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Influence of Online Gaming User Preferences on Cognitive Behavior with Mediation Effect of Emotions

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Abstract

Online games are now a prosperous industry. Despite the popularity of online games, game developers confront the challenge of how to boost the player's cognitive behavior. Some of the researchers investigate the influence of functional experience, hedonic experience, and social experience on the word of mouth through the mediation mechanism of pleasure, arousal, and dominance and they found that online game experiences first trigger the positive emotions of the online game players and then emotionally laden players spread the positive word of mouth about that player. To enhance the players' cognitive behavior, researchers need to identify some more influential variables. To tackle this significant challenge, game developers found the cause To address this challenge, this study investigates the impact of three types of variables, namely, immersion, progression, and socialization, on cognitive behavior. Drawing from the Stimulus, Organism, and response theory, the authors propose that immersion, progression, and achievement leads the cognitive behavior by evoking the emotions of achievement. The current study found that user preference experiences like socialization, immersion, and progression influence the emotion of achievement, and in turn emotional laden customer will spread out the excitement of winning players in their social circle. Using the survey data collected from online game players, our study reveals that immersion, progression, and socialization significantly affect cognitive behavior through achievement. This study suggests that game developers integrate the user preference experience like socialization, immersion, and progression to enrich the player's experience. The major contribution of this study is to investigate the unique relationship between user experience, emotions, and cognitive behavior. Theoretical and managerial implications are discussed.

Keywords: User Preference, Cognitive Behavior, Progression, Immersion, Socialization

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1. Introduction

Online games have a unique ability to engage, challenge and motivate has led users to learn, grow, and change. The primary purpose of games is entertainment. It is a challenge for a game developer to create games that both educate and entertain. The given model discusses the user preferences and their behavior towards gaming. The interesting fact about the game is that users (players) will voluntarily do unnecessary challenges in the game which move towards cognitive behavior. Online games are more effective when they provide a chance to players to win the game. Multi-media players' online games often engage acknowledging users about themes in which they have less knowledge, encouraging the online game player to change their attitude or behavior, or involve them in related areas. To make online gaming systems more influential, many researchers have attempted to theoretical framework for players preferences on these platforms. Online games or any gaming system help its users to accomplish their goals. It helps in educating them and helps them to improve their knowledge, attitude, and behavior. Gaming becomes more effective when the user preference model is focused on the research methods.

Learning through games have various application even on medicine as well. (Beale, Kato, Marin-Bowling, Guthrie, & Cole, 2007; Cameron & Dwyer, 2005; Lennon, 2006; Roubidoux, 2005; Yaman, Nerdel, & Bayrhuber, 2008) business and knowledge management (Christoph, 2006) military training (Artstein, Gandhe, Gerten, Leuski, & Traum, 2009; Patel, Leuski, & Traum, 2006) science and mathematics (Habgood, 2007; Nelson, 2007; Shaffer, Squire, Halverson, & Gee, 2005; Young & Upitis, 1999) promotion of language education and vocabulary (Connolly, Stansfield, & Hainey, 2011; Johnson & Wu, 2008; Yip & Kwan, 2006) software engineering, computer science and information systems (Connolly, Stansfield, & Hainey, 2007; Ford Jr & Minsker, 2003) analyzing the literature review in online games helps in focusing on how , much positive impact the gaming's create on its users. It enhance skills and improve learning ability. The literature review explains about playing online games that its range of perceptual, behavioral and cognitive affects bring motivating outcomes and results.

Immersion has a characteristics in which it kept user engage in a different self-improvement activities. Learn in a environment where users explain the real-world meaning by using different creative stories. And can relate the gaming lessons in a real world. Users who learn and more enthusiastic to challenge and other people and motivate to compete with them. It motivates the learners to make a community of leaners and win the competitions in the world. Similarly, through gaming people learn to make

groups team mates and ability to work for acquiring their goals (Bateman, Lowenhaupt, & Nacke, 2011; Ju & Wagner, 1997).

Gaming learners can engage themselves to explore and enjoy the environment where they can create a persona with a background story, and they are interested in recreating their digital character in-game according to their own choice which helps them to rebuild their character in the real world to win in real-world competitions as well. The existing research is related to the gamification, playing games, their designs and categories, gamers interest, achievement, socialization and immersion that reflects the major game design mechanics (Cummins, 2002; DeRose, 1993; Ju & Wagner, 1997; Mithra, 1998). Gamification strategies have many positive effects according to many researches, these effects strongly depend on the design, context and target users of such strategies (Deterding, Dixon, Khaled, & Nacke, 2011). Gamification strategy is to think of how to engage different users. Although the gamification refers to the gaming design system, its services, games organization and the activities involves in the game. All together makes a gamification system, with the added aim of affecting user behavior (Mora, Riera, González, & Arnedo-Moreno, 2017; Tondello et al., 2016).

Interaction creates excellent outcomes from online gaming. Csikszentmihalhi (2020) and Mithra (1998) interaction comes from socializing with others it is defined as communicating with others by creating an impact on each other. Let's take an example of any thrill digital game where a monster may interact with a player for killing him/her, and the player interacts with a counterattack using his/her arms for saving his/her life in online games. Sometimes, when a player wants to get powerful items or a higher skill, the player may interact with a monster, and then the giant reply with a counterattack or escape. This type of incident creates greater influence on the publicity of the online game as the result to generate a story assists in storytelling by the players of the online game (Cummins, 2002; Ju & Wagner, 1997; Nacke, Bateman, & Mandryk, 2014). Therefore, many games have been created like novel stories and all of these are done by researching their impact on the users and popularity of the game (Johnson, 1998; Lewinski, 1999). Interaction of the user with the games is considered a personal interaction. Hypothetically, the people will have an excellent experience, when they have an interaction with the gaming system or other users in a game.

2. Literature Review

Gaming Systems create an effect when they are designed to aid people in accomplishing their goals. Games have a learning perspective as well where it helps their users to gain knowledge of those areas where they lack, it helps them in maintaining

changes in attitude and behavior. Games develop the interest of an individual in specific areas as well. Research on playing games show interesting studies that every individual has different personal preferences over what to play and how to play (Peever, Johnson, & Gardner, 2012; Yee, Ducheneaut, & Nelson, 2012). There's research on players type model made by researchers (Hamari & Tuunanen, 2014; Nacke et al., 2014) and the motivational level or scale of often players/gamers (Yee *et al*., 2012) has done to identify different playing styles of players.

2.1. Socialization

Recently, Yee *et al*. (2012) expanded on their previous work. Social (competition and community), achievement (competition and power). This recent proprietary investigation intended to capture player motivations towards many different games and was empirically supported by factor analysis. Online gaming consist of all those elements that go parallel to some kind of social interaction, which involves collaborative, synergetic, competitive, and increase interaction among people. Socialization is the element that is based on socializing with others which leads to the fact that gamers perceive the socializing factor from gaming as well because they show their preferences for socialization. It's an extrovert hobby to socialize more and therefore they play games to interact with others.

2.2. Immersion

The momentous element of online gaming activity is that it creates immersion and curiosity. This element is strongly preferred by free spirits. Immersion elements developed in those players who have a sense of doing something, who are achievers. People who have the will of doing something develop this element of immersion by playing games, it boosts their self-esteem challenge them to do better out of curiosity. Moreover, philanthropists and disruptors also show a weak preference for these elements. Immersion elements are preferred by women, achievers, and free spirits.

2.3. Progression

The element of progression creates a sense of doing something that creates change or this element shows how much progress have made. Player'sperceive such a sense of improvement and achieving meaningful goals via online gaming. Progression elements are only marginally preferred by achievers and philanthropists. However, this element of preferences is not explained or studied much, although people who experience the sense of progression does enjoy it more than other perceivers of other preferences.

Moreover, Immersion and progression are the most liked perceived preferences by the users as compared to other element preferences. *Factors that Influence User Preferences* to comprehend what factors influence user preferences of elements. However, through elements of nature, we analyzed how the participant's user type scores, personality traits, age, and gender influenced their scores for each group.

2.4. Individual Motivations

Every element of online gaming supports individuals to accomplish their decided goals. Immersion develops curiosity which kept them engaged in games to increase their experience that leads them towards doing something more meaning full. Similarly, progression provides the path as well as results at every stage to tell the player how much they have learned until now and how much they have improved and what more is left to achieve. Therefore, these elements participate in improving an individual's self-esteem and self-efficacy with the help of the gaming system.

2.5. Social Motivations

Social Motivation involves such element that makes its user interact with people while performing activities that lead them towards the achievement of their gaming goals. Socialization makes its use motivated to interact with others and perform better. Users collaborate with others to achieve their goals which creates a relationship among them. Altruism makes users feel that they are part of something meaningful and make a contribution to a worthy cause. It allows people to get aid from one another and the game system. Supporting each other and resolving each other's problems rise experiences of users and motivate them to play the game and do something meaningful.

2.6. Behavior versus Cognitive Perspectives

In the beginning, it is important to clarify that different research methodologies about behavior and cognitive psychology, and the findings of cognitive research are also based on observable behavior. How the researchers can be assured that their research or findings accurately represent the cognitive process instead of behavioral responses.The most significant aspect of behavior related to the relation of behavior with cognition where, if behavior is habitual then the results from some kind of cognition even when the latter falls under the rubric of what (Goleman, 2001; LeDoux, 1998) refer to as ''emotional intelligence.''

Behavior and thinking processes side by side because behavior can tell about a persons personality.Its focus instead on observable behavior alone (Sternberg, 1996).

According to Greene (1995) the behavioral theory has been rejected because according to him researchers can predict how we can see that mind responds to stimuli as an intentional system, with logic, desire, and goals. The mind works rationally in its process of thinking, being significantly predictable only when people are judged by their behavior. According to his thinking rationality is not perfect because theirs is always a possibility of human error, humans make mistakes in creating good judgment and their memory does not always work rightly. Picard (1997) also suggested that emotions play an essential role in decision-making, learning, and other processes that directly influence the mechanisms of rational thinking.

Learning motivates people, it has many motivational benefits (Blumenfeld, Kempler, & Krajcik, 2006), few studies discuss how motivation emerges and sustain learning activities. Motivation in a learning process is considered as a factor-driven by psychology that takes us towards cognitive process when furthered take us to achievement. Individuals or different people go through challenges coming from cognition pattern, and it requires collaborative learning, such those include producing the same ground in similar problems. For example, Mäkitalo, Häkkinen, Leinonen, and Järvelä (2002), negotiate different and numerous perspectives, and handle complicated concepts (Koschmann, 2012). Computer games are very useful in an educational perspective, according to some educationalists. They mention it as a high learning activity and motivate the user to perform much better than before. It is addictive though and the quality (Griffiths & Davies, 2002). Connolly, McLellan, Stansfield, Ramsay, and Sutherland (2004) suggest that computer games build on theories of motivation, constructivism, situated learning, cognitive apprenticeship, problembased learning, and learning by doing.

3. Hypotheses Development

3.1. Socialization and Achievement

The basic scheme to separate the different players' types by their in game behavior interaction with other players. In multi-player game environments, the author varies gamers in category achiever and socialization**.** In the social category, players are interested in having a significant relationship with other players (Mora et al., 2017).

H1: Socialization positively affects achievement.

3.2. Immersion and Achievement

In achievement, players are taking interest to gather coins and powers, immediate development, and status. In the immersion, category players have the intention to generate a person with story background, and getting an escape from the real-life difficulties, and attempt to immerse in an own-like activity by using the virtual environment (Mora et al., 2017).

H2: Immersion positively affects achievement.

3.3. Progression and Achievement

Features regarding progression and achievement. Such type of feature push the biginers by providing them a challenging task and pleasure toward meeting a specific goal. Earned coins are specifically given for successfully completing a particular task and keep busy bigners by giving supporting hand their own achievement motivation (Cameron & Dwyer, 2005; Heeter, Lee, Medler, & Magerko, 2011; Mora et al., 2017).

H3: Progression positively affects achievement.

3.4. Socialization, Immersion, Progression, Achievement, and Cognitive Behavior

Gamification is a non-game environment that incorporates game design elements, intending to create a better user experience and increase motivation however in games, it is generally observed that we are often compellingly engaged and motivated, as well as being able to drive cognitive and socialization, immersion, progression benefits (Bateman *et al*., 2011; Mora *et al*., 2017). The achievement category tries to motivate users by giving them a challenging situation and enjoyment toward achieving a particular task.

H4: Achievement mediates the relationship between socialization, immersion, progression, and cognitive behavior.

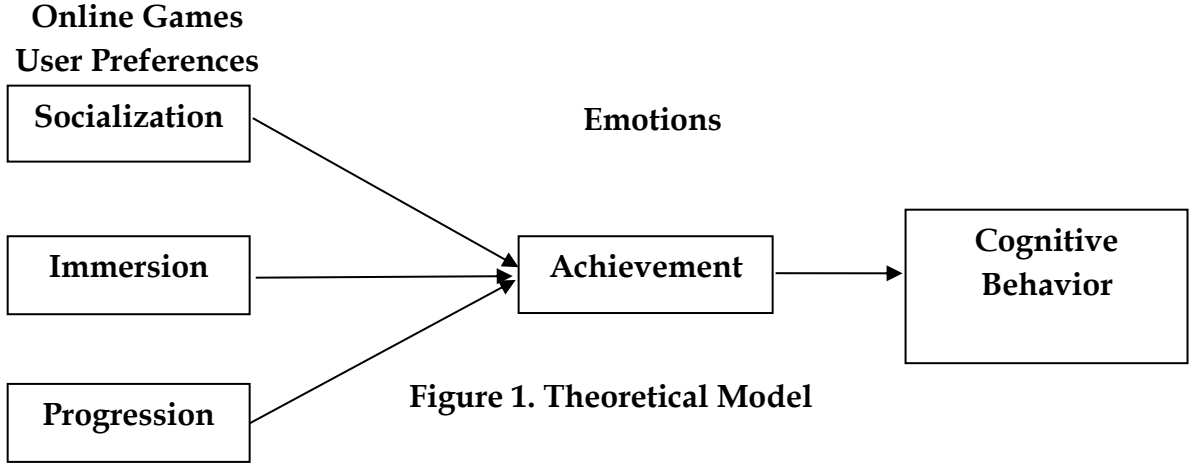


Figure 1. Theoretical Model

4. Methodology and Data Analysis

4.1. Participants and Procedures

The questionnaire was conducted for one month May 2021.

Online gamers were approached in the different cities of Pakistan. The response rate was (42%) (126 usable responses out of 300). The questionnaires were shared among volunteers' online game experience for at least three months. The demographic and socioeconomic profiles of the sample indicated (55.55) males and (44.45%) females. A major portion (71.42%) of the sample was the younger than 25 years old, and (23.01%) of the respondents were between 26 and 35Years old, and (1.58) of the respondents were between 36-45 years old, and (1.58%) of the respondents were between 46-55, and (2.41%) of the respondents were between 56 and older. The mean age of the online game players was within the range of 24-25 years old. Of the respondents, (15.87%) completed High school or below, and (19.84%) completed intermediate, (42.06%) completed bachelor's degrees and (22.23%)completed a master or doctorate. Among the respondents, 26% have been playing online games for the last three years or more.

4.2. Measure

The researchers used a questionnaire to test the proposed assumptions. The survey consisted of two parts. The second part asked Participantsonline game user experience in terms of user Socialization, Immersion, and Progression experiences. Participants were asked about their emotions like achievement, while playing online games. A 5-point-likert scale was used to measure the items in part one. The final section of the questionnaire was relating to players' personal information, such as gender, age, job, qualification, and income.

4.2.1. Socialization, Immersion, Progression

The measurement items of Socialization, Immersion, and progression experiences are adapted from (Griffiths & Davies, 2002; Khan & Muqtadir, 2016; Korkeila & Hamari, 2018; Tondello, Mora, & Nacke, 2017). The scale measures different dimensions of socialization experience, such as Play with friends, players in the chat room, and communicating from different countries. The scale measures the Immersion experience, interest, emotions, and empathized of a player. The progression experience is measured by increasing amount, and playing more. Socialization experience (Cronbach's a = 0.678), Immersion experience(Cronbach's a = 0.45), and progression experience (Cronbach's a = 0.680).

4.2.2. Achievement

Items of achievement are adapted from (Okuneva & Potapov, 2014). The instruments evaluated are powerful, compete with others, and take part in a competition of online game players. The achievement represents a good mediator. Mediator Achievement (Cronbach's a = 0.79).

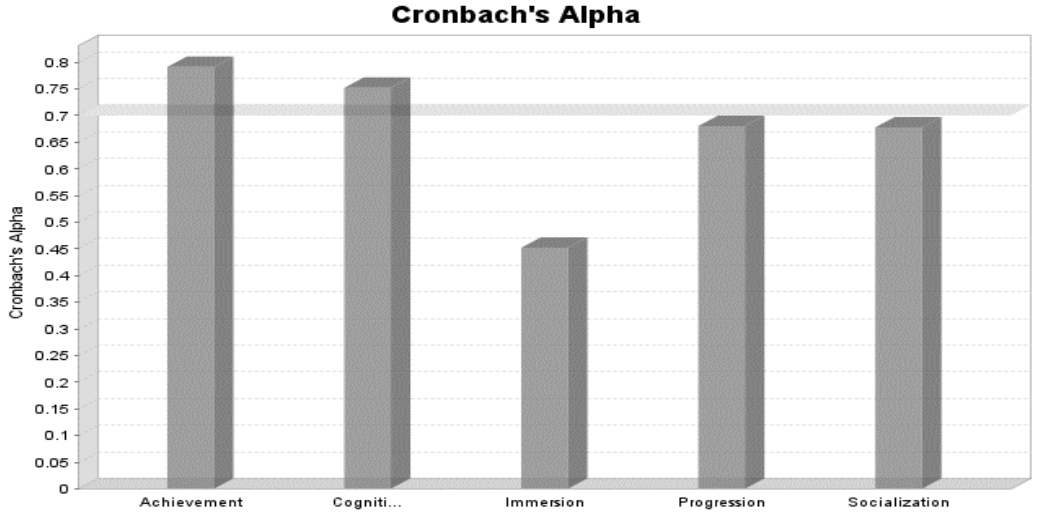
4.2.3. Cognitive behavior

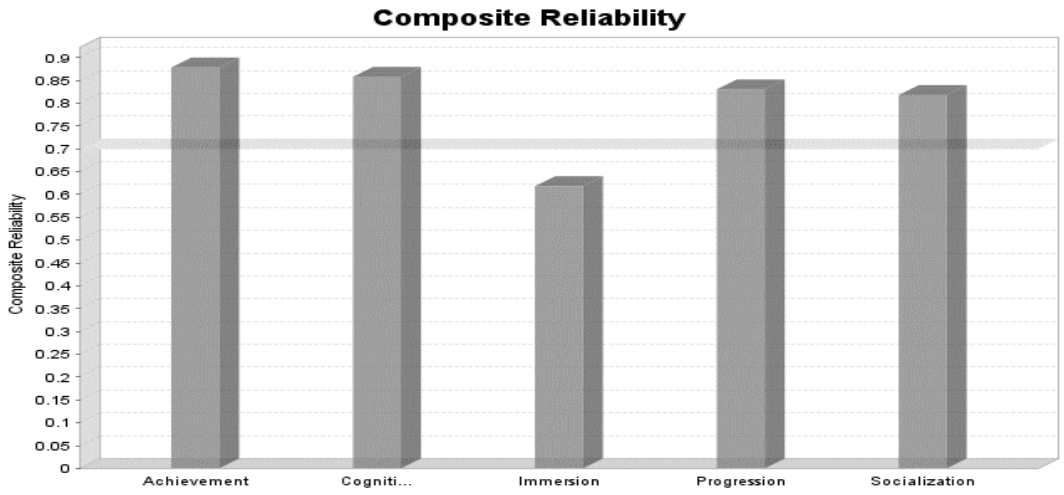
The scale measured different dimensions of CB, such as control, entirely absorbed, and felt curious with others to play the game The CB dimension demonstrated good reliability. Dependent variable Cognitive behavior (Cronbach's a = 0.75). (Choi & Kim, 2003).

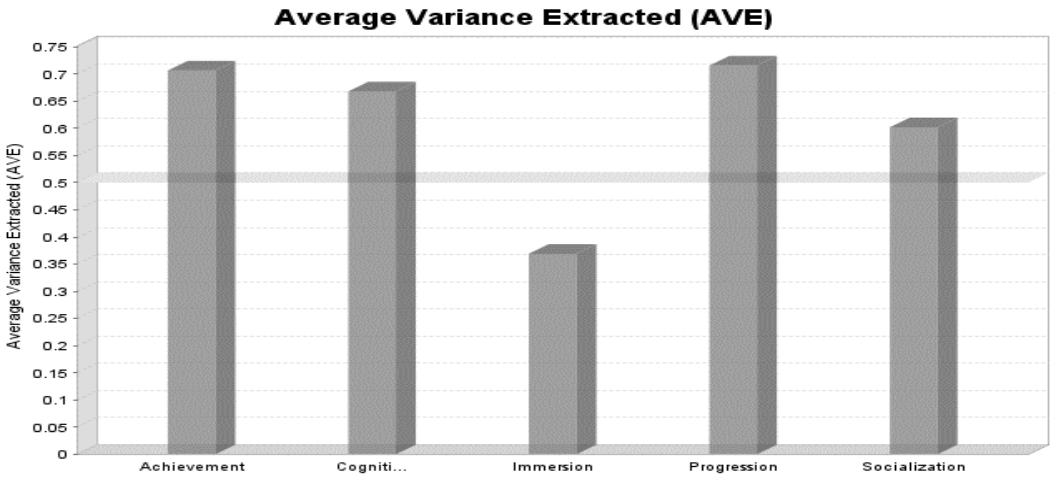
Table 1: Confirmatory Factor Analysis

Constructs	Items	SFL
Online Game Immersion Cronbach's α=0.45 CR = 0.618 AVE = 0.369	OGI 1: I felt that I really empathized for the game	**0.770**
	OGI 2:I was interested in seeing how the game's events would progress	**0.907**
	OGI3:I did not feel any emotional attachment to the game	**0.207**
	OGI4: It did not interest me to know what would happen next in the game.	**0.137**
Online Games and Socialization Cronbach's α= 0.678 CR = 0.818 AVE =0.602	OGS1: How important for you to chat with other players in the chat room?	**0.667**
	OGS2, How important for you to play with friends	**0.856**
	OGS3, How important for you to communicate with people from many different countries and cities.	**0.793**
Achievement Cronbach's α=0.79 CR = 9.878 AVE = 0.706	A1,How important for you to become powerful	**0.850**
	A2, How important for you to compete with other players	**0.879**
	A3, How important for you take part in competitions	**0.789**
Online Game and Cognitive Behavior Cronbach's α= 0.752 CR = 0.858 AVE =0.668	CB1, I was in control of the online game that I was playing	**0.832**
	CB2, I was entirely absorbed in playing the online game	**0.805**
	CB3, I felt curious while playing online games.	**0.815**
Progression Cronbach's α=0.680 CR = 0.830 AVE =0.716	OP1, Over time I have increase the amount of online gaming I do in a day	**0.693**
	OP2, I tried to reduce my gaming time but always end up with playing more than before	**0.975**

Standard factor loadings of two (OGI1, OGI2) items of online gaming Immersion fulfill the criteria and their values are above than threshold value 0.70. Rest of the two items (OGI3, OGI4) did not fulfill the criteria and their values are less than 0.70. Standard factor loadings of two items (OGS2, OGS3) of online gaming Socialization fulfill the criteria and their values are above than threshold value 0.70.The rest of the one items (OGS1) did not fulfill the criteria and their values are less than 0.70. Standard factor loadings of all items of online gaming achievement fulfill the criteria and their values are above than threshold value 0.70. Standard factor loadings of all items of online gaming cognitive behavior fulfill the criteria and their values are above than threshold value 0.70. Standard factor loadings of one item (OP2) of online gaming progression fulfill the criteria and their values are above than threshold value 0.70.The rest of the one item (OP1) did not fulfill the criteria and their values are less than 0.70.







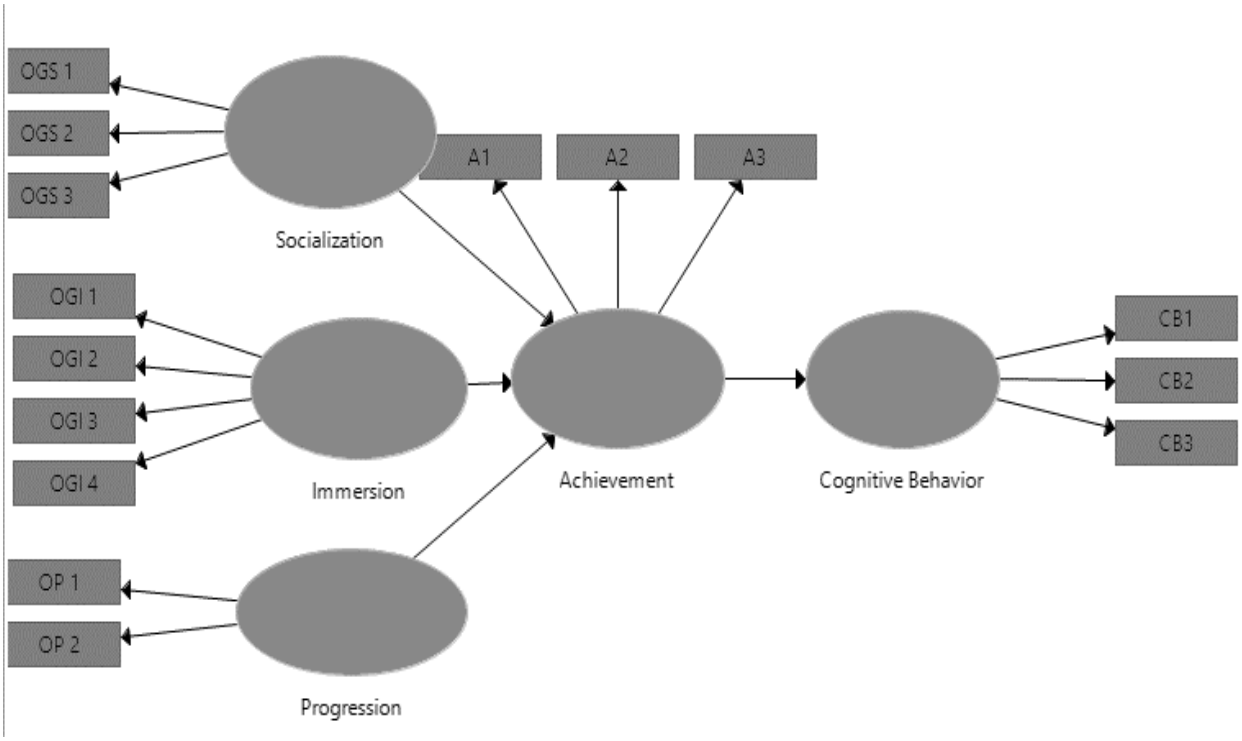


Figure 2: Theoretical Model with Indicators

Table 2: Demographic Characteristics of Participants

Profile	Category	%age
Gender	Male	55.55%
	Female	44.45%
Age	Younger than 25	71.42%
	26-35	23.01%
	36-45	1.58%
	46-55	1.58%
	56 and Older	2.41%
Education	High School or Below	15.87%
	Intermediate	19.84%
	Bachelor Degree	42.06%
	Masters or Doctorate Degree	22.23%
Job	Govt Employee	3.96%
	Private Employee	11.90%
	Full Time Student	47.61%
	Own Business	21.42%
	Other	15.11%
Monthly Income	Upto RS: 12800	32.53%
	Between Rs: 12800 – 24000	17.46%
	Between Rs: 24000 – 32000	10.31%
	Between Rs: 32000 – 64000	18.25%
	More than RS: 64000	21.45%

Table 3: Correlation Matrix

Variables	1	2	3	4	5
1-Achievement	**0.84**				
2-Cognitive Behavior	0.41	**0.82**			
3-Immersion	0.37	0.42	**0.61**		
4-Progression	0.17	0.41	0.31	**0.85**	
5-Socialization	0.49	0.53	0.53	0.32	**0.78**

Note: *n = 126, Bold figures on the diagonal are the square roots of the AVE for constructs. *p < 0.1; **p < 0.05; ***p < 0.01*

Table 4: Main Effect

Hypothesized Path	Path Coef	P Values
Immersion -> Cognitive Behavior	0.235	**0.006*****
Progression -> Cognitive Behavior	0.219	**0.028****
Socialization -> Cognitive Behavior	0.328	**0.003***

Note: *Immersion influence cognitive behavior (b = 0.235, p = 0.006) positively and significantly as shown in the table 4. Progression influence cognitive behavior (b = 0.219, p = 0.028) positively and significantly as shown in the table 4 .Socialization influence cognitive behavior (b = 0.328, p = 0.003) positively and significantly as shown in the table 4*

Table 5: Mediation Effect

Hypothesized Path	Path Coef	P Values
Immersion -> Achievement_ -> Cognitive Behavior	0.141	**0.012****
Socialization -> Achievement_ -> Cognitive Behavior	0.129	**0.043****
Progression -> Achievement_ -> Cognitive Behavior	-0.008	**0.827**

Note: *Immersion influences the cognitive behavior (b = 0.141, p =0.012) positively and significantly without mediation effect as shown in table 5. Socialization influences the cognitive behavior (b = 0.129, p =0.043) positively and significantly without a mediation effect as shown in table 5. Progression influence cognitive behavior (b = -0.008, p =0.827) positively and significantly without mediation effect as shown in table 5.*

Table 6: Sobel Test (z)

Hypothesis	Predictor	Mediator	Outcome	Z Value	P Value	Status
H1	Socialization	Achievement	Cognitive Behavior	2.443	0.014***	Accepted
H2	Immersion	Achievement	Cognitive Behavior	2.628'	0.008***	Accepted
H3	Progression	Achievement	Cognitive Behavior	0.221	0.824	Rejected

The authors used Sobel test to check the significance of the mediator and found that achievement had a significant mediation effect (z = 2.443, p = 0.014) on the relationship of socialization and Cognitive behavior. The authors used sobel test to check the significance of the mediator and found that achievement had significant mediation effect (z = 2.628, p = 0.008) on the relationship of Immersion and Cognitive behavior. The authors used Sobel test to check the significance of the mediator and found that achievement had a significant mediation effect (z = 0.221, p = 0.824) on the relationship between Progression and Cognitive behavior.

5. Discussion and Conclusion

The research of this article came to an understanding that the impact of immersion, progression, and socialization on cognitive behavior is positive. The relationship between immersion, achievement, and cognitive behavior is positive has been observed. The impact of socialization on achievement is positive and the effect of achievement on cognitive behavior is positive as well. Similarly, the progression positively effects achievement and the creates a positive impact on cognitive behavior. Our findings are in line with the previous research. Socialization's positive impact check on achievement in previous research. Also, immersion and progression positive impact check on achievement in previous research.

But some of the findings are not in line with the previous research. Achievement not mediates the relationship of progression and cognitive behavior in this research where as the previous research revealed that progression significantly mediates the relationship of progression and cognitive behavior (Mora *et al*. 2017; Heeter *et al*. 2011; Cameron & Dwyer 2005). This contradiction might be due to the cultural difference. Might be possible that Pakistani online game players are not considering the progression as compared to the developed countries' online game players consider it.

6. Limitations and Future Guidelines

The current study collected the data from the different cities of Pakistan and analyze it. Future studies also can collect data from other developing countries like India, Nepal, Afghanistan, Saudia, etc. The current study used the type of emotion like achievement emotion but future studies can use the other positive emotions like pleasure, arousal, and dominance. Furthermore, the current study uses online game user preferences like socialization, immersion, and progression, but the future study may investigate the impact of negative experiences like ping, in-game advertising, micro transaction, and hacking.

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