

A Preliminary Study on the Motives of Online Games Addiction Based on Flow Theory and Two-Factor Theory

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Abstract

Obviously, the negative impact of online games has received much attention as well as become a popular research topic. This research aims to explore the psychological motivations based on the flow theory and humanistic needs theory. The purpose of study 1 was to investigate the relationship between flow state and on-line games addiction. Results in study 1 indicated that flow state was negatively correlated with addictive inclination and it was not a significant predictor for subsequent addictive inclination of online games. Findings also revealed that the flow state of addicts is lower than the nonaddicts'. Thus, flow state might not be the key psychological mechanism of online games addiction and. In study 2, the results showed that the psychological needs of players of online games were close to the two-factor theory with two satisfactory and dissatisfactory dimensions. The nature of needs for addicted players was similar to the feature of dissatisfactory factor. That is, without online games are likely to generate sense of dissatisfaction; the addicts' compulsive use of online games seems to stem from the relief of dissatisfaction rather than seek for satisfaction. In contrast, online games tend to bring the nonaddicts with sense of satisfaction rather than sense of dissatisfaction.

Keywords: online games addiction, flow theory, two-factor theory

摘要

本研究從正向心理學的沉浸理論與人本取向的二因子需求理論探討網路遊戲成癮傾向者的心理動機。研究一驗證沉浸狀態與網路遊戲成癮的關係是否為單向因果關係或為互為因果關係，研究發現指出兩者為負相關，彼此不具相互預測性的因果關係，沉浸狀態應該不是網路遊戲成癮的關鍵心理機制。研究二從人本心理需求—滿足的架構下探討成癮傾向者對於網路遊戲的需求本質。結果發現成癮傾向者對於網路遊戲的需求本質較傾向為不滿足因子的特性，意即缺乏時會產生不滿足狀態，玩網路遊戲卻不會增加滿足的感受，需求滿足較符合—滿足／不滿足—雙向度模式。

關鍵詞：網路遊戲成癮，沉浸理論，二因子理論

1. Introduction

The popularity of Internet has affected every aspect of human beings' lives. According to iRate Internet viewership rating of Sproll Net in 2001, the

Internet users who have played online games in Taiwan increased from 10.5% (600,000 people) in December of 2000 to 40.7% (2,900,000 people) in August of 2001. The growing speed was astonishing. And the survey predicted that the market of online games in 2005 is going to reach US\$2.9 billion. However, some negative effects are emerging at the same time, the most noticeable is the effect of Internet addiction [2, 9, 25, 29]. Therefore, one cannot neglect the negative effects of the overuse of Internet in Taiwan [3]. Among the Internet users, the students are ones who tend to encounter the issue of Internet addiction. The college students, in particular, have the most risky problems [13, 30].

Some of the research on Internet use pointed out that during the browsing of the Internet, persistent involvement might result in the occurrence of flow [16]. In additions, based upon empirical evidence, researchers found out that the flow is an important factor for the users of online games [11]. Szalvatiz [23] proposed that the Internet users who encounter obstacle with interpersonal relationship are eager to intimately access to Internet. The advance of Internet technology allows the users to consistently learn how to overcome the challenges from which they obtain the need of personal achievement [20]. Usage of online games is associated with the satisfaction of diverse needs for players [27]. Therefore, this research aimed to probe into the online games addicts' motives via the perspectives of flow theory in optimal experience psychology and needs theory in humanistic psychology.

2. Flow State and Online Games Addiction

In online games, continuous scoring, promotion, immediate feedback and achievement of self-satisfaction have become the channels for upgrading individual self-esteem of the Internet generation [19, 21]. Computer games provide various means for the users to express themselves, to explore the world and seek for self-recognition. The Internet, which possesses anonymous and diverse characteristics, is an important channel for expanding friendship and seeking for belonging [27]. The above statement and research findings point out that online games might offer positive and optimal experience to the users. However, overly flowing in this optimal experience might result in negative outcome. This paradox is worthy of profound exploration.

Flow theory can be referred to as "The Psychology of Optimal Experience" [7] which, in

recent years, has been applied to the behavior of Internet usage and e-commerce by some research [4, 8]. The experiences described by flow state [24, 26] such as clear objective and immediate feedback, challenge encounter and adequate skill, combination of action and consciousness, concentration, sense of control, curiosity, loss of self-consciousness, purposeful experience, and inner interests are the states which can be experienced and accomplished by online games. Hwang [12] once explored college students' Internet usage behavior in Taiwan via flow theory and found out that under general situation, the users would actually experience flow state when using the internet. The more the users sense the premise aspects of flow, the more they will realize the flow experience of Internet. Besides, they are more likely to proceed with related exploring behaviors. Choi and Kim [5] found that people continue to play online games if they have optimal experience because flow state had impact on consumer loyalty. Consequently, the optimal experience of online games relatively complies with the psychological state of flow theory. Following the logic, if users who are more involved in flow state in online games, are they more likely to become addicted? Further, when the users are more addictive to online games, would they merely focus upon seeking for flow experience?

Once the relationship between flow state and addiction to online games is confirmed, it could provide suggestions for the intervention of the pathological use of online games. Thus, the research questions in this study were: Is users' flow state positively correlated with the addiction to online games? Can the addicted orientation of users be predicted by their experienced flow state?

3. Needs Theory with Two-factor Model and Online Games Addiction

Based upon the perspective of need-motivation in humanism, motivation is the inner drive of an individual that can force people to carry out their actions. According to Maslow's hierarchy of human needs model [15], Suler [22] attempted to elaborate the reasons that cause Internet addiction and pointed out that Internet can satisfy different hierarchy of human needs which is the sources of the users' motivation. As to further elaboration of the humanistic needs theory, the lower hierarchy of human needs refers to "dissatisfactory needs" which includes physical, safety, belongingness, and self-esteem. The higher hierarchy of human needs means "satisfactory needs" which consists of self-actualization and self-transcendence. According the concept, two-factor theory [10] developed for depicting job motivation is very similar to the above classification which points out that satisfaction and dissatisfaction do not stand at the opposite sides of single continuum; instead, they stand in different and independent scale. "Hygiene factors" are similar to "dissatisfactory needs". Without them, it will result in dissatisfaction. However, their

existence does not affect the level of satisfaction. That is, "Hygiene factors" are the source that influences the feeling of dissatisfaction. On the other hand, "motivators" are similar to "satisfactory needs". They can enforce the level of satisfaction. However, without them, it will not result in dissatisfaction. These kinds of factors mainly affect people's feeling of satisfaction.

The pathologic phenomenon of addicted usage of online games reveals that the addicts have to increase the time they spend upon Internet in order to obtain "tolerance". The reduction of their time consuming on Internet or the suspension of the act will result in withdrawal symptoms [17]. In other words, the essence of the addicts' needs toward online games is more like "unsatisfactory factors". Without them, the addicts will feel sense of dissatisfaction, but their existence does not apparently reinforce the feeling of satisfaction. Therefore, from the perspective of two-factor theory [10], the essence of the addicts' psychological motives toward online games should be more similar to "hygiene factors". Thus, if the research findings indicate differential evaluations on satisfaction and dissatisfaction dimensions, the needs of online games are more approximate to the notion of two-factor theory. In contrast, if the research findings find out that there is no differential effect on the dimension of satisfaction and dissatisfaction, the psychological motives of online games will be like uni-dimensional. Furthermore, the addicts' essence of needs should be more close to unsatisfactory factor whereas the nonaddicts' essence of needs should be more similar to satisfactory factor.

4. Study One

Study 1 was conducted with a longitudinal design survey. The main purpose was to investigate the relationship between flow state and online games addiction and to clarify the mutual impacts of two mental states.

4.1 Subjects and Design

The initial sample included 199 high school and college adolescents (around 16-23 years old) who had online games experiences by purposive sampling. This sample was used for reliability analysis. In formal sample, 177 adolescent (around 16-24 years old) participated in this survey with longitudinal design. The population was stratified into three demographic areas: Northern, Central, and Southern Taiwan. Subjects were asked to finish a series of questionnaires about their flow state in online games and online games addiction in the pretest. Besides, they were also asked to fill in the first English code and the last four codes of I.D. as "Identification Code" for the matching of pretest and posttest. After a period of six month, they were informed of the notification of posttest. By excluding the data with major missing value, serious response bias and misdate of posttest, there are 127 who accomplished the pretest and

posttest of this research. The aims of study one was to investigate the relationship between flow state in online games and online games addiction as well as the relationship is non-recursive or recursive. For this purpose, the cross-lagged panel design [6] was used as the framework of data collection and subsequent data analysis.

4.2 Measures

Flow state during the playing of online games was measured by the scale developed by Choi, Kim, and Kim [5]. The questionnaire for measuring the flow state in online games consisted of six items: two questions to measure intrinsic interest, two questions to measure curiosity, one question to measure control. Participants were received the definition of flow by a short description at the beginning of the questionnaire and subsequently proceeded with the measurement. The α coefficient of the whole scale is 0.89, with an explained accumulated variance of 66%. All the item-total correlations reach significance (ranging from 0.53 to .064) and which indicate satisfactory internal consistency.

The Internet Addiction Scale for high schoolers in Taiwan (IAST) developed by Lin and Tsai [14] was modified into an Online Games Addiction Scale for Adolescents in Taiwan (OAST) by substituting the subject, Internet, via online games. OAST employed a 4-point Likert scale with 29 items and 4 subscales: compulsive use and withdrawal (10 items, $\alpha = 0.96$), tolerance (7 items, $\alpha = 0.92$), related problem of family, school, and health (8 items, $\alpha = 0.91$), and related problem of peer interaction and finance (4 items, $\alpha = 0.93$). The reliability of the whole scale is .92. OAST shows a satisfactory internal consistency in item-total correlations (ranging from 0.69 to 0.84).

4.3 Results

The cross-lagged panel analysis [6] was utilized to examine the research questions. In this framework, the stable coefficients were computed to examine the relationship between flow state and addiction orientation of online games. The panel coefficients (flow state in pretest and online games addiction in posttest; online games addiction in pretest and flow state in posttest) were used to examine the recursive relationship between the test variables. Results of the cross-lagged panel analysis were shown in Table 1 with a correlation matrix.

Table 1 Cross-lagged Panel Analysis of Flow State and Online Games Addiction

| Variables | A ₁ | B ₁ | A ₂ | B ₂ |
|--|--------------------|-------------------|--------------------|----------------|
| Flow at pretest (A ₁) | -- | | | |
| Online games addiction at pretest (B ₁) | -.41 ^{a*} | -- | | |
| Flow at pretest (A ₂) | .24 ^{b*} | -.15 ^c | -- | |
| Online games addiction at posttest (B ₂) | -.12 ^c | .24 ^{b*} | -.35 ^{a*} | -- |

Note: ^a are the stable coefficients; ^b are the coefficients of test-retest

reliability; ^c are the panel coefficients; * $p < 0.01$

For the relationship between flow state and online games addiction, the stable coefficients of pretest and posttest data were both significant ($r_{A_1B_1} = -0.41$ and $r_{A_2B_2} = -0.38$ respectively, $p < 0.01$). These findings indicated that the relationship of flow state and online games addiction was stable and consistent over half-year period and they also showed that flow state was negatively correlated with online games addiction. Furthermore, subjects with an average score higher than 3 on the OAST of pretest data were classified into addicts (69 subjects, 46%). Besides, the addicts' scores on the flow state scale were significantly lower than those nonaddicts ($t = 3.11$, $p < .01$).

With regard to the panel coefficients in two predictive directions were both insignificant. Specifically speaking, the prior flow state was not associated with the subsequent online games addiction ($r_{A_1B_2} = -0.12$, n.s.); and the prior online games addiction was not correlated with the subsequent flow state in online games ($r_{B_1A_2} = -0.15$, n.s.). These findings indicated that the mutual predictive relations of flow state and online games addiction dose not exist. Addictive inclination might not be predicted by the prior flow state in the playing of online games and vice versa.

5. Study Two

The aim of study 2 was to examine if the addicts' essence of needs is more like dissatisfactory factor and if nonaddicts' essence of needs is more similar to satisfactory factor. Survey method was employed for data collection.

5.1 Subjects and Design

Subjects of this study were 182 adolescents (around 16-22 years old) who indicted themselves as the highly frequent players of online games on a screening questionnaire. They stratification of population was similar to study 1. All the respondents were asked to complete the questionnaires of about their attitudes toward online games addiction and evaluations on the two-factor dimensions of psychological needs for the playing of online games. Those with an average score higher than 3 on the OAST (4-point Likert scale), a total of 84 (46%), were defined the addicted players of online games. The rest 98 subjects (54%) below the cut-off score were considered as non-addictive players. The subsequent data analysis was based upon this classification.

5.2 Measures

The subjects' addition of online games was assessed by the OAST, which was also utilized in study 1. The development and reliability of OAST have been addressed in study 1.

The Two-factor Evaluation on Needs for Online Games (TENOG) was developed to measure the intensity of psychological needs on satisfaction and dissatisfaction dimensions. Based upon psychological

needs of Internet addicts proposed by the needs theory of humanism [22], subjects were received an elaborated definition of four psychological needs (safety, love & belonging, self-esteem, and self-actualization). Subsequently, they were asked to read the description with regard to the meanings of “satisfaction” and “dissatisfaction” based on four psychological needs generated by online games, to evaluate the intensity of “satisfaction” and “dissatisfaction” of the four kinds of needs that they experienced from online games on “non-graded scale”. Participants’ responses were later quantified by measuring the distance from the lower end of the scale to the mark and were then standardized on a 100-point scale. Take the scale of “dissatisfaction” as an example, “1” signifies that “the intensity of dissatisfaction is none without usage of online games” and “100” refers to “extreme sense of dissatisfaction”. As to the evaluation of “satisfaction”, “1” means that “the intensity of satisfaction is none with usage of online games” and “100” refers to “extreme sense of satisfaction”. Based upon this scoring, the participants had the scores of “satisfaction” and “dissatisfaction” with respect to four kinds of psychological needs.

The reliability coefficient for satisfaction dimension of the TENO is 0.93, where as the reliability coefficient for dissatisfaction dimension is 0.88. The item-total correlations showed a satisfactory internal consistency for both dimension (ranging from 0.76 to 0.83 for satisfaction and ranging from 0.49 to .055 for dissatisfaction dimension respectively).

5.3 Results

To examine if the intensity difference between satisfaction and dissatisfaction dimensions is contingent upon the kinds of psychological needs, ANOVA of a 2 (satisfaction vs. dissatisfaction) × 4 (four kinds of psychological needs) within-subjects factor design was conducted. Two-way interaction was not significant ($F(3, 537) = 0.20, ns.$) and this indicated that the difference between two dimensions was not dependent on the psychological needs. Thus, summated scores of four kinds of psychological needs were utilized on the subsequent analysis with respect to satisfaction and dissatisfaction dimensions. The descriptive statistics of study 2 was shown in Table 2.

Table 2 Two-factor evaluations on needs in Addicts and Nonaddicts

| Online Games Addiction | Two-factor evaluations on needs | |
|------------------------|---------------------------------|--------------|
| | Dissatisfaction | Satisfaction |
| Nonaddicts | | |
| <i>M</i> | 112.97 | 162.46 |
| <i>SD</i> | 83.86 | 91.87 |
| Addicts | | |
| <i>M</i> | 154.48 | 130.04 |
| <i>SD</i> | 96.76 | 107.58 |

Note: The cell means are summated scores of satisfaction and dissatisfaction (range is 4 to 400).

According to ANOVA of 2 (between-subjects factor: addicts vs. nonaddicts) × 2 (within-subjects

factor: satisfaction vs. dissatisfaction) mixed-factor design, the differential intensity of satisfaction and dissatisfaction was obtained ($F(1, 179) = 32.40, p < 0.01$). This result indicated that the psychological needs for online games are close to two-dimension rather than single-dimension. A non-ordinal interaction was found ($F(1, 180) = 31.02, p < 0.01$) and the finding indicated that the differential intensity of two dimensions was contingent upon addiction of online games. A further analysis indicated that the addicted players’ scores on dissatisfaction dimension ($M = 154.48$) were greater than the satisfaction dimension ($M = 130.04$), $F(1, 83) = 5.72, p < .001$. In contrast, the scores of nonaddicts on the satisfaction dimension ($M = 162.46$) were greater than the dissatisfaction dimension ($M = 112.97$), $F(1, 97) = 33.04, p < .05$.

6. General Discussion

Two studies were conducted to explore the psychological motives of online games with two approaches. From the psychology of optimal experience, the relationship of flow state in online games and addictive orientation was examined. Besides, the essence of needs for online games was investigated from the two-factor theory. The results indicated that, in a short term, flow state in online games was negatively correlated with addictive inclination to online games. However, such finding seems to be contradictory to the expectation. Online games players with pathological use did not experience high level of flow state and their addiction to online games could not be explained by the flow experience. Moreover, the flow state might not be a significant predictor of addiction to online games. Choi and Kim [5] found that people continue to play online games if they have optimal experience. Compared to the findings in this research, the flow state of addicts was significantly lower than the nonaddicts. Thus, flow state might not play an important role of the addiction to online games though it is positively correlated with customer loyalty. In general, flow state or optimal experience might not be the major motivation for the addicts’ playing of online games.

Based upon the perspective of humanistic needs theory, the findings of study 2 pointed out that the psychological need of players of online games is close to a bi-dimension model of “satisfactory and dissatisfactory.” Results in this research broaden the horizon of previous research on the motivation of Internet or online game addiction, because they only adopted the uni-dimensional framework of satisfaction. For example, researchers [18, 28], proposed, the more satisfied person is more likely to become Internet addict; the more powerful the person’s motive is, the more he will be satisfied with Internet. Inconsistent with the uni-dimension notion, this research discovered that the psychological needs of addicts of online games were close to dissatisfactory factor with

regard to the two-factor theory. On the contrary, the nonaddicts' needs were similar to satisfactory factor. According the meaning of dissatisfactory factor, finding in this research indicated that the compulsive use of online games comes from the relief of dissatisfaction rather than the seeking for satisfaction. This is parallel to the finding of Armstrong, Phillips, and Sailing's [31], they found that the person with lower self-esteem was more likely to addict to Internet due to deficient social skills and insufficient self-confidence and the addicts would regard Internet as a means for compensation and avoidance. In general, findings in this research indicate that addicts of online games tend to be affected by the sense of dissatisfaction, and this might be the reason why they are compulsive users. In contrast, the nonaddicts tend to seek for the enhancement of satisfaction and this might be the reason why they could escape from the claw of tolerance and obsession to online games.

On the other hand, the role-playing games allow the users to play roles as different alternative heroes through virtual world. They can thus fulfill the needs of self-actualization [31], which belongs to satisfactory factor. That is to say, different kinds of online games might satisfy different psychological needs of players. Although study 2 pointed out that the differential intensity of satisfaction and dissatisfaction was not dependent on the kinds of psychological needs (safety, love & belonging, self-esteem and self-actualization), future research shall investigate if the differential impact was contingent upon various kinds of games. The sampling of this research merely focuses upon high school and college adolescents. Elementary school students, in fact, are also the risky groups. Future research can employ the sampling of the students of cross ages and large sample in order to examine the external validity of research findings. Future studies can adopt qualitative research with projective techniques, depth-interview, collage research, and metaphor analysis to collect the texts of psychological motives of online game addicts. These approaches not only uncover the unconscious motivations of addicted players, but also bring further insights of the interplay between conscious and unconscious plains.

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