

Associations between Game Users and Life Satisfaction: Role of Self-Esteem, Self-Efficacy and Social Capital

Hye Rim Lee, Eui Jun Jeong

Abstract—This study makes an integrated investigation on how life satisfaction is associated with the Korean game users' psychological variables (self-esteem, game and life self-efficacy), social variables (bonding and bridging social capital), and demographic variables (age, gender). The data used for the empirical analysis came from a representative sample survey conducted in South Korea. Results show that self-esteem and game efficacy were an important antecedent to the degree of users' life satisfaction. Both bonding social capital and bridging social capital enhance the level of the users' life satisfaction. The importance of perspectives as well as their implications for the game users and further associated research is explored.

Keywords—Life satisfaction, self-esteem, game efficacy, life-efficacy, social capital.

I. INTRODUCTION

OVER the last several decades, digital entertainment games have become one of the most popular leisure activities globally [1]. Therefore, games become a part of people's lives. Recent years have seen a growth in research on the causes of subjective well-being (SWB) related to life satisfaction in game areas [2]. Life satisfaction has become a key factor in research, regarding comparisons between nations and societies as a representing the cognitive and emotional aspect of the quality of one's life [3], [4] and can predict many life outcomes such as self-esteem, social relationships, efficacy, education and religion [5]. The life satisfaction is a key indicator of Subjective Well-Being (SWB), since a mental feeling of well-being and fulfillment reflects the individuals' well-being from various aspects such as happiness and morale [6]. Previous research suggested that satisfaction has been affected by pursuing goals, taking pleasure in life, finding meaningful life, seeking social relationships [7].

Bentham [8] and Mill [9] argued that human motivation is fundamentally hedonistic. This suggests that gaming, as a hedonistic activity, contributes to the fulfillment of the individuals' desires, and that it produces happiness, life satisfaction or SWB, not simply pleasure. Moreover, [10] investigates that human beings are seeking exciting leisure activities for a sense of climax, thereby obtaining satisfaction, in that games as a cognitive leisure activity can give people a

feeling of happiness, life satisfaction or SWB. Although life satisfaction, self-esteem, efficacy and social capital are important human factors, not only in real life but also virtual life, there is relatively little emphasis on playing a role in gaming research. Moreover, empirical evidence is lacking on the intergrational associations between life satisfaction-related variables, with respect to both game users and the changes in them.

The Self-Determination Theory (SDT) posits that some activities, that meet individuals' needs, improves a person's well-being with the intrinsic sense of pleasure and satisfaction [11]. SDT is a widely grounded theory that is applicable to activities in the major fields of life [13], such as work, love and play [11], [12]. Wang, Khoo, Liu, and Divaharan [14] found that the physiological and aesthetic dimensions of game satisfaction had positive effects for game users. Similar findings were reported by [15] who found that the in-game satisfaction of basic needs predicted persistence in playing the game. Likewise, [16] examined longitudinal studies on MMORPGs, with arcade, console and computer games. They found that the MMORPG group reported greater enjoyment in playing, greater interest in continuing to play, and greater acquisition of new friendships. These studies on game satisfaction and greater game enjoyment suggest that game usage as a psychological variable might be also related to life satisfaction. Furthermore, [17] found that users' perceptions associated fun and the enjoyment of life, a sense of belonging, and warm relationships with others as reasons for playing games. Thus, game usage might offer a subjective experience which is specific to the individual underlying need for social relationship.

Concerning engagements like a game activities, previous studies found that such engagement contributed to well-being if the motivation for participating in them was self-determined [18]. Diener et al. [19] found that personal resources contributed more to well-being if they matched each person's goals. Playing games leads to a higher degree of involvement and goal pursuit [18], [20]. In the light of these various considerations, [21] identified that involvement, measured as flow experience, correlated strongly with having created something that had a sense of purpose and meaning, and labelled it need satisfaction. However, there is little research into the effects of life satisfaction on game users with self-esteem, efficacy and social capital.

This seeks to fill this gap by analyzing the associations between the life satisfaction and psychological, social, and

Hye Rim Lee is with the Digital Culture and Contents Department, University of Konkuk, Seoul, South Korea (e-mail: nevercry21@naver.com).

Eui Jun Jeong is currently an Assistant Professor in the Dept. of Digital Culture and Contents at Konkuk University (e-mail: jeong12@konkuk.ac.kr).

demographic aspects of general Korean game users. In this study, therefore, psychological variables (self-esteem, game and life self-efficacy), social variables (bonding and bridging social capital), and demographic variables (age, gender) were selected as the main indicators of game users' life satisfaction, in accordance with previous studies.

II. LITERATURE REVIEW

A. Role of Self-Esteem and Self-Efficacy

Self-esteem is an important indicator for life satisfaction. Self-esteem is regarded as a positive or negative orientation toward the self [22], and reflects one's feelings of self-worth [23]. High self-esteem has been reported to be one of the best predictors of well-being and has been found to be an important part of a successful and satisfying life, as a central aspect of well-being [23], [24]. High self-esteem was also reported as the one of the strongest predictors of well-being [25], [26]. Previous research constantly found that its correlation with life satisfaction was reported to be significantly high [5].

Importantly, Diener and colleagues' review of well-being cites 11 studies [4] showing a positive association between self-esteem and well-being. Rosenberg [22] found that self-esteem decreases during periods of unhappiness [22]. Despite the fact that the recent empirical studies have verified the significant relationship between self-esteem and life satisfaction in various settings, little has been conducted on its relationship in game research.

Efficacy is defined as an individuals' conviction or beliefs, concerning their ability to meet their desired outcomes in life [27]. Schunk [28] mentioned that efficacy has a positive effect on individual performance regardless of the domain. Luszczynska et al. [51] found a positive relationship between general efficacy and social satisfaction. Lent et al. [29] showed that goal efficacy was directly related to domain satisfaction, and indirectly related to overall life satisfaction. Thus, individuals experience positive emotions and satisfaction with success in a specific domain (e.g. game), and this in turn contributes to their sense of overall life satisfaction. Individuals with high efficacy may differ from perceived physiological level, as it enhances game performance rather than hindering it; therefore efficacy can have an impact on the game users.

Game efficacy refers to an individual's confidence in his or her ability to interact with game systems [30]. Previous studies indicate that a player's performance can be associated with the experience of efficacy [31]. Higher game-efficacy may lead to satisfaction, or SWB in games (due to playing the game) might seem like compensation for their lack of achievement, or any unfulfilled desires in their real lives [32]. In this regard, this study investigates the potential link between game and life efficacy and users' life satisfaction.

Considering the previous papers, the below hypotheses will be tested:

H1. Controlling for other variables, self-esteem will be found to be associated with the degree of game users' life satisfaction.

H2. Controlling for other variables, (a) game efficacy and (b)

life efficacy will be found to be associated with the degree of game users' life satisfaction.

B. Relationship Between Life Satisfaction and Social Capital

Social capital has gained extensive attention over the past few years, in numerous fields of studies, such as the strong ties or weak ties from online to offline [33]. Social relationships are associated with strong or weak ties, which related to social capital. These ties can be described as benefits like the acquisition of information or the emotional support people obtain from their social networks, which is embedded in the relationships between individuals [34], [35].

In this paper, we chose Putnam's [36] concepts, which are described as two types of social capital: bonding and bridging. Bonding social capital delineates benefits from close personal relationships, which might include deep or strong social ties that give emotional support among family or close friends. Bridging social capital is derived from casual acquaintances, including weak social ties, and new connections like novel information from distant connections. This relationship can lead to a broadening of social horizons, wider perspectives, or it can open up opportunities for new resources.

Lucas, Clark, Georgellis, and Diener [36] found that social bonds can be higher levels of subjective well-being. Kahneman and Krueger [37] found that people are simply happier when they are around other people, in general. Likewise, [5] shows that individuals who have a greater number of friends and family members tend to have higher levels of subjective well-being. That is, when they are involved in social interaction, people feel more satisfied. In the gaming context, social capital would imply that individuals with life satisfaction or SWB might affect near (e.g. bonding social capital) or faraway (e.g. bridging social capital) relationships. Thus, the personal social capital may influence the game users' life satisfaction. We therefore assume that game user has different patterns of relation with SWB depending on the degree of the bonding and bridging social capital. In addition, gender and age also has been reported to have a close relationship with life satisfaction [5]. Thus, life satisfaction could be influenced user's age and gender.

Considering the previous papers, the hypotheses below will be tested:

H3. (a/b): Controlling for other variables, (a) bonding social capital and (b) bridging social capital will be found to be associated with the degree of game users' life satisfaction.

H4. (a/b): Controlling for other variables, (a) gender and (b) age will be found to be associated with the degree of game users' life satisfaction.

III. METHOD

A total of 789 participants were surveyed for two weeks in South Korea. We randomly selected the participants. Participants ranged in age from 16 to 59 ($M=38.79$, $SD=11.89$). In gender ($M=1.50$, $SD=.50$); concerning the ratio of each gender, men comprised 395 (50.1%) of the participants, while women comprised 394 (49.9%). All participants received 5,000 KRW (about 5 USD) for their involvement in the survey.

The Satisfaction with Life Scale developed by Diener et al., [38] was used to measure the life satisfaction of the game users. Participants responded to items on a 5-point Likert Scale, ranged from 1 “strongly disagree” to 5 “strongly agree” ($\alpha = .86$)

Self-esteem was developed by Rosenberg [39] and the scale has been extensively utilized in measuring self-esteem. The questionnaires were composed of 10 items and a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). ($\alpha = .84$)

Game efficacy (online) was created by modifying the computer efficacy scales [40]. The scale is about conviction towards a user's ability to control over the games. Thus, we try to improve game efficacy item measure elaboration. We modified it, focusing on game related experience by adding "gaming" to the questions (e.g. "I am a valuable and important person in gaming-worlds; I know the game better than others." Participants responded on a 5-point Likert scale. The scale contains 12 items that are rated, ranging from 1 “strongly disagree” to 5 “strongly agree” ($\alpha = .87$).

For life efficacy (offline), we created scales by modifying the General Efficacy scales [41], focusing on real life related experience. The scale contained 12 items that are rated on a 5-point Likert scale, ranging from 1 “strongly disagree” to 5 “strongly agree” ($\alpha = .85$) (e.g. “If something looks too complicated, I will not even bother to try it; I can easily become friends with others.”

The measure of social capital was developed by Williams' social capital scale with 20 items [33]. Participants were asked to rate the items on a 5-point Likert scale, ranging from 1 “strongly disagree” to 5 “strongly agree”. 10 items focused on bonding social capital ($\alpha = .87$) while the other 10 items related to bridging social capital ($\alpha = .89$).

IV. RESULTS

A. Correlation Analysis

In a correlation test, there was a significant relationship between life satisfaction and self-esteem ($r = .54$, $p < 0.01$), as well as game efficacy ($r = .12$, $p < 0.01$) and life efficacy ($r = .30$). Regarding the social capital, both bonding social capital ($r = .37$, $p < 0.01$) and bridging social capital ($r = .31$, $p < 0.01$) were significantly correlated with life satisfaction. However, both gender ($r = -.03$) and age ($r = .05$) were not correlated with life satisfaction

B. Regression Analysis

To test the hypotheses, we used a regression analysis. Table II shows the results of the regression analysis. Based on the analysis, the factor of users' self-esteem and game efficacy were an important antecedent to the degree of the users' life satisfaction. Users who reported higher levels of self-esteem significantly increased the degree of life satisfaction ($\beta = .540$, $p < .001$). Thus, H1 was supported. Likewise, users with a high level of game efficacy are important when it comes to the feeling life satisfaction ($\beta = .153$, $p < .001$). However, life

efficacy significantly decreased the degree of life satisfaction ($\beta = -.147$, $p < .001$). Thus, H2a was supported while H2b was not supported. Both bonding social capital ($\beta = .120$, $p < .01$) and bridging social capital ($\beta = .094$, $p < .05$) showed a positive effect on life satisfaction. The stronger users felt greater bonding and bridging social capital, the more they increased the degree of life satisfaction. Thus H3a and H3b were supported. However, both gender and age did not show any significant effect on life satisfaction. Thus H4a and H4b were not supported.

TABLE I
DESCRIPTIVE STATISTICAL ANALYSIS

	M	SD	Cronbach α
Life satisfaction	11.26	2.98	.86
Self-esteem	30.37	4.81	.84
Game-efficacy	2.21	.85	.87
Life-efficacy	3.36	.47	.85
Bonding social capital	3.43	.55	.87
Bridging social capital	3.52	.49	.89

TABLE II
REGRESSION ANALYSES ON LIFE SATISFACTION

	B	β	t	p
SE	.335	.540	13.68	.000***
GSE	.052	.153	4.97	.000***
LSE	-.927	-.147	-3.65	.000***
Bond-SC	.652	.120	2.91	.004**
Bridg-SC	.568	.094	2.43	.015*
Gender	.126	.021	.70	.483
Age	.008	.033	1.06	.286

^a R square = .343 ($p < .001$), * $p < .05$, ** $p < .01$, *** $p < .001$

SE=Self-Esteem; GSE=Game Efficacy; LSE=Life Efficacy; Bond-SC= Bonding Social Capital; Bridg-SC= Bridging Social Capital

V. DISCUSSION

This study proposed hypotheses on which relatively little emphasis has been placed, previously, about game users' life satisfaction related subjective well-being. Also, the role played by the psychological factors (self-esteem, game and life self-efficacy), social capital, and demographic factors.

As expected, a direct association was found between game users' life satisfaction and self-esteem. Game users who reported higher levels of self-esteem significantly increased the degree of life satisfaction. Given that self-esteem affects a positive or negative orientation toward the self [22], the result may have suggested that individuals play the game to satisfy certain needs, in regard to changing negative aspects of self-esteem. According to the Mood Management theory, people will choose specific media that best suit their mood state, with the goal of reducing their negative mood [42]. Furthermore, prior research suggests that games are able to repair negative moods as well as lead to positive emotional outcomes [43], [44]. It seems that game users played as a means of entertained themselves, or even as a means of attaining satisfaction reflecting self-respect.

	1	2	3	4	5	6	7	8
1. Life satisfaction	1							
2. Self-esteem	.543**	1						
3. Game-efficacy	.128**	-.004	1					
4. Life-efficacy	.309**	.638**	.027	1				
5. Bonding social capital	.378**	.508**	.019	.526**	1			
6. Bridging social capital	.314**	.390**	.021	.467**	.628**	1		
7. Gender	-.036	-.023	-.236**	.031	.015	-.044	1	
8. Age	.056	.124**	-.220**	.075*	-.044	.073*	-.034	1

Fig. 1 Correlations between Variables (*p<.05, **p<.01, ***p<.001)

With regard to the results about users' game and life efficacy, Hypothesis 2 is partially supported. Game users with high levels of game efficacy, but not life efficacy, are found to have a negative association with life satisfaction scores. Users who feel more intense game efficacy exhibit a much higher degree of game efficacy in online, as they are more comfortable satisfying their desired satisfaction. This finding is in line with the results of previous studies stressing that a domain specific efficacy is positively related to life satisfaction [28]. However, life efficacy was significantly decreased by the degree of life satisfaction. The results imply that the more they feel efficacy in games, the more they are likely to experience delusion divorced from reality. Hussain and Griffiths [45] reported that escape was a key function of playing games. This suggests that users who play games with the motivation to escape from life problems may experience more negative outcomes when they returned to realities, a result supported by previous studies [32], [46].

Furthermore, studies on the relationship between games and real life effects are still ambiguous, with negative [47], [48], neutral [49] and positive implications [50]. Thus, future studies should focus on how specific game styles or characteristics, and efficacy, influence users' life satisfaction.

Concerning the social capital, individuals with both higher bonding and bridging social capital experienced increased levels of life satisfaction. The results imply that when they are involved in social interaction, people simply feel satisfied if the game space corresponds to the reality. Previous research reported that individuals who have a greater number of social bonds tend to have higher levels of happiness [36], [37]. In this sense, they seem likely to satisfy both bonding and bridging social capital.

To the best of our knowledge, this study is the first to investigate potential mechanisms by which self-esteem, game and life self-efficacy, and bonding and bridging social capital jointly predict life satisfaction. This study extends past work on

the role of life satisfaction in various types of games by proposing the Self Determination Theory and Mood Management theory. We conclude, from the present study, that it supports the idea that playing games could have a significant relationship, with the likelihood of enhancing life satisfaction.

REFERENCES

- [1] T. M. Connolly, E. A. Boyle, E. MacArthur, T. Hainey and J. M. Boyle, "A systematic literature review of empirical evidence on computer games and serious games", *Computers and Education*, 2012, vol. 59, no. 2, pp. 661-686.
- [2] L. S. L. Chen, H. H. J. Tu and E. S. T. Wang, "Personality traits and life satisfaction among online game players", *Cyber Psychology and Behavior*, 2008, vol. 11, no. 2, pp. 145-149.
- [3] W. Pavot and E. Diener, "Review of the satisfaction with life scale", *Psychological assessment*, 1993, vol. 5, no. 2.
- [4] E. Diener, "Subjective well-being", *Psychological Bulletin*, 1984, vol. 95, pp. 542-575.
- [5] E. Diener, E., and K. Ryan, "Subjective well-being: a general overview", *South African Journal of Psychology*, 2009, vol. 39, no. 4, pp. 391-406.
- [6] S. Vara, "Intensive care nurses Investigation of the Relationship between Job Satisfaction and General Life Satisfaction", Unpublished MA Language Thesis, Ege University, Health Sciences Institute, Izmir, 1999.
- [7] C. Schmitter, M. Zisselman, and A. Woldow, "Life satisfaction in centenarians residing in long-term care", *Annals of Long Term Care*, 2003, vol. 7, no. 2, pp. 437-442.
- [8] J. Bentham, "An introduction to the principles of morals and legislation", London: The Clarendon Press, 1823/1907.
- [9] J.S. Mill, "Utilitarianism. On liberty and other essays", New York, NY: Oxford University Press, 1861/1991.
- [10] E. L. Kelly, E. L., and J. J. Conley, "Personality and compatibility: a prospective analysis of marital stability and marital satisfaction", *Journal of personality and social psychology*, 1987, vol. 52, no. 1, p. 27.
- [11] R. M. Ryan, and E. L. Deci, "Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being", *American psychologist*, 2000, vol. 55, no. 1, p. 68.
- [12] J. L. Neys, J. L., Jansz, J., and Tan, E. S., "Exploring persistence in gaming: The role of self-determination and social identity", *Computers in Human Behavior*, 2014, vol. 37, pp. 196-209.
- [13] P. Thagard, *"The brain and the meaning of life"*, Princeton University Press, 2010.
- [14] C. K. J. Wang, A. Khoo, W.C. Liu, and S. Divaharan, "Passion and intrinsic motivation in digital gaming", *Cyber Psychology and Behavior*, 2008, vol. 11, no. 1, pp. 39-45.

- [15] R. M. Ryan, Rigby, C. S., and Przybylski, A., "The motivational pull of video games: A self-determination theory approach", *Motivation and emotion*, 2006, vol. 30, no. 4, pp. 344-360.
- [16] J. M. Smyth, "Beyond self-selection in video game play: An experimental examination of the consequences of massively multiplayer online role-playing game play", *Cyber Psychology and Behavior*, 2007, vol. 10, no. 5, pp. 717-721.
- [17] Y. L. Lin and Lin, H. W., "A study on the goal value for massively multiplayer online role-playing games players", *Computers in Human Behavior*, 2011, vol. 27, no. 6, pp. 2153-2160.
- [18] R. J. Vallerand and Ratelle, C. F., "Intrinsic and extrinsic motivation: A hierarchical model", *Handbook of self-determination research*, 2002, vol. 128, pp. 37-63.
- [19] E. Diener, E. M. Suh, R. E. Lucas and H. L. Smith, "Subjective well-being: Three decades of progress", *Psychological bulletin*, 1999, vol. 125, no. 2, p. 276.
- [20] K. Jegers, "Pervasive game flow: understanding player enjoyment in pervasive gaming", *Computers in Entertainment (CIE)*, 2007, vol. 5, no. 1, p. 9.
- [21] M. M. Omodei and A. J. Wearing, "Need satisfaction and involvement in personal projects: Toward an integrative model of subjective well-being", *Journal of Personality and Social Psychology*, 1990, vol. 59, no. 4, p. 762.
- [22] M. Rosenberg, C. Schooler, and C. Schoenbach, "Self-esteem and adolescent problems: Modeling reciprocal effects", *American Sociological Review*, 1989, vol. 54, pp. 1004-1018.
- [23] S. X. Chen, F. M. Cheung, Bond, M. H., and Leung, J. P., "Going beyond self-esteem to predict life satisfaction: The Chinese case", *Asian Journal of Social Psychology*, 2006, vol. 9, no. 1, pp. 24-35.
- [24] A. Campbell, "The sense of well-being in America: recent patterns and trends", New York: McGraw-Hill, 1981.
- [25] H. Cheng and A. Furnham, "Personality, self-esteem, and demographic predictions of happiness and depression", *Personality and individual differences*, 2003, vol. 34, no. 6, pp. 921-942.
- [26] E. McAuley, S. Elavsky, R. W. Motl, Konopack, J. F., Hu, L., and Marquez, D. X., "Physical activity, efficacy, and self-esteem: Longitudinal relationships in older adults", *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 2005, vol. 60, no. 5, pp. 268-275.
- [27] A. Bandura, "On the functional properties of perceived efficacy revisited", *Journal of Management*, 2012, vol. 38, no. 1, pp. 9-44.
- [28] D. H. Schunk, "Efficacy and education and instruction", In J. E. Maddux (Ed.), *Efficacy, adaptation, and adjustment: Theory, research, and applications* (pp. 281-303). New York: Plenum, 1995.
- [29] R. W. Lent, H. B. Sheu, D. Singley, Schmidt, J. A., Schmidt, L. C., and Gloster, C. S., "Longitudinal relations of efficacy to outcome expectations, interests, and major choice goals in engineering students", *Journal of Vocational Behavior*, 2008, vol. 73, no. 2, pp. 328-335.
- [30] D. Pavlas, K. Heyne, W. Bedwell, E. Lazzara and E. Salas, "Game-based learning: The impact of flow state and videogame efficacy", In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, SAGE Publications, 2010, vol. 54, no. 28, pp. 2398-2402.
- [31] S. Trepte and L. Reinecke, "The pleasures of success: Game-related efficacy experiences as a mediator between player performance and game enjoyment", *Cyberpsychology, Behavior, and Social Networking*, 2011, vol. 14, no. 9, pp. 555-557.
- [32] S. Caplan, D. Williams and N. Yee, "Problematic Internet use and psychosocial well-being among MMO players", *Computers in Human Behavior*, 2009, vol. 25, no. 6, pp. 1312-1319.
- [33] D. Williams, "On and off the Net: Scales for social capital in an online era", *Journal of Computer-Mediated Communication*, 2006, vol. 11, no. 2, pp. 593-628.
- [34] N. B. Ellison, C. Steinfield and C. Lampe, "The benefits of Facebook friends: Social capital and college students' use of online social network sites", *Journal of Computer-Mediated Communication*, 2007, vol. 12, no. 4, pp. 1143-1168.
- [35] S. Trepte, L. Reinecke and K. Juechems, "The social side of gaming: How playing online computer games creates online and offline social support", *Computers in Human Behavior*, 2012, vol. 28, no. 3, pp. 832-839.
- [36] R. D. Putnam, "Bowling alone: America's declining social capital", *Journal of democracy*, 1995, vol. 6, no. 1, pp. 65-78.
- [37] R. E. Lucas, A. E. Clark, Y. Georgellis, and E. Diener, "Reexamining adaptation and the set point model of happiness: Reactions to changes in marital status", *Journal of Personality and Social Psychology*, 2003, vol. 84, pp. 527-539.
- [38] D. Kahneman and A. B. Krueger, "Developments in the measurement of subjective well-being", *The journal of economic perspectives*, 2006, vol. 20, no. 1, pp. 3-24.
- [39] E. D. Diener, R. A. Emmons, R. J. Larsen and S. Griffin, "The satisfaction with life scale", *Journal of personality assessment*, 1985, vol. 49, no. 1, pp. 71-75.
- [40] M. Rosenberg, *Society and the adolescent self-image* (p. 326). Princeton, NJ: Princeton University Press, 1965.
- [41] D. R. Compeau and C. A. Higgins, "Computer efficacy: Development of a measure and initial test", *MIS quarterly*, 1995, pp. 189-211.
- [42] G. Chen, G., Gully, S. M., and Eden, D., "Validation of a new general efficacy scale", *Organizational research methods*, 2001, vol. 4, no. 1, pp. 62-83.
- [43] D. Zillmann, "Mood management through communication choices", *American Behavioral Scientist*, 1988.
- [44] D. Rieger, L. Reinecke, L. Frischlich and Bente, G., "Media Entertainment and Well-Being: Linking Hedonic and Eudaimonic Entertainment Experience to Media-Induced Recovery and Vitality", *Journal of Communication*, 2014, vol. 64, no. 3, pp. 456-478.
- [45] D. Rieger, T. Wulf, J. Kneer, L. Frischlich and Bente, G., "The winner takes it all: The effect of in-game success and need satisfaction on mood repair and enjoyment", *Computers in Human Behavior*, 2014, vol. 39, pp. 281-286.
- [46] Z. Hussain and M. D. Griffiths, M. D., "Excessive use of massively multi-player online role-playing games: A pilot study", *International Journal of Mental Health and Addiction*, 2009, vol. 7, no. 4, pp. 563-571.
- [47] D. J. Kuss and M. D. Griffiths, "Internet gaming addiction: A systematic review of empirical research", *International Journal of Mental Health and Addiction*, 2012, vol. 10, no. 2, pp. 278-296.
- [48] V. Anand, "Study of time management: the correlation between video game usage and academic performance markers", *CyberPsychology and Behavior*, 2007, vol. 10, no. 4, pp. 552-559.
- [49] M. M. Skoric, L. L. C. Teo and R. L. Neo, "Children and video games: addiction, engagement, and scholastic achievement", *CyberPsychology and Behavior*, 2009, vol. 12, no. 5, pp. 567-572.
- [50] G. M. Hart, B. Johnson, B. Stamm, N. Angers, A. Robinson, T. Lally, et al., "Effects of video games on adolescents and adults", *Cyberpsychology and Behavior*, 2009, vol. 12, no. 1, pp. 63-65.
- [51] B. C. De Souza, L. X. L. e Silva and A. Roazzi, "MMORPGs and cognitive performance: a study with 1280 Brazilian high school students", *Computers in Human Behavior*, 2010, vol. 26, pp. 1564-1573.