Self-control and online game addiction in early adult gamers

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Abstract. Early adulthood is a productive period in development stage which involves more complex experiences and responsibilities. Contrary to what early adulthood should do, it was found that there were individuals who spent almost all their time playing online games at internet cafes. They always visit cyber cafes and usually play online games for at least 10 hours every day, which usually leads to various problem. This study aimed to see the correlation of self-control and online game addiction in early adult gamers. A total of 33 online gamers in early adulthood stage participated in this study and were asked to complete self-report measures using questionnaires. Questionnaires included demographic information, Brief Self-control Scale constructed by Tangney, et al. and Game Addiction Scale constructed by Lemmens, et al. Rank Spearman correlation was used to analyze the data and the result indicated that there are two aspects of self-control that have significant correlation with online game addiction (Deliberate/Non-impulsive and Self-discipline) and the other three aspects of self-control have insignificant correlation with online game addiction (Healthy Habit, Work Ethic, and Reliability). The overall result shows that self-control is significantly negative correlated with online game addiction. This means the lower the self-control, the more severe the probability of suffering online game addiction in early adult gamers.

1. Introduction
According to the 2013 State of Online Gaming Report by Spil Games, the number of people who play online games worldwide is 1.2 billion, with 700 million of those online [1]. Online game is a video game that is either partially or primarily played through the internet or any other computer network available [2]. Online games are ubiquitous on modern gaming platforms like PCs, consoles and mobile devices [3]. Online games can range from simple text-based games to games incorporating complex graphics and virtual worlds populated by many players simultaneously and it has many genres including first-person shooters, strategy games and massively multiplayer online games [3].

Thanks for technological advancement, the access to online game becomes a lot easier (e.g., we can access online game anywhere and anytime via smartphones). Although the access to online games becomes easier, there are many people who prefer playing online games at internet cafes to playing online games via smartphones.

Regarding playing games at internet cafes, Wong stated that internet cafe could be potentially more hazardous than home gaming [4]. Driven by the profit making motive, the cafe managers would not stop excessive gamers to play, and venue-based safeguards against gaming addiction did not exist [4]. Gamers who play online games at internet cafes tend to play online games excessively because there were no restrictions given to them by the cafe manager. Based on Thalemann’s study, it was stated that
excessive gaming is related to the core components of addiction [5]. The researcher found this case in one of the biggest internet cafes in Cimahi City, Indonesia, called Insan-net.

Game addiction, according to behavioral definition by Lemmens et al., is defined as excessive and compulsive use of computer or videogames that results in social and/or emotional problems. Despite these problems, the gamer is unable to control this excessive use [6]. Based on pre-survey data through observation, questionnaires, and brief interviews, it showed that visitors who visited internet cafe usually played for at least 10 hours, even up to 24 hours a day and it usually triggered quarrels especially with family members. They assumed that playing games was important and could not be abandoned, felt uncomfortable if they did not take time for playing games, and most of them play online games to get rid of fatigue and forgetting their ‘real world’ problems. All visitors who showed online game addiction criteria were in their early adulthood stage (20 – 40 years old).

Some previous studies had suggested that individual psychological characteristics may predispose certain individuals to overuse the Internet; self-control was one of them. It was found that game addiction among young people was related to their weak self-control and discipline [7]. Based on pre-survey data, it showed that internet cafe’s visitors had low self-control when playing online games at internet cafe. The evidence showed that they tended to skip meals and most of them did not sleep at all when playing games. They chose to spend their time playing games and sacrificed their daily activities. They also carried out tasks and jobs as they wish, so their work results were bare minimum. In fact, there were early adult gamers who spent their salaries and borrowed money from their workplaces just for playing online games at internet cafes.

Based on the explanation above, there was a gap in early adulthood subjects according to developmental stage. Early adulthood stage is a productive stage which involves change in roles and more complex responsibilities [8]. It is a period when one’s patterns of behavior tends to be persistent for the rest of their life [8]. If the phase of early adult development stage is supposed to be a productive period, the case found by the researcher showed the otherwise. In fact, there were early adult individuals who spend their time and money for unproductive activities by playing online games at internet cafes.

According to previous studies that had been conducted in Indonesia, the correlation between self-control and online game addiction usually focused on teenager subjects and the result showed that self-control and online game addiction had very significant negative correlation [9-11]. Compared to previous studies, the research aimed to see the correlation between self-control and online game addiction on different research subjects; they are early adult individuals.

The objectives of this study are as follows: 1) Obtaining empirical data regarding self-control and online games addiction in early adult gamers and 2) Knowing the correlation between self-control and online game addiction in early adult gamers.

2. Method

2.1. Participants and procedure
The population of this study were early adult individuals that become permanent members at Insan-net internet cafe who were 20-40 years old and suffered from online game addiction. With the help of internet cafe’s operators, the data about permanent members at internet cafe were successfully collected. The total number of permanent members were 54 people. To find out the permanent members who suffered from online game addiction, the Game Addiction Scale constructed by Lemmens, Peter, and Valkenburg was used [6]. After the results of Game Addiction Scale had been obtained, it was found that permanent member at internet cafe who suffered from online game addiction were 33 people including 32 males and 1 female. That was the final number of participants in this study.

2.2. Questionnaire and measurement scales
The researcher used questionnaires which was composed of three sections: questionnaires regarding demographic information, the game addiction scale, and the brief self-control scale.
2.2.1. **Demographic information.** Researcher investigated the general information about the participants such as age, sex, occupation, marital status, and the types of game that usually played by participants.

2.2.2. **The brief self-control scale.** The Brief Self-control Scale was introduced by Tangney, Baumeister, and Boone [12]. The Brief Self-Control Scale has 13 items which are scored along five-point Likert scale. The score for each item is a graded respond from 1 (strongly disagree) to 5 (strongly agree). The Likert scale provides an overall score, and it has five subscales: self-discipline, deliberate/non-impulsive, healthy habits, work ethic, and reliability. Only the total score considered in this study. Higher total score indicated higher level of self-control. The Cronbach’s’ Alpha of the scale in this study was 0.724.

2.2.3. **The game addiction scale.** The research used the Game Addiction Scale constructed by Lemmens, Valkenburgh, and Peter [6]. The Game Addiction Scale consists of 21 items associated with the importance of playing games (salience), gradual increase of time that used for playing games (tolerance), playing games as their coping strategy (mood modification), uncomfortable feeling when not playing game online (withdrawal), tendency to return to excessive playing habits (relapse), experiencing interpersonal conflict because of playing games (conflict), emergence of school, work, and social interaction problems (problems). The score for each item is selected from this scale: never, rarely = 0, and for all other answers (sometimes, often, very often) the score is 1. The minimum score for someone who can be categorized as a game addict is 11 and the score must be found in at least four criteria. The Cronbach’s’ Alpha of the scale in this study was 0.777.

2.3. **Statistical analysis**

All statistical analyses were performed by using IBM SPSS Statistics 21.0 for Windows. Spearman correlation to analyze the correlation between self-control and self-control aspects with online game addiction was also used.

3. **Results and discussion**

The general information and a survey of characteristics of participants are listed in Table 1. Most of the participants were 20-30 years old (94%) and dominated with male participants (97%). Most of the participants’ marital status was single (81.8%). The number of college student participants was the highest (45.5%) and the number of participants playing MOBA was the greatest (57.6%).

| Table 1. Demographic and general characteristic of the participants. |
|----------------------------------------------------------|
| **N (%)** |
| **AGE** |
| 20-30 | 31 (94) |
| 31-40 | 2 (6) |
| **SEX** |
| Male | 32 (97) |
| Female | 1 (3) |
| **MARITAL STATUS** |
| Married | 6 (18.2) |
| Single | 27 (81.8) |
| **OCCUPATION** |
| Worker | 12 (36.4) |
| None | 4 (12.1) |
| College student | 15 (45.5) |
| **TYPE OF GAME** |
| MOBA | 19 (57.6) |
| MMORPG | 10 (30.3) |
| MMOFPS | 3 (9.1) |
| MMORTS | 1 (3.0) |
Based on Table 2, it was found that 16 participants (48.5%) showed high self-control and 17 other participants had low self-control (51.5%). Referring to the percentage of self-control categories, it can be concluded that the participants in this study were dominated by participants who had low self-control.

**Table 2. Self-control category on early adult gamers.**

| Category | Frequency | Percentage |
|----------|-----------|------------|
| High     | 16        | 48.5%      |
| Low      | 17        | 51.5%      |

A bivariate test was conducted to see the correlation between self-control and online game addiction using Spearman correlation. The followings are the results of the Spearman correlation test obtained with IBM SPSS Statistics 21.0.

**Table 3. Correlation between self-control and online game addiction.**

| Spearman’s rho | Self-control | Online Game Addiction |
|----------------|--------------|-----------------------|
|                | Correlation Coefficient | Sig. (2-tailed) | N | Correlation Coefficient | Sig. (2-tailed) | N |
|                | Spearman’s rho | Online Game Addiction |
| Self-control  | -0.581** | 0.000 | 33 | 1.000 | -0.581** | 1.000 | 33 |

**. Correlation is significant at the 0.01 level (2-tailed).**

Based on Table 3, the value of \( r = -0.581 \) was obtained. According to Hair, et al., if the coefficient \( r \) is in the range of 0.40 - 0.599, the correlation is on moderate level [13]. Because the Sig. (2-tailed) 0.000 <0.05, it can be said that there was significant negative correlation between self-control and online game addiction.

**Table 4. Correlation between self-control aspects and online game addiction.**

| Self-control Aspects | Coefficient of Spearman Correlation | Sig. (2-tailed) |
|----------------------|-------------------------------------|----------------|
| Deliberate/Non-impulsive | -0.551                              | 0.001**        |
| Self-discipline     | -0.439                              | 0.011*         |
| Healthy Habit       | -0.319                              | 0.071          |
| Work Ethic          | -0.292                              | 0.099          |
| Reliability         | -0.200                              | 0.265          |

**. Correlation is significant at the 0.01 level (2-tailed)**

**. Correlation is significant at the 0.05 level (2-tailed)**

Table 4 showed the correlation between aspects of self-control and online game addiction from the highest correlation to the lowest correlation. Deliberate/non-impulsive aspect had the highest correlation \( r = -0.551 \), whereas the reliability aspect had the lowest correlation with online game addiction \( r = -0.200 \).

When viewed from the percentage of participants' self-control suffering from online game addiction (Table 2), the number of participants who had low self-control was dominant (51.5%). In this study, early adult gamers who had low self-control can be defined as someone that had difficulty in controlling their habits when playing online games that can lead them to suffering from online game addiction. When early adult gamers were suffered from online game addiction, they spent almost all of their time playing games and it can obstruct the fulfillment of development tasks including changing roles and taking more complex responsibilities that should be fulfilled in early adulthood stage.
This is consistent with the study that was conducted by Kim, et al., stating that online game addiction was related to the low self-control of individuals [7]. Besides, low self-control was also related to various kinds of addictive behavior including internet addiction [7]. The study conducted by Tangney, et al., had the same result which explained that low self-control was a significant risks factor for a broad range of personal or interpersonal problems [12]. This study explained that the low ability of individuals in controlling impulses was an important predictor of the occurrence of addiction [12].

According to Table 4, there were two aspects of self-control that had significant correlation with online game addiction; they were deliberate/non-impulsive aspect and self-discipline aspect. Consistent with Jentsch’s study, it explained that impulsivity had strong relationship with addiction-related behaviours, and also the potential susceptibility of those with poor impulse control for substance or behavioural addiction [14]. In addition, Gentile’s study stated that higher impulsivity was found to be a risk factor for becoming a pathological gamer [15].

Although the results of the study showed the majority of respondents had low self-control, data in Table 2 showed that the number of respondents who had high self-control was quite large with a total of 16 people (48.5%). Besides low self-control ability, demographic information such as gender and types of game they played may contribute to online game addiction.

Based on Table 1, it was found that almost all of the participants were males. According to research conducted by Hoeft, et al., males were more likely to suffer game addiction than females because when they were playing games, one part of the brain that produced rewarding feeling was more active in the males brain than the females brain [16]. Based on an interactive survey conducted in this study, it also showed that males were two to three times more likely to suffer games addiction compared to females [16].

In addition, Table 1 showed the types of game that were mostly played by early adult gamers who suffered from online game addiction were MOBA (Multiplayer Online Battle Arena Game) and MMORPG (Massively Multiplayer Online Role Playing Game). Based on Blinka’s study, MOBA and MMORPG were specific game genres that were more related to addictive behaviors [17].

Multiplayer Online Battle Arena (MOBA) games have become the most popular type of video games played worldwide, superseding the playing of Massively Multiplayer Online Role-Playing Games and First-Person Shooter games. It was stated in Nuyen’s study that MOBA games did not take place in never-ending virtual worlds, but compared to other types of game, it had short, intensive game sessions, and daily updated international rankings that might be susceptible to promote heightened probability of suffering game addiction [18].

The other type of games that more related to addictive behaviors is Massively Multiplayer Online Role-Playing Games (MMORPG). In Young’s study, she explained that MMORPG had virtual world called persistent world. Persistent world is like a real world, they continue to exist whether players are in them or not [19]. In MMORPG, there were so many activities and missions provided. It can increase gamers’ curiosity and desire to complete the tasks and these can lead MMORPG gamers to suffering from game addiction.

4. Conclusion

Based on spearman correlation analysis, it shows that self-control and online game addiction has very significant correlation, which means the lower the self-control, the more severe the probability of suffering online game addiction in early adult gamers. There are two aspects of self-control that have significant correlation with online game addiction (sig. 2-tailed  < 0.05): 1) Deliberate / Non-impulsive and 2) Self-discipline. It shows that the lower the deliberate/non-impulsive aspect and self-discipline aspect, the more severe the probability of suffering online game addiction in early adult gamers. Lastly, there are three aspects of self-control that have insignificant correlation with online game addiction (sig. 2-tailed > 0.05): 1) Healthy Habit; 2) Work Ethic; and 3) Reliability. It shows that the lower/higher healthy habit, work ethic, and reliability aspect is, the severity of online game addiction in early adult gamers will not be affected.
To improve self-control, especially the deliberate/non-impulsive aspect and self-discipline aspect, early adult gamers can try to increase those aspects by doing following activities: 1) Making a priority scale. Make a list of ongoing activities and goals, arranging it from the most important to the least important; 2) Making a time table for daily schedules. If someone has a lot of free time and an unstructured schedule, it will be easier to do impulsive actions. Gamers should try to make a schedule for their daily activities with clear time intervals. It will be better if it is balanced with tasks that must be done, time to socialize, and enough leisure time.

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