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A study of relationship between meta-cognitive skills (wells) and internet addiction with academic achievement in students of Islamic Azad University, Hamedan branch 2012-2013

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ABSTRACT

The aim of the present research is to study the relationship between "internet addiction" and "meta-cognitive skills" with "academic achievement" in students of Islamic Azad University, Hamedan branch. This is descriptive – correlational method is used. To measure meta-cognitive skills and internet addiction of students Wells questionnaire and Young questionnaire are used respectively. The population of the study is students of Islamic Azad University of Hamedan. Using proportional stratified random sampling the sample size was 375 students. The results of the study showed that there is no significant relationship between two variables of "meta-cognition" and "Internet addiction"(P >0.184).However, there is a significant relationship at 5% level between the two variables "meta-cognition" and "academic achievement" (P<0.002). Also, a significant inverse relationship was observed between the average of two variables of "Internet addiction" and "academic achievement" at 5% level (P<0.031). There is a significant difference in terms of meta-cognition among the groups of different fields of studies. Furthermore, there is a significant difference in terms of internet addiction scores among students belonging to different field of studies. In explaining the academic achievement variable variance of "meta-cognition" and "Internet addiction" using combined regression, it was observed that the above mentioned variables explain 16% of variable variance of academic achievement simultaneously.

Key words: meta-cognition, internet addiction, academic achievement

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INTRODUCTION

Academic success or failure is the most important concern in each education system. Among major concerns of professors, university education officials, students and their family is academic achievement and prevention to educational dropout. The opposite of academic achievement is educational dropout, which has important influence on the fate of a person and also imposes high costs to families and society. Academic achievement refers to learned or acquired ability in educational issues which is measured by standardized or teacher – made tests. Generally, this term refers to the individual's learning amount in the school, so that can study them in the general categories related to individual differences and education system [17]. Academic achievement demonstrates access level to educational goals and standards [13]. This concept has various aspects and is related to many factors [17]. One of

factors with direct relation to the academic achievement is cognitive and metacognitive skills. Meta cognitive skills play an important role in a variety of cognitive activities including verbal information exchange, verbal persuasion, understanding and comprehension, reading, writing, attention, perception, memory, language learning, problem – solving, social cognition, and various forms of self – learning and self – control. Meta cognitive knowledge refers to the beliefs and theories that people have about their self – understanding such as beliefs about the meaning of certain types of thoughts and belief about effectiveness of memory and cognitive control [21].

Fuche and Lamport(2011) argue that teaching metacognitive strategies to students cause to improve academic achievements. So people can strengthen their metacognitive skills to realize educational achievement. Vafa (2003) and Young (2009) also demonstrated that metacognitive strategy training has a positive effect on academic achievement.

Trabanker and Rynerson (2004) also stated that metacognitive skills is a separating factor between two groups of successful and unsuccessful students. On the other hand, one of the factors that threaten individual educational achievement is a problem called internet addiction which today grows a lot and find a wider range every day. In recent years, there are reports based on addictive internet users [19]. Although many people cannot accept the concept and definition of internet addiction and only recognize drug addiction and alcohol dependency, but psychology and humanities experts introduce this problem as an addiction. In some studies, internet addiction has been introduced as one of the factors to prevent academic progress. Anderson (1997) studied the effects of internet addiction on the students and found that they have educational problems as a result of excessive use of the internet [9].

Cooley (2003) states that when different habits becoming in the form of addiction they can have adverse effects on the various aspects of life. By ignoring economic, social and physical responsibilities, addiction leads to harm to individuals [19]. Urzak (1999) found that people, who are susceptible to Internet addiction become simply tired and dejected, they are lonely, timid, and shy, suffered from depression or other forms of addiction [3]. This study aims to determine relationship between Internet addiction and metacognitive skills in academic achievement.

MATERIALS AND METHODS

This study is correlation type and method of collection data is descriptive and correlation. The statistical population includes 14,354 students of Islamic Azad University, Hamedan branch. To determine sample size was used Cochran's formula, sampling error of sample size was 375 at the level of 0.05. Using relative random sampling method each of the colleges was considered as a special class. And given to the ratio of sample size to the statistical population size, it was determined the ratio of the studied sample size in every school to students attending each college.

Instruments

Metacognition questionnaire made by Wells and Cartwright Hinton, with 30 items was used. Each subject response these items by a four – grade scale (from I'm disagree to I'm very agree). This questionnaire has five components of positive beliefs about worry, cognitive trust, cognitive self – knowledge, negative beliefs about uncontrollability of thoughts and beliefs concerning the need for mind control. MCQ – 30 questionnaire has acceptable validity and reliability. The obtained reliability by Cronbach alpha for the subscales ranged from. /72 to. /93 and the reliability of retest have been reported for the total score, after 22 to 118 days, was. /75 and for the subscales. /59 to. /87 [8]. The correlation of the whole scales with trait anxiety scale /43, and the correlation of subscales ranged from. /58 to. /87. In the Wells meta cognition questionnaire each item placed in subscales. Items 1,7,10, 19, 23, 28 categorized in the "positive beliefs about worry" subscale. Items 2, 4, 9, 11, 15, 21 classified in the "uncontrollability and danger" subscale. Items 8, 14, 17, 24, 26, 29 categorized in the "cognitive trust" subscale. And items 3, 5, 12, 16, 18, 30 classified in the "cognitive self – consciousness" subscale. Internet Adiction Questionnaire (IAS) is a revised edition of the "Diagnostic Questionnaire Internet Addiction" developed by Young (1996). The scale consists of 20 items with scores from 1 to 5 (considering total score ranging from 20 to 100), thus higher scores reflect a greater tendency toward addiction. Three types of internet user groups were identified. Internet addicts have the scores of 80 to 100, addicts with restrict signs, 50 to 79 and score under 50 indicate that the person is not addicted. In Iran for n = 261, Cronbach's alpha coefficient was 0.91 [7]. Academic achievement score is the average of scores which students write in their questionnaire.

RESULTS AND DISCUSSION

First hypothesis: There are relationship between metacognitive skills and Internet addiction in students.
As can be seen in Table 1 there are no significant relationship between two variables 'meta cognition' and 'Internet addiction' (sig = 0.184). Therefore, the first research hypothesis is rejected. To study the relationship between two mentioned variables was used the Pearson's correlation coefficient.

Second hypothesis: there is relationship between metacognitive skills and academic achievement in the students.
There are direct and significant relationship between two variables 'meta cognition' and 'academic achievement' at %1 error level and %99 confidence (sig = 0.002, P = 0.146). To study the relationship between two mentioned variables was used the Pearson's correlation coefficient. Therefore, the second hypothesis was confirmed.

Third hypothesis:
There is relationship between Internet addiction and academic achievement in students.
As can be seen in the Table 1 there are reversed (negative) and significant relationship between these two abovementioned variables at 5% error level (P = 0.031, sig = 0.031). In other words, the rise of Internet addiction in students leads to reduce their academic achievement. Therefore, the third research hypothesis is accepted. To investigate and test this hypothesis was used the Pearson correlation test. The reason to use the reversed correlation is depended to the individual's behavior.

Table 1: relationship between mainly variables

Sig	R	Test	Variable2	Variable1
0.184	0.047	Pearson	Internet addiction	metacognition
0.002**	0.146	Pearson	academic achievement	metacognition
0.031*	-0.096	Pearson	academic achievement	Internet addiction

The fourth hypothesis: there is difference in Internet addiction among students from different university disciplines.
According to ANOVA results in Table (2) there is significant difference between different fields of studies at 1% error and 99% confidence level (sig = 0.002). Thus the fourth research hypothesis was accepted. Scheffe test showed that these differences arising from the average difference scores related to Internet addiction between two groups of Technical – Engineering and Art – Architecture students. As shown in the Table (7) the average scores of Technical – Engineering group 30.08 and the average scores of Internet addiction in the Art – Architecture students are obtained 20.63. This difference is probably related to certain tendency that Technical – Engineering students directed to computer, technical and mathematical subjects.

Table 2 : Variance Analysis related to comparison of Internet addiction scores in 4 fields of study

sig	F	MS	d.f	SS	
0.002*	4.887	1512.521	3	4537.563	MSb
		309.475	371	114815.370	MSw
			374	119352.933	T

However to determine between which academic groups exists average difference in Internet addiction scores, Scheffe test was used. According to Table 3, Scheffer Analysis has been identified two different groups in terms of the average Internet addiction scores. The first group is students of Art – Architecture with average score 20.63 and the second group is students of Technical – Engineering with average 30.08. It is worthy o note that students from Basic Sciences and Humanities did not classified in the certain and independent group because they did not have significant differences with other groups.

Table 3: Comparison the multiple average academic groups concerning Internet addiction

Humanities	Basic Sciences	Technical – Engineering	Art – Architecture	
*	0.627	0.618	0.092	Humanities
0.627	*	0.172	0.908	Basic Sciences
0.618	0.172	*	0.005	Technical – Engineering
0.092	0.908	0.005**	*	Art – Architecture

Table 4: Classification of academic groups based on the degree of difference in Internet addiction by Scheffe test

Group2	Group1	f	
	20.63	71	Art – Architecture
23.136	23.136	44	Basic Sciences
27.15	27.15	140	Humanities
30.08		120	Technical – Engineering

The fifth hypothesis: there are difference between students in different field of studies in terms of meta cognition skills.

As can be seen in Table 5, there is a significant difference between these four field of study in terms of meta cognition at 99% confidence level (sig = 0.000).

Table 5 : Variance analysis related to comparison of individual's metacognition scores in 4 academic groups

sig	F	MS	d.f	SS	
0.000*	74013.	1838.492	3	5515.475	MSb
		137.131	371	50875.714	MSw
			374	56391.189	T

The sixth hypothesis: there is significant difference among students with different field of study in terms of 'meta cognitive skills'.

To test sixth hypothesis was used also ANOVA. To compare the average scores related to metacognition among different academic groups, there is significant difference among four academic groups in the field of metacognition at 99% confidence level (sig = 0.000). Consequently, the sixth research hypothesis is also accepted. According to Tables 6 and 7, there is significant difference between Humanities and Technical – Engineering, Basic Sciences and Technical – Engineering, Art – Architecture and Technical – Engineering in terms of the average scores of metacognitive skills. Accordingly, Scheffe test have identified the two different groups. The first group is Basic – Sciences and Humanities with average scores 73.5 and 70.79 and the second group was determined Technical – Engineering with average scores 79.95. As you can see, the average scores of Technical – Engineering group are more than other groups and the average scores of Humanities show the lowest average scores. It is worthy to note that Art – Architecture group has not been in any of these mentioned groups.

The seventh hypothesis:

Two variables metacognitive skills and Internet addiction can make clear the variance of academic achievement variable.

To explain variance of academic achievement variable, Internet addiction and cognition variables were introduced into the regression. Multiple linear regressions showed that these two mentioned variables can be predicted 16% of the dependent variable variance and the remaining amount (84%) depends on other variables that have not been examined in this study.

Scheffe test was used to determine among which group of academic groups there are differences in metacognition average scores. According to Table 6 between two groups of Technical – Engineering and Humanities at 1% level and Basic Sciences and Technical – Engineering at the level of 5%, Art- Architecture and Technical - /engineering at the level of 5%, there is significant difference in terms of average scores of metacognitive skills. According to Table 7 using Scheffe Analysis has been identified two different groups in terms of average scores of metacognitive skills. The first group were students in the Humanities and Basic Science with average of 70.79 and 73.50 respectively and the second group were students in the Technical - Engineering field of study with average of 79.95 and Art – Architecture students did not classified in a certain and independent group because there was no significant difference with other groups.

Table 6: Multiple average comparisons among academic groups in metacognitive skills

Humanities	Basic Sciences	Technical – Engineering	Art – Architecture	
*	0.618	0.000**	0.146	Humanities
0.618	*	0.022*	0.957	Basic Sciences
0.000**	0.022*	*	0.034*	Technical – Engineering
0.146	0.957	0.034*	*	Art – Architecture

Table 7: Classification of academic groups based on differences in metacognitive skills using Scheffe test

Group2	group1	f	
74.76	71.76	71	Art – Architecture
	73.5	44	Basic Sciences
	70.79	140	Humanities
79.95		120	Technical – Engineering

CONCLUSION

According to First hypothesis there are no significant relationship between two variables 'meta cognition' and 'Internet addiction' (sig = 0.184). Therefore, the first research hypothesis is rejected. These results are inconsistent with the obtained results by Mohammad khani and Zafar Panahi (2011). Therefore, it could be concluded that increased cognitive skills does not affect Internet addiction. In other words, metacognitive skills cannot change Internet addiction factor in the students.

According to Second hypothesis there are direct and significant relationship between two variables 'meta cognition' and 'academic achievement' at %1 error level and %99 confidence (sig = 0.002, P = 0.146). Therefore, the second hypothesis was confirmed. It seems that meta cognition skills caused to individuals understand better that excessive use of Internet leads to damage them. Because they always review their behavior performance through their behavior self – regulation and prevent the occurrence of excessive dependence on things like internet. The obtained results of Salari far and Pakdaman (2010), Malekian et al (2011), Agha Delavar Pour (2009), Seed et al (2010), Fahimzadeh (1992), Rastgar et al (2010), Aba baf and Pasha Sharifi (2009) are also consistent with our results.

According to third hypothesis the rise of Internet addiction in students leads to reduce their academic achievement. Therefore, the third research hypothesis is accepted. To investigate and test this hypothesis was used the Pearson correlation test. The reason to use the reversed correlation is depended to the individual's behavior. People with Internet addiction spend much time on the computer and internet and they spend less time to study. On the other hand, subjective factors followed by mental dependence and reduce focus on learning process. Thus Internet dependence leads to educational dropout. Researches made by Rouhani and Tari (2011), Bahri et al (2011), Hassanzadeh et al (2010) also confirm the above results.

The fourth hypothesis there is difference in Internet addiction among students from different university disciplines. There is significant difference between different fields of studies at 1% error and 99% confidence level (sig = 0.002). Thus the fourth research hypothesis was accepted.

The fifth hypothesis there are difference between students in different field of studies in terms of meta cognition skills. There is a significant difference between these four field of study in terms of meta cognition at 99% confidence level (sig = 0.000).

The sixth hypothesis: There is significant difference among students with different field of study in terms of 'meta cognitive skills'.

To test sixth hypothesis was used also ANOVA. To compare the average scores related to metacognition among different academic groups, there is significant difference among four academic groups in the field of metacognition at 99% confidence level (sig = 0.000). Consequently, the sixth research hypothesis is also accepted.

The seventh hypothesis: Two variables metacognitive skills and Internet addiction can make clear the variance of academic achievement variable between two groups of Technical – Engineering and Humanities at 1% level and Basic Sciences and Technical – Engineering at the level of 5%, Art- Architecture and Technical - /engineering at the level of 5%, there is significant difference in terms of average scores of metacognitive skills. According to Table 7 using Scheffe Analysis has been identified two different groups in terms of average scores of metacognitive skills. The first group were students in the Humanities and Basic Science with average of 70.79 and 73.50 respectively and the second group were students in the Technical - Engineering field of study with average of 79.95 and Art – Architecture students did not classified in a certain and independent group because there was no significant difference with other groups.

Regression equations derived from regression analysis are as follow:
1- According to equation

$$y = 17.535 + 0.0$$

2- Regression equation

$$y = 0.143a - 0.1$$

a- Metacognitive skills
b-Internet addiction

As shown in the equations, variable coefficients “metacognitive skills” is larger than coefficient of variable “Internet addiction”. Therefore, it could be concluded that compared to “internet addiction” variable, “academic achievement” variable is influenced more by “metacognition” variable. On the other hand, it should be noted that the coefficient of “internet addiction” variable is negative. As a result, increasing of “internet addiction” among students reduce their academic achievements, in other words, they have reverse (negative) relationship with each other.

According to the obtained results the following recommendations will be provided:
1. Considering there is significant negative relationship between two variables “Internet addiction” and “academic achievement”, therefore will be recommended that to improve academic achievement and learning conditions of students, universities and formal educational centers consider facilities to guide and treat addicted people to internet to provide the way for their growth and development.
2. Given that there is positive and significant relationship between “academic achievements” and “metacognitive skills”, it is recommended to improve their educational achievement Science Department and syllabus planners of universities and related organization develop special education programs for students to improve their metacognitive skills. These programs offer them to learn better and actually learn them learning and learning monitor to enable students to learn more quickly with higher quality and gain their academic achievements.
3. Concerning significant difference among various academic disciplines, it was determined that Technical – Engineering students have more Internet addiction. Therefore, it is recommended to investigate why students in different fields of study have different perspectives and different ways to use Internet. Ultimately, with identification of these factors may special courses of special academic disciplines will be led to Internet more or sometimes less than others.
4. According to significant differences among students in different academic discipline in terms of “metacognitive skills”, therefore it is recommended to investigate the reasons of differences and to improve metacognitive skills will be taken special measures including organizing training courses in the universities and educational centers.

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