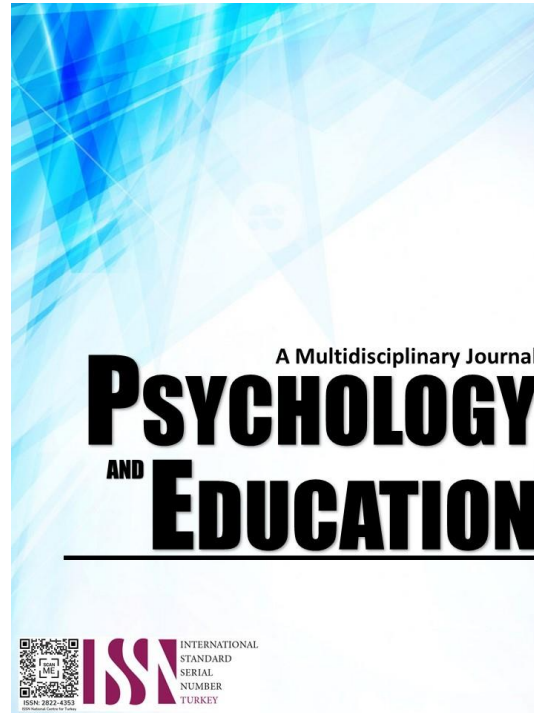


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Level of Mobile Game Engagement at this Time of Pandemic: Basis for an Intervention Program

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Abstract

This study aimed to assess the level of mobile game engagement at this time of pandemic. A total of 100 participants participated in the study. The researcher made a self-made questionnaire that will measure the level of mobile engagement. Overall results shows that there is an average mobile game engagement. Results also revealed that there is a significant different in mobile game engagement for age demographic profile and highest educational attainment demographic profile. No significant different on sex at birth demographic profile and marital status.

Keywords: *intervention program, mobile phones, pandemic, mobile game engagement*

Introduction

Overall, advancements in invention play a vital role in people's lives. The most recent trend among the public is to keep up with changes in the field of communication innovation. Mobile phones are regarded as important specialized equipment and have become a necessary item for the general population; they are also essential amusement accessories. Everyone now uses their mobile phones to stay entertained by streaming music, watching live videos, and playing online games. Online gaming has become a vital part of every person's daily life. It was a pastime in one's busy and constrained schedule. However, a lot of players focused most of their energy on playing mobile games.

The world is currently dealing with a widespread medical issue that has affected a big number of people. An outbreak of COVID-19, a respiratory illness, started to develop in December 2019. In a short amount of time, the virus had a significant impact on a big number of people. When people shrink due to this virus, they may experience mild to basic symptoms. Tragically, no treatment or vaccine has yet been developed to treat or prevent this infection, which affects a person's ability to live safely. The government as a whole takes general health precautions to stop the sickness from spreading. The aforementioned general safety precautions include the wearing of face coverings and face shields, social segregation, and home isolation or lockdown. Every country has implemented home isolation or lockout as a first step. People are only allowed to leave their homes to fulfill basic needs.

COVID-19, a novel coronavirus, has a significant impact on all of the endeavors simultaneously. Online gaming was one of the industries that saw significant growth during the implementation of lockdowns or home isolation in several countries. It has played a vital role in everyone's lives. The majority of those who stayed at home spent their time playing video games online. One of the ways needed to have fun and get through the period of home solitude is to play internet games. A significant problem for a big number of people worldwide is playing online video games for extended periods of time to the point where it becomes addictive. The following are the research questions of the study:

1. What is the demographic profile of respondents when they are grouped according to the following demographic profile:
 - 1.1 Sex at Birth
 - 1.2 Age
 - 1.3 Marital Status
 - 1.4 Highest Educational Attainment
2. How many hours per day do respondents allocated for mobile gaming before and after pandemic?
3. How much data they consumed per day for mobile gaming at this time of pandemic?
4. What is the level of mobile game engagement when respondents will be grouped according to demographic profile?
5. What is the overall mean score per emotion as perceived by the respondents?
 - 5.1 Happiness
 - 5.2 Sadness
 - 5.3 Enjoyment
 - 5.4 Hope
 - 5.5 Fear



- 5.6 Joy
 - 5.7 Distress
 - 5.8 Pride
 - 5.9 Shame
 - 5.10 Admiration
 - 5.11 Reprimand
 - 5.12 Love
 - 5.13 Hate
6. Is there a significant difference in the level of mobile gaming engagement when respondents are grouped according to demographic profile?

Literature Review

Regardless of whether you are on the train, holding up in a line or the specialist's sitting area, you can keep yourself engaged by just pulling out your mobile phone and playing a few games. Indeed, there are devoted mobile gaming reassures out there, yet they expect you to haul an additional gadget around only for gaming. Then again, you are probably going to have your mobile phone on your consistently, so it simply makes messing around that amount more basic.

Because they have been forced to stay at home, away from their friends, classmates, and all the activities they used to participate in before the COVID-19 pandemic, children are one of the social groups that has been most impacted. As a result, their only option for entertainment during their stay at home was to spend a lot of time in front of computers, tablets, and smartphones playing video games. There is no doubt that the sudden change in children's lifestyle during the Covid-19 pandemic had serious repercussions and risks that threatened their stability at all levels (Walaa, 2021).

The findings revealed that the total weight of the effects of the Covid-19 epidemic on the rising chances of children becoming addicted to video games was (27907), with a weighted relative weight of (80.47 percent). This signal is High, indicating that the Covid-19 epidemic has had a High impact on the rise in all forms of dangers associated with kids becoming addicted to video games (Walaa, 2021).

According to Fernades (2020), the COVID-19 pandemic has had a big influence on daily life, and there are a lot of things being done to stop the virus from spreading. Long-term lockdowns have been imposed on schools and public gathering places, and people are still keeping their physical distance. Adolescents and young people have had to deal with developmental traits as well as substantial stress. In the

midst of all of this, studies show a rise in internet use and gaming addiction, both of which have a negative impact on psychosocial well-being.

Further, those who scored highly on gaming addiction, compulsive internet use, and social media use also reported high scores for depression, loneliness, escapism, poor sleep quality, and anxiety related to the pandemic. The results show that adolescents have generally increased their use of social media sites and streaming services. Our data suggest that the COVID-19 outbreak has had a considerable impact on teenage internet use and psychosocial well-being, independent of the country of residency. It is stressed that in order to lessen the impact of unhealthy coping mechanisms, pandemic-related suffering needs to be addressed (Fernades, 2020).

When the epidemic started, mobile gaming saw a rise. A recent study found that over two thirds of gamers increased their playing time. Most of such activity will also continue after the pandemic. Additionally, the number of new players rose. According to the paper "What Mobile Gaming's 'New Normal' Should Look Like After the COVID-19 Pandemic" by market research firm IDC and LoopMe, 6% of mobile gamers had never played a mobile game prior to the pandemic. The global base of gamers who played on a smartphone or slate tablet monthly increased by 12 percent in 2020 compared to 2019, reaching nearly 2.25 billion last year, the research states. This increase was primarily caused by pandemic impacts (Nagel, 2021).

The popularity of gaming has increased dramatically since the outbreak, reaching people who previously avoided it totally or just sometimes played. According to a recent study by the American business-research firm NPD, four out of five customers in one survey in the US alone reported playing video games in the previous six months. Additionally, gaming sales are rising at a time when many other businesses are struggling. This year, global revenue is anticipated to increase by 20% to \$175 billion (£130 billion) (Article entitled How online gaming has become a social lifeline).

According to Al Mulhem & Almaiah (2021), educational mobile games may be crucial in aiding kids' learning during the COVID-19 pandemic. When students are equipped with the right learning tools, some studies have suggested that playing these games on their phones may increase their motivation for and effectiveness in studying. However, throughout the COVID-19 pandemic, little scholarly focus has been



paid to examining the impact of learning strategies in students' use of educational mobile apps. In order to close this gap, our research suggested two learning game scenarios. In the first case, students were given access to an instructional mobile game that included the "scaffolding strategy," whereas in the second, they were given access to the identical game without it.

In order to accomplish this goal, a research model and experimental design were created to investigate the role of the scaffolding learning method in students' use of educational mobile games. 43 students from two courses took part in the two learning settings in this experimental study. The findings show that the use of the mobile game by students was highly influenced by educational mobile gaming and the scaffolding learning technique. Additionally, when compared to the identical game without the learning strategy, the adoption of the learning approach had a substantial impact on students' perceptions of the game's usefulness, convenience of use, and enjoyment. The findings also suggest that adding the scaffolding learning approach to the educational mobile game can improve students' motivation and learning efficiency (Al Mulhem & Almaiah, 2021).

Male pupils showed signs of gaming addiction at higher rates than female students. According to the multinomial logistic regressions, older female students had a greater connection between loneliness and harmful gaming practices. Poor mental health, lack of parental support and supervision, low socioeconomic level, and gaming addiction behaviors were risk factors, particularly in elementary school kids (Zhu et al., 2021).

The results of this study revealed that the relationship between loneliness and gaming addiction behaviors among young people was consistent across gender and age categories. During times when schools are closed, parental support and monitoring can prevent children from engaging in problematic gaming activities. The study's findings have implications for early intervention and prevention (Zhu et al., 2021).

According to Su et al. (2018) and Choo et al. (2014), family structure, financial position, and parenting traits (i.e., parental support and supervision) play a significant part in the impact of gaming activities on young people's well-being and development as children spend more time at home during school closures brought on by COVID-19. The material mentioned above makes it evident that more research is needed to determine whether young people's gaming

problems and feelings of loneliness are related. Toker et al. (2016) and Schneider et al. (2017) claimed that socioeconomic status plays a significant impact on gaming activities.

Johannes (2021) discovered a weakly positive relationship between gameplay and affective well-being, defying widespread expectations that excessive play may result in addiction and poor mental health. Playtime did not interact with need fulfillment or play-related motivations; rather, they were independently correlated with well-being.

Unfortunately, because there are so few reliable, repeatable, and ecologically valid studies, nearly three decades of research investigating the potential links between video games and negative outcomes like aggression, addiction, well-being, and cognitive functioning have not yet led to a consensus or evidence-based policy (Drummond, 2020).

This methodological choice has historically been made for two reasons: first, self-report is a reasonably simple technique to get information regarding play. Second, the video game business has resisted collaborating with outside scientists in the past. It has become more and more obvious over time that relying just on one's own reporting is untenable. The conclusions we may make from studies on the relationship between time spent playing video games and well-being are constrained, according to recent data, because self-reports of digital behaviors are notoriously inaccurate and biased (Parry et al., 2020).

According to Diener et al. in 2018, multiple positive effects of playing video games on mental health have caught the attention of researchers and politicians. Positive and negative mental health are both components of mental health, such as depression. Emotional well-being (the affective component) and evaluative well-being are further categories of good mental health (i.e., the cognitive component).

According to Zhu et al. (2021), when schools were closed due to the pandemic, problem gaming habits among physically and socially isolated young people raised concerns among policymakers, researchers, and aid workers. The chronic effects of increased loneliness may persist even after the epidemic, and they may cause melancholy and suicidal thoughts. The self-determination hypothesis suggests that playing video games can give most people a sense of autonomy, competence, and relatedness. According to several studies, problem gaming activities are not linked to loneliness (Cudo et al., 2019).



Before the epidemic, screens already took up a sizable portion of young people's life, and they did so even more so during it. According to Qustodio (2019), kids used YouTube on average for 97 minutes per day during the early stages of the pandemic, which is twice as long as they do now. Numerous negative effects of excessive screen usage include visual impairment, insomnia, anxiety, and even dependence on the gadget. Children in some situations spent less time with their families and more time in front of their screens. While staying connected is helpful, in-person contacts that foster social skills in children, especially those who are very young, can't always be replaced by technology. As a result, lots of parents have tried to limit how much technology their kids can use (Article reading entitled Effects of Technology on Children During a Pandemic).

A serious problem that prevents health regulators from having access to the high-quality evidence they need to decide whether to regulate the video game business is the absence of precise behavioral data (Ijzerman et al., 2020).

The most heated discussions about the potential impacts of playing video games are generally centered on the players' mental health. For instance, the American Psychiatric Association does not list any video game-related mental disorders in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), but it does suggest more research into Internet Gaming Disorder (Kardefelt-Winther, 2015).

Given this, it's important to realize that there has been a lot of criticism of the quality of the research supporting certain classifications of video game play as potentially psychopathological. Numerous specialists have claimed that there is not enough proof to support the claim that clinically acceptable gaming disorder criteria and diagnostic methods exist (Aarseth et al., 2016).

According to Ryan and Deci (2000), 1 decade of research shows that perceptions of the psychological affordances given by games are vital to player experiences in games, however, the perceptions of players in recalling their video game play time can induce bias. According to the self-determination hypothesis, people will benefit from any activity whose affordances match their motives.

Methodology

This study used descriptive type of research with

quantitative approach. According to McCombes (2019), descriptive research aims to describe a population, situation or phenomenon accurately and systematically. The researcher does not control or manipulate any of the variables, but only observes and measures them in descriptive design.

Participants

Table 1. *Profiling of Respondents*

Demographic Profile		Frequency	Percent
Sex at Birth	Male	36	36
	Female	64	64
	Total	100	100
Age	40 to 65	4	4
	20 to 39	61	61
	Below 20	35	35
	Total	100	100
Marital Status	Single	95	95
	Married	5	5
	Total	100	100
Highest Educational Attainment	College Graduate	33	33
	College Undergraduate	41	41
	High School	26	26
	Total	100	100

Table above shows the frequency distribution per demographic profile. For sex at birth, 36 or 36 percent are male respondents while 64 or 64 percent are female respondents. For Age, 4 or 4 percent of the respondents belong to age 40 to 65 years old, 61 or 61 percent of the respondents belong to age 20 to 39 years old, and 35 or 35 percent of the respondents belong to age 40 to 65 years old. For marital status, 95 or 95 percent are single respondents and 5 or 5 percent of the respondents are married respondents. For highest educational attainment, 33 or 33 percent are college graduate respondents, 41 or 41 percent are college undergraduate respondents and 26 or 26 percent of the respondents are high school college graduate.

Instruments of the Study

This study utilized a 20-item 5-point Likert scale self-made questionnaire that measures level of mobile gaming. The questionnaire underwent validity and reliability scoring with subject matter expert and the computed Cronbach's alpha is .972. The validated survey questionnaire was converted to online Google survey form for online data gathering.

Procedures

The researcher asked an approval for the final



title. Once approved, the researcher will do library visits to further enhanced the intended research and start drafting the introduction down to methodology. Upon the approval of thesis proposal, the researcher will develop a self-made test to measure the level of mobile gaming. Once statements are ready, the researcher coordinated with subject matter experts to validate and rate each item whether it is Retain, Revise or Remove. After scoring each item, reliability scoring will be conducted by obtaining an acceptable Cronbach’s alpha at .70 for social science research. The validated and reliable self-made test will be converted to google survey for online survey purposes. Once data is collected, it will be tallied and run with statistical analysis.

Results and Discussion

Table 2. *Number of Hours Per Day in Mobile Gaming*

Number of Hours per day	Before Pandemic		After Pandemic	
	Frequency	Percentage	Frequency	Percentage
More than 12	2	2	16	16
10 to 12	2	2	2	2
6 to 9	3	3	9	9
4 to 6	20	20	22	22
1 to 3	42	42	49	49
Less than 1	31	31	2	2
Total	100	100	100	100

The time spent playing mobile games each day is displayed in the table above. Out of 100 respondents, 2 or 2% spent more than 12 hours a day playing mobile games, 2 or 2% spent 10 to 12 hours a day playing mobile games, 3 or 3% spent 6 to 9 hours a day playing mobile games, 20 or 20% spent 3 to 6 hours a day playing mobile games, 42 or 40% spent 1 to 3 hours a day playing mobile games, and 31 or 40% spent less than hours a day playing mobile games. Out of 100 respondents, 16 or 16 percent spent more than 12 hours per day playing on mobile devices, 2 or 2 percent spent between 10 and 12 hours per day playing on mobile devices, 9 or 9 percent spent between 6 and 9 hours per day playing on mobile devices, 22 or percent spent between 3 and 6 hours per day playing on mobile devices, 49 or 49 percent spent between 1 and 3 hours per day playing on mobile devices, and 2 or 2 percent spent less than hours per day playing on mobile devices during the pandemic.

Table 3. *Amount of Data Per Day Consumed for Mobile Gaming*

Amount of Data in GB	Frequency	Percent
More than 12	6	6
10 to 12	4	4
6 to 9	4	4
3 to 6	16	16
1 to 3	70	70
Total	100	100

The data consumption per mobile gamer is shown in the table above. Out of 100 respondents, six or six percent consumed more than 12 GB per day, four or four percent consumed more than 10 to 12 GB per day, four or four percent consumed more than 6 to 9 GB per day, sixteen or sixteen percent consumed more than three to six GB per day, and seventy or seven percent consumed more than one to three GB per day.

Table 4. *Level of Mobile Engagement per Demographic Profile*

Demographic Profile	Mean	Verbal Description	Verbal Interpretation
Sex at Birth	Male	2.97	Average Engagement in Mobile Gaming
	Female	2.92	Average Engagement in Mobile Gaming
	Average	2.94	Average Engagement in Mobile Gaming
Age	40 to 65	1.99	Low Engagement in Mobile Gaming
	20 to 39	2.88	Average Engagement in Mobile Gaming
	Below 20	3.15	Average Engagement in Mobile Gaming
	Average	2.94	Average Engagement in Mobile Gaming
Marital Status	Single	2.96	Average Engagement in Mobile Gaming
	Married	2.48	Low Engagement in Mobile Gaming
	Average	2.94	Average Engagement in Mobile Gaming
Highest Educational Attainment	College Graduate	2.70	Average Engagement in Mobile Gaming
	College	3.05	Average Engagement in Mobile Gaming
	Undergraduate	3.08	Average Engagement in Mobile Gaming
	High School	3.08	Average Engagement in Mobile Gaming
Average	2.94	Average Engagement in Mobile Gaming	

The level of mobile engagement for each demographic profile is shown in the table above. In terms of sex at birth, the average score for male respondents was 2.97, which was understood as "Neutral" and "Average Engagement in Mobile Gaming," whereas the average score for female respondents was 2.92, also interpreted as "Neutral" and "Average Engagement in Mobile Gaming." According to age, those between the ages of



40 and 65 received a mean score of 1.99, which is verbally described as "Disagree" and verbally interpreted as "Low Engagement in Mobile Gaming," those between the ages of 20 and 39 received a mean score of 2.88, which is verbally described as "Neutral" and verbally interpreted as "Average Engagement in Mobile Gaming," and those younger than 20 received a mean score of 3.15, which is verbally described as "Neutral" and "Average Engagement in Mobile Gaming," while those who were married received a mean score of 2.48, which is interpreted as "Disagree" and "Low Engagement in Mobile Gaming." For those with the highest levels of education, college graduates scored an average of 2.70, which is interpreted as "Neutral" and "Average Engagement in Mobile Gaming," college undergraduates scored an average of 3.05, which is interpreted as "Neutral" and "Average Engagement in Mobile Gaming," and high school graduates scored an average of 3.08, which is interpreted as "None."

Due to social exclusion and isolation brought on by Covid-19's emergence, the online gaming sector has experienced tremendous growth. The online market has been strengthened by the rapid change in personal life. People now turn to video and online games for entertainment because to restrictions and lockdown. As of March 2020, according to a study conducted in the Philippines by Rakuten Insight, 43 percent of those who play online games daily spend one to two hours doing so (Santiago, 2020).

The portable revolution is continuing to alter global internet consumption patterns and frequencies. The propensity for in-application interactions is perhaps the most obvious portable usage pattern: Buyers of flexible applications will spend 102 billion dollars worldwide on the Google Play and Apple App Stores in 2020. A combined 142 million applications were downloaded that year, according to the two industry pioneers, with online media, gaming, and informational applications accounting for the lion's share of those downloads. After the (COVID-19) pandemic outbreak, the majority of application classes suffered a flood that became widespread in 2020 (Clement, 2021).

As of March 2020, the majority of respondents across all age groups in a poll by Rakuten Insight done in the Philippines said they played online games, with the exception of those who were 55 and older. Notably, the percentage of online gamers fell as people got older.

Table 5. Overall Mean Score per Emotion

<i>Emotion</i>	<i>Average</i>	<i>Verbal Description</i>	<i>Verbal Interpretation</i>
Happiness	5.10	Somewhat Agree	Moderately High
Sadness	2.84	Somewhat Disagree	Moderately Low
Enjoyment	5.54	Agree	High
Hope	4.35	Neutral	Average
Fear	2.77	Somewhat Disagree	Moderately Low
Joy	5.20	Somewhat Agree	Moderately High
Distress	3.97	Neutral	Average
Pride	3.90	Neutral	Average
Shame	2.94	Somewhat Disagree	Moderately Low
Admiration	4.29	Neutral	Average
Reprimand	3.49	Somewhat Disagree	Moderately Low
Love	4.32	Neutral	Average
Hate	2.80	Somewhat Disagree	Moderately Low

The aggregate mean score for each emotion as rated by the respondents is shown in the table above. The overall average for happiness is 5.10, which is assessed as "Moderately High" and vocally articulated as "Somewhat Agree." The overall average for sadness is 2.84, which is read as "Moderately Low" and vocally articulated as "Somewhat Disagree." The total average for enjoyment is 5.54, which translates orally as "Agree" and linguistically as "High." The overall average for hope is 4.35, which is read as "Average" and represented verbally as "Neutral." The overall average for Fear is 2.77, which is linguistically understood as "Moderately Low" and expressed as "Somewhat Disagree." The overall average for Joy is 5.20, which is linguistically understood as "Moderately High" and expressed as "Somewhat Agree." The overall average for distress is 3.97, which is read as "Average" and verbally stated as "Neutral." The overall average for pride is 3.90, which is verbally translated as "Average" and described as "Neutral." Shamefully, the total average is 2.94, which is linguistically interpreted as "Moderately Low" and "Somewhat Disagree." The overall average for appreciation is 4.29, which is regarded as "Average" and described in words as "Neutral." The overall average for reprimand is 3.49, which is verbally translated as "Moderately Low" and described as "Somewhat Disagree." The overall average for love is 4.32, which is regarded as "Average" and described in words as "Neutral." The overall average for hate is 2.80, which is read as "Moderately Low" and vocally articulated as "Somewhat Disagree."



Table 6. *Test for Significant Difference in Mobile Gaming Engagement per Demographic Profile*

Demographic Profile	p-value	Significance	H ₀ Decision
Sex at Birth	.697	Not Significant	Accept
Age	.001	Significant	Reject
Marital Status	.353	Not Significant	Accept
Highest Educational Attainment	.025	Significant	Reject

*Significant at .05 alpha level

The test for statistically significant differences in mobile gaming engagement by demographic profile is shown in the table above. The computed p-value for birth sex is .697, which is higher than the .05 alpha threshold. This would imply that the null hypothesis is accepted and that there isn't a discernible difference. Thus, there is no statistically significant difference between the mean scores of male and female responders.

The calculated p-value for Age is .001, which is less than the .05 alpha threshold. This would indicate a significant difference and the rejection of the null hypothesis. Consequently, the difference in mean between age groups is noteworthy. The computed p-value for Marital Status is .353, which is higher than the .05 alpha threshold. This would imply that the null hypothesis is accepted and that there isn't a discernible difference. As a result, there is no real difference in the mean scores between respondents who are single and married.

The computed p-value for Highest Educational Attainment is .025, which is smaller than the .05 alpha level. This would indicate a significant difference and the rejection of the null hypothesis. As a result, the gap in mean scores among those with the highest levels of schooling is noteworthy.

Table 7. *Post Hoc for Age*

Compared Sub-Level	P-value	Significance	H ₀ Decision	
40 to 65	20 to 39	0.004	Significant	Reject
	Below 20	0.000	Significant	Reject
20 to 39	Below 20	0.036	Significant	Reject

*Significant at .05 alpha level

The age post hoc is shown in the table above. The computed p-value is smaller than .05 alpha level for respondents in the age range of 40 to 65 compared to respondents in the age range of 20 to 39 years. This would indicate a significant difference and the

rejection of the null hypothesis. As a result, late adult respondents played less mobile gaming than early and middle adult respondents. The computed p-value is smaller than .05 alpha level for respondents in the age group of 20 to 39 years old compared to respondents in the age group of 20 years or younger. This would indicate a significant difference and the rejection of the null hypothesis. Early adults therefore play more mobile games than middle adults.

Table 8. *Post Hoc for Highest Educational Attainment*

Compared Sub-Level	p-value	Significance	H ₀ Decision	
College Graduate	College Undergraduate	.017	Significant	Reject
	High School	.022	Significant	Reject
College Undergraduate	High School	.865	Not Significant	Accept

*Significant at .05 alpha level

The Post Hoc for Highest Educational Attainment is displayed in the table above. The computed p-value for respondents who have graduated from college is lower than the .05 alpha level when compared to respondents who have completed their undergraduate degrees and high school. This would indicate a significant difference and the rejection of the null hypothesis. As a result, college graduate respondents participate less than respondents from undergraduate and high school programs. The computed p-value is bigger than .05 alpha level for respondents in college compared to respondents in high school. This would imply that the null hypothesis is accepted and that there isn't a discernible difference. As a result, there is no statistically significant difference in the level of participation between those in college and those who just graduated from high school.

Conclusion

The following are the conclusions of the study: (1) In general, respondents used 1 to 3 GB of bandwidth every mobile game session. (2) The respondents play mobile games on average. (3) Playing mobile games induces a mildly low level of melancholy, fear, shame, reproach, and hatred. (4) Playing mobile games causes the typical emotions of hope, distress, pride, adoration, and love. (5) Playing mobile games results in a moderately high level of enjoyment. (6) Playing games on a mobile device makes you feel extremely happy. (7) The amount of mobile gaming has nothing to do with birth gender or marital status. (8) Those who are late in life prefer playing mobile games less than those who are young or middle-aged, while those who have



not yet graduated from college prefer playing mobile games more than those who have.

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