Analyzing Motives, Preferences, and Experiences in Video Game Play

Donald LOFFREDO
Department of Psychology, University of Houston-Victoria
Victoria, TX 77901, USA

and

Alireza TAVAKKOLI
Department of Computer Sciences, University of Houston-Victoria
Victoria, TX 77901, USA

ABSTRACT

This paper presents the results of analyzing motives, preferences, and experiences in video game play. A sample of 112 (64 male and 48 female) students completed online the Gaming Attitudes, Motives, and Experiences Scales (GAMES). Separate one-way independent-measures multivariate analyses of variance (MANOVAs) were used to determine if there were statistically significant differences by gender, age category, hours of videogame play, and ethnicity on the nine Factor Subscales of the GAMES. The results supported two of the proposed hypotheses. There were statistically differences by gender and hours of videogame play on some of the Factor Subscales of the GAMES.

Keywords: games, video games, gaming attitudes, motives, experiences, statistical significance

1. INTRODUCTION AND LITERATURE REVIEW

The video game industry remains one of the fastest growing sectors in the U.S. economy. The U.S. video game industry is expected to grow 30% from $15 billion in 2014 to 19.6 billion in 2019 [1]. The European market for the video game industry is almost $20 billion [2]. Asia, however, remains the hotbed for gaming [2]. China had a 34% increase in games revenues in 2012 and online gaming made up a whopping 94% of the pie [2]. The world-wide video game industry grew 9% in 2013 and now exceeds $76 billion with projections that it will reach over $86 billion by 2016 [2].

Although there has been some concern regarding negative effects of video game playing there have been some who describe how video games may actually be good for us [3]. Scientists have reportedly found recently a variety of cognitive, emotional, and social benefits to gaming such as [3]: (1) gamers of all ages perform better than non-gamers on measures of attention, speed, accuracy and multi-tasking [4], (2) Children who spend more time playing videogames score higher on measures of creativity [5], (3) Massively-multiplayer online role playing games improve cognitive function among elderly players, and can help to stave off age-related dementia, (4) Scary or violent video games improve children's ability to manage difficult emotions, such as anger and fear, (5) Parents who spend more time playing games with their children report better relationships with them and the kids have better moods, higher grades, and less behavior problems [6], (6) First-person shooter games can improve vision and can effectively treat cataracts [7], (7) Playing video games gives us an ability to control our dreams and stop our own nightmares [8], and (8) Video game technology can increase physical activity in children by 60% and decrease physiological risk factors for heart disease and diabetes [9].

Academic research on gaming has identified vulnerability markers for pathological internet use and pathological video game playing [10] [11]. Many researchers have raised a concern regarding the potential for some people to exhibit pathological patterns of behavior using computer, Internet, and video game technologies [12]. Using a national sample of 1,178 youth ages 8 to 18, Gentile (2009) reported that about 8% of their sample participants exhibited pathological patters of play as defined by exhibiting at least 6 out of 11 symptoms of damage to family, social, school, or psychological functioning [12]. Sim, Gentile, Bricolo, Serpelloni, and Gulamoydeen (2012) have asserted that there has been no common framework to view studies on the pathological use of computers, video games, and the Internet and recommend a possible framework to evaluate such studies [11].

In 2013 Hilgard, Engelhardt and Bartholow developed a new measure of gaming attitudes, motives, and experiences [13]. This new measure, the Gaming Attitudes, Motives, and Experiences Scales, i s now referred to as the GAMES. These researchers also used in their GAMES study a measure of pathological video game use developed by Gentile (2009) [12]. Participants were asked to indicate if they had experienced any of the 15 symptoms of pathological video game use [13]. Participants higher on the GAMES Escapism Scale were much more likely to have a

positive diagnosis of pathological game use than participants lower on this factor [13]. In addition, GAMES Social Interaction and Grinding/Completion scores were also significantly associated with increased risk of pathological game use [13.].

Participants used in the development of the GAMES (2013) study included 1,689 diverse individuals ranging in age from 17-34 [13]. They were recruited from internet discussion forums and completed the survey for a chance to win one of ten $20 Amazon gift cards [13]. The purpose of the study was to establish high reliability and Validity for the GAMES.

2. RESEARCH METHOD

Participants

The total number of participants in our study was 112 with 64 (57%) males and 48 (43%) females.

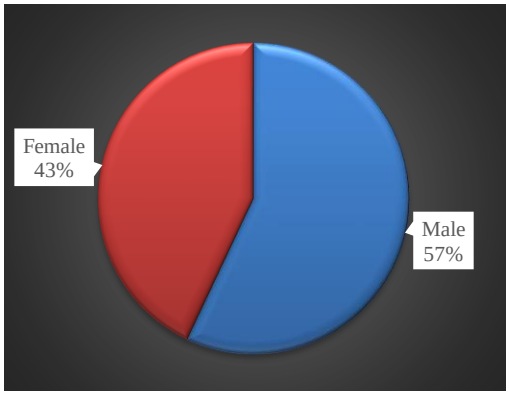

Figure 1. Participants' Gender

The participants were undergraduate students from the University of Houston Victoria (59%), area Junior colleges (32%), and online gaming sites (9%).

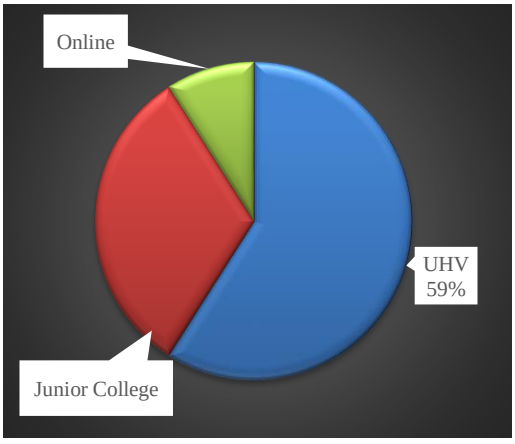

Figure 2. Participants' Affiliation

Participants ranged in age from 18 to 53 years of Age. The percentage of participants in the 18-22 age range was approximately 72% with about 15% in the 23-30 age range, 7% in the 31-40 age range, 3% in the 41-50 age range and 3% in the 51-60 age range.

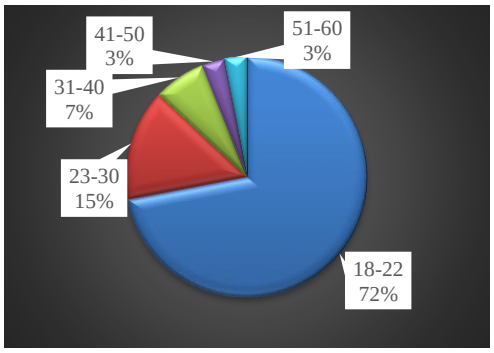

Figure 3. Participants' Age

The sample was somewhat diverse with about 14% African American, 1% Native American/Pacific Islander, 5% Asian, 37% Caucasian, 41% Hispanic, and 2% Other.

About 52% of the participants spent a relatively short amount of time (0-5 hours) playing video games while 23% of the participants spent a relatively large amount of time (15 hours or more) playing video games. Approximately 9% of the participants spent a medium (10-15 hours) amount of time playing video games while approximately 16% spent a short amount of time (5-10 hours) playing video games.

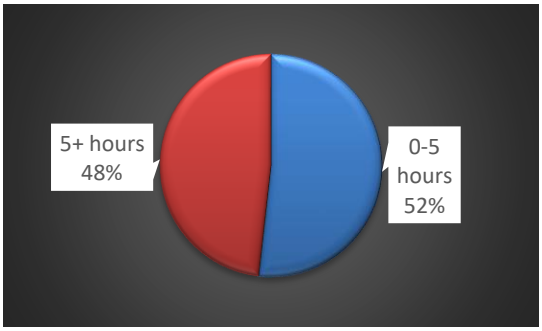

Figure 4. Participants' Play Time

Materials

Participants completed online a demographic sheet and the relatively new (2013) 59-item Gaming Attitudes, Motives, and Experience Scale (GAMES). The GAMES Survey was created to study gaming attitudes, motives, and experiences [13]. The GAMES Survey uses Likert scores ranging from 1 (strongly disagree) to 5 (strongly agree). There are nine factors (subscales) in the GAMES Survey and their hypothesized meanings are indicated in Table 1 [13] below.

The GAMES consists of 9 factors (subscales). Cronbach's alphas for the 9 factors (subscales) range .78 to .92 demonstrating high reliability for each factor [13]. Confirmatory factor analysis has demonstrated excellent

model fit for the 9 GAMES factors [13].

Procedure
Participants completed the demographic sheet and the GAMES online. Only participants who completed the demographic sheet and all 59 items of the GAMES were included in the survey results.

Research Design
The research design in this study was quasi-experimental. The quasi-independent variables were gender age group, hours of video game play, and ethnicity. The dependent variables were the 9 factor subscales of the GAMES.

Table 1. GAMES Factors and Their Hypothesized Meanings

Factor (Subscale)	Meaning
Story	Whether game stories are important, engaging, and emotionally compelling.
Violent Catharsis	Whether game violence is perceived to help harmlessly release negative moods or aggression.
Violent Reward	Whether game violence provides positive or thrilling emotions such as satisfaction or power.
Social Interaction	Playing games with a group, developing personal relationships with other players.
Escapism	Using games to regulate dysphoric moods or to escape the frustrations of daily life.
Loss-Aversion	Tendency of a loss to frustrate or to "spoil the fun." Likely subsumes search for challenges.
Customization	Interest in in-game creative pursuits like personalizing an in-game avatar or building a house.
Grinding /Completion	Attitudes toward performing repetitive actions or paying real-life money to earn in-game rewards; interest in performing every possible action in a game or collecting every in-game item.
Autonomy/Exploration	Enthusiasm for games with many choices, options, multiple solutions to puzzles, and open areas to explore

Research Hypotheses
- H1: There will be a statistically significant difference on the 9 factor subscales by gender.
- H2: There will be a statistically significant difference on the 9 factor subscales by age group.
- H3: There will be a statistically significant difference on the 9 factor subscales by hours of video game play.
- H4: There will be a statistically significant difference on the 9 factor subscales by ethnicity.

Statistical Analyses
To analyze the data from the GAMES, 4 one-way independent-measures multivariate analyses of variance (MANOVAs) were used to test each of the 4 research hypotheses.

3. RESULTS

Descriptive Statistics
The means and standard deviations for the entire sample on the nine GAMES factor subscales are provided in Table 2 below.

Table 2. Factor Subscale Means and Standard Deviations for the Entire Sample

Factor	Mean	Standard Deviation (SD)
Story	40.96	9.55
Violent Catharsis	16.12	7.21
Violence Reward	15.03	6.42
Social Interaction	19.79	5.49
Escapism	18.84	6.48
Loss-Aversion	18.19	5.08
Customization	13.87	4.38
Grinding/Completion	18.60	4.43
Autonomy/Exploration	18.58	4.72

Inferential Statistics
For H1, a one-way independent-measures multivariate analysis of variance (MANOVA) revealed a statistically significant difference by gender, $F(9,102) = 2.07$, $p = .037$, $\eta_p^2 = .15$. Males scored significantly higher than females on the Story, Social Interaction, and Autonomy/Exploration factor subscales as indicated in Table 3, on page 3 below.

Table 3. Factor Subscale Means and Standard Deviations by Gender

Factor Subscale	Males		Females	
	Mean	SD	Mean	SD
Story	(42.55,	9.21)*	(38.83,	9.68)
Violent Catharsis	(15.62,	7.68)	(16.77,	6.56)
Violence Reward	(15.64,	6.89)	(14.21,	5.71)
Social Interaction	(20.69,	5.42)*	(18.58,	5.42)
Escapism	(19.34,	6.85)	(18.17,	5.97)
Loss-Aversion	(17.67,	5.48)	(18.87,	4.45)
Customization	(13.97,	4.52)	(13.75,	4.21)
Grinding/Completion	(18.70,	4.77)	(18.46,	3.97)
Autonomy/Exploration	(19.44,	4.71)*	(17.44,	4.53)

*: Significance p<.05

For H2, a one-way independent-measures MANOVA revealed no statistically significant difference by age group, $F(36, 408) = .84$, $p = .74$ on any of the 9 factor subscales.

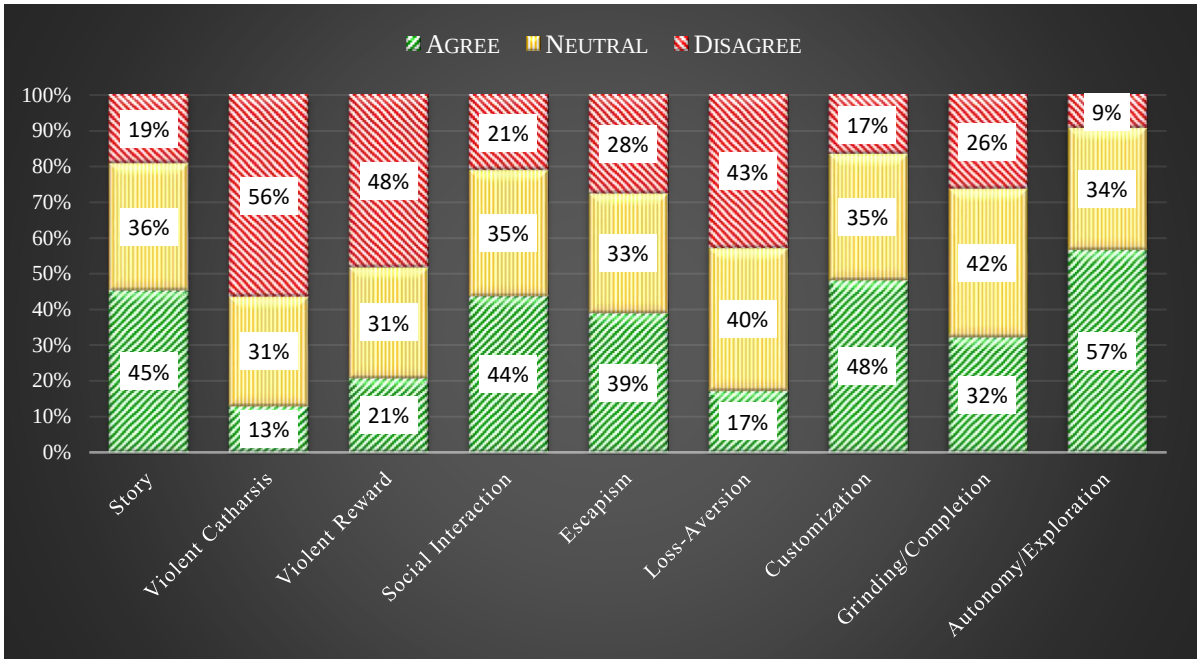

Figure 5. Subject Responses to Factor Subscales.

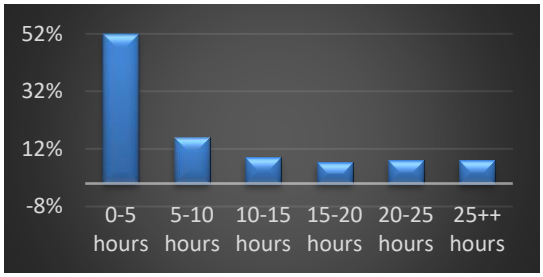

Figure 6. Breakdown of Participant's Play Time

For H3, a one-way independent-measures MANOVA revealed a statistically significant difference by hours of videogame play, F (45, 441.481) = 2.168, p < .001, η_p^2 = .16. There were significant differences by hours of video game play on 5 of the 9 factor subscales as indicated in Tables 4-8 below.

1) *Story Factor Subscale*

Table 4. Story Factor Subscale Means and Standard Deviations by Hours of Video Game Play

Factor Subscale	Hours of Play	Mean	SD	N
Story	0-5	36.86	7.78	58
	5-10	44.33	9.57	18
	10-15	43.5	9.77	10
	15-20	45.25	11.12	8
	20-25	50.89	4.78	9
	25++	44.00	10.28	9
	Total	**40.96**	**9.55**	**112**

Participants with 0-5 hours of video game play scored significantly lower on the Story Factor Subscale than the participants in the other five hours of video game play categories.

2) *Social Interaction Factor Subscale*

Table 5. Social Interaction Factor Subscale Means and Standard Deviations by Hours of Video Game Play

Factor Subscale	Hours of Play	Mean	SD	N
Social Interaction	0-5	17.12	4.95	58
	5-10	21.17	4.57	18
	10-15	21.10	5.06	10
	15-20	23.50	4.41	8
	20-25	24.78	3.70	9
	25++	24.44	4.03	9
	Total	**19.79**	**5.49**	**112**

Participants with 0-5 hours of video game play scored significantly lower on the Social Interaction Factor Subscale than the participants in the other five hours of video game play categories.

3) *Escapism Factor Subscale*

Participants with 0-5 hours of video game play category scored significantly lower on the Escapism Factor Subscale than participants in the 15-20, 20-25, and 25+ hours of video game play categories. The participants in the 5-10 hours video game play category scored significantly lower than participants in the 15-20, 20-25, and 25+ hours of video game play categories.

Table 6. Social Interaction Factor Subscale Means and Standard Deviations by Hours of Video Game Play

Factor Subscale	Hours of Play	Mean	SD	N
Escapism	0-5	16.79	5.44	58
	5-10	17.33	7.48	18
	10-15	19.20	6.44	10
	15-20	23.50	4.92	8
	20-25	25.22	4.97	9
	25++	24.11	5.09	9
	Total	**18.84**	**6.48**	**112**

4) Loss-Aversion Factor Subscale

Table 7. Loss-Aversion Factor Subscale Means and Standard Deviations by Hours of Video Game Play

Factor Subscale	Hours of Play	Mean	SD	N
Loss-Aversion	0-5	19.57	3.77	58
	5-10	16.94	5.40	18
	10-15	16.20	8.52	10
	15-20	16.12	5.62	8
	20-25	18.78	4.99	9
	25++	15.22	4.82	9
	Total	**18.19**	**5.08**	**112**

Participants with 0-5 hours of video game play scored significantly higher on the Loss-Aversion Factor Subscale than participants in the 10-15 and 25+ hours of video game play categories.

5) Autonomy/Exploration Factor Subscale

Table 8. Autonomy/Exploration Factor Subscale Means and Standard Deviations by Hours of Video Game Play

Factor Subscale	Hours of Play	Mean	SD	N
Autonomy/ Exploration	0-5	16.53	4.12	58
	5-10	20.39	4.15	18
	10-15	20.20	6.32	10
	15-20	19.87	4.16	8
	20-25	21.22	3.59	9
	25++	22.56	3.13	9
	Total	**18.58**	**4.72**	**112**

Participants with 0-5 hours of video game play scored significantly lower on the Autonomy/Exploration Factor Subscale than the participants in the other five hours of video game play categories.

For H4, a one-way independent-measures MANOVA revealed no statistically significant difference by ethnicity on any of the 9 factor subscales, $F(45, 441.481) = .91$, $p = .64$.

4. DISCUSSION

Male participants scored significantly higher than female participants on the Story, Social Interaction, and Autonomy/Exploration factor subscales of the GAMES. Game stories were significantly more important, engaging, and emotionally compelling for male participants than for female participants. Playing games with a group and developing personal relationships with other players were significantly more important to male participants than to female participants. Male participants reported significantly more enthusiasm than female participants for games with many choices, options, multiple solutions to puzzles, and open areas to explore. There were no significant differences on any of the 9 factor subscales of the GAMES by age group or ethnic group.

Also, there were significant differences by hours of game play on 5 of the 9 factor subscales of the GAMES: Story, Social Interaction, Escapism, Loss-Aversion, and Autonomy/Exploration. However, the number of participants, N, in each category of video game play were not equal and varied from 9 to 58. Future studies should contain larger and approximately equal numbers of participants in each hour of video game play category.

5. CONCLUSIONS AND FUTURE WORK

Future studies should contain larger and approximately equal numbers of participants in each hour of video game play category, in each age-group category, and in each ethnic group category. Future research with larger samples should also look at the possible interaction of several variables such as age group, gender, ethnic group, hours of game play, and risk of game play pathology with an approximately equal number of participants in the categories of each variable.

There needs to be more emphasis and research on how video games may actually be good for you. Research should also focus on a cost benefit analysis of video game playing rather than on pathological video game playing alone.

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