

ORIGINAL ARTICLE

Factors Associated with Internet Gaming Disorder Symptoms of Adolescents: Foundation in Developing and Implementing a Behavior Modification Therapy

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Main Points

- This study assessed the extent of the IGD of the participants through the administration of the first standardized psychometric test on IGD.
- This study also collected the IGD experiences through the Deductive and Inductive Analysis Methods on the RLS, FGDs, through the Inductive Analysis Method on the TNA of the participants.
- The mixed data about IGD served as the foundation in the development and implementation of the BMT program.
- The BMT was developed to reduce the excessive frequency and intensity in virtual gaming, and IGD symptoms of the selected Filipino adolescent high school students.
- The implemented and evaluated BMT was efficacious in reducing the IGD symptoms of the respondents.

Abstract

Excessive Virtual Gaming (EVG) afflicted the adolescents in the Philippines that they found it hard to control their behavior anymore. There were research that studied the causes of this behavior but the intervention program that would modify the extreme gaming habit of the Filipino high school students was still scarce. This study aimed to develop and implement a Behavior Modification Therapy (BMT) program that would reduce the frequency and intensity of the virtual gaming and modify the Internet Gaming Disorder (IGD) symptoms. Mixed methods through sequential explanatory were employed in this study. The IGD factors were correlated to IGD symptoms through the Pearson's Correlation Coefficient (r). The qualitative data were collected through Thematic Analysis Method on the Related Literatures and Studies (RLS); the IGD experiences were processed through the Focus Group Discussions (FGD); and the analysis of the training needs (TN) were analyzed. The data were used as bases in developing the BMT. The Behavior Modification Therapy program was helpful to the participants, and efficacious in reducing the IGD symptoms.

Keywords: Adolescent, Behavior Modification Therapy, factors, Internet Gaming Disorder, symptoms

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Introduction

Excessive Virtual Gaming (EVG) is an addictive behavior that afflicts adolescent students in such a way that they find it hard to stop playing virtual games. In the Philippines, there were 18% males and

10% females in the age bracket of 10 – 20 years who were virtual gamers in 2017 (Sanchez, 2019).

There are different kinds of online games which draw curiosity among adolescents such that they would like to try it once or twice, until it becomes

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their source of leisure, and then becomes an excessive habit. The majority of gamers use their mobile phones as the platform of choice. Totally 74% of the online gaming population in the Philippines play games on the mobile, 65% play PC games, and 45% play console games (Elliott, 2020).

This modern day addiction has been termed as “Internet Gaming Disorder” (IGD) by the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM 5) (2013), and was described in the 11th Revision of the International Classification of Diseases (ICD-11) (2018) as a “pattern of gaming behavior (digital gaming or video gaming) characterized by impaired control over gaming, increasing priority given to gaming over other activities to the extent that gaming takes precedence over other interests and daily activities, and continuation or escalation of gaming despite the occurrence of negative consequences.”

The increasing number of adolescents engaged in EVG is of great concern. These youth need assistance to help them emerge from virtual reality. There have been many research studies on the causes of IGD, but the intervention programs remain scarce. Hence, the behavior modification therapy (BMT) program was developed, with the hope that it would reduce excessive virtual gaming (EVG).

The population considered to have a higher risk of developing EVG are those in the adolescent stage (King & Delfabbro, 2016). There are more male than female virtual gamers (Müller, Glaesmer, Brähler, Woelfling, & Beutel, 2014; Dumrique & Castillo, 2017). Pawlikowski et al. (2018), and studies indicate that the significant factors related to online gaming addiction are aggravated by the long hours of playing online games. EVG causes cognitive problems, leading to psychological distress. Adolescents with IGD have a distinctive set of maladaptive beliefs which include the adherence to inflexible and maladaptive rules about behaviors during online gaming. Those who spend more than 30 hours per week playing online games are considered to have maladaptive virtual gaming behavior, described in IGD symptoms (King & Delfabbro, 2016).

Wang et al. (2017) explained that virtual gamers are seemingly ignorant of the adverse effects of online gaming. The excessive cyber gaming has negative health consequences on the players. Rehbein, Kliem, Baier, Mößle, & Petry (2015) reported that those who play virtual games excessively complain about lack of sleep and other sleep problems, usually spend so much time gaming that they forget to eat, and have decreased auditory and visual functioning (Kuss, Pontes, & Griffiths, 2018). They are not able to control their EVG, because, according to Kuss and Lopez (2016), gaming fanatics have poorer emotional regulation and reduced response – inhibition as their cognitive control and working memory have decreased capacity. They also experience the negative emotional and relational impacts of withdrawal. They feel more anxious about the game, sad when not gaming, and become aggressive to people around them, arguing with them constantly. Those with IGD experience withdrawal symptoms and tolerance similar to substance abuse disorder (Chen, 2018; Weinstein, 2017). Griffiths (2019) pointed out that the sameness of their actions can be in mood, tolerance, modification, conflict, salience, withdrawal symptoms, and relapse. EVG negatively impacts their

health, way of thinking, social life, family relationships, academic performance, and state of well-being.

BMT

The distress and addiction experienced by the adolescents due to their EVG needed a supportive intervention. Percy et al. (2016) stated that studies and interventions for virtual gaming were very relevant and timely for this case. The BMT developed in this research was anchored to the Cognitive Behavior Therapy (CBT) principles and techniques of Donald Meichenbaum’s CBT. The BMT is composed of eight sessions of psycho-educational processing and integration; and behavioral modification strategies which include conditioning, modification, modeling, and reinforcement.

Fernandes and Sadhana (2016) stated that the effectiveness of CBT in treating several behavioral and emotional and problems has been affirmed by many therapists. CBT has been found effective in treating individuals who acquire psychological distress from virtual gaming addiction (Kuss & Lopez-Fernandez, 2016; Lindenberg, Halasy, & Schoenmaekers, 2017; Vasiliu & Vasile, 2017). The CBT treatment offers corrective measures in cognitive processing, and identifying and correcting irrational thoughts to more rational ones.

Woog (2016) recommended the treatment intervention focusing on a behavioral management method involving the gradual decrease in time spent in virtual gaming.

Nazlıgül et al. (2018) shared that the CBT programs have shown successful results in reducing IGD symptoms and the time spent playing games, and in addition, the addicted individuals’ negative verbal expressions changed to more acceptable ones. The facilitation of BMT techniques could promote Productive Activities; an improvement in the school performance; harmonious relationships with the family and the community; and enhancement of the well-being of the participants. The BMT was deemed necessary in assisting the participants in reducing their EVG.

Purpose of the Study

The main thrust of this phase of the research was to study the virtual gaming experiences of the participants, assess the extent of the IGD symptoms, find out the relationship of factors, and develop and implement a BMT to reduce the excessive frequency and intensity in virtual gaming and IGD symptoms.

There were seven questions posed in this study. The first question was, how may the profile (of the respondents) be described in terms of: (a) age; (b) gender; (c) virtual games played; and (d) the frequency, intensity, and duration (FID) of virtual gaming? Second, what are the consequences of the IGD according to related literatures and studies (RLS)? Third, what is the standard deviation and mean of the symptoms of the IGD-20 Test and the mean of the IGD factors in terms of: (a) salience; (b) mood modification; (c) tolerance; (d) withdrawal symptoms; (e) conflict; and (f) relapse? Fourth, do the IGD factors relate to the IGD-20 Test symptoms? Fifth, what are the training needs (TN) of the participants according to the Focus Group Discussion (FGD)? Sixth, what intervention program may be developed to reduce the EVG of the selected students? Seventh, what is the result of the evaluation of the BMT program after its implementation?

Methods

Sample

The purposive sampling technique was employed in selecting the participants for this research. The respondents included were the 43 students aged from 12 to 17 years, and from Grade 7 to Grade 12 of public high schools. The inclusion criteria for the participants were: (1) they experienced excessive frequency and intensity in virtual gaming and got a clinical score of 71 and above in the IGD-20 Test; (2) they were also those who gave their assent to participate in the research, and were given consent by their parents.

Instruments

The instruments used in this research were: the IGD-20 Test for quantitative data and the Thematic Analysis on the IGD Literatures and Studies, the FGD for the IGD experiences, and the Training Needs Analysis (TNA) for the analysis of the TN of the participants for qualitative data. This also included the evaluation tool for the BMT sessions.

IGD-20 Test

The psychometric properties of the IGD-20 Test included the validity, which comprised criterion-related validity and concurrent validity. The reliability of this test was measured through its internal consistency. The criterion-related validity was assessed by the association between weekly game play and the IGD-20 Test scores ($r_s(1003) = .77, p < .001$). The concurrent validity associated with this was assessed using the IGD-20 Test with the nine IGD criteria from the DSM-5 ($r_s(1003) = .82, p < .001$). For reliability, as measured by Cronbach's alpha, the internal consistency of the IGD-20 tests was .88 (Pontes, Király, Demetrovics, & Griffiths, 2014).

Thematic analysis of literatures and studies

The RLS about the participants' virtual gaming were consolidated, analyzed, and thematically presented after the application of the Deductive Analysis Method for the general IGD themes and the Inductive Analysis Method for the specific codes.

FGD guide questions

The FGD guide questions were designed to discuss the experiences of the selected high school students. The seven-item guide questions were validated by five licensed experts in psychology before they were facilitated. The questions focused on the virtual games they played, the factors why they played the computer games, the FID in playing online games, and the help they needed to reduce the frequency and intensity of their virtual gaming.

TNA

The TNA of the participants which were mentioned from the FGD were coded thematically according to the Inductive Analysis Method, and ranked according to the priority of the respondents.

Evaluation of BMT

The BMT sessions were evaluated using the researcher-made evaluation forms, which were validated by experts in psychology. For every session, the respondents checked the column that was appropriate to their assessment depending on the level of how much the BMT helped them.

This was rated as follows: 1 = It did not help me. 2 = It slightly helped me. 3 = It moderately helped me. 4 = It helped me. 5 = It helped me a lot. The scales for interpretation were the following: .05 – 1.4 = no efficacy, 1.5 – 2.4 = slight efficacy, 2.5 – 3.4 = moderate efficacy, 3.5 – 4.4 = efficacious; and 4.5 – 5.0 = very efficacious.

Design

This research followed the protocols set by the University of Santo Tomas (UST) Graduate School Ethics Review Committee (ERC) in developing a psychotherapy program. The ERC approval number of this research study was GS2019PN088.

The participants were selected according to the recommendations of the guidance counselors, advisors, and subject teachers. The parents of the selected participants were oriented on the procedures of the research, and their consent was also solicited.

The IGD-20 Test was administered, and the scores were computed and interpreted. The Pearson correlation coefficient (r) was used in correlating the IGD factors to the IGD symptoms.

The RLS about IGD were consolidated, analyzed, and thematically presented. The FGD was facilitated for the IGD experiences of the respondents, and the TNA of the participants were thematically coded.

The quantitative and qualitative data gathered were processed and analyzed and served as the bases in developing the eight sessions in BMT. The developed BMT program was validated by five licensed experts in the field of psychology.

Results

Age of the Participants

The participants of this research were adolescents. Six (13.95%) of the participants were 12 years old; 6 (13.95%) were 13 years old; 6 (13.95%) were 14 years old; 5 (11.62%) were 15 years old; 3 (6.97%) were 16 years old; and 10 (23.25%) were 17 years old. There were more participants aged 17. The age range of the participants indicated that they were adolescents.

Gender of the Participants

There were both male and female participants in this research. There were 28 males (62.12%) and 15 females (34.88%) who participated in the research. This showed that there were more male than female participants in the study.

The Consequences of IGD According to the RLS

This section presents the results of the deductive analysis method applied for the general themes on the consequences of IGD; and the Inductive Analysis Method applied for the specific codes on the consequences of IGD from the RLS. The 40 authors mentioned different themes about IGD. There were seven themes assigned for IGD, and there were 16 specific codes created from the consequences of IGD, according to the authors.

Virtual Games Played by the Participants

Figure 1 presents the top 10 virtual games played by the participants and the specific frequency.

Figure 1 illustrates the top 10 virtual games played by the participants. The top ranked game was the rules of survival (RoS).

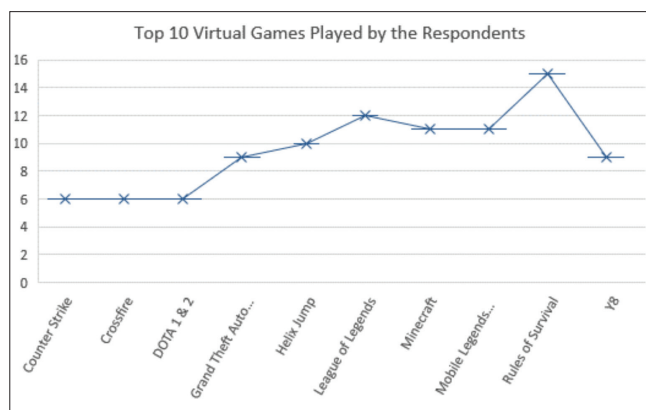


Figure 1. Virtual games played by the respondents.

The RoS is a multiplayer online video game that requires the last man standing to win in the game. RoS is a Battle Royale/Hunger Games-type of game where the characters get thrown onto an island with 99 other people, have to scavenge for weapons and kill each other off until only one remains. There is also a “Squad Mode” where an individual gamer and his/her friends could play as a team, help each other out, and try to eliminate opponents. (<https://y101fm.com/features/lifestyle/reviews/6219-why-is-rules-of-survival-addictive>).

FID of Virtual Gaming

Table 1 presents the FID statistics of the participants’ virtual gaming.

Table 1 shows that the first rank in frequency was for those respondents who played 6 to 7 days per week; the first rank in intensity was for those respondents who spent from 6 hours to 8 hours or more a day in playing online games; and the first in rank for duration was for those who had played for 21 – 25 months or more.

IGD-20 Test Result

This presents the IGD symptoms, mean and interpretation, and standard deviation. The item number 3 on IGD symptoms, “I have significantly increased the amount of time I play games

Table 1. Frequency, Intensity, and Duration of Virtual Gaming

FID of Online Gaming of the Respondents	Frequency	Rank
Frequency		
2 – 3 days/week	2	3
4 – 5 days/week	18	2
6 – 7 days/week	23	1
Intensity (Time)		
3 h 30 min – 4 h 30 min	6	3
4 h 31 min – 5 h 59 min	10	2
6 – 8 h or more	21	1
Duration		
11 – 15 months	10	2
16 – 20 months	8	3
21 – 25 months or more	25	1

Table 2. Mean of the Factors in the Internet Gaming Disorder (IGD)-20 Test

IGD Factors	Mean	Rank
Factor 1: Salience	3.90	1
Factor 2: Mood Modification	3.77	3
Factor 3: Tolerance	3.82	2
Factor 4: Withdrawal Symptoms	3.65	4
Factor 5: Conflict	3.65	6
Factor 6: Relapse	3.65	5

over last year,” had the highest mean of 4.07, while on the other hand, the item number 16 had the lowest mean of 3.42, which was stated as “I tend to get anxious if I cannot play games for any reason.” Both items 3 and 16 were interpreted as “Agree.” The standard deviation was 0.78 and the overall mean was 3.78 with the scale interpretation of “Agree.” This indicated that the participants confirmed their experiences about IGD symptoms.

Mean of the Factors in the IGD-20 Test

Table 2 presents the IGD-20 Test factors, mean, and rank. There were 6 IGD factors.

This table shows that the top ranked factor was Salience.

Relationships of IGD Factors with the IGD-20 Test Symptoms

Table 3 presents the relationships of the IGD factors to the IGD-20 test Symptoms.

This table shows that Factor 3: Tolerance, had a high positive correlation to IGD symptoms among the six IGD factors. This manifested that the EVG of the participants was due to the high tolerance in the frequency and intensity of cyber gaming.

Predominant Themes on the TN of the Participants

Table 4 presents the nine themes from the TN, the frequency of the participants who needed training, and the rank of their priority. The participants mentioned two or more TN.

Table 3. Relationships of Internet Gaming Disorder Factors to the IGD-20 Test Symptoms

Relationships of Factors to Internet Gaming Disorder (IGD)-20 Test Symptoms	Pearson r	Interpretation
F1-Salience	0.59	Moderate positive correlation
F2-Mood Modification	0.30	Low positive correlation
F3-Tolerance	0.75	High positive correlation
F4-Withdrawal Symptoms	0.65	Moderate positive correlation
F5-Conflict	0.52	Moderate positive correlation
F6-Relapse	0.56	Moderate positive correlation

Table 4.
Predominant Themes on the Training Needs (TN) of the Participants

Training Needs (TN)	Participants (f)	Rank
TN1: Reduction of Frequency and Intensity in Online Gaming	26	1
TN2: Conflict Resolution and Management of Responsibilities	23	2
TN3: Handling Emotions	16	3
TN4: Sleep Regulation	13	4
TN5: Giving Importance to Eating Meals	11	5
TN6: Reduction of Physical Consequences of Excessive Virtual Gaming	4	6
TN7: Resolution of Thought Issues	3	7
TN8: Proper Allowance Allocation	3	7
TN9: Learning Life Lessons	2	8

This table indicates the training needed by the participants, which was ranked according to their priority. The highest priority for intervention was given to the Reduction of Frequency and Intensity in Online Gaming.

BMT Developed

Table 5 presents the eight BMT sessions developed.

Table 5 presents the eight BMT sessions developed, with themes, activities, and objectives. The specific time frame for the first and eighth sessions was 90 minutes, and for the other sessions (the second up to the seventh) was 60 minutes. The topics covered in the BMT were:

Session 1: Getting-to-Know Activity and Orientation on the BMT; Session 2: Discussion on the Psychological Effects of IGD, and Rational Thoughts and Mental Hygiene; Session 3: Emotional Effects of IGD and Positive Emotion; Session 4: Behavioral Effects of IGD and Behavior Modification on IGD (Part 1); Session 5: Modification on IGD (Part 2) and Reduction of Computer Gaming through Productive Activities; Session 6: Skipping Meals with IGD and the Right Eating Habits; and Importance of Sleep; Session 7: Psychosocial Effect of IGD and Mending Relationships; and Session 8 was: Youth Productive Lifestyle, Session Closure and Evaluation.

Evaluation of BMT

The Session 1, with the topic "Getting-to-Know Activity and Orientation on the BMT" had a mean of 4.42, with a scale description of "It helped me." Session 2, with the topic: "Discussion on the Effects of IGD; Irrational Thoughts on IGD, and Rational Optimistic Thoughts" had a mean of 4.17, with a scale description of "It helped me." Session 3, with the topic "Effects of IGD on Emotions and Promoting Positive Emotions" had a mean of 4.30, with a scale description of "It helped me." Session 4, with the topic "Behavioral Effects of IGD and Behavior Modification on IGD (Part1)" had a mean of 4.33, with a scale description of "It helped me." Session 5, with the topic "Modification on IGD (Part 2), Reducing Computer Gaming through Productive Alternative

Activities" had a mean of 4.44, with a scale description of "It helped me." Session 6, with the topic "Effects of Skipping Meals and the Importance of Meals; and Missing Sleep and Sleep Regulation" had a mean of 3.94, with a scale description of "It helped me." Session 7, with the topic "Psychosocial Effects of IGD and Mending Relationships" had a mean of 4.43, with a scale description of "It helped me." Session 8, with the topic: "Learning about Productive Lifestyle; Session Closure and Evaluation" had a mean of 4.28, with a scale description of "It helped me." All eight therapy sessions were interpreted as efficacious. The overall mean was 4.28 with a scale description of "It helped me." which was interpreted as efficacious. The Session 5, with the topic: Modification on IGD (Part 2), Reducing Computer Gaming through Productive Alternative Activities had the highest mean of 4.44, with a scale description of "It helped me." which was interpreted as efficacious. This only manifested that the number one training need of the respondents could be provided through the facilitation of the BMT.

The results of the data above supported Woog (2016) when he recommended treatment intervention focused on the behavioral management method which involved the gradual decrease in time spent in online gaming. The reinforcing activities which compete with the online gaming time should be increased, to decrease the time spent in virtual games. The activities that complement gaming should be reduced or eliminated, as also the amount of time spent on them. These activities could be their school activities, bonding with family members and friends, learning other skills like playing musical instruments, playing sports, and dancing.

Discussion

Age of the Participants

The participants of this research were adolescents who were 11 – 17 years old. Watson (2013) stated that the internet has the potential to be addictive for a number of players, especially those who are vulnerable. The internet could impact the adolescent's developing brain, considering the adolescents' vulnerability and the plastic nature of the brain. The virtual games adolescents play have aggressive themes that affect their thoughts, emotion, and behavior. As mentioned by Saman (2012) the real problem lies in the computer program of the games, where the content deals more with violence and horror which are problematic and the worst.

The frequency of virtual gaming for most of the participants was 6 – 7 days per week; the intensity or extent of time in gaming lasted from 6 hours to 8 hours or more a day; and the duration was 21 – 25 months or more. Spending more time online and living in virtual reality is a way of escaping the real world, one at a time. Hagstro and Kaldo (2014) described it as escapism and claimed it as purely "negative escapism." Playing virtual games as way of avoiding daily hassles and distress is considered more of a negative reinforcement than positive motivation.

Gender of the Participants

There were more male participants than female participants in this research study. According to Müller et al. (2014), adolescent males are more vulnerable to EVG. Seventy-one percent of those who met the clinical diagnosis of addiction to online gaming were predominantly males. They showed a higher stage

Table 5.

Developed Behavior Modification Therapy

Session 1: Getting- to-Know Activity and Orientation on the Behavior Modification Therapy (90 minutes)

Objectives:

- Welcome the participants and facilitate a getting-to-know activity.
- Orient them on the coming sessions that will be facilitated and let them write their expectations.
- Explain the importance of joining in therapy sessions.

Session 2: Psychological Effects of IGD; Rational Thoughts; and Maintaining Mental Hygiene (60 minutes)

Objectives:

- Discuss with them the result of the IGD 20 Test and let them assess the effects of online gaming.
- Explain the importance of rational, optimistic thoughts in maintaining mental hygiene.
- Let the participants talk about their good thoughts.

Session 3: Emotional Effects of IGD and Positive Emotion and You (60 minutes)

Objectives:

- Enlighten the participants on the emotional effects of IGD and let them describe their experiences.
- Elaborate on the influence of positive emotion on one’s life.
- Let them draw any symbol of positive emotions that they want.

Session 4: Behavioral Effects of IGD and Behavior Modification on IGD (Part 1) (60 minutes)

Objectives:

- Let them identify their learned attitudes from online games and expound on the effects of IGD on behavior.
- Let them list the times during the day when they play online games.
- Let them write the ways to lessen their online gaming.

Session 5: Modification on IGD (Part 2) and Reduction of Computer Gaming through Productive Activities (60 minutes)

Objectives:

- Explain the behavior modification in application to IGD.
- Let them rank the gaming schedule they can give up.
- Let them choose activities in exchange of online gaming.
- Let them plan a weekly schedule to manage their time and activities that can regulate their virtual gaming.

Session 6: Skipping Meals and the Right Eating Habits; and Importance of Sleep (60 minutes)

Objectives:

- Tackle the effects of skipping meals and talk about food and its importance.
- Analyze with them the effects of missing sleep.
- Let them plan a sleep schedule and list ways to have a good sleep.

Session 7: Psychosocial Effects of IGD and Mending Relationships (60 minutes)

Objectives:

- Emphasize the psychosocial effects of IGD on one’s relationships.
- Illuminate the value of mending relationships as an essential aspect toward their recovery from IGD.
- Let them role play social ways that can improve their relationships.

Session 8: Youth Productive Lifestyle; Closure and Evaluation (90 minutes)

Objectives:

- Expound on the worth of one’s time, productive lifestyle, and remind them of self-management.
- Let them write and share their plan for the future.
- Explain the session closure and let them evaluate the therapy sessions.

of psychopathology, particularly on dissociative and depressive symptoms. More adolescent males sought IGD treatment.

IGD-20 Test Result

The IGD-20 Test result of the participants had a standard deviation of 0.78 and the overall mean of 3.78, which corresponds to the scale interpretation of “Agree.” This indicated that the respondents agreed that they experienced the IGD symptoms stated in the test. Zhang et al. (2016) characterized IGD as a higher level of desire for virtual gaming. The addiction-related cues induced intensification of the desire to play online, more in the brain areas involved in motivational

and reward processing. The individuals often crave for virtual gaming, which consumes most of their time. Müller et al. (2014) pointed out that individuals who meet the criteria of craving, withdrawal indications, tolerance, and the report of daily use of the internet and excessive time spent online can be characterized as addicted.

Mean of the Factors in the IGD-20 Test

The mean of the six factors in the IGD- 20 Test indicated that the participants agreed that they experienced those factors measured by the test. The IGD factors were Salience, Mood Modification, Tolerance, Withdrawal Symptoms, Conflict, and Relapse. Salience

was ranked first. The IGD- 20 Test described Salience with the symptoms of: “I often lose sleep because of long gaming sessions”; “I play games to help me cope with any bad feelings I might have”; and “I think gaming has become the most time-consuming activity in my life.”

Rehbein et al. (2015) reported that the excessive virtual gamers complained about lack of sleep and other sleep problems. The participants were not able to sleep well, because they found it hard to control their craving for more time to play online games. They also experienced the negative emotional and relational impacts of withdrawal. They felt more anxious about the game; sad when not gaming; became aggressive to people around them; and argued with them constantly. Those with IGD experienced withdrawal symptoms and tolerance similar to substance abuse disorder (Chen, 2018; Weinstein, 2017). Kuss & Lopez (2016) pointed out that gaming fanatics had poorer emotional regulation and reduced response – inhibition because their cognitive control and working memory had decreased capacity for decision, and made them play online games in excess, even if it became the most time-consuming activity in their life.

Relationships of IGD Factors to the IGD-20 Test Symptoms

There was a positive relationship between the IGD factors which were: Salience, Mood Modification, Tolerance, Withdrawal Symptoms, Conflict, and Relapse, to the IGD-20-Test symptoms. Among the six factors, Factor 3, Tolerance, was interpreted as “high positive correlation.” This showed that the EVG of the participants was due to their high tolerance in the extreme frequency and intensity of cyber gaming. Griffiths (2014) observed that all addictions share the sameness of their actions that can be in mood, tolerance, modification, conflict, salience, withdrawal symptoms, and relapse. These indications were experienced by the participants, as shown by the IGD-20 Test result.

Predominant Themes on the TN of the Participants

The respondents chose the Reduction of Frequency and Intensity in Online Gaming as their highest priorities in the psychotherapy sessions. The IGD caused conflicts in different aspects of their life and negatively impacted their health, way of thinking, social life, family relationships, academic performance, and state of well-being.

Sharma & Selvan (2015) recommended the interventions based on psychological models which aimed to achieve abstinence and controlled use. The interventions should enable the participants to reduce the frequency and intensity of their virtual gaming.

BMT Developed

The eight sessions of BMT were anchored from Meichenbaum’s CBT. The focus of this intervention was to change the irrational thoughts of the participants by starting a new internal dialog, produce a desired effect, and enable them to learn new skills to have a well-adjusted behavior. It was time-limited, present-centered, and an educational intervention program targeted at the problems to be solved (Corey, 2013). It was hoped that the development of BMT would aid the participants in managing their behavior well, improve their academic performance, and have a harmonious relationship with their family members, peers, and the community.

Evaluation of BMT

The Reduction of Computer Gaming through Productive Alternative Activities, the BMT topic which had the highest mean, helped the participants reduce their IGD symptoms. The evaluation result of the sessions manifested that the number one TN of the respondents were provided through the facilitation of the BMT. The BMT sessions were considered efficacious.

This was supported by Woog (2016) when he recommended treatment intervention focused on the behavioral management method, which involved the gradual decrease in time spent in online gaming. The reinforcing activities which compete with online gaming time should be increased, to decrease the time spent in virtual games. The activities that complement gaming should be reduced or eliminated, and thereby the amount of time spent on them. Such activities could be their school activities, bonding with family members and friends, learning other skills like playing musical instruments, playing sports, and dancing.

Limitations and Directions/Suggestions for Future Research

The participants of this study were adolescent high school students, but similar research may be conducted with private high school students with an EVG habit. This study used a mixed method of quantitative and qualitative gathering of data, but administered only the IGD-20 Test in assessing the quantitative extent of the IGD symptoms. Other psychometric tests to assess the extent of the virtual gaming may also be administered to the participants. Parents may also be interviewed to have additional relevant information on the extent of the virtual gaming by the participants.

The BMT can be used to help the students who experience EVG. BMT can be facilitated for an individual client or as a group intervention. The counselors and therapists may facilitate BMT to aid the respondents in reducing the frequency and intensity of virtual gaming. After the facilitation of the BMT for the participants, their parents may also be encouraged to exercise parental management to avoid the recurrence of the EVG behavior. Other integrated intervention may also be developed to assist the students in changing their EVG habit.

Conclusion

The population considered to have the highest risk of developing IGD are those in the adolescent stage, especially the male virtual gamers. The virtual games played by the high school students have aggressive themes that affect their thoughts, emotion, and behavior.

There were ten virtual games that the participants played excessively. The frequency of their virtual gaming was 6 to 7 days per week, in sessions which lasted from 6 to 8 hours or more per day; and they played for a duration of 21 – 25 months.

The IGD-20 Test result showed that the participants agreed that they experienced the IGD symptoms stated in the test.

The IGD factors had a positive relationship to the IGD-20 Test symptoms. This manifested that the EVG of the participants was due to the high tolerance in the frequency and intensity of cyber gaming.

Ramos & Agnes. Factors Associated with Internet Gaming Disorder

Their highest priority for intervention was on the reduction of the frequency and intensity of their virtual gaming.

The BMT was a psycho-educational program developed to modify the EVG behavior of the participants.

The result of the evaluation of the implementation of the BMT manifested that it was efficacious in reducing the IGD symptoms of the participants.

The BMT was deemed necessary in assisting the participants to improve their way of thinking, health, social life, family relationships, academic performance, and state of well-being.

Ethics Committee Approval: This research followed the protocols set by the University of Santo Tomas (UST) Graduate School Ethics Review Committee (ERC) in developing a psychotherapy program. The ERC approval number for this research was: GS2019PN088.

Informed Consent: Written informed assent was obtained from the participants and the written informed consent was solicited from their parents.

Peer-review: Externally peer-reviewed.

Authors' Contributions: Concept - A.P.R., M.C.A.A.; Design - A.P.R., M.C.A.A.; Supervision - M.C.A.A.; Data Collection and Processing - A.P.R.; Analysis and Interpretation - A.P.R.; Literature Review - A.P.R., M.C.A.A.; Writing - A.P.R.; Critical Review - M.C.A.A.

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