

RELATIONSHIP OF ONLINE GAMING WITH SELF CONTROL, PROBLEM SOLVING AND SOCIAL ZAPPING IN YOUNG ADULT GAMERS

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ABSTRACT

The aim of study is to investigate the impact of online gaming behavior on self-control, problem solving, and social zapping among adult gamers. A quantitative study with correlational research design; participants $N=325$ (270 males and 55 females) aged 18-30, was conducted where data was gathered through Google forms. The assessment tools used for this research were Internet Gaming Disorder Scale (Pontes & Griffith, 2015), The Self Control Scale (Tangney et al., 2004), Independent- Interdependent Problem-Solving Scale (Rubin, Watt & Ramelli, 2012) and Social Zapping Scale (Muller, et. al., 2021). The results of statistical analyses indicated that online gaming has negatively significant relation with self-control ($r=-.224^{**}$, $p<0.01$) and positively significant relation with social zapping ($r=.165^{**}$, $p<0.01$). But no significant relation was observed between online gaming and problem solving ($p>0.05$). Furthermore, self-control found to be the key factor as a mediator between online gaming and social zapping ($b=-.29$, $p<.001$). Online gaming shows negative correlation with self-control and positive correlation with social zapping which means with the increase in online gaming there will be increase in social zapping as well but decrease is self-control and vice versa. No significant relationship was found between online gaming and problem solving. Besides, age plays a huge role in social zapping among gamers. Late adult gamers are comparatively less social zappers as compared to young adult gamers.

Keywords: Online Gaming, Self-Control, Problem Solving, Social Zapping.

INTRODUCTION

Cyber psychology is one of the emerging branches of psychology which deals with the psychological effects linked with the uncontrolled usage of the new enhancing technology (Singh, 2019). One of the most highlighted issues in the cyberworld today is the addiction of online gaming and its psychological, social and cognitive issues (Sporcic & Takalic, 2018). But the major concern linked to address this issue is to first consider the issue as a potential problem. So far the researchers from all over the world have conflicting views regarding online gaming where some see it just a growing hobby with

cognitive development and encourages it while some see it as a threat to their youth due to its deteriorating affects both physically and mentally.

In the Journal of Psychiatry in APA it was mentioned in a study that suggested "online game addiction might be a serious issue, but it is not such an outbreak that some people think it is" (Markey & Ferguson, 2017) while in argument, The Proceedings of the National Academy of Sciences commented, online gaming is an underlying symptom of depression, anxiety and aggression but yes, so far saying it a disorder itself might be an exaggeration (Jan, 2018).

In Pakistan, cyber psychology is still at the stages of birth due to our technological drawbacks. But ever since Internet Gaming Disorder has become a part of DSM-5, a number of researches on the topic have emerged, but none could holistically explain the peripheries of effects due to online gaming. The major purpose of this research is to investigate the relationship of online gaming with self-control, social zapping and problem solving of the young gamers on the grounds of which the understanding of online gaming will be developed and procured for the further in the prediction of behavior of online gamers. Also the finds will lead us to know what factors make online gaming healthy or dangerous.

Statistics of Online Gaming

Due to the immense popularity, now-a-days, online gaming is not only considered a source of adventure and enjoyment or an activity to kill time like it used to be perceived in the past. According to recent research in the US, almost 38% of young adults are online gamers who spend 61-80% of their time gaming. Among those gamers 45% gamers are females while 55% are males (Vasilev et al. 2022). According to one of the most popular researches of decade in APA is the research on Internet Gaming and how it is linked with Addiction. The study shows that while online gaming, certain neural pathways activate in the human mind which gives immense pleasure and adrenaline rush which is found to be quite similar to that of patients with drug addiction. Moreover, further in depth study suggested that the symptoms and aftermath of those online gamers was also found to be similar with addicts which make the researchers believe that online gaming could be a hidden addiction in disguise of hobby (APA, 2013). The symptoms include: completely indulged in gaming, withdrawal symptoms when gaming is taken away like sadness, anxiety and irritability, need to spend more time gaming to satisfy the urge, inability to reduce playing even after trying, giving up other activities or loss of interest in previous hobbies, keep playing games despite having problems, lying to family members about the total gaming time, use of gaming to relieve negative moods, such as guilt or hopelessness, non-serious about losing a job or relationship due to gaming.

Role of Self Control in Online Gaming

One of the most important factors that seem to differentiate the regular gamers from the professional gamers is their self-control (Latifa et al. 2018). Self-control is a person's ability to regulate his emotions, thoughts and behaviors (Delisi, 2014). Self-control is also termed as self-regulation or emotional regulation which is considered as an extremely powerful weapon that strengthens a person's cognitive development if used on long term with proper stability but the unnecessary self-control may lead to self-destruction (Burman et al. 2015).

In simple terms people occasionally use determination, discipline, willpower as a substitute of self-control but in psychological terms, self-control is the ability to be focused enough to avoid any sort of temptation and negative consequences while remaining concentrated on the goal to achieve positive outcome (Duckworth et al. 2010). People who have high self-control are found to be more goal-oriented and more happy for both short term and long term life (Cheung et al. 2014; Hofmann et al. 2014) and have better interpersonal relationships (Vohs et al., 2011). Studies have found that self-control achievement at an early age can also enhance cognitive and self-regulatory skills in adolescence (Shoda et al. 1990) and well-being later on in life (Moffitt et al. 2011). Moreover, in adolescents and young adults self-control achievement can lead to better grades and academic success (Tangney et al. 2004; Duckworth & Seligman, 2005). People with high self-control are less likely to be indulged in drugs, addiction, procrastination, and weight gain (Kokkoris & Stavrova, 2020).

In self-regulated behavior the most important components are emotional control, impulse control, concentration level, sleep regulation and physical control. The negative behavior that is observed in online gamers like deteriorating sleep, physical and mental health atrophy, exhaustion, addiction, aggression, obesity, anxiety, stress and even depression are mainly because these gamers have not self-regulated behavior (Zamani et al. 2009).

In retrospect, self-control tendencies are rather low in Pakistani youth in general. Most of the criminal activities are reported by youth. Our young generation is highly convicted due to loss of self-control and impulse regulation (Mahmood et. 2014).

Same goes for the online gaming industry. The violent tendencies are reportedly high in our gamers due to lack of self-control. It was found that online gaming and aggression are highly correlated among males and cognitive ability among females (Shahbaz et al. 2019).

Problem Solving in Online Gamers

According to the research from a neuropsychologist, online gaming or video gaming have a great effect on cognitive and executive functioning on the human brain. The attention span and visuospatial cognition is relatively high in gamers (Kuhn et al. 2019). Another research explains that online gamers exhibit better cognitive abilities specifically involving processing speed, logical and deductive reasoning and mathematical intelligence (Hisam et al. 2018).

In the life of a gamer, there could be numerous types of problems which affect his personality and gaming style. These problems aren't necessary to be gaming specific; in fact they could be any sort of daily life problems from setting the desktop to achieving a victory. In 2011, people playing Foldit, an online puzzle game, resolved the structure of an enzyme that causes an Aids-like disease in monkeys. Interestingly, researchers had been working on the problem for 13 years and the gamers solved it in three weeks. "Our brains function in a way that recognizes patterns," says Erinma Ochu, a neuroscientist explaining why scientists are asking gamers for help (Mohammadi, 2014).

In order to understand instant gratification due to loss of self-control in social prospects, the variable of social zapping has been used to understand the elaborated concept of self-control tendencies. Social zapping is the newly studied phenomenon quite opposite to self-control, where individuals cancel appointments at the last minute for anything else which they deem suitable for themselves. And in doing that, they might be gaining a short term benefit but, in the long run they lose the potentially more profitable goals (Greythorn, 2021).

Social Zapping

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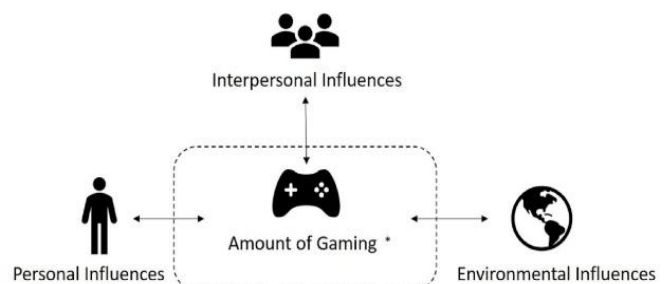
zapping is the newly studied phenomenon quite opposite to self-control, where individuals cancel appointments at the last minute for anything else which they deem suitable for themselves. And in doing that, they might be gaining a short term benefit but, in the long run they lose the potentially more profitable goals (Greythorn, 2021).

Individuals with high social zapping are found to be impulsive and malevolent in nature. They lack the emotional stability and self-control due to which they are prone towards exhibiting aggressive behaviors most of the time (Muller et al. 2021). It has also been found that social-zapping behavior may be associated with tendencies to procrastinate a long time on decisions or actions. These procrastinators usually make decisions at the last minute (Lay & Burns, 1991; Pychyl, Morin, & Salmon, 2000) and are in search of better alternatives which they can find for their use while postponing or canceling an event. This type of social zapping behavior where a person searches for the best options; meanwhile consuming the time in gratifying the self needs is termed as maximization and people with such traits are called as 'maximizers' (Schwartz et al. 2002).

Theoretical Framework

Push and Pull Influences on the amount of Gaming

According to the Push and Pull model, many factors around a gamer influence his amount of gaming. Some of them may take part in increasing the amount of gaming while some of them become a reason for its decrease. All of that increase and decrease is dependent on three major forces, personal forces, interpersonal forces and environmental forces. The



*Note: Arrows indicate that the influences are pushing and pulling at the amount of time spent gaming so that a person would play more or less.

holistic survey of all these forces can collectively provide a complete perspective about a gamers amount of gaming which doesn't always remain

constant. It may increase or decrease if the factors influencing it alter (Shi et al. 2019). The one notable keypoint of this theory is that no force exists in isolation. All these forces collectively impact the amount of gaming. The above model acted as a backbone for the study on the basis of which all the demographic variables including personal information, interpersonal relationships and environmental circumstances were collected. The integrated Push and Pull Model of collective influences is in Figure 1

Fig. Push and Pull Influences on the amount of Gaming

The Discounting Model of Impulsiveness

This theoretical model is based on the concept of delayed gratification (Mischel, 1974) which explains that the key to regulating self-control lies in delaying immediate gratification. People who prefer instant gratification lack self-control while those who retain themselves from pleasure for a long term gratification ultimately achieve self-control (Ainslie, 1975; Mischel et al., 1989; Kirby and Herrnstein, 1995). The theory further proposed that people with low self-control give up easily in face of temptations and are more indulged in criminal activities while those with high self-control can sacrifice their short term pleasures in favor of long term goals (Frederick, Loewenstein, & O'Donoghue, 2003).

This theory is used as one of the key background on the basis of which the relationship between self-control and social zapping will be studied. In this study it is assumed that gamers with low self-control will have a high rate of social zapping due to which they will immediately grab every opportunity of gratification while delaying their important appointments. While on the other hand, those gamers with high self-control will have the ability to delay gratification leading to less social zapping behavior.

Hot/Cool System Approach of Self-Regulation

This theory explains the concept of self-control on two cognitive poles where one end is cool in which a person has high self-control and majorly goal oriented. They make rational decisions after keen observation and judgment. Their motto of doing things is because 'it makes sense'. While on the other end is hot which explains the people's nature with

low self-control and high impulsivity. Their principle of doing things is mostly because 'they feel like it' and they usually make rash decisions based on mere impulse (Metcalf & Mischel, 1999).

This theory provided the framework for the study in a way that we can assume that gamers on 'cool' end means with high self-control will be less oriented towards the impulsive activities because they rationally articulate their decisions before any problem handling, while the gamers on 'hot' end with low self-control will be more indulged in impulsive activities and social zapping because they want to live in the moment and satisfy their impulse.

Social Problem Solving Model

Social problem solving model is based on two key factors that are used for problem solving in real life matters. The first key factor is problem orientation which explains that a person should be aware of the nature of the problem and should have an objective or motivation to solve the problem. The second key factor is problem solving style, which include three major styles which are most common among people, namely, rational problem solving, impulsive careless problem solving and avoidance problem solving (D'Zurilla & Goldfried, 1971).

Among them the rational problem solving is the positive style while the other two are negative styles. Rational problem solving is the style in which a person considers the problem as a challenge, undergoes each and every conceptual detail of the problem and solves it actively with skills, knowledge and prior learning experience to achieve a goal. Impulsive or careless style is the one where a person wants to get rid of the problem rather than practically and technically solving it. In this style a person makes rash and impulsive decisions which might solve the problem for the short term but it creates multiple other problems ahead. Avoidance style is most common in those people who take the problem as a personal threat to their existence. Therefore, whenever they encounter a problem, they either flee away to avoid the problem or ask someone else to stand in their place. Both of the negative styles are those in which a person is always in need of others and can't make their own decisions (Chang, D'Zurilla & Samma, 2004).

This theory has been extensively used in the past few decades and has undergone many revisions. This theory provided a framework for many cognitive and behavioral researches where problem solving was used to study in social settings (Nezu & Wilkins, 2004; Erozkan, 2013). Similarly, in this research where we are studying independent and interdependent problem solving, this model is of great acknowledgement in categorizing the problem solving natures.

Hypotheses

- Online gaming will be correlated with self-control, problem solving and social zapping in gamers.
- Online gaming behavior may predict self-control, problem solving and social zapping in gamers.
- Self-control can be a mediator between online gaming and social zapping.

Method

Participant Sample

The sample included 345 online gamers who had been regular gamers for the past one year aged 18-30 (including both male and female). The sample was targeted through purposive and snowball sampling techniques because the population was specific and a little difficult to find on my own. The data from the sample was collected through online google forms. After the thorough scrutinizing of the whole data, the responses of 20 participants were discarded on the basis of outliers. The remaining responses of 325 participants were further used for the analysis.

Instruments

Internet Gaming Disorder Scale - Short - Form (IGDS9-SF): Internet Gaming Disorder Scale (Pontes & Griffith, 2015), is a self-reported 9 item scale based on the diagnostic criteria according to DSM-5 that measures the symptoms and prevalence of Internet Gaming Disorder which includes preoccupation with gaming, withdrawal symptoms (like sadness, anxiety and irritability) when gaming is taken away, tolerance (the need to spend excess time on gaming to satisfy the need), inability and unsuccessfulness in reducing the play time. This scale has a very high internal consistency coefficient

i.e. $\alpha = .96$ which makes it highly reliable to use. This scale is applicable for all adolescents, young and older adults. This scale is used to screen the participants with Internet Gaming Disorder and measure the online gaming behavior of remaining participants.

Self-Control Scale (SCS): The self-control Scale (Tangney, Baumeister & Boone, 2004) is a 36 item, self-report measure that is used to assess the ability and strength of people to regulate their thoughts, emotions, behaviors and impulses. Subscales of self-control scale include self-discipline, deliberate/non-impulsive action, healthy habits and work ethics. The reliability of the measure was measured as $\alpha = .89$. This scale is applicable for all the ages above 17.

Independent-Interdependent Problem-Solving Scale (IIPSS): Independent- Interdependent Problem-Solving Scale (Rubin, Watt & Ramelli, 2012) is a 10 item self-report scale using 7 Likert-type responses. The purpose of this scale is to measure the problem solving skills in an individual. Five of the items measure the preferences for independent problem solving, and the remaining five measure the preferences for interdependent problem-solving. It predicted the participants' self-reported ability that they would either find a solution to a problem (i.e., independent problem-solving) or ask another person to help them with a problem (i.e., interdependent problem-solving). The scale has good reliability, with good internal consistency ($\alpha = .77$ & $.80$).

Social Zapping Scale (SZS): Social Zapping Scale (Muller, et. al. 2021) is a 6 item likert scale that is used to measure an individual's tendency to cancel appointments on a short notice and prioritize short term goals over long term gains. The internal consistency was acceptable for the overall scale (Cronbach's $\alpha = 0.770$). The age range defined for using this scale is 18-30.

Procedures

In order to fulfill the purpose of this study, which is to find the relationship between online gaming, self-control, problem solving and social zapping, the permission from the respective authors was taken in order to use their tools. Data was collected on the basis of inclusion and exclusion criteria. Each participant took approximately 15-30 minutes to

answer the form. For the purpose of statistical analysis, the analytic software i.e. Statistical Package for the Social Sciences (SPSS 21) was used.

Results

Descriptive Analysis

Table 1

Descriptive Statistical Characteristics of Participants (n=325)

Demographics	Categories	f	%	M	S. D
Age	18-20	129	39.7		
	21-23	149	45.8		
	24-27	37	11.4		
Gender	28-30	10	3.1		
	Male	270	83.1		
Education	Female	55	16.9		
	Matriculation	4	1.2	2.90	0.543
Employment Status	Intermediate	54	16.6		
	Undergrad	238	73.2		
	Postgrad	29	8.9		
	Student	59	18.1	4.0	2.126
	Job Holders	66	20.2		
	Business Owners	19	5.8		
Marital Status	Freelancers	16	4.9		
	Gamers	3	0.9		
	Unemployed	162	50.0		
	Unmarried	308	94.5	1.08	0.396
	Married	13	4.0		
Monthly Family Income	Divorced	5	1.5		
	Less than 25000	20	6.4	3.34	1.284
	Around 50000	82	25.2		
	Around 100000	81	24.8		
	Around 150000	53	16.3		
Sleeping Hours	More than 150000	89	27.3		
	< than 4 hrs	23	7.1	2.87	0.987
	4-6 hrs	86	26.4		
	7-8 hrs	151	46.6		
	9-10 hrs	39	12.0		
Sleep Satisfaction	> than 10 hrs	26	8.0		
	Highly Satisfied	60	18.4	2.70	1.201
	Satisfied	85	26.1		
	Moderate	102	31.6		
	Unsatisfied	47	14.4		
Gaming on Weekdays	Highly Unsatisfied	31	9.5		
	< than 10 hrs	319	98.2	1.02	0.135
Gaming on Weekends	> than 10 hrs	6	1.8		
	< than 10 hrs	305	93.9	1.06	0.241
Most Played Games	> than 10 hrs	20	6.1		
	PUBG	77	23.9	4.51	2.48

	Valorant	28	8.6		
	Call of Duty	25	7.7		
	Clash of Clans	4	1.2		
	Candycrush/Subway Surfer	15	4.6		
	^a Multiple	70	21.5		
	^b Others	106	32.5		
Parental Relationship	Highly Satisfied	171	52.6	2.07	1.391
	Satisfied	57	17.5		
	Moderate	37	11.4		
	Unsatisfied	24	7.4		
	Highly Unsatisfied	36	11.1		

Note. Sample Size n=325, M = mean, S.D = Standard Deviation, f = Frequency

^aMultiple means that the gamers play all the games enlisted in mostly played games i.e. PUBG, Valorant, Call of Duty, Clash of Clans and Candy Crush/Subway Surfer.

^bOthers means the variety of other games which are played by the population but aren't rather frequently played which includes 8 Ball Pool, Ludo, Genshin Impact, Frag, World of Warcraft, Free Fire, Tekken, Need for Speed etc.

Table 2

Reliability Analysis and Alpha Coefficient of Scales (n=325)

Scales	K	M	S. D	α	Range
1 Internet Gaming	9	20.39	6.022	.757	9-32
2 Self-control	36	111.80	14.087	.764	75-156
3 Problem Solving	10	38.55	7.428	.750	14-64
4 Social Zapping	6	18.57	6.109	.772	6-36

Note. K = Number of Items, M = Mean, S.D = Standard Deviation and α = Cronbach Alpha

Table 2 shows the reliabilities of the scales with cronbach alpha, mean, standard deviation and range. The reliabilities of the main scales are all acceptable i.e. Internet Gaming consisted of 9 items ($\alpha = .757$),

self-control consisted of 36 items ($\alpha = .764$), Problem Solving consisted of 10 items ($\alpha = .750$) and Social Zapping consisted of 6 items ($\alpha = .772$).

Table 3

Pearson Product Correlation Analysis between Internet Gaming, Self-Control, Problem Solving and Social Zapping among young Online Gamers (n=325)

Scales	1	2	3	4	M	S. D
1 Internet Gaming	-	-.224**	.024	.165**	20.39	6.022
2 Self-control		-	.002	-.311**	111.80	14.087
3 Problem Solving			-	.114*	38.55	7.428
4 Social Zapping				-	18.57	6.109

* $p < .05$, ** $p < .01$

In Table 3 the correlation matrix was generated using Pearson Product Moment Correlation to examine bivariate relationships between Internet Gaming, self-control, Problem Solving and Social Zapping. The results shows that Internet Gaming is significantly negatively correlated with Self-Control ($r = -.224, p < .01$) indicating that online gamers who are more indulged in internet gaming, decline in regulating their self-control and vice versa. In addition, Internet Gaming is significantly positively correlated with Social Zapping ($r = .165, p < .01$) indicating that individuals who are more indulged in

internet gaming have high social zapping and vice versa.

Self-Control is also significantly negatively correlated with Social Zapping ($r = -.311, p < .01$). It indicates that individuals who have high self-control have low social zapping. In addition, Problem Solving has a significant positive correlation with Social Zapping ($r = .114, p < .05$), it shows that if a gamer has high problem solving abilities, his social zapping will also be high.

Table 4

Linear Regression Enter Method Analysis for Predictor of self-control (n=325)

Variable	B	SE	95% CI	β	t	P
(Constant)	122.475	2.697	[117.170-127.780]		45.418	.000
IG	-.523	.127	[-.773-(-.274)]	-.224	-4.126	.000
R	.224					
R ²	.050					
F	17.024**					

Note. IG is for Internet Gaming, SE for Standard Error, CI for Confidence Interval.

* $p < .05$, ** $p < .01$

In Table 4 Internet gaming was measured as a predictor of self-control. A significant regression equation was found [$F(1,323) = 17.024, p < 0.01$] where the value of R is .224 and R² is .050 which

indicated 5.0% variance in model. Gamers' predicted self-control = 122.475 - .523 (IG) according to which we can say, Internet Gaming significantly predicts self-control ($\beta = -.224, p < 0.01$).

Table 5

Linear Regression Enter Method Analysis for Predictor of Social Zapping (n=325)

Variable	B	SE	95% CI	β	t	P
(Constant)	15.156	1.183	[12.827-17.848]		12.807	.000
IG	.167	.056	[.058-.0277]	.165	.058	.003
R	.165					
R ²	.027					
F	9.046**					

Note. IG is for Internet Gaming, SE for Standard Error, CI for Confidence Interval.

* $p < .05$, ** $p < .01$

In Table 5 internet gaming was analyzed as a predictor of social zapping. A significant regression equation was found [$F(1,323) = 9.046$, $p < 0.01$] where the value of R is .156 and R^2 is .027 which indicated 2.7% variance in model. Gamers' predicted

Social Zapping = $15.156 + .167$ (IG) according to which we can say, Internet Gaming significantly predicts social zapping ($\beta = .165$, $p < 0.01$).

Table 6

Mediation Effect of Self-control between Internet Gaming and Social Zapping (n=325)

Variable/Effect	B	SE	P	t
IG→SZ	.167	.056	.003	3.008
IG→SC	-.523	.127	.000	-4.126
IG→SC→SZ	-.125	.023	.000	-5.332
Effects				
Direct	.167	.056	.003	3.008
Indirect	-.125	.023	.000	-5.332
Total	.042	.079	.003	-2.324

Note. B= Unstandardized coefficients; SE= Standard error, LL= Lower limit; UL= Upper limit; IG=Internet Gaming, SC=Self Control, SZ=Social Zapping

The Table 6 shows the mediation of self-control between internet gaming and social zapping in online gamers. The findings revealed self-control showed full mediated between internet gaming and social zapping, hence playing a role as key mediator.

Discussion

In the light of previous literature it was perceived that the participants with risk of IGD will have low self-control (Halimah & Safrina, 2019; Zhou & Xing, 2021; Afriwilda et al. 2020). It was also perceived that online gamers will have high problem solving skills (Chen, 2019). Along with the lack of self-control, researchers found that online gamers are also found to be aggressive in nature which is one of the reasons which leads them to the internet gaming disorder (Teng, Lu and Liu, 2014). Another study in 2019 found that online gaming enhances social connectedness and is nowhere related to social isolation or depression which made us believe that

online gamers might not be asocial (Renwick et al. 2019). However, we couldn't claim that all of these related researches' results were also valid for Pakistani gamers.

According to current limited literature of Pakistan we came to know that male population of gamers was way higher than the female population (Khalid & Muqtadir, 2014) which has also been proved by this study where male participants are 270 and female participants are 55. Besides, it was also found that males scored higher on IGDS as compared to females (Zahra et al, 2019 & Rasheed, 2021) and more at risk of IGD which again was proved by this research as males scored $M = 20.5444 \pm 5.84$ while females scored $M = 19.618 \pm 6.86$. No current study in Pakistan was directed to find out the collective psychological relationship of online gaming, self-control, problem solving and social zapping in order to find out the cognitive, social and mental health of gamers concisely, which give rise to this study.

The hypothesis was that online gaming will be correlated with self-control and social zapping. After the analysis, it was found that online gaming indeed was significantly correlated with self-control and social zapping but no significant correlation was found between online gaming and problem solving. One of the reasons behind this insignificant relationship could be that problem solving is a versatile cognitive factor which can't simply be measured on the basis of a IIPSS questionnaire especially for the online gamers. Gamers may be strategically great problem solvers in game but we must know the real world is far more different than the virtual world (Wang, 2019). To measure the problem solving of participants, more in-depth study is required with an experimental problem solving scale where participants may be asked to solve a problem practically.

The next hypothesis was that online gaming behavior may predict self-control, problem solving and social zapping, but the results showed that since the correlation of online gaming with problem solving wasn't significant hence there lies no predictive relationship between online gaming and problem solving. However, a significant predictive relationship was found between online gaming and self-control and social zapping. This hypothesis is backed by a finding of (Latifa et al. 2018) who found that there is significant prediction between online gaming, self-control and parenting styles.

Conclusion

This research concludes that there exists a significantly negative correlation between online gaming and self-control; and a significantly positive correlation between online gaming and social zapping which means with the increase in gaming behavior, the self-control will decline and social zapping behavior will increase and vice versa. Moreover, it was found that online gaming can significantly predict self-control and social zapping. Problem solving showed no significant relationship with any variable however it was found that interdependent problem solving problem solving was positively correlated with social zapping.

Implication of Study

Esports is a growing industry all over the world which holds a promising future, though not in Pakistan yet, but the time will come soon as the ministry of Technology has officially announced esports as a career in Pakistan in 2021. Especially after COVID-19, when multiple platforms have shifted from physical to virtual ones, drastic changes have been seen in the statistics of online gaming all around the world (Kawatato et al. 2021).

The results of this study can help to spread the word of awareness about the harmful psychological effects of uncontrolled gameplay. The mental health counselors, behavior and health psychologists can address the youth and their parents especially about the symptoms of IGD who are indulged in online gaming or are at risk of developing disorder. Mental health and social workers should strictly tell parents to not take their children's mood swings for granted and keep strict checks on how many hours they play games. They can provide proper guidance about how to differentiate between healthy and dangerous gaming in a way in which they could maintain their healthy routine, including proper sleep, healthy, remaining socially connected and especially self-control regulation. If online gamers develop self-control, they are one step away from being a professional online gamer.

While there might be multiple reasons for lack of self-control, some significantly prominent issues in Pakistan are technological drawbacks, low ping of internet while gameplay, loadshedding, piracy of local games, gray trafficking and less e-cafes (Asim, 2019; Gulrez, 2020 & Nasir, 2021). This research can also further lay the background for the researchers about how gamers lose self-control in the first place while playing online games and how it could be controlled.

Limitation and Recommendation

- Firstly, the data was collected online through google forms because it was practically almost impossible to reach all the online gamers and collect data manually especially during the times of summer vacations when this data collection took place. I would suggest conducting manual data collection if feasible. The reliability of scales may increase. Also holding an experimental design research for the

testing of problem solving because it is a versatile cognitive phenomenon which is rather difficult to find from mere 10 or so statements.

- Secondly, all of the available scales were in English and no Urdu translation was available at that time. Future researchers should try using translated scales so that participants face least problems regarding understanding the language and could properly answer all the statements.

Contributions

Esha Naeem: Conception and design, data collection, analysis and interpretation of data, drafting of the article.

Arooj Nazir: Supervision of research, data collection, statistical expertise, critical revision of article for important intellectual content.

Author's Note

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