with the study included the small sample and that none of the participants' IAT scores fell within the IAT range indicative of significant impairment. With a larger sample size, such scores might emerge and provide data points to fully evaluate how psychosocial characteristics are associated with IA behaviors. Another limitation may have been the study design itself. Potential participants that used the internet vary rarely or only for non-recreational purposes were unlikely to take part in the study due to the nature of its advertisements (e.g., posted in online gaming forums). On the other hand, possible participants that used the internet excessively could have been so engaged in their online activities that put energy and time into completing the survey was unappealing. Therefore, the study design may have excluded important participants at either end of the IA spectrum.

*Future Direction*

In terms of further study, collection of data is still ongoing to obtain a larger sample. With a larger sample, several new areas to explore would include 1) how does ethnicity, dedication to specific online activities, and romantic relationship involvement affect a person's tendency to exhibit IA behaviors and 2) how are internet addictive behaviors related to academic/school performance.

A larger sample would also provide greater statistical power that would allow better means of data analysis, including multiple regression, which allows inference

regarding the causality of relationships. This method could hopefully be employed as more data is collected and sample size increases.

Improvements on experimental design could be made. Implementation of a longitudinal design would also help establish causal relationships between IAT score and dependent variables, instead of relying solely on correlational data. Also, recruitment techniques could be improved to better tap into underrepresented populations in the study.

### *Summary*

Individuals that experience higher levels of IA symptoms also experience higher levels of loneliness and sleep deprivation as well as lower levels of self-esteem, and tended to be younger than those with lower IAT scores. Variance in hours spent online, and percent of online friends compared to offline friends could also occur based on level of IA. The finding that certain psychosocial impairments and friendship behaviors were linked to IAT score is important since it reinforces the contention that IA can be quite impairing thus, and may be worthy of being officially recognized as a psychological disorder.



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Table 1

*Sample Descriptive Statistics*

	<i>N</i>	Minimum	Maximum	<i>M</i>	<i>SD</i>
Online hours/week	44	5	41	20.43	10.81
On-offline friends	44	0	1	.39	.31
MMORPG player	45	0 (= No)	1 (= Yes)	.38	--
Self-Esteem	45	10	39	31.20	5.71
Social phobia score	45	0	28	10.78	7.80
Extraversion	45	10	37	24.19	6.68
Agreeableness	45	15	39	27.66	5.61
Conscientiousness	45	10	44	30.48	7.03
Neuroticism	45	9	40	22.45	7.34
Openness	45	25	47	36.36	4.44
Sleep deprivation	45	0	15	6.62	3.39
Assertion skill	45	13	39	29.62	5.94
Dating skill	45	11	37	25.67	6.35
Loneliness Total	45	23	77	44.46	11.69
IAT score	45	13	58	34.80	9.75

*Note.* "MMORPG" = Massively Multiplayer Online Role Playing Game.  
 "IAT" = Internet Addition Test (Young, 1998).

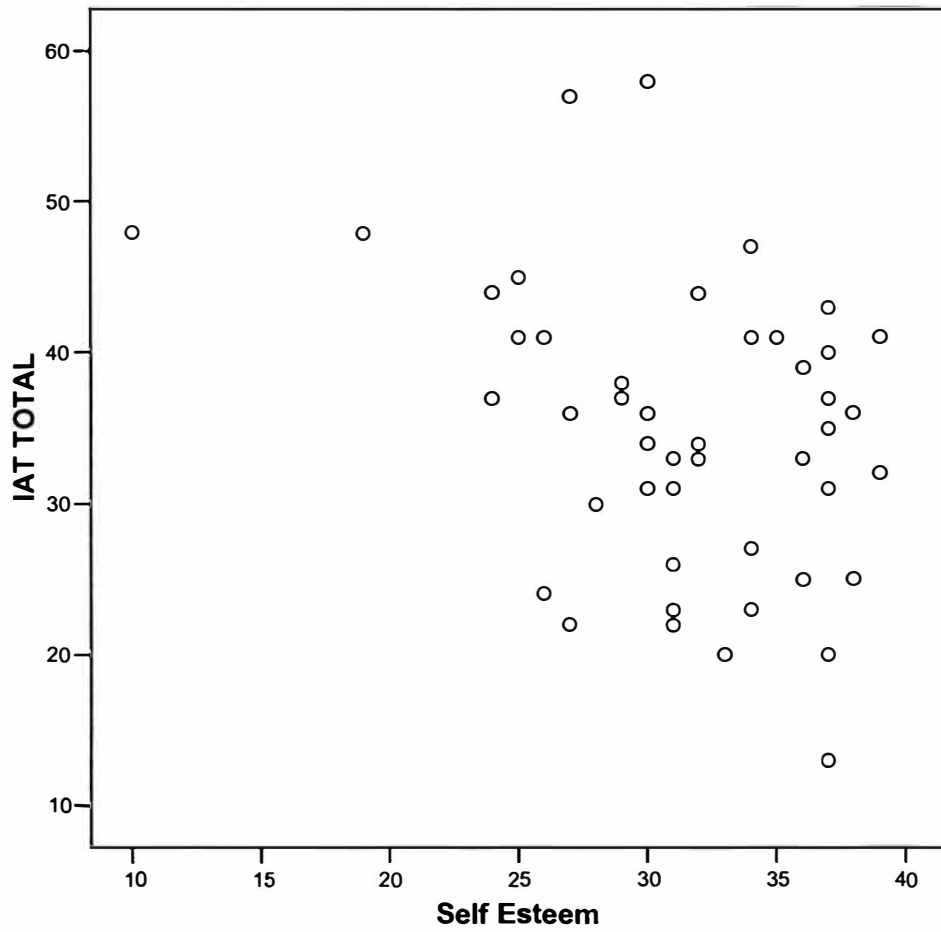


Figure 1. Relationship between *Internet Addiction Test* (IAT; Young, 1998) and *Rosenberg Self-Esteem Inventory* (Rosenberg, 1965).

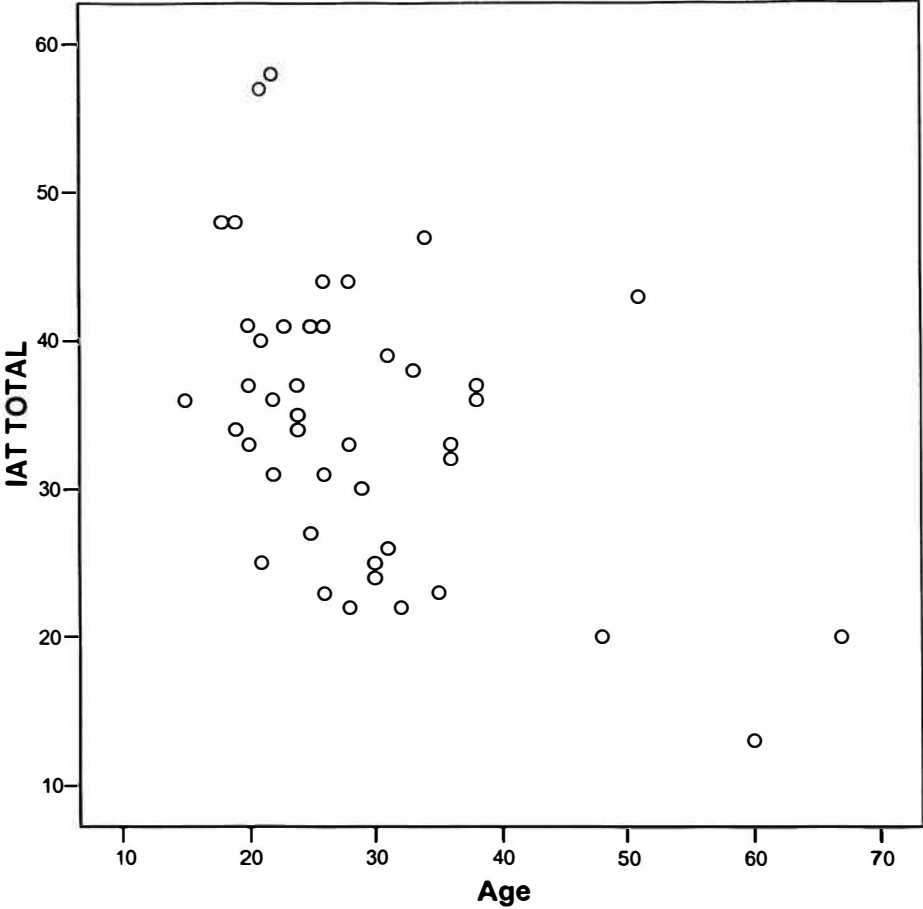
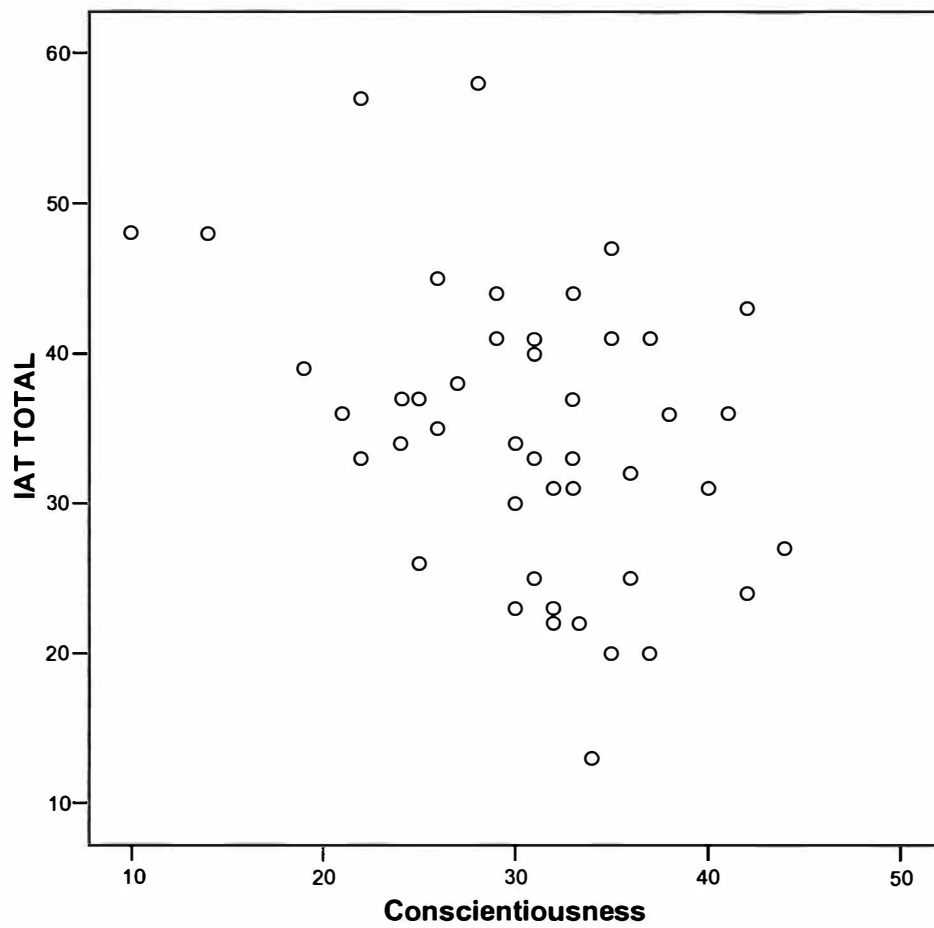


Figure 2. Relationship between *Internet Addiction Test* (IAT; Young, 1999) and Age.



*Figure 3.* Relationship between *Internet Addiction Test* (IAT; Young, 1999) and *Conscientiousness* (44-item BFI; John & Srivastava, 1999).

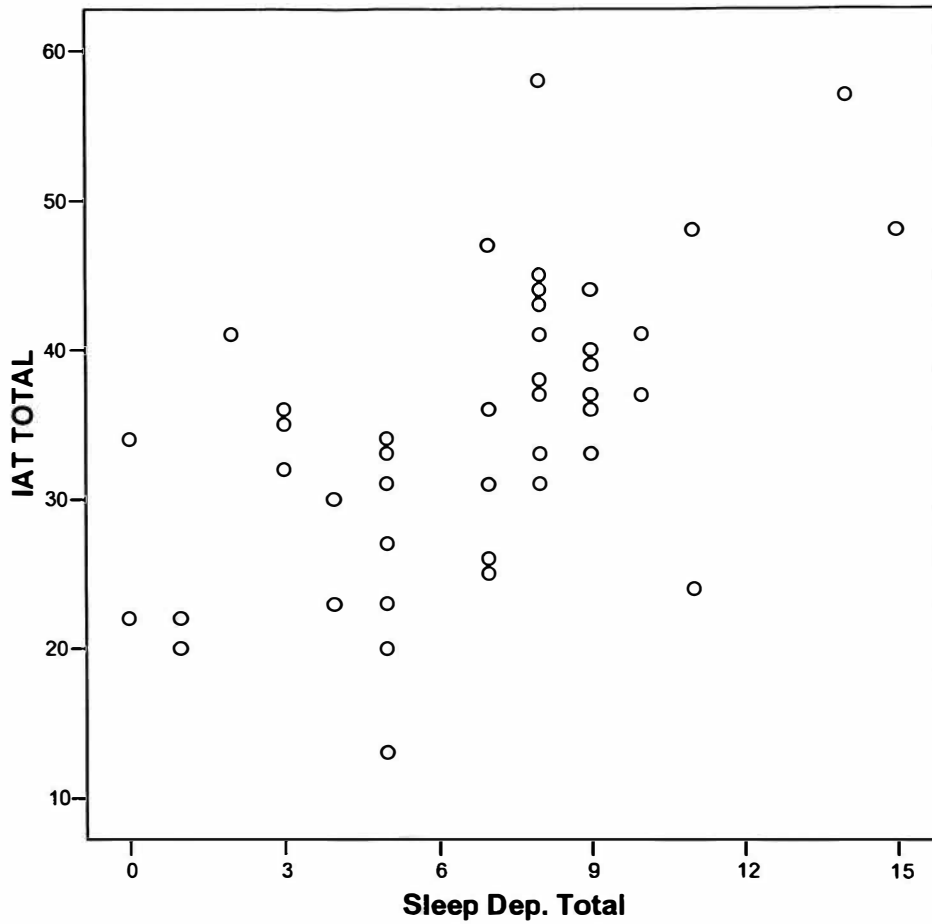


Figure 4. Relationship between *Internet Addiction Test* (IAT; Young, 1999) and *Sleep Deprivation Inventory* (*How large is your sleep dept?*; Coren, 1996).

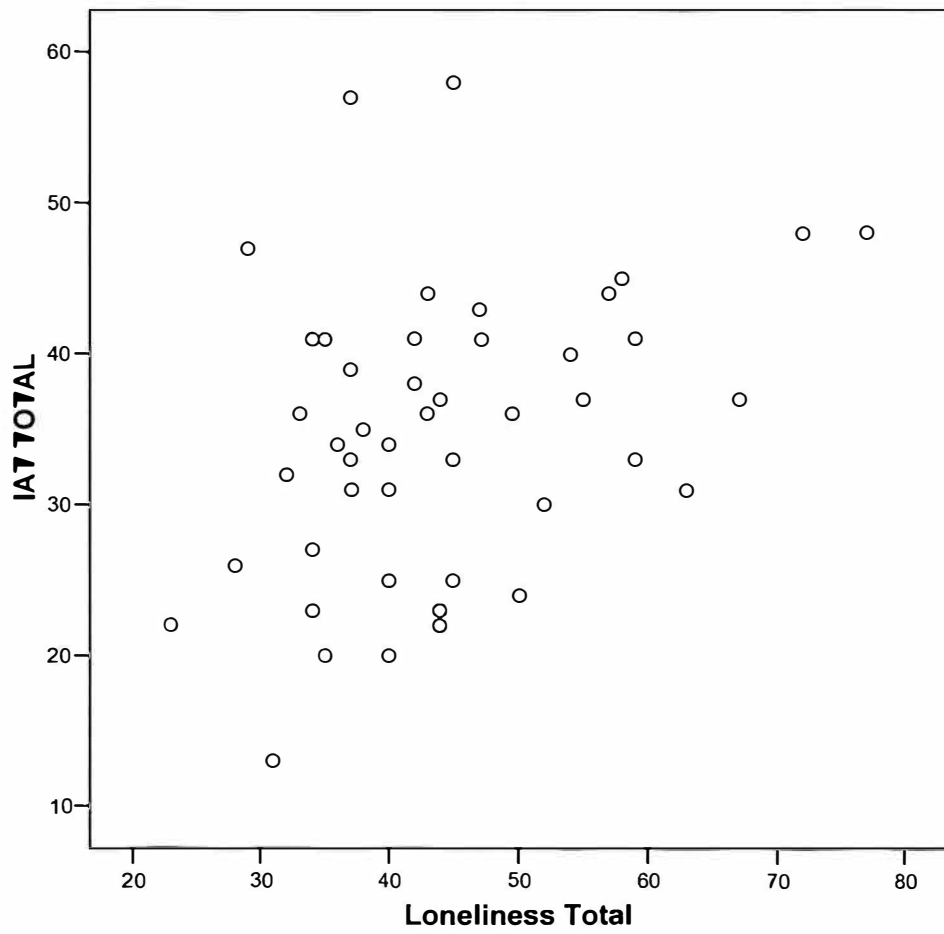


Figure 5. Relationship between *Internet Addiction Test* (IAT; Young, 1999) and *UCLA Loneliness Scale Inventory* (Russel, 1996).



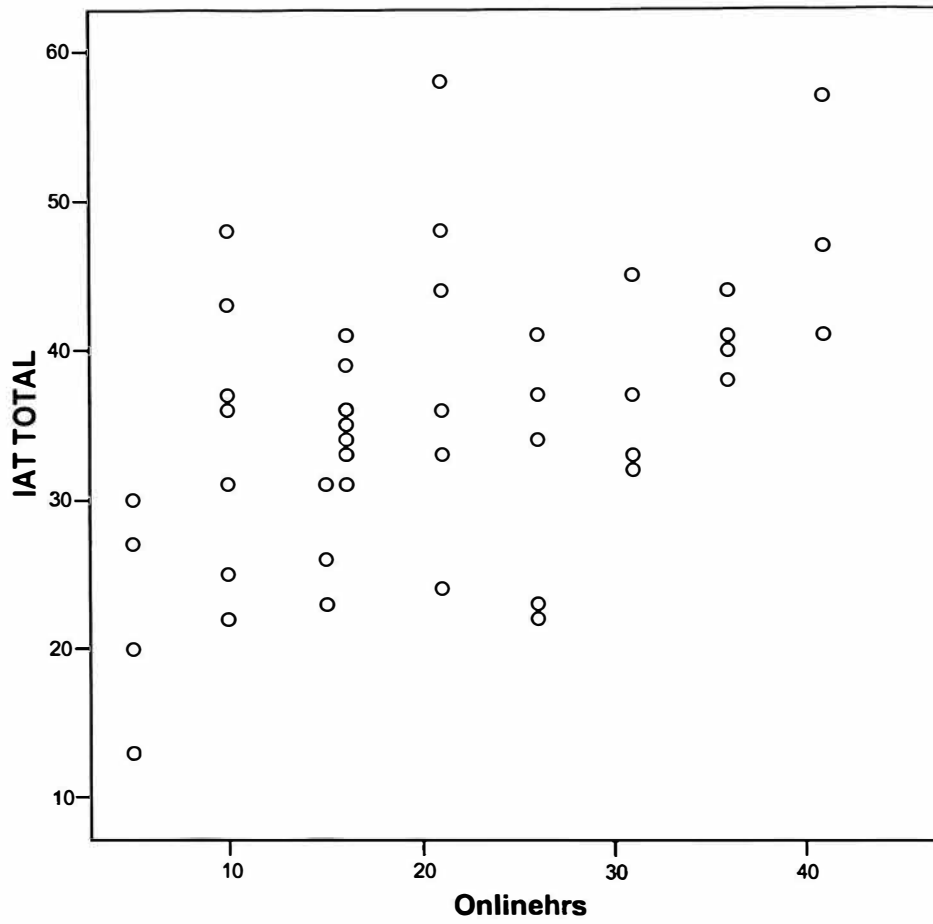


Figure 6. Relationship between *Internet Addition Test* (IAT; Young, 1999) and Hours Spent Online (per week).