

Exploring the Relationship between Psychological Mechanism and Experience Value in Mobile Gaming: Enjoyment or Addiction?

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ABSTRACT

With the rapid development of science and technology, mobile phones have both improved and complicated daily life. Activities such as surfing the Internet, watching videos, listening to music, and playing online games are more convenient, and mobile games become more dazzling. This study aims to explore psychological mechanism that may cause positive experience value or addiction and affect personality traits. This research utilized the Multiple Case Study Research Method to analyze the data collected from in-depth interviews, which were based on Grounded Theory. It was discovered that personality traits can influence the relationship between psychological mechanisms and experience values for game players. Whether mobile game players can experience joy in the game or become addicted to it is determined by how their personality traits can influence psychological mechanisms and experience values.

JEL Classification: Z1, Z13, Z31

Keywords: psychological mechanism, experience value, addiction, social traits, cultural economics, entertainment industries

I. INTRODUCTION

With the rapid development of science and technology, mobile phones have both improved and complicated daily life. Activities such as surfing the Internet, watching videos, listening to music, and playing online games are more convenient, and mobile games become more dazzling. Driven by live streaming and electronic sports, the game industry continues to expand, and the size of the mobile games market cannot be ignored. According to the latest Global Games Market Report issued by the research institution Newzoo, it was estimated that the revenue of global games market could reach two hundred billion USD in 2023 (Wijman, 2021). A more recent report by Adroit Market Research estimated that the size of online gaming market size would reach USD \$ 450.8 billion by 2029.

Although mobile games play an important role in the game industry, playing mobile games is no longer just an activity enjoyed by young users. Nowadays, many people use mobile games as a way to cope with stress and express their emotions. However, some players may become addicted. During the process of playing, each player will have different experience values due to different psychological mechanisms and may generate positive and negative experiences based on their personality traits. This study seeks to explore the psychological mechanisms that can bring pleasure to gamers and potentially lead to addiction, causing issues such as family breakdown, interpersonal changes, and high costs.

The following research questions serve to be research purpose of this study.

1. What kinds of psychological mechanism and experience value may show up during the experience of mobile games?
2. How can psychological mechanism affect experience value and symptoms of addiction during the experience of mobile games?
3. How can personality trait influence the relationship between psychological mechanism and experience value?

II. LITERATURE REVIEW

A. Experience Value

Value resides in experience (Fall, Diop-Sall and Poncin, 2021); experience value refers to the value that customers experience from products or services provided by enterprises. Nevertheless, negative experiences can result in value co-destruction (Keeling et al., 2021; Sahhar and Loohuis, 2022). It is the value felt and appreciated by customers from the services or products as a kind of spiritual satisfaction from the bottom of heart and an enlightenment of service value to leave customers a good aftertaste or a deep memory (MBAlib, 2018).

Experience value focuses on the pleasing intrinsic symbol, playfulness, and aesthetics of products that consumers can feel, as well as the feelings and emotions that customers attach importance to (Holbrook and Hirschman, 1982). Holbrook (1996) believed that experience value emphasizes on the internal psychological happiness. Experience value is what experienced by customers, whether it is tangible product value and service or intangible affect value exceeding customer expectations. By immersing

customers in the consumption situation, experience value is felt deeply by consumers. No matter tangible or intangible feelings or expectations, the experience will be engraved in the memory. Customers' experience value may vary due to different environmental atmospheres and self-efficacies (Lin, 2010).

Mathwick et al. (2001) argued that the perception of experience value stems from people's direct use or appreciation of services and products from a distance. Their measurement of experience value comprises four dimensions: consumer return on investment, service excellence, aesthetics, and playfulness, which are also explored in this study.

1. Consumer return on investment indicates that consumers mainly measure the experience by time cost, invested value, and expected return rather than the actual transaction price from the perspective of execution efficiency and economic benefits.
2. Service excellence suggests that consumer's self-subjective response towards services and marketing mainly comes from his/her experience about product performances and services, which are based on product or service quality itself.
3. Aesthetics includes the overall design, environmental atmosphere, visual attractive and internal feeling for beauty.
4. Playfulness means the feelings of fun, happiness and pleasure generated by consumers during the experience.

B. Psychological Mechanism

Psychological mechanism refers to the structure or state of a certain psychological phenomenon, which may either be a dynamic psychological process or a state. It is a way of connecting different parts of experience in order to achieve coordination (Zhang and Lu, 2013).

Experience is not only process-oriented but also state-based. It exists in a certain form, which means, it involves cognitive understanding and reflection, emotional feeling and comprehension, and behavioral activities. Moreover, the experience is closely related to the creation of meaning. Based on the work of Zhang and Lu (2013), psychological mechanism of experience mainly consists of five parts from the emergence to development: the presentation of the object, the construction of meaning, the changes of body, the occurrence of experience, and the extension of experience.

Based on the aforementioned information, when an object evokes experience and individual meaning is constructed, the object will cause corresponding psychological and physiological changes in the individual's body to go into the awareness. This process is referred to as the psychological mechanism of experience. According to the above definition, this study explored the connotation of psychological mechanism from disengagement theory, activity theory, flow theory, need hierarchy theory and self-determination theory as shown in Table 1.

Accordingly, the psychological mechanism of experience is separated into detachment-recovery, autonomy, control, meaning and belonging.

1. Detachment-recovery: Escape from pressure and relax the mood to liberate the body, mind and soul.

2. **Autonomy:** As no one can make decisions for others, the individual can make his/her own decisions, choose whatever he/she is interested, or control the activities he/she are engaged in.
3. **Mastery:** The individual can master, control and grasp the opportunities to challenge himself/herself and to learn new things.
4. **Meaning:** An individual can gain a better understanding of life and oneself through spiritual contents of human communication engaged in the activities, which consist of the intention, definition, purpose, cognition, knowledge, value, concept, etc.
5. **Belonging:** Through experiences, one can build relationships, find a sense of belonging, and feel connected to others.

C. Addiction

Addiction means a kind of repetitive compulsory behaviors, which are repeated continuously despite being aware of its harmful effects. According to the World Health Organization, addiction means as a state of periodic and chronic intoxication detrimental to the individual and to society, produced by the repeated consumption of a drug (natural or synthetic) due to the overpowering desire to continue taking the drug. With increasing doses, physical and psychological dependence develops.

Table 1
Theoretical Basis for Psychological Mechanism

Theory	Definition	Psychological Mechanism
Disengagement Theory (Cumming and Henry, 1961)	It is a phenomenon to escape from pressure, work place and others during the process of experience to obtain psychological relaxation.	Relaxation
Activity Theory (Havighurst, 1961)	When people engage in a certain activity with a certain concept, the engagement and concept will influence each other, and they will be combined together after the process of transformation. Activity theory explains two psychological mechanisms.	Belonging Meaning
Flow Theory (Csikszentmihalyi, 1975)	A psychological phenomenon when people they will be focused excluding irrelevant thoughts and perceptions after being immersed in something.	Autonomy Mastery
Need Hierarchy Theory (Maslow, 1943)	Human needs can be divided into high and low levels. High-level needs include the needs for learning, aesthetics, and self-realization, while lower needs contain physiological, safety, belongingness, and esteem needs.	Belonging Autonomy Meaning
Self-Determination Theory (Ryan and Deci, 2000)	If three internal psychological needs can be satisfied which include competence, autonomy and relatedness, self-motivation and mental health can be strengthened. If those needs are obstructed, the motivation and well-being will be minimized.	Autonomy Belonging

Addiction in computer may include Internet addiction (Goldberg, 1996; Griffiths, 1998), social media addiction (Al-Samarraie et al., 2022) and smartphone addiction (Chatterjee et al., 2022). In this study, we use Internet addiction as a typical term. Griffiths (1998) viewed that Internet addiction is a type of technological addiction, along with addiction to computer, mobile games, and TV. It is the product of human-computer interaction and behaviors, which is a continuous increase of the behavior tendency due to specific incentives and excessive use.

Goldberg (1996) argued that Internet addiction can have a detrimental effect on one's occupation, study, social communication, work, family life, finance, psychological and physiological functions by the excessive use of Internet. Suler (1996) pointed out that for people driven to compensate for deep-seated feelings of failure and unhappiness in real life, and to overcome desperate needs for contentment, self-esteem, recognition, care and self-worth by establishing relationships with others in online communities, the obsession with cyberspace accomplishments can become a true addiction that never fully gratifies. In a nutshell, Internet addiction means the negative influence of excessive Internet use on physical and mental health.

Internet addiction is characterized by several core components of addictive behavior, including the tolerance, compulsion, withdrawal symptoms, and changes of living conditions (like time, health, and interpersonal relation management) (Wang, 2009). Griffiths (1998) adopted an operational definition of addictive behavior as any behavior that included six core components of addiction, namely, withdrawal symptoms, tolerance, conflict, salience, relapse, and mood modification. Based on extant literature, this study divided indicators of Internet addiction into five parts, which are, tolerance, compulsion, withdrawal symptoms, conflict, and salience. Some indicators belong to negative psychological mechanisms, while others can have actual effects on consumer's body and mind. In summary, considering the correspondence among indicators, negative emotions, psychological mechanism, and experience value, the following Table 2 is concluded to show dimensions of addiction corresponding to negative psychological mechanism or negative experience value.

D. Personality Traits

Allport (1937) believed that personality is an internal physiological and psychological system within the individual that influences how they behave and think in their environment. According to Cattell (1965), the personality is a tendency to predict how individuals will behave in a particular situation, which is related to the individual's explicit and implicit behaviors.

Table 2
Dimensions of Addiction Corresponding to Negative Psychological Mechanism or Negative Experience Value

Dimensions of Addiction	Corresponding Negative Psychological Mechanism or Negative Experience Value
Tolerance	Unable for Autonomy (Bad Autonomy)
Compulsion	Unable for Mastery
Withdrawal Symptoms	Physiological Dependence, Negative emotion
Conflict	Interpersonal Disturbance
Salience	Uncertainty, Unworthiness

Data Source: Summarized by this research

Pervin (1980) argued that the personality can be seen as a general characteristic of the individual or people represents why the response to situation can be lasting. Being a particular physical and mental system formed through interactions between the individual and their environment, and allows individuals to be distinguished from others in the aspects of motivation, interest, attitude, values, temperament, sexual orientation, appearance and physiology while adapting to the environment (Yang, 1993).

At present, the most acceptable way for personality classification is the NEO Five-Factor Inventory proposed by Costa and McCrae (1985) as follows:

1. Neuroticism: negative emotions or emotional instability.
2. Extraversion: the quantity and intensity of interpersonal interaction, need for stimulation, and capacity for joy.
3. Openness: actively seeking experience, the tolerance and exploration of unfamiliar environment.
4. Agreeableness: an interpersonal orientation in feelings, thoughts, and actions, including the traits like closeness, empathy, respect, trust, love.
5. Conscientiousness: the tendency to control impulses and take goal-directed behaviors to achieve goals or reliable results.

The NEO Five-Factor Inventory, proposed by Costa and McCrae (1985), is one of the most acceptable framework for personality classification. The five factors of traits are important characteristics of interpersonal interaction which enable people to evaluate and expect the relationship and interaction mode, reflecting the structure of traits and the stability of people's development process. Therefore, the NEO Five-Factor Inventory was taken as the theoretical basis for classifying personality traits of eight respondents in this research.

III. RESEARCH METHOD

On the basis of the motivation, purpose and literature review of this study, the research framework was developed to gain an understanding of mobile game players, as well as to analyze the psychological mechanism and experience value of mobile game experience.

A-company game is a classic Simulation Game (SLG) belonging to the Turn-Based Strategy (TBS), the contents of which is based on historical wars. Targeting eight cases (players) of A-company games, the Multiple Case Study Research Method was adopted to collect related data in this research. After repeated deliberation and revision of the questions, the interview contents were summarized. The players are selected from Facebook users on the discussion forum of A-company game. Eight game players were invited to do interviews in the most popular discussion forum (<https://www.facebook.com/groups/1479834185610809/>). The requirements for those players were: They shall have at least one year's experience in playing mobile games and have spent more than NT \$50,000; they shall be quite active in the discussion forum or have hot postings and are still playing the game now. According to the NEO Five-Factor Inventory proposed by Costa and McCrae (1985), the eight interviewees were classified into two groups (i.e., conservative players and adventurous players).

This study collected data through in-depth interviews. First, the interview outline was drafted. Next, following the research direction, based on game content, player's

information, literature collection, and theoretical basis of psychological mechanism, the interview summary was initially finished. Finally, after repeated reflection and modification, the interview contents were summarized.

Primary data were collected based on case interview. In addition to creating the atmosphere and extending the questions to allow interviewees to fully express their opinions, the interview recordings were transcribed into texts word by word. Moreover, for each case, the full text was analyzed as much as possible, rather than being summarized for key points. To obtain primary data, 6-8 game players were interviewed. Research participants must have at least one year of experience playing mobile games, having spent more than NT \$50,000. They must be actively engaged in the discussion forums, having made hot postings, and still be actively playing the game.

Secondary data were mainly obtained from official announcements and public resources of the game, such as game memorabilia data, revision content, update time, etc. Moreover, external secondary data were sourced from discussion forums of the online gaming community. The discussed data and active degree of players were taken as the secondary data source.

Grounded Theory (Struss and Corbin, 1990) was adopted to conduct the coding and analysis of interview data. The coding process in grounded theory include open coding, axial coding and selective coding (Strauss and Corbin, 1990). Open coding refers to the process of generating initial concepts from data, it focuses on the conceptualization and categorization of phenomena. In open coding, the data are broken up into smaller parts to develop a code to describe it. Axial coding refers to the development and linking of concepts from open coding into conceptual families. The concepts from open coding are integrated into a core category, then investigate the relationships among categories. Selective coding refers to the formalizing of these relationships into theoretical frameworks by integrating the different categories that have been developed during axial coding into one cohesive theory. This theory links data collection, data analysis, and the final conclusions, by decomposing and conceptualizing the data and recombining them in a new way. There are three ways of coding in the Grounded Theory: open coding, axial coding and selective coding.

This study utilized the constant comparison analysis method to improve its reliability. Before the interview and data analysis, the researchers would enhance their theoretical sensitivity in line with the above principles. To get more data, in addition to creating the atmosphere and extending the questions to allow interviewees to fully express their opinions, the interview recordings were transcribed into texts word by word. Moreover, for each case, the full text was analyzed as much as possible, rather than being summarized for key points. Also, the triangulation was carried out in this study. The sources of data included previous or existing theoretical literature, supporting and contradictory narrations for comparison. Vague concepts recorded during the data analysis would be discussed, and different data sources were compared. Triangulation of data adopted different data collection methods (in-depth interviews with 8 respondents) to verify the consistency of the findings; triangulation of data sources used the same method to test the consistency of different data sources; triangulation of analysts includes the observation, analysis, focusing, re-observation, and re-analysis, which was repeated in the research to conclude deepest and widest findings; and triangulation of theory used various theories (such as disengagement theory, activity theory, need hierarchy theory, and self-determination theory to investigate the connotations of psychological

mechanism) to interpret data.

IV. DATA ANALYSIS

A. Coding Process

The coding of psychological mechanism and experience value is based on the transcripts using Grounded Theory, for instance:

I think playing games is a double-edged sword. One advantage is that it allows me to make many friends. For example, Brother Huang, who came from Dajia to visit me as a good friend. Additionally, I can relieve pressure and relax. If I'm feeling down, playing games can help me feel better and pass the time (Paragraph x7-017).

The open coding of this psychological mechanism was "B11 release pressure and relax", and finally it was summarized as "B1 Detachment-Recovery". Based on Strauss and Corbin(1990), we use the dimensions (B1-B5, C0-C5) from literatures as the basis of axial coding. We classify open coding (such as B11, B12...), into associate dimensions as axial coding. For example, the open coding of this psychological mechanism was "B11 release pressure and relax", and finally it was summarized as axial coding of "B1 Detachment-Recovery".

Based on the before-mentioned coding process, the following Table 3 was formed.

B. Coding of Personality Traits

From the interview process and game performance, as well as player's discussion and active degree while playing the game, this study described personality traits of eight interviewees as follows, for example:

Personality traits of X1 Player: He enjoys competing with other players in daily ranking competition and has the unyielding spirit; seeks to pass the level and bother with instances via quests for excitement; expresses enthusiastically and likes to chat with others about the skills of improving the level and so on in groups. In line with these data, these qualities can be coded as sociable, gregarious, loquacious, active, talkative, adventurous, and risk-seeking. The coding of personality traits is illustrated in Table 4 as follows.

Referring to the five personality traits in Figure 2-4 and the coding of personality traits in Table 4 based on the data, eight respondents were separated into two groups:

1. Conservative players: Their traits are affinity and conscientiousness. The respondents having those traits are 5 players in total, including x3, x4, x5, x7 and x8.
2. Adventurous players: Their traits are neuroticism, extraversion and openness. The respondents having those traits are 3 players in total, including x1, x2 and x6.

Table 3
Coding Table of the Study

Axial Coding	Open Coding Category
B1 Detachment-Recovery	B11 Release pressure, vent emotion, relax, and compensate
B2 Autonomy	B21 Be able to engage in activities based on self-determination, free choice and self-control
	B22 Be unable to engage in activities based on self-determination, free choice and self-control
B3 Mastery	B31 Be able to master, control, challenge oneself and master learning opportunities
	B32 Be able to master, control, challenge oneself and master learning opportunities
B4 Meaning	B41 The intention, definition, purpose, cognition, knowledge, value, concept, memory, interest, belief and emotion related to oneself.
B5 Belonging	B51 The sense of belonging, mutual connection and combination
C0 Physiology	C01 Improve physiological health
	C02 Physiological dependence, which continuously affects vision, health, and sleep to cause health problems, physiological addiction, and withdrawal symptoms of physiological reaction
C1 Emotion	C11 Positive emotion
	C12 Negative emotion
C2 Perception	C21 Positive perception: soul, self-affirmation, sense of achievement, values, self- discovery, concentration, comforted heart and focus in life
	C22 Uncertainty: Be uncertain and lack concentration (while working)
C3 Interpersonal	C31 Positive: Feel recognized, appreciated, proud and make new friends
	C32 Interpersonal disturbance
C4 Service	C41 Positive service perception: satisfaction (quality, attitude, real-time)
	C42 Negative service perception: Poor Service
C5 Economy	C51 Worthiness
	C52 Unworthiness, and not worth spending money and time

Data Source: Summarized by this research

Table 4
Coding of Personality Traits

Axial Coding	Open Coding Category
Neuroticism	Loneliness, boredom, anxiety, prejudice, low self-disciplined and high neuroticism; worried, suspicious, irritable, jealous, skittish for change, anxious
Extraversion	Sociable, gregarious, loquacious, active, talkative, bold, and energetic
Openness	Open-minded, bold, adventurous, go against expectation, creative, imaginative, philosophical, intelligent, complicate, and deep
Agreeableness	Polite, flexible, trustworthy, kind, cooperative, tolerate, compassionate, warm, and gracious
Conscientiousness	Cautious, careful, responsible, planned, diligent, achievement-oriented, organized, efficient, systematic, and realistic

Data Source: Summarized by this research

In addition, in the study, to distinguish the degree of involvement in the game (mild, medium and severe), we should understand how long and how much do respondents spend on mobile games every day. The degree of game involvement was classified as follows:

1. Mild: Spend within 2 hours per day and up to NT \$100,000 in total.
2. Medium: Spend 2-4 hours per day and NT \$100,000 - \$ 300,000 in total.
3. Severe: Spend over 4 hours per day and over NT \$ 300,000 in total.

According to the resources mentioned before, the following Table 5 was formulated.

Table 5
Summary of Respondents

Code	Gender	Age	Occupation	Personality Trait Factor	Classification	The Degree of Game Involvement (Mild, Medium, Severe)
1	Male	45	Motor	Curious, risk-seeker, creative, optimistic, persistent, competitive, ambitious, fond of leadership, helpful, imaginative, and talkative	Adventurous Player	Medium, over NT \$100,000
2	Male	9	Finance	Casual, optimistic, sociable, open-minded, expressive, competitive, positive, outgoing, frank, and risk-seeker	Adventurous Player	Severe, about NT \$300,000
3	Male	47	Agent	Logical, cooperative, analytical, non-competitive, and family-center	Conservation Player	Medium, about NT \$200,000
X4	Male	40	Manufacturing	Unsociable, introverted, uncompetitive, cooperative, and an otaku	Conservation Player	Medium, about NT \$170,000
X5	Male	48	Bedding Businessman	Rule-abiding, organized, efficient, systematic, cooperative and non-competitive	Conservation Player	Medium, over NT \$100,000
X6	Male	45	Air-conditioning and Refrigeration	Competitive, risk-seeker, and frank	Adventurous Player	Medium, about NT \$200,000
X7	Male	22	Pharmacist	Modest, tender, responsible, careful, and cautious	Conservation Player	Medium, about NT \$180,000
X8	Male	41	Business	risk-evader, cooperative and realistic	Conservation Player	Mild, about NT \$100,000

Data Source: Summarized by this research

C. Analysis of Psychological Mechanism

After interviewing 8 players in this study, it is discovered that players could have positive and negative psychological mechanisms after playing A-company games as shown in Table 6.

According to Table 6, during the process of playing A-company game, for positive psychological mechanisms, the most frequent was detachment-discovery (40 times), followed by 39 times of mastery, and 14 times of autonomy was the least frequent (6.51%). In terms of negative psychological mechanisms, being unable for autonomy is the highest with a score of 64.

As can be seen from Table 6, among 215 coded psychological mechanisms generated by mobile games playing, positive and negative psychological mechanisms appeared 135 and 80 times respectively, with a ratio of 63:37, while positive psychological mechanism is more frequent.

Table 6
The Frequency of Psychological Mechanism

Psychological Mechanism	Positive	Detachment-discovery	40
		Autonomy	14
		Mastery	39
		Meaning	18
		Belonging	24
	Total		135
	Negative	Unable for Autonomy	64
		Unable for Mastery	16
		Total	

Data Source: Summarized by this research

D. Analysis of Experience Value and Addiction

The frequencies of experience value and addiction in Table 7 show that the most frequent positive experience value was positive emotion with a score of 68 times, followed by positive interpersonal relation with a score of 38 times. Players stated that the most rewarding parts of playing mobile games were the positive experience values, such as joy, happiness, fun, delight, relaxation, and interest. The most common negative experience value reported was negative emotion, which occurred 22 times. Physiological dependence was the second most frequent response, occurring 20 times. However, none of the respondents reported feeling any physiological effects when playing mobile games.

Table 7 suggested that among 211 coded experience values generated by mobile games playing, positive and negative experience values appeared 132 and 83 times respectively with a ratio of 66:34, while positive experience value appeared more frequently.

E. Relationship of Psychological Mechanism and Experience Value (Including Addiction)

1. Analysis of Psychological Mechanism and Experience Value

This study aimed to explore psychological mechanisms generated by game players while playing mobile games. For the constructs of Psychological Mechanism and Experience Value, we use the frequency of interviewee mentioned as the importance of associated dimension of each construct. We also use the frequency table to show the relationship of psychological mechanism and experience values. This becomes the results of selective coding and shows the psychological transformation process of the interviewees.

The psychological mechanisms were distinguished into positive and negative psychological mechanisms. Positive psychological mechanisms could bring experience values. Table 8 presents the empirical findings in a crosstab manner.

As shown in Table 8, the positive psychological mechanism was positively correlated with positive experience value. Positive emotion ranked first, followed by positive interpersonal relations and positive perception. Further, the positive economic value had a total score of only 2, and positive physiology and service obtained a score of zero. Hence, it can be concluded that players mainly generate positive emotions (experience value) through mastery and detachment-recovery of psychological mechanism, and they develop positive interpersonal relations through belonging of psychological mechanism.

Table 7
Frequencies of Experience Value & Addiction

		Physiology	0
		Positive Emotion	68
		Perception	23
	Experience Value	Interpersonal Relation	38
		Service	1
		Economy	2
		Total	132
Experience		Psychological Dependence	20
		Negative emotion	22
		Uncertainty	7
	Addiction	Interpersonal Disturbance	16
		Negative Service	7
		Unworthiness	11
	Total	83	

Data Source: Summarized by this research

Table 8
Summary of Positive Values

Projects	Positive Physiology	Positive emotion	Positive Perception	Positive Interpersonal Relations	Positive Service	Positive Economic Value	Total
Detachment-Recovery	0	20	5	10	0	0	35
Autonomy	0	4	6	2	0	1	13
Mastery	0	24	7	4	0	1	36
Meaning	0	15	0	0	0	0	15
Belonging	0	4	2	17	0	0	23
<i>Total</i>	0	67	20	33	0	2	122

Data Source: Summarized by this research

Under the psychological mechanism of mastery, players can gain a sense of control, challenge themselves, and learn while playing mobile games, resulting in a positive emotional experience with benefits such as mental comfort, leisure, entertainment, happiness, stability, excitement, and stimulation.

Under the psychological mechanism of detachment-recovery, when players experience detachment-recovery during the process of escaping from work, relieving life pressure, or seeking to relax, they can develop positive emotion and experience value through entertainment, leisure, happiness and escapism that mobile games provide. Below is a statement from one of the respondents of the study:

“Playing mobile games is just like this: it can help us feel relaxed after coming from work. No matter how overwhelmed I may be with work or personal matters, I can easily forget my worries when I return to playing mobile games. Playing mobile games is a great way to relax and take a break from the day-to-day stress.” (Respondent: X1-035).

From Table 8, 5 dimensions of psychological mechanism and 6 dimension of positive experience value are the results of axial coding, and the high frequency represent the results of selective coding. For example, “Mastery” in psychological mechanism is highly related with Positive emotion (Frequency 24), and this becomes a part of theoretical frameworks.

2. Analysis of Psychological Mechanism and Addiction

The negative psychological mechanism represents addiction, and negative experience values are the symptoms of addiction. The results of the analysis and coding demonstrated the relationship between negative psychological mechanisms and addiction which are shown in Table 9.

As illustrated in Table 9, physiological dependence is the most frequent, followed by interpersonal disturbance, negative emotion, unworthiness, uncertainty, and negative service accordingly. Therefore, it can be summarized that players mainly develop the addictive symptoms of physiological dependence by the psychological mechanism of “being unable for autonomy”. If players are unable to make their own decisions, have a free choice, or control over game activities they are engaged in, they become addicted to and immersed in games habitually, which compels them to play the game overnight, become dependent on the game, and spend all their time playing to rush and finish the task. This results in withdrawal symptoms such as physiological addiction and physiological reactions, which are harmful to physical health; hence, negative experience value is generated. As an example, below is a statement of one of the respondents:

“In the past, mobile games affected my sleeping time as I often played them without realizing that it was already 1 or 2 am. However, things have changed now. If you stay up all night and let it affect your sleep, you end up getting late the next day and getting fined. It's not worth it!” (Respondent: X7-012)

Table 9
Summary of Negative Values

Project	Physiological Dependence	Bad Mood	Uncertainty	Interpersonal Disturbance	Negative Service	Unworthiness	Total
Unable for Autonomy	18	10	5	12	3	8	56
Unable for Mastery	1	8	1	2	1	1	14
Total	19	18	6	14	4	9	70

Under the psychological mechanism of being unable for mastery, the most common addictive symptom was having the negative emotion. When players are unable to master their skills, control the game, challenge themselves, and learn from playing, it results in a bad mood. This makes them lose their sense of excitement and interest and ends up disappointed because of failed expectations prompting them to make complaints. Players will be upset if they cannot play at work. If they are interrupted while playing, they will have a bad mood, will become angry, or lose their temper. As an example, below is a statement from one of the respondents:

“I do not have any feelings or expectations for this game now, as it offers very few coins as a reward. I’ve been playing other kinds of games, for example, Three Kingdoms for a long time. I can play it offline or be away from keyboard. It gives more coins and has more levels. It has been so long since Conquest updated its levels. At present, I play less than an hour a day of this game.” (Respondent: X4-004)

In Summary, for psychological mechanism, “Unable for Autonomy” and “Unable for Mastery” are the only two result dimensions of axial coding. There are 6 dimension of negative experience value. The high frequency represents the results of selective coding. For example, “Unable for Autonomy” in psychological mechanism is highly related with Physiological Dependence (Frequency 18), and this becomes a part of theoretical frameworks.

F. Comparison of Personality Traits

1. Positive Experience Value

Based on the coding of personality traits in Table 9 and the NEO Five-Factor Inventory, 8 respondents were divided into two groups: conservative and adventurous players. The analysis results are shown in Table 10.

Conservative players mainly generate experience value of positive emotion through psychological mechanisms of detachment-recovery and mastery (see Table 9). Hence, conservative players developed positive emotion and value by escaping from the actual environment, being able to relax by themselves, or by taking challenges from the game to feel good and experience mental comfort and joy.

As for adventurous players, they mainly produced experience value of positive emotion by psychological mechanisms of meaning and mastery. Similar to conservative players, adventurous players produced positive emotion by taking challenges in the game as well as by pursuing self-worth while playing the game.

Table 10
Summary of Positive Values for Conservative and Adventurous Players

Project	Conservative Players						Adventurous Players							
	Positive Physiology	Positive emotion	Positive Perception	Positive Interpersonal Relationship	Positive Service	Positive Economic Value	Total	Positive Physiology	Positive emotion	Positive Perception	Positive Interpersonal Relationship	Positive Service	Positive Economic Value	Total
Detachment-Recovery	0	14	1	4	0	0	19	0	6	4	6	0	0	16
Autonomy	0	0	0	1	0	0	1	0	4	6	1	0	1	12
Mastery	0	14	4	2	0	0	20	0	10	3	2	0	1	16
Meaning	0	4	0	0	0	0	4	0	11	0	0	0	0	11
Belonging	0	4	1	7	0	0	12	0	0	1	10	0	0	11
Total	0	36	6	14	0	0	56	0	31	14	19	0	2	66

Data Source: Summarized by this research

Both conservative and adventurous players can produce the experience value of positive interpersonal relations through the psychological mechanism of belonging. Both types of players can strengthen their interpersonal relations by developing a sense of belonging by engaging in the competitions and cooperation and by sharing in the game.

2. Negative Experience Value

The coding results of the relationship between psychological mechanism and addiction are shown in Table 11. Conservative players had psychological mechanisms of being unable for autonomy and mastery at the same time, while adventurous players were unable to develop psychological mechanisms of mastery. For conservative players, under the psychological mechanism of being unable for autonomy, they experienced similar feelings to those associated with addiction, such as physiological dependence, negative emotion, interpersonal disturbance, and unworthiness. However, when the psychological mechanism of an inability to gain mastery was experienced, the most common symptom was a negative emotion, resulting in a devalued sense of self, leading to a loss of emotional impulse, expectation, and other feelings.

Adventurous players may not frequently develop a psychological mechanism of being unable for mastery, which may be due to their personality trait of having a strong need to obtain control. The psychological mechanism of being unable for mastery mainly results in the addictive factor of physiological dependence. Therefore, adventurous players may not be able to play or become interrupted while playing because of this psychological mechanism.

Secondly, the psychological mechanisms of being unable for autonomy and mastery appeared 28 times and 12 times respectively in conservative players, suggesting that while both are negative psychological mechanisms, being unable for autonomy was more frequent. For adventurous players, psychological mechanisms of being unable for autonomy and mastery appeared 28 times and 2 times respectively, indicating that the

former may be developed by adventurous players while the latter may not.

Moreover, for conservative players, the positive and negative experience values were very close (56 and 40 times respectively). This means that when conservative players play mobile games, they can have positive and negative experience values. For adventurous players, the positive and negative experience values were widely apart (66 and 30 times respectively). This indicates that when adventurous players play mobile games, they generate more positive experience values than negative ones.

Table 11
Summary of Negative Values for Conservative and Adventurous Players

Project	Conservative Players					Adventurous Players								
	Bad Mood	Uncertainty	Interpersonal Disturbance	Negative Service	Unworthiness	Total	Physiological Dependence	Bad Mood	Uncertainty	Interpersonal Disturbance	Negative Service	Unworthiness	Total	
Unable for Autonomy	7	6	2	6	2	5	28	11	4	3	6	1	3	28
Unable for Mastery	1	8	0	2	1	0	12	0	0	1	0	0	1	2
Total	8	14	2	8	3	5	40	11	4	4	6	1	4	30

Data Source: Summarized by this research

V. CONCLUSIONS AND SUGGESTIONS

A. Conclusions

This study interviewed mobile game players and found that personality traits had a significant impact on the development of an addiction to playing mobile games. The results also indicated that the degree of enjoyment or addiction relies on the player's psychological mechanism and experience. Using the Grounded Theory to encode, summarize, and analyze the in-depth interviews of the eight players recruited in this study, the following conclusions were drawn:

During the process of mobile game-playing, 63% of the players had positive psychological mechanisms, while only 37% had negative psychological mechanisms. The most frequent positive psychological mechanism was detachment-discovery, followed by mastery, with autonomy being the least frequent. Conversely, the highest score for a factor of negative psychological mechanisms was being unable to achieve autonomy, followed by being unable to achieve mastery.

1. Comparing positive experience value and addiction, it was found that 66% of the players had positive experience value, while only 34% had an addiction. For positive experience value, positive emotion was the most frequent, followed by positive interpersonal relations, and positive physiological value was the least frequent. For negative experience value, having the negative emotion was the most

- frequent, followed by physiological dependence, and uncertainty and negative service were the least frequent.
2. Based on the analysis of positive experience value, as for the psychological mechanisms of detachment-discovery and mastery, the most frequent of positive experience value was having the positive emotion. That is to say, players most often achieve the positive emotion through those two mechanisms.
 3. According to the analysis of addiction, under the psychological mechanism of being unable for autonomy, the frequency of physiological dependence was the highest in negative experience values, Meanwhile, under the psychological mechanism of being unable for mastery, the frequency of negative mood was the highest.
 4. Being unable to achieve autonomy and mastery were both common in conservative players, but the frequency of being unable to achieve autonomy was higher. Most adventurous players had the psychological mechanism of being unable for autonomy, while few had experienced the psychological mechanism of being unable to obtain mastery.
 5. The results showed that when adventurous players play mobile games, they produce higher positive experience value than that of conservative players. This indicates that it is easier for adventurous players to obtain positive value when playing mobile games.
 6. It was discovered that conservative players generated positive experience value through psychological mechanisms of detachment-discovery and mastery, while adventurous players mainly produced experience value of positive emotion through psychological mechanisms of meaning and mastery.
 7. This study also observed that conservative players under the psychological mechanism of being unable for autonomy tend to have similar experiences to addiction such as physiological dependence, negative emotion, interpersonal disturbance, and feelings of unworthiness. Under the psychological mechanism of being unable for mastery, having negative emotion was the most frequent in causing negative experience values. This results in players losing their emotional impulses and in disappointment because of failed expectations.

As for adventurous players, the psychological mechanism for being unable for autonomy mainly caused the addiction element of physiological dependence.

B. Suggestions

Based on the above conclusions, this study offers the following suggestions in regard to seven positive and negative mechanisms.

1. Game Design

For the detachment-discovery to be effective, companies should design games that can be played offline, without the need for keyboards. Also, they may design the game in such a way that players can exchange accumulated time for more experience and the chance to increase the level of their characters even when playing offline, rather than requiring players to wait for a long time or to complete several tasks first. In this way,

players can enjoy the game without spending their whole time playing. Game companies may also provide an option for players to adjust the difficulty of the game levels at any time to help them gain a sense of mastery and to avoid them from getting bored or frustrated because of the inability to surpass the level. The ability to complete a challenge and increase their level in the game can make players feel a sense of achievement. Companies can design game content based on cultural history and traditions to add a new level of excitement and novelty. Additionally, it is recommended to include multiple playing modes and regular updates to enrich the gaming experience. To increase players' autonomy, game tasks may not be set at a certain time (e.g. setting a 24-hour free task instead of having a specific time). There are two benefits in doing this: (1) players will not need to be bounded by the game; and (2) players can play mobile games at any time and control their schedule. Through this, players will not feel pressured to finish the task immediately because of time constraints. For higher belonging, it is suggested that tasks requiring teamwork may be added to increase interaction between players. It will also be great for the game to have a group chat function or real-time voice communication system for better interpersonal connections.

2. Suggestions for Players

As for the psychological mechanism of detachment-discovery, conservative players are recommended to get positive emotion and relieve pressure by engaging in activities close to nature such as exercising and mountain climbing, rather than playing mobile games. Engaging in activities near people, objects, and the environment can not only promote good health, but also reduce stress from work and personal matters. For adventurous players, to obtain the positive emotion and interpersonal relations, they can also participate in activities that involve face-to-face interactions with people, e.g. going to clubs.

In terms of the psychological mechanism of being unable for autonomy, conservative players are suggested to: (1) choose games that can be paused and continued at a later time so that when they are interrupted, they can easily go back to the game, preventing feelings of unhappiness and having a bad mood; (2) participate in parent-child activities; (3) and avoid spending all their time and money on games to prevent the sense of unworthiness. For adventurous players, they are suggested to choose games that can be interrupted any time to avoid the physiological dependence and to give them control over their time. For both types of players, they are recommended to participate in activities that can give them a sense of autonomy out of interest like running, playing ball, and doing other physically demanding tasks.

In terms of the psychological mechanism of being unable for mastery, conservative players are suggested to select mobile games that update frequently to arouse their expectations and excitement. For adventurous players, they are recommended to play games with higher returns on investment so that they can master the game, control their time, take on challenges, and learn while playing to avoid loss of concentration and attention at work.

This study further suggests that game companies may develop two versions of mobile games (i.e., simple vs. challenging) to target players with different personalities. For instance, games that are rather relaxing and without time limits or pressure may be created for conservative players, while games with challenging tasks and tight plots to

explore may be made for adventurous players. This method may be a way to better satisfy online gaming customers' various demands.

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