

## **Motives of Problematic and Nonproblematic Online Gaming among Adolescents and Young Adults**

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The aim of the present research was to explore the motives of playing online multiplayer games that leads toward either problematic online gaming or nonproblematic online gaming behavior. A sample of 357 online gamers (298 boys and 59 girls with mean age = 16.8 years) was selected from schools, colleges, and universities of Islamabad and Rawalpindi. Problematic Online Gaming Questionnaire-Short Form (Papay et al., 2013) and Online Gaming Motivation Scale (Yee, Ducheneaut, & Nelson, 2012) were used to measure problematic online gaming and motives to play online games, respectively. One hundred and ninety participants were identified as problematic gamers, while one hundred and sixty five participants were identified as nonproblematic gamers. Results indicated that all motives (achievement, socialization, and immersion) had significant positive relationship with online gaming behavior. Results indicated that problematic gamers had higher motivation for socialization, achievement, and immersion than nonproblematic gamers. Regression analysis indicated that time of playing online games, socialization and immersion motives act as significant positive predictors of online gaming.

*Keywords.* Adolescents, motives of playing games, problematic online gaming, young adults

Online gaming is popular all over the world and people irrespective of their age, gender, location, and race are involved in playing some kind of online games. Diagnostic and Statistical Manual of Mental Disorders-V (American Psychiatric Association, 2013) urged the researchers to gather substantial research evidence on internet gaming disorder to be included as a formal disorder. This prompted many to investigate the nature, causes as well as consequences associated with online gaming. The term internet

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addiction must be used cautiously; especially, while working with young adults and normal population. Therefore, it is often advised in literature to refer to problematic gaming, while assessing pathological use of online games (Van Rooj, Schoenmakers, Eijnden, Vermulst, & Mheen, 2014). Furthermore, Problematic Internet Use (PIU) and Problematic Online Gaming (POG) are considered as distinct constructs; whereby, more adolescents met the criteria for PIU than POG (Kiraly, 2014).

There are different types of online games like social network games, first person shooter games, and massively multiplayer games. The present research is carried out on massively multiplayer online games (MMOG). According to Caplan, Williams, and Yee (2009) massively multiplayer games are the rapidly growing segment of internet activity and the subscription for these games are above 47 million. According to Billieux et al. (2013), there are 20 million people worldwide playing massively multiplayer online role playing games in which 10 million are only playing World of War Craft. It is actually features of multiplayer online gaming that lead to the association between problematic internet gaming and MMOG (Van Rooj et al., 2014).

Massively multiplayer group reported greater enjoyment in the game, plans to continue playing, and have more online friends than the gamers of other computer games (Yee, 2006a). MMOG are played online with other gamers from different locations on gaming server. The players interact with one another to compete and win the game. In case of MMOG players group together called as guilds to accomplish gaming tasks. Players of MMOG interact with their old gaming friends on daily basis for relatively longer period of time to accomplish game goals and form new relations during the course of game play. In these games, interaction among players is very necessary to succeed in the game. Forming new relations and maintaining existing one is a necessary mean to an end. Sometimes this mean becomes an end in itself (Caplan et al., 2009).

These interactions among player are carried out by instant messaging, voice chat, and group-wide text channels on the computer screen. Some MMOG are played in temporary gaming environment, where the game is finished as soon as the player leaves the game. While, others are played in never-ending gaming world in which the gaming world continues to exist even when the player leaves the game. These games are called massively multiplayer online role playing games (MMORPG). MMORPG are computer role-playing games played in virtual environment. In these games millions of players interact with each other from all over the world (Billieux et al.,

2013). The game keeps on progressing despite the absence of player and causes him/her to win or lose. The requirement of high involvement for prolonged period of time for a MMO games makes this particular type of gaming hazardous as excessive preoccupation in fulfilling gaming roles at the expense of ignoring other activities leads to problematic online gaming. Research literature has revealed that online games are replacing other life activities like study, job, social life, family events, and normal daily functioning (Van Rooij et al., 2011). Numerous empirical studies (Chappell, Eatough, Davies, & Griffiths, 2006; Grusser, Thalemann, & Griffiths, 2007) has identified that a large number of players sacrifice sleep, school and job productivity, household chores, time spent with significant others, and other major responsibilities in order to play video games offline and online and show fondness for virtual life.

Problematic online gaming has been defined as a loss of control over gaming leading to significant harm (Van Rooij et al., 2014). Demetrovics et al. (2012) defined it as when the excessive gaming starts interfering with the daily life functioning it became problematic online gaming or addiction. Problematic online gaming can be viewed as a special case of broader concept of pathological internet use. A study (Ali, 2005) carried out in Pakistan about internet addiction also found support for categorization of gaming addiction as a subtype of internet addiction along with Western literature (e.g., Kiraly, 2014).

Freeman (2008) reported that internet gaming disorder is comorbid with many psychiatric disorders like mood disorder, anxiety disorder, attention disorder, and substance abuse disorder. The prevalence of problematic online gaming has been estimated in different countries of the world. A study by Wang et al. (2014) on problematic online gaming indicated prevalence rate of problematic online gaming as 8.7% in Singaporean youth, 9.9% in Spanish adolescents, 8% in American adolescents, 7% in German adolescents, and 3.3% in adolescents and young adults of Netherland. The literature provides support for the fact that adolescents as a group is more vulnerable to become problematic gamers because of the stressors and vulnerability associated with this particular group (Celik & Odaci, 2012). Also accessibility and availability of internet especially for urban youth as well as smart phone technology also makes it important to study the phenomenon in a sample of Pakistani adolescents.

### **Theoretical Framework of Problematic Gaming**

Researchers are working on developing standard criteria for gaming addiction since the last two decades. For most part, existing

literature has identified internet gaming disorder as comparable to substance use disorder, pathological gambling or addiction (Khang, Kim, & Kim, 2013; Spekman, Konijn, Roelofsma, & Griffiths, 2013), and consider it as a behavioral issue. Therefore, studies conducted on problematic gaming identified salience, euphoria, withdrawal symptoms, reinstatement, and conflicts as main features of online gaming disorder (Mo Koo, 2009).

Brown (1997) component model of addiction is one of the most quoted models in studies (Spekman et al., 2013; Griffiths, 2008). This model asserts that six core features must be present for a significant period of time in order to indicate online gaming addiction. The six features of this model include:

**Salience.** This occurs when playing online video game becomes the most important activity in a person's life, dominating the thoughts (preoccupation and cognitive distortions), emotions (cravings), and behavior (deterioration of normal behaviors) of the players.

**Mood modification.** This refers to changes in person's mood state that occur as a result of playing online video games, such as increase in physiological arousal or a tranquilizing feeling of calm.

**Tolerance.** This refers to the process whereby increase in amounts of online video game play is required to achieve the former mood-modifying effects. This means that players gradually increase the amount of time they spend playing online video games.

**Withdrawal.** These are the aversive mood states and /or physical effect that occur when online video game play is suddenly discontinued or reduced. Psychological withdrawal symptoms include frustration, irritability, and flattened affect.

**Relapse.** This refers to the tendency of the player to make repeated reversions to earlier patterns of playing online video games.

**Harm.** This refers to the negative consequences of excessive online video game play. Harm includes conflicts between the addicted video game player and other people (family members and friends), other activities (job, school, social life, hobbies and interests), and from within the addict themselves (psychological distress).

Numerous risk factors have been identified by literature (Hyun, Han, Lee & Renshaw, 2015) on problematic online gaming including individual (gender, age), psychopathologies (including ADHD, depression, impulsivity), and social factors (such as family environment and social anxiety). These factors include social isolation, lack of social support, preexisting psychological problems, lack of parental supervision, lack of structured activities at home,

attachment styles, personality, low self-esteem, and trait anxiety (King, Delfabbro & Griffiths, 2010).

For the past several years researchers have focused their attention on a new construct, that is motivation. According to Bostan (2009) motivation is an important risk factor for developing and maintaining problematic online gaming addiction. Motivation for playing online games answers the questions that why people play games for long hours; what kind of psychological needs (affiliation, interaction, competition, and approval) are fulfilled by playing online games; what happens while they are playing online games; and why they ignore other activities because of online gaming (Przybylski, Rigby, & Ryan, 2010).

### **Motives of Playing Online Gaming**

Motivation is defined as set of factors that activates, direct, and maintain behavior, usually toward some goal (Huffman, 2004). People vary in the type of motives they have for engaging in any activity. The level of motivation also differs from person to person.

Bartle (as cited in Ryan, Rigby & Przybylski, 2006) carried out first study about player's types according to their motivation of playing video game and proposed four types of players according to player's behavior and interaction with other players in the games. The four types of players are characterized as killers, achievers, socializers, and explorers. The killers want to act on players; socializers want to interact with other players; achievers want to act on virtual world; and explorers want to interact with the virtual world.

Building on Bartle's (1996) players types; Yee (2006b) carried out extensive research of MMOG players' behavior. Yee (2006b) identified different motivations of MMOG players. For the present research, Yee's (2006b) model of online gaming motivation have been be used to explain the motives of playing online games of people.

**Yee Model of Online Gaming Motivation.** According to the model (referred above) there are three broad nonexclusive motives as achievement, socialization, and immersion. These three motives are further divided into ten subcomponents as follow:

**Achievement.** Players who have achievement motivation are inclined to seek mastery in game, competition and gaining power in the game. This component is further divided in three subcomponents: advancement, mechanics, and competition.

**Immersion.** Players who play for immersion motivation have a desire to escape real life problems, like to absorb in the gaming world and want to role-play. Immersion motivation is further divided into three subcomponents: Discovery, role-playing, and customization.

**Socialization.** Players who have socialization motivation want to interact with other players in the virtual world and develop in-game relationship. This component is further divided into three subcomponents of socialization, relationship, and teamwork.

Researchers (Billieux et al., 2013; King, Haagsma, Delfabbro, Gradisar, & Griffiths, 2013; Ryan et al., 2006; Yee, 2006a, 2007) have explored the role of multiple needs including achievement need, socialization, self-regulation, and immersion in the high engagement game playing. Griffiths, Davies, and Chappell (2004) stated that intrinsic motivation like pleasure and challenge and social motivation are important for playing online games. A study (Venkatesh, Morris, Davis, & Davis, 2003) identified extrinsic motivation related to gaming as perceived ease of use, complexity, perceived usefulness, outcome expectation, and relative advantage. Another study identified intrinsic motivation of video games as fun, enjoyment, and flow (Mo Koo, 2009).

It has been proved that people with particular types of motives for playing online games are at greater risk of developing gaming addiction. In one study achievement motivation appeared as the strongest predictor of problematic online gaming as compared to socialization (Yee, 2007b). Sheng and Bin (2006) qualitative study with Taiwanese adolescents showed that adolescents might take refuge in online gaming by being able to exercise control in the virtual world, by escaping from reality, and therefore, using online gaming as coping and also to fulfill unmet psychological needs including achievement and power motive. Yee (2006a, 2006b) demonstrates that only escape and advancement are important predictors of problematic usage of online games. The remaining factors such as mechanics, competition, socializing, relationship and teamwork, discovery, role-playing, and customization are not significant predictors. These results suggest that the motives of problematic online gaming are different from those of nonproblematic online gaming.

Gender differences are also found among motives of playing online games. Yee (2006a, 2006b) reported that boys have significant higher achievement motives and girls have higher socialization motive for playing online games. Yee (2007a) reported that boys and girls have equal socialization motives for playing games, while Olson (2010) found that boys are significantly more likely than girls to play

for fun, to compete with other people, and to win, for the challenge of figuring the game out, and for several emotional reasons (excitement, relaxation, and coping with anger). Moreover, approximately equal proportions of boys and girls have been strongly motivated by creativity and curiosity.

Internet addiction and internet gaming disorder has been studied by Khan (2014) and Khalid (2015) respectively. Games today have more fantastic feature addressing to the social psychological needs of variety of consumers. Technological advancements change the mechanisms of playing games rapidly. Hence, research is needed in this area to explore why children, youth, adults play games (Spekman, Konijn, Roelofsma, & Griffiths, 2013). In the present research, adolescents and young adults have been approached because this age group is engaged more in online game playing as compared to adults and old age group according to recent researches done in Pakistan (Khalid, 2015; Khan, 2014) and internationally (Spekman et al., 2013). The present research would investigate the motives of playing problematic as well as nonproblematic online gaming.

### **Hypotheses**

1. There is a positive relationship between motives (socialization, achievement, immersion) and problematic online gaming.
2. Problematic gamers have high achievement, immersion, and socialization motives of playing online games than nonproblematic gamers.
3. Male adolescents and young adults have high socialization, immersion, and achievement motive as compared to female adolescents and young adults.
4. Motives of achievement, immersion, socialization and time of playing online games positively predict problematic gaming.

### **Method**

#### **Participants**

Sample of interest in this study were adolescents and young adults who play multiplayer online games. Convenient sampling technique was used for data gathering. According to Kuss, Griffith, Karila, and Billieux (2014) risk factors for internet addiction or

pathological gaming include gender as well as age of the player where boys more than girls and adolescents more than adults are pathological users. Therefore, in the present research a wider age range of adolescents ranging from 11 to 23 years was included in the sample. Tromp and Koot (as cited in Safdar, 2012) in giving range of age for adolescents gives a span from 11 to 23 years of age.

The participants of the study were adolescents and young adults online gamers ( $N = 357$ ; boys = 298, girls = 59) with age range of 11 to 23 years ( $M = 16.8$ ;  $SD = 3.13$ ). Online game players from primary and elementary classes ( $n = 50$ , 14%), secondary classes ( $n = 136$ , 38.1%), higher secondary ( $n = 51$ , 14.4%), under graduate ( $n = 50$ , 14.2%), and graduate classes ( $n = 66$ , 18.7%) were selected through purposive convenient sampling technique from Islamabad and Rawalpindi. The overall sample was later on assessed on Problematic Online Gaming Questionnaire (Papay et al., 2013) on the basis of cut off score of 32. On the basis of scoring, 190 problematic gamers and 165 nonproblematic gamers were identified in the total sample.

## Instruments

**Problematic Online Gaming Questionnaire.** This scale was developed by Papay et al. (2013) to measure problematic and nonproblematic online gaming and consisted of 12 items. It's a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) with possible score range of 12 to 60. The cut-off score of 32 was taken for problematic gamers with high score indicating more problematic gaming. The Cronbach alpha of the scale reported by author (Papay et al., 2013) was .91; while alpha reliability of .75 has been found in the present study.

**Online Gaming Motivations Scale.** The present scale was based on the Yee's Massively Multiplayer Motivational inventory (2007a). This scale consisted of 12 items developed by Yee, Ducheneaut, and Nelson (2012) used to determine the motivational factors associated with massively multiplayer online gamers gaming. It's a 5-point Likert scale, ranging from 1 (*completely disagree*) to 5 (*completely agree*). There are three subscales with four items each to assess motivational factors of Achievement, Immersion, and Socialization. The possible score range for each subscale was 4 to 20 and high score indicates higher level of that particular motive. This tool was validated both for Western and nonWestern countries and the obtained reliability index was .77 for Socialization, .75 for Immersion, and .74 for Achievement (Yee et al., 2012) for a cross-cultural sample.



The alpha reliability acquired in the present study was .61 for Socialization, .50 for Immersion, and .64 for Achievement that is below the conventional level of .70. Kline (2005) says that reliability is not inherent in the test itself, but rather a function of test items, the sample, the situation, and so forth. Schmitt (1996) suggested that acceptable level of alpha in case of less number of items may be accepted as in some cases, measures according to conventional standards of low levels of alpha may still be quite useful. Therefore, further analysis was carried out for the present sample with same instrument. The demographic information like age, gender, educational institution, type of game played and for how long was also taken into account.

### **Procedure**

Permission was acquired from the administration department of schools and colleges for data collection. Informed consent was taken initially from participants and they were assured about the confidentiality of their responses. Most of the data was collected in group setting in the respective classes of the students. Time taken by the participants to fill the questionnaire was maximum of fifteen minutes.

### **Results**

Pearson Product Moment Correlation analysis was used to determine the relationship between problematic online gaming and motivation to play games. *t*-test was used to determine the difference of playing motives among problematic and nonproblematic online gamers. It was also used to investigate gender differences on motives of playing online games. Regression analysis was used to determine the role of motives of playing games and time of playing online games in determining problematic online gaming.

#### **Correlation between Motivation to Play Online Games, Problematic Online Gaming, and Time of Play**

Table 1 indicates that time of playing game is significantly positively related with problematic online gaming. Online gaming is significantly positively related with achievement, socialization, and immersion motivation.

Table 1

*Correlation of Motivation to Play Online Games, Problematic Online Gaming, and Time of Play (N = 357)*

S No.	Variables	1	2	3	4	5
1	Time of play	-	.40**	.24**	.18**	.15**
2	Problematic Online Gaming		-	.33**	.29**	.27**
3	Socialization			-	.29**	.39**
4	Immersion				-	.39**
5	Achievement					-

\*\* $p < .01$ .

Results in Table 1 also indicates that time of playing online games is significantly positive related to the motives of playing online games. Achievement, immersion, and socialization motives are also significantly positively related to each other.

Table 2

*Group Differences on Playing Motives among Problematic and NonProblematic Gamers (N=357)*

Variables	Problematic Gamers (n = 190)		NonProblematic Gamers (n = 165)		t(353)	p	95% CI		Cohen's d
	M	SD	M	SD			LL	UL	
Socialization	12.93	3.57	11.53	3.53	3.70	.00	.65	2.14	.39
Immersion	12.78	3.50	11.11	3.28	4.61	.00	.96	2.38	.49
Achievement	15.44	3.50	14.09	4.05	3.36	.00	.55	2.14	.35

Table 2 indicates that 190 individuals are categorized as problematic gamers and 165 individuals as nonproblematic gamers by using one sample *t*-test. Participants who scored higher than 32 on Problematic Online Gaming Scale (Papay et al., 2013) are identified as problematic gamers and those scored less than 32 are identified as nonproblematic gamers. The results indicated that significant differences exist in motivation to play online games among problematic and nonproblematic gamers. Problematic gamers have higher motive of achievement, socialization, and immersion than nonproblematic gamers.

Table 3

*Gender Differences on Socialization, Immersion, and Achievement Motivation to Play (N = 357)*

Variables	Boys (n = 296)		Girls (n = 59)		t(353)	p	95% CI		Cohen's d
	M	SD	M	SD			LL	UL	
Socialization	12.65	3.52	10.52	3.64	4.24	.00	1.15	3.13	.59
Immersion	12.20	3.49	11.11	3.43	2.18	.03	.10	2.05	.31
Achievement	15.10	3.74	13.42	3.94	3.11	.00	.61	2.73	.43

Table 3 indicates that there is significant difference in achievement, socialization, and immersion motives across gender. Boys have higher motives of achievement, immersion, and socialization as compared to girls for playing online games.

Table 4

*Multiple Linear Regression Analysis for Effect of Time of Play, Immersion, and Socialization on the Prediction of Online Gaming (N = 357)*

Variables	B	S.E	CI (95%)		
			$\beta$	LL	UL
Constant	12.71	2.11		10.51	18.05
Time of play	3.15	.46	.32***	2.25	4.09
Immersion	.39	.13	.15***	.22	.72
Socialization	.43	.13	.17***	.26	.79
Achievement	.23	.13	.09	-.02	.48
R <sup>2</sup>			.26***		
F			30.46***		

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Table 5 indicates prediction of online gaming behavior from time of play and the three motives to play: achievement, immersion and socialization. It shows that 25% of the variance in the gaming behavior can be explained by the predictors. The table indicated that time of play, immersion, and socialization are significant predictors of problematic online gaming. Achievement motivation is not a significant independent predictor of problematic online gaming.

## Discussion

The present research aimed to explore the relationship between motivation to play and online gaming behavior both problematic and nonproblematic. The results of the study supported first hypothesis; where a significant positive relationship between problematic online gaming and achievement, socialization, and immersion motivation of playing online games was found. Studies on motivational perspective of online gaming have revealed that socialization, immersion, and achievement are the main and important motivations of playing online games for all people (Yee, 2006b). Kneer and Glock (2013) indicated that Yee's (2006a,b) motives were highly activated in problematic gamers. Studies on players who are addicted to online games reveals that these individual fulfills their psychological needs of affiliation, achievement and power through online games (Shen-Wan & Bin Chiou, 2006). Another study (Wang et al., 2011) indicated that passion and intrinsic motivation is related with internet gaming. The same has also been found in a study (Olson, 2010) that indicated variety of motives as reasons for children playing video games including social, emotional, achievement, aggressive and intellectual motives.

Second hypothesis was supported by the results of present research that problematic gamers have higher immersion, achievement and socialization motivation than nonproblematic gamers. Problematic gamers fulfills their psychological needs of social interaction, affiliation and achievement mainly through playing games as compared to nonproblematic gamers who partially fulfill their psychological needs from playing games. Researches have proved that problematic gamers have low psychosocial well-being, low self-esteem and loneliness, anxiety shyness, aggression, introversion and social skills deficits (Caplan et al., 2009). Therefore, it can be inferred that problematic gamers are more motivated towards virtual gaming world to fulfill their unmet psychological needs and to forget real life problems as compared to nonproblematic gamers. The reason for initiation of gaming behavior most probably is to fulfill psychological needs that somehow cannot be achieved in the real world. Shen-Wan and Bin Chiou (2006) indicated that problematic gamers considered games as central to their lives to achieve entertainment, emotional coping, escaping from reality and to form interpersonal relationship virtually. Nonproblematic gamers reported a unidimensional healthier objective of playing games which is primarily for the sake of playing games and the fun attached it. Kneer and Glock (2013) also found differences in motivation to play games among addicts and non-

addicts. Addictive gamers have high immersion, achievement and socialization motivation to play online games as compared to non-addictive ones. Nonproblematic gamers have less immersion motives than achievement and socialization. Present study endorse the same for a select sample of Pakistani adolescent, that is nonproblematic gamers have low immersion motives as compared to the other two motives socialization and achievement.

Results indicated that boys have higher achievement, socialization and immersion motives for playing online games than girls. Boys have higher mean score on socialization, achievement, and immersion motive as compared to girls. Researchers have highlighted that boys have more achievement, socialization and immersion need of playing online games and thus they play for more time as compared to girls. Billieux et al. (2013) and Yee (2006b) found out that boys have more achievement motivation for games as compared to girls and girls have more immersion motivation as compared to boys. Furthermore, the later also concluded that adolescent girls have more social motivation in case of massively multiplayer online role playing games than adolescents boys. But according to the results of present study, boys outnumber girls in all three types of motivation. The difference between immersion score is low among boys and girls as compared to achievement and socialization. Perhaps this difference between the present and previous studies is because present study has included all types of online games such as achievement oriented games, first person shooter games, massively multiplayer games and social network games. Former studies (Yee, 2006a, b; Billieux et al., 2013) have been carried out specifically with multiplayer games.

Fourth hypothesis that achievement, immersion, socialization and time of play positively predict problematic gaming has also been supported. It is found that time of playing game is the strongest predictor of problematic online gaming. Socialization and immersion also predicted problematic online gaming respectively. However, achievement is nonsignificant in predicting problematic online gaming. Previous studies on massively multiplayer online role playing games (Billieux et al., 2013; Yee, 2006a, b) reported that achievement and socialization motives play a central role in problematic gaming. In the present research, achievement did not turn out to be a significant independent predictor of problematic gaming. The reason can be attributed to the criteria for selection of the games that was open and included all types of multiplayer online games, for example, facebook games, first person shooter games, and massively multiplayer games. Probably the type of game is a confound and the players of these online games are motivated more by socialization and immersion

motive as compared to achievement motive. These games are famous because of their potential to offer rich competition and social interaction with other players (Xu, Cao, Sellen, Herbrich, & Graepel, 2011). Another study carried out on first person shooter games and World of Warcraft also revealed similar results that the main motivational force of first person shooter games is social interaction in games by communication and cooperation with other players (Frostling-Henningsson, 2009). Facebook games on the other hand, do not involve real time competition or interaction rather the players can enter into the gaming world at any time in the day. These games also fulfill the need of social interaction as they require other people to play the same game for achieving high scores (Shin & Shin, 2011).

Time of playing games has been taken as main criteria of defining gaming addiction in research literature. Research reported that time spent on playing games and its negative consequences as the criteria of gaming addiction lead more individuals (above 10%) to be classified as addictive gamers (King et al., 2010). In the present study, time spend on online gaming is not an evaluative criteria for problematic gamers, rather a cut off score on Problematic Online Gaming Questionnaire Short Form by Papay et al. (2013) was used to identify problematic gamers. Through regression analysis it was revealed that time of playing video game is a strong predictor of problematic gaming. Individuals who played online games for more time may develop problematic gaming behavior as compared to those who played for lesser time. A similar regression analysis is also employed by Yee (2006b) with problematic score as dependent variable and the age, gender, time of playing game, and motivation to play games as independent variable. The results revealed immersion as the strongest predictor followed by time of playing game, and the achievement component.

### **Limitations and Suggestions**

The present research was conducted on players of various types of online games. In order to analyze the differences in gaming genre and their effect on gaming addiction separate studies on each gaming type is recommended. There are other risk factors for gaming addiction like low self-esteem, dispositional traits and emotional intelligence that can be studied in future researches. Studying the phenomenon by using longitudinal research design will provide more in depth understanding about gaming behavior and changes in it across time.

Another limitation of present study was using self-report data for data collection. This method has its limitation and may effects the true responses by posing threat like social desirability and patterned responses. By using qualitative research design more genuine and local context of gaming addiction and motives to play online games can be achieved. Motivation to play online game was measured by motivation to play online gaming questionnaire short form which yielded relatively low subscale reliability. Furthermore, differences in subcomponent of each motivation were not accessed as in actual inventory. So it is recommended to use longer version of the inventory; with more items measuring each motivation to play. It is also recommended to further psychometrically validate the instrument.

### **Implications**

The implications for the present research are discussed for various stakeholders, for example, researchers, parents, and game developers. For researchers the results would help in understanding the phenomenon of online gaming particularly problematic gaming. Secondly the study will help in understanding the broader issue of mechanics through which individuals are attracted toward media like internet and online games. It will create awareness about the role of motives like escape, role-playing, social interaction and enjoyment in motivating people to play online games. Research on online gaming and especially problematic online gaming in Pakistan is limited. The phenomenon of online gaming is increasing day by day. The present research will build an understanding of the phenomenon in local context. The study will pave the way for future researches to explore other causes and consequences of problematic online gaming.

The research findings can help parents to develop an understanding of causes of problematic online gaming that their children have developed. By understanding the causes they can manage and control gaming behavior of their children. The time of play online games has emerged as a strong predictor. Time of play can be controlled by the parents so that adolescents do not become problematic gamers. Secondly, the psychological needs of achievement, socialization and immersion can also be fulfilled by other sources like interaction with family and friends will meet the socialization motivation, thus in return it will reduce internet time usage and online gaming usage for the need fulfillment.

Present findings have many important implications for online game developers. First, the findings suggest that online game

developers should concentrate on providing various virtual experiences to online game players like enjoyment, social affiliation, competition and escape. In particular, the finding that immersion (escape, role playing, customization) and socialization (teamwork, social interaction) are the most important motive for online game players should induce practitioners to add such features in game that provide social interaction, escapism from real world problems and allow players to exercise control over the game. Secondly game developers should develop games that can be played in small time and are easy to play as depicted by the game preferences.

### Conclusion

It can be concluded that there is a positive relationship between motives of playing online games and gaming behavior. Time of playing games along with the motives of playing games is a significant predictor of problematic gaming. Thus, by regulating one's time of playing games and fulfilling the motives through real life activities problematic gaming behavior can be avoided.

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Received August 26<sup>th</sup>, 2014

Revision received June 13<sup>th</sup>, 2016