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ADDICTIVE BEHAVIOR IN RELATION TO THE *HAPPY FARM* FACEBOOK APPLICATION

PI-CHU WU
China University of Technology

In this study I investigated the influence of materialism on online game addiction. A questionnaire survey was completed by university students in Taiwan who were users of the popular Facebook application *Happy Farm*. Results showed that (a) the materialism of individual users who had been playing *Happy Farm* for less than 6 months had a positive impact on their Internet addiction, but those who had been playing *Happy Farm* for more than 6 months were not influenced by individual materialism; and (b) interpersonal relationships moderated the effect of users' materialism on online game addiction. I also found that materialism had a greater positive influence on novice players of Happy Farm than on experienced players, and that interpersonal relationships moderated this influence.

Keywords: online games, social media, Facebook, Happy Farm game, materialism, addiction, interpersonal relationships.

Facebook, the top social network globally (Nielsen Wire, 2012), is a classic form of social media that easily induces addiction – a phenomenon that affects the lifestyles of individuals. Li and Bernoff (2008) used the term *groundswell* to describe how social media uses technology to promote relationships between people. They emphasized that this trend is based on people who not only possess an infinite desire to establish relationships, but also act on this desire. This phenomenon has created a permanent and long-lasting change in the way the world operates, and it has also been revealed that, although social media initially only attracted the attention of young people, today it has become a major part of the lives of people of all ages (Weinberg, 2009). Moreover, online games are some of the most popular applications on Facebook. After a user registers and

Pi-Chu Wu, Department of Marketing and Logistics, China University of Technology.
Correspondence concerning this article should be addressed to: Pi-Chu Wu, Department of Marketing and Logistics, China University of Technology, No. 56 Xinglong Road, Sec. 3, Wenshan District, Taipei 116, Taiwan, ROC. Email: **jessywu1123@gmail.com**

logs on to Facebook, they merely need to click on a simple Flash™ application to play a game. The formats of these online games are easier to use than those of other online games, as they do not demand a lot of concentration, take less time to play, and users – often office workers and students – can play them during breaks. In particular, *Happy Farm* is easy to play as it has only a few basic functions, which allows for enjoyable interactions with friends.

Most people consider the mode of interaction found in online games as a virtual behavior that cannot fulfill their need for real social activity (Huang & Hsieh, 2011). However, most of the other player users who meet in online social media games are friends in real life; strangers are in the minority, despite the fact that online games possess social functions. Additionally, obtaining virtual wealth in the game world is an important factor for increasing personal status. *Materialism* is *the importance ascribed to material goods in achieving major life goals or states*. Materialists place high importance on acquisition and believe that their personal happiness depends in part on acquisition (Richins, 1999, 2011). In *Happy Farm*, players can accumulate crops through virtual cultivation and can buy different fruits, vegetables, and flowers at a real superstore. Similar to the virtual treasure in other online games, crops have value, and players in their various groups display different levels and accumulations of points. This drive to accumulate becomes an engine for creating a difference in status, which leads players to strive for higher positions among their peers and to an eventual addiction to the game. However, if users are not avid materialists, they will not care about the virtual world and are unlikely to develop an addiction. Therefore, the purpose in this investigation was to determine whether or not being a materialist is a factor that influences online game addiction. Additionally, I also investigated interpersonal relationships as a factor that may moderate an individual's materialistic tendencies towards Internet addiction. Young (1997) suggested that Internet addiction can be categorized as an addiction to applications. I proposed that individuals with a higher quality of interpersonal relationships in real life will have weaker materialistic tendencies towards Internet addiction.

Literature Review and Research Hypothesis

Online Games

New online games are continually being launched to replace older ones. These new games often require higher quality hardware such as high-performance graphics cards or more hard drive space. The complexity of games is also increasing, but at the same time they require a greater investment of time and money. The most popular online games of recent years are those developed for use on social media websites, that are capable of connecting users with

similar backgrounds and interests. Social media platforms are profile-based and encourage users to develop relationships amongst themselves (Weinberg, 2009). Therefore, most game participants are people who know each other in real life. As Egan (2008) pointed out, Facebook is a type of affinity group composed of like-minded individuals who possess common interests and actively build relationships with each other. As a result, a user's status in a game is naturally noticed by his/her friends. Selwyn (2007) argued that the *self-presentation* function (the presentation of an online identity) of social media platforms such as Facebook and their associated online games have become a popular attraction with users.

Addiction

Internet addiction is a byproduct of technological development. In 1996, psychiatrist Ivan Goldberg (as cited in Suler, 1996) was the first to propose the term *Internet addiction disorder* (IAD) to describe how an excessive and inappropriate use of the Internet can induce low work efficiency or a reluctance to engage in interpersonal contact with others. Lu and Wang (2008) pointed out that users' addiction to online games has a direct impact on their loyalty to the games. However, some of these users remain loyal to games even though they are not satisfied with the game's design.

Goldberg suggested that this new addiction can further interfere with the experience of daily life, including school, work, family, and society, and also impair physical and mental functioning. Young (1996a) defined *Internet addiction* as *a disorder with symptoms that include compulsive use, withdrawal, tolerance, and dependence*. Young (1996a, 1996b, 1997) also proposed a criterion for an IAD diagnosis that would clearly indicate whether or not an Internet user was addicted. Griffiths (2000) argued that social pathologies are beginning to surface in cyberspace (i.e., technological addictions). Because the focus in the present study on online game addiction is within the range of Internet addiction, the same measurement method can be applied.

Young (1997) suggested that Internet addiction can be categorized as an addiction to applications, social support, sexual fulfillment, and the creation of a persona. Canan, Ataoglu, Nichols, Yildirim, and Ozturk, (2010) argued that it is generally recognized that problematic Internet use involves an individual's inability to control his or her use of the Internet, which leads to negative consequences. Thus, certain Internet applications may be so attractive to a user (i.e. simultaneously satisfying their sexual and social needs) that they may induce addictive behavior. In addition, in order to remain anonymous, some users create a virtual persona on the Internet that is different from their real life personality. These findings can also be adapted to examine online game addiction.

Materialism

As the Internet and interactive information technology evolve, the development of materialism is becoming heavily influenced by innovations in online interactive technology. Richins (2004), in a discussion of the status of materialism in US society, observed that hundreds of research papers and countless articles have been written and published on materialism since she first conducted research on the concept in 1992. In addition, material value can be described by the following three constructs: that possessions are indicators of the success of oneself and others, that possessions are the center of personal lives, and that possessions bring about satisfaction and happiness (Belk, 1984; Richins & Dawson, 1992). Richins (1994) also pointed out that the pursuit of six specific objects were in accordance with the characteristics of highly materialistic people: Cadillacs, speedboats, jewelry, mink coats, sports cars, and diamonds.

However, as times have changed, so have the target subjects and the kinds of material objects. Chaplin and John (2007) performed research on material objects and distinguished the importance of many popular items across age groups (e.g., money), younger children (e.g., stuffed animals), boys (e.g., nice sports equipment), and girls (e.g., jewelry). Then, Chang and Zhang (2008) used online game players as their research participants and verified that the degree of materialism in the players had a positive impact on their motives and attitudes towards online games. This result suggests that an attempt to satisfy material desire through online gaming is a contributing factor to online game addiction. Wertime and Fenwick (2008) also pointed out that consumption behavior occurs in online virtual reality, and when increasing numbers of consumers are accustomed to switching between the virtual world and the real world, distinctions between the two become blurred. In the online game *Happy Farm*, users can simulate farming and harvesting activities on virtual farms. Their wealth in the game symbolizes their status in their Internet community. Therefore, I proposed the following hypothesis:

Hypothesis 1: In the context of online games, users who are materialistic will be at greater risk of becoming addicted to these games than will users who are less materialistic.

Impact of Interpersonal Relationships on Addictive Behavior

Richins (1994) posited that materialists attach more weight to material objects than they do to interpersonal relationships. Thus, because of this strong need to possess material objects, they act only to satisfy their own materialistic needs and often worry that others will steal from them. As a result, materialists often have poor interpersonal relationships and begrudge others what they do not have. Many researchers argue that Internet use has a negative impact on interpersonal relationships (Anderson, 2001; Whang, Lee, & Chang, 2003; Young, 1996b) and

that individuals who exhibit extreme anxiety in social relationships in real life may use the Internet as a substitute for social contact in the real world.

Therefore, if materialism contributes to users becoming addicted to the online game world, and if Csikszentmihalyi and Rochberg-Halton (1978) were correct in their suggestion that materialism is an instrument of this phenomenon, individuals may use this instrument (a kind of "show off" tool) to establish their value. Lo, Wang, and Fang (2005) pointed out that many individuals use the Internet to satisfy social needs that are otherwise unable to be satisfied in their real-world interactions. In addition, Vernberg, Abwender, Ewell, and Beery (1992) argued that some individuals cannot express themselves in real social environments because of their social anxiety; interaction on the Internet, on the other hand, relaxes their psychological defense mechanisms and temporarily reduces that anxiety. Whang et al., (2003) suggested that Internet addiction is closely related to strong antisocial tendencies. For example, addicts who are very lonely or very depressed express intimacy towards strangers on the Internet in an attempt to avoid facing the real world. Therefore, better interpersonal relationships should help to lower the risk of materialism impacting Internet addiction. Users with poor interpersonal relationships pay more attention to their virtual lives, in which materialism potentially has a greater impact on Internet addiction.

Liu and Kuo (2007) found that frustrating interpersonal relationships may raise levels of social anxiety. They suggested that interpersonal relationships, parent-child relationships, and social anxiety all influence Internet addiction and found that the more social anxiety and discontent with their peer interactions the participants experienced, the more addicted they were to the Internet. Therefore, I proposed the following hypothesis:

Hypothesis 2: The impact of materialism on the users of *Happy Farm* will be influenced by their interpersonal relationships in real life, such that better interpersonal relationships will contribute to materialism having a lesser impact on the degree of online game addiction, whereas poorer interpersonal relationships will contribute to materialism having a greater impact on the degree of online game addiction.

Method

Measures

The constructs discussed in this study include materialism, degree of addiction, and interpersonal relationships. The definition of materialism was taken from Richins and Dawson (1992): the degree to which online game users value material objects, for example, their harvests in *Happy Farm*. The following eight items were designed for use in measuring this construct: "I enjoy possessing material conditions that others envy", "The most important achievement in life

is to acquire certain material possessions", "I like a lot of luxury in my life", "Purchasing things that I like brings me great satisfaction", "With respect to money use, excessive consumption is common for me", "Being able to buy more high-privileged objects makes me happy", "Being unable to buy more high-privileged objects often makes me unhappy", and "I think making money is the goal of life". These items were measured using a 7-point Likert scale which ranged from 1 = *strongly disagree* to 7 = *strongly agree*. The Cronbach's α of the overall scale was 0.842. The participants were divided into a high materialistic group and a low materialistic group, with the average acting as the line of demarcation.

The *interpersonal relationship construct* was defined in this study as *the strength of a user's interpersonal social relationships in everyday life*. The following six items were designed for use in measuring this construct: "I enjoy conversing with others", "I actively make new friends", "I enjoy participating in social events", "I am articulate and persuasive", "I am optimistic and cheerful", and "I am the source of vitality in a group". I used a 7-point Likert scale which ranged from 1 = *strongly disagree* to 7 = *strongly agree*, and 3.50 was the average. The Cronbach's α of the overall scale was 0.897. The participants were divided into a high interpersonal group and a low interpersonal group with the average as the line of demarcation.

The third construct investigated was degree of Internet addiction. Young (1996a) defined Internet addicts as possessing the following characteristics: compulsive behaviors, withdrawal, tolerance, and dependence on addictive behavior. Based on this definition, five items were designed for this construct: "Not playing *Happy Farm* makes me anxious", "I am willing to buy actual products in exchange for virtual currency", "I think my farm is beautiful and reflects who I am", "I care about my level in *Happy Farm*", and "I buy products related to *Happy Farm*". An analysis of all samples showed that being materialistic had a significant impact on online game addiction ($t = 3.51$). Users with a high degree of materialism scored 4.05 for level of addiction, whereas those with a low degree of materialism scored 3.78 for level of addiction. The Cronbach's α of the overall scale was 0.904, indicating a high level of reliability.

All these items were modified to increase the clarity of each of the item statements or to ensure the completion and balance of the scales. After examination and discussion of the comments from experts, six items that had been identified as having major limitations or were redundant were deleted. The remaining 19 item statements were clarified by an interrater agreement between two qualified assessors to ensure that only one concept was identified and was consistent and relevant to the scales.

Participants and Procedure

Participants were university students from the Northern area of Taiwan. University students in Taiwan generally use Facebook, and therefore the proportion of those who had played, and were still playing, online games on Facebook was rather high. According to statistical data on the Facebook Statistics website **checkfacebook.com** on November 3, 2009, the world population use of Facebook was 316,402,840. The number of Taiwanese users amounted to about 5 million which is 1.6% of the total global use. The age distribution was highest for 25- to 34-year-olds at 39.1%, and 18- to 24-year-olds were a close second at 33.4%. As the participants had to be online game users, I employed a convenience sampling method. They were approached on campus, given information about the study, and were asked to participate. Each student participated after I obtained their permission. Only respondents who had played the online games on Facebook for at least one month were eligible to fill out the questionnaire. I used the questionnaire to determine how long they had been playing the online games, and if this was less than one month they were not included in the final sample owing to their lower levels of familiarity with the games. A total of 197 samples were collected within two months in this study.

The gender distribution in the sample was roughly equal. In terms of how much time the respondents spent using social media every day, 37.3% spent less than 1 hour, 28.2% spent 1 to 3 hours, 22.0% spent 3 to 5 hours, and 12.4% spent over 5 hours. With respect to the length of time the respondents had been playing *Happy Farm*, roughly a third (33.5%) had been playing for less than 3 months, 26.3% had been playing for 3 to 6 months, 27.4% had been playing for 6 months to 1 year, and 12.8% had been playing for more than a year. In terms of the amount of time spent on *Happy Farm* per session, the majority spent less than half an hour each time: 36.9% spent less than 10 minutes, 36.3% spent 11 to 30 minutes, 17.3% spent 31 minutes to 1 hour, and 9.5% spent more than 1 hour.

Results

The Direct Impact of Materialism on Degree of Online Game Addiction

In this study I employed an independent samples t test to verify Hypothesis 1, that being materialistic would increase the degree of browser game addiction in users. The high materialistic and low materialistic groups were examined for significant differences. The results revealed that the interpersonal relationships of members of the two groups were not markedly different; indeed, the F values ranged between 0.41 and 1.36, which indicates that the interpersonal relationships of the groups were similar. The average of interpersonal relationships in both groups was over 3.50.

The respondents were further divided into three groups to determine whether or not the users' length of experience playing online games would affect the results of the study: new players who had been playing for less than 3 months, established players who had been playing for 3 to 6 months, and experienced players who had been playing for more than 6 months. An analysis of all the samples showed that being materialistic had a significant impact on online game addiction (t = 3.51). Users with a high degree of materialism obtained an average addiction score of 4.05, whereas those with a low degree of materialism scored 3.78 for degree of addiction. When categorized by playing experience, the materialism of new players and established players had a positive impact on addiction (t = 3.64 and 3.45, respectively). The materialism of experienced players also had a positive impact on addiction (t = 1.01), but it was much smaller. The overall results still support Hypothesis 1, in that materialism increased the degree of addiction in online game users.

An analysis of covariance (ANCOVA; Hair, Black, Babin, Anderson, & Tatham, 2006) was applied to eliminate the interference of interpersonal relationships and to ascertain the pure effects of materialism on online game addiction. The homogeneity of the degree of online game addiction between the high versus low materialism groups was first tested on three kinds of players (see Table 1), as well as the homogeneity of the regression coefficient within groups. The results revealed that the homogeneity of the regression coefficients in each group were not significantly different, with F values ranging between 0.246 and 1.974. These F values are in accordance with the preconditions of the ANCOVA. Next, the impact of materialism on online game addiction was analyzed, as the interpersonal relationship factor had been controlled for. The results showed that materialism did, indeed, have a significant impact on online game addiction.

Moderating Effects of Users' Interpersonal Relationships

In Hypothesis 2 it was proposed that the interpersonal relationships of users would moderate the impact of their materialism on online game addiction. In other words, the materialism of users with better interpersonal relationships was posited to have less of an impact on their degree of online game addiction; while the reverse would be true for those with poorer interpersonal relationships. An analysis of variance (ANOVA) was used to test the impact of materialism on addiction for the relative quality of interpersonal relationships.

In the analysis of all the samples, it was shown that the materialism of respondents with better interpersonal relationships had no significant impact on their degree of addiction, regardless of whether they were high materialistic or low materialistic (F = 2.55, $p > .05$). The materialism of respondents with poor interpersonal relationships, on the other hand, was shown to have a significant

Table 1. *Moderating Effects of Interpersonal Relationships on Materialism and Tolerance*

Player type	Average of interpersonal relationships	Materialism	Good interpersonal relationships	Poor interpersonal relationships
New player				
(n = 60)	3.76	F High vs. Low	1.57	9.88***
		High	4.05	4.26
		Low	3.94	3.63
Established players				
(n = 65)	3.79	F High vs. Low	4.26*	5.72*
		High	4.08	4.13
		Low	3.85	3.84
Experienced players				
(n = 54)	3.74	F High vs. Low	2.55	5.65*
		High	3.80	3.95
		Low	3.74	3.68
All samples				
(n = 179)	3.77			
		F High vs. Low	2.55	9.46***
		High	3.94	4.12
		Low	3.84	3.70

impact on their degree of addiction ($F = 9.46$, $p < .001$), with higher degrees of addiction exhibited in the high materialistic group.

The moderating effects of interpersonal relationships were apparent in the analysis of more recent players. The materialism of new respondents with poor interpersonal relationships was shown to have a significant impact on their online game addiction ($F = 9.88$, $p < .001$), whereas the materialism of new players with good interpersonal relationships had no significant impact ($F = 1.57$, $p > .05$). In terms of the established players, the impact of the high materialism of respondents, regardless of the quality of their interpersonal relationships, was higher than that of those with low materialism. This indicates that in this case, the moderating effects of quality of interpersonal relationships were not significant. The

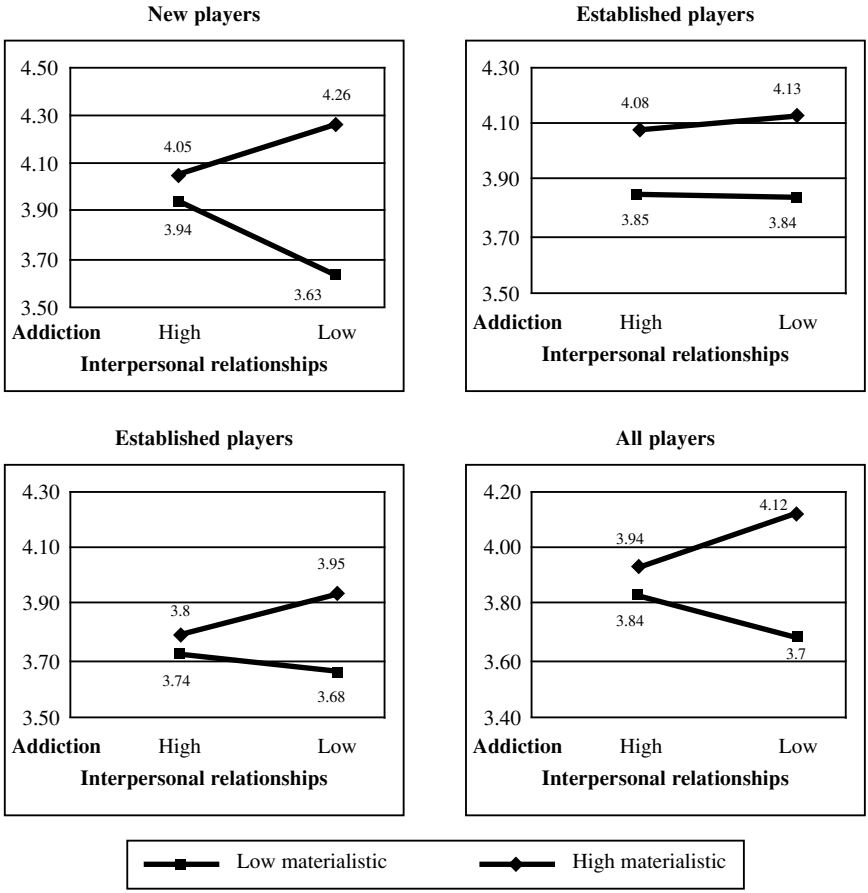

Figure 1. *Analysis of moderating effects on different types of players.*

results of the analysis of more experienced players also showed the moderating effects of interpersonal relationships. The materialism of respondents with poor interpersonal relationships significantly impacted their online game addiction ($F = 5.65$, $p < .05$), whereas the materialism of respondents with good interpersonal relationships did not ($F = 2.55$, $p > .05$).

Overall, the degree of materialism of the respondents with poor interpersonal relationships had a significant influence on their degree of online addiction. Therefore, Hypothesis 2 was supported in that the impact of *Happy Farm* users' materialism was influenced by the quality of their interpersonal relationships in real life (see Table 1).

In Figure 1 it can be seen that the degree of addiction of the high materialistic group was higher than that of the low materialistic group for players with all levels of experience and qualities of interpersonal relationships. Additionally, the degree of addiction in respondents with good interpersonal relationships exhibited smaller differences, whereas the degree of addiction in the respondents with poor interpersonal relationships exhibited larger gap differences. This indicates the moderating effect of quality of interpersonal relationships. In other words, materialism had a greater effect on the degree of online game addiction in users with poor interpersonal relationships than in users with good interpersonal relationships.

Discussion

Researchers have conducted many studies on the phenomenon of online game addiction. However, most of these studies are based on a social contact point of view (Liu & Kuo, 2007), which neglects the desire of the game users to pursue virtual wealth. Particularly in the Facebook environment, most users play games with people with whom they are familiar. Therefore, in this virtual world, social contact is less of an objective than increasing personal status. Online game operators deliberate on how to satisfy the materialism of users through game design mechanisms that induce in users a willingness to invest in the game.

The empirical results in this study show that users who are more materialistic than others easily become addicted to online games. However, this phenomenon only occurs in new players and established players; the personal materialism of experienced players has no particular impact on their Internet addiction. The main reason for this phenomenon may be that, as the amount of time spent playing increases and players accumulate a certain amount of wealth, the novelty of showing off their accumulated wealth starts to wear off. Chaplin and John (2007) indicated that early adolescents had a higher degree of materialism and a lower degree of self-esteem, and they tended to worship materialism in order to compensate for their low degree of self-esteem. Therefore, in terms of new

and established players, the results in this study indicate that a higher degree of materialism in users makes them more likely to become addicted to the online games. Yet, after a person becomes an experienced player, individual materialism has no impact on online game addiction.

The moderating effects of interpersonal relationships on personal materialism were as follows: for users with good interpersonal relationships, materialism had less of an impact on the degree of online game addiction compared to users with poor interpersonal relationships. This result is similar to that obtained by past researchers (see e.g., Liu & Kuo, 2007), that Internet users with good interpersonal relationships usually show no online game addiction. This supports the argument that the quality of interpersonal relationships does, indeed, have a moderating effect on online game addiction. In other words, online game users with good interpersonal relationships do not need to prove their status in the community through wealth in the virtual world; this also weakens the impact of individual materialism on their degree of addiction. Relatively, the materialism of users with poor interpersonal relationships causes them to become addicted to online games more easily. This also supports the argument that the Internet has been blamed for decreased shared family time and strains upon personal relationships (Lee et al., 2007).

Theoretical Implications

Most past researchers of online game environments have investigated players who were strangers to their fellow gamers. In these studies it was found that those with poor interpersonal relationships in the real world try to compensate for this lack of social fulfillment through their relationships in the online world (Liu & Kuo, 2007; Milani, Osualdella, & Di Blasio, 2009). Thus, it can be said that in past studies researchers have identified the need for social contact as an incentive to play online games. However, players of *Happy Farm* are often offline friends, and so the pursuit of social status has become the main goal. Past researchers have also identified the fact that the number of players at a high risk of Internet dependence who preferred to play with others was significantly high (Lee et al., 2007). Materialists value their accomplishments and possessions more for reasons concerning appearance and monetary worth than for enjoyment and intrinsic value (Richins, 1994). Nevertheless, past researchers have indicated that materialism has a significantly negative correlation with overall life satisfaction (Roberts & Clement, 2007). In the present study I used the materialism of online game users to represent their desire for wealth. The results confirm that individual materialism is one of the causes of online game addiction, a point worthy of consideration for future researchers of online games in social media.

In addition, interpersonal relationships were found to be a moderating variable, which indicates that users with good interpersonal relationships tend to consider

themselves as more popular; even if they are materialistic, they are less prone to needing to prove their personal value by accumulating virtual wealth. In future studies researchers may also need to consider this phenomenon. In contrast, Milani, Osualdella, and Di Blasio (2009) confirmed that users had poorer interpersonal relationships when they spent more time using the Internet every month. Therefore, how to reduce the phenomenon of Internet addiction and promote real-life interpersonal relationships of online users should be the focus. Thus, in this study I established that, with respect to the phenomenon of online game addiction, researchers should pay attention to the materialism, interpersonal relationships, and usage duration of individuals, all of which generate variable results in the development of this addiction.

Practical Contribution

As it is clear from the research result of this study that materialism affects online game addiction, I offer some suggestions to online game operators. If operators want users to play more, in the virtual world they should provide distinct material standards through which users can differentiate their performance, raise their social status, and let them pursue material goods, for example, land. With respect to marketing, the materialism of online game users can be used to promote greater perseverance – the likelihood of a person continuing to play the game – although the enthusiasm of materialists will still abate as experience accumulates. Therefore, online games must be diversified in design and be rich in content in order to promote the continued perseverance of users and their pursuit of material returns. In this study of *Happy Farm* users it was apparent that the deep-rooted Asian ideal of "where there is land, there is wealth" still drives online game users in Taiwan to pursue their goals and satisfy their inner needs, even if the wealth accumulated is virtual.

As I investigated only a single region and a single game in this study, my conclusions may be limited. Future researchers may consider a comparison of individuals with different backgrounds and cultures or include different games for verification. At the same time, I also recommend the use of experimental methods for further confirmation of the causality and investigation of whether virtual wealth is a cause of addiction. I carried out this study from the perspective of materialism, but future researchers could expand and confirm the importance of the pursuit of virtual materials in the process of self-affirmation.

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