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플레이어 유형과 MMORPG "Grinding" 유형과의 관계 연구

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Research on the Relationship between Player Type and MMORPG "Grinding" Type

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요 약

MMORPG 중후반에 "Grinding"으로 인해 소모되는 경우시간과 에너지가 갈수록 많아지고, 반복되다 보면 지루한 느낌이 들기 쉽기 때문에 유저의 이탈을 초래하기 쉽다. 본 논문은 MMORPG "Grinding" 8종 유형에 대한 Richard Bartle의 4가지 플레이어 유형의 선호도의 차이를 연구하고자 SPSS 소프트웨어를 사용하여 수집된 200개의 샘플 데이터에 대한 묘사적 분석, 신뢰성 분석, 단요인 방차 분석을 수행했다. 연구 결과에 따라 MMORPG 'Grinding' 최적화 방안을 게이머 성향 차원에서 제시했다.

ABSTRACT

In the middle and late period of MMORPG, as more and more time and energies are repeatedly consumed due to Grinding, it is easy for the players to feel bored and quit the game. This paper mainly studies the differences in preferences of four types of players for MMORPG grinding types. Apart from that, SPSS software is used to make descriptive analysis, credibility analysis, and one-way analysis of variance on the 200 survey sample data. Based on the content of the experimental results, this study proposes an optimized design plan for MMORPG grinding from the perspective of player tendency.

Keywords : Grinding(그라인딩), MMORPG,Player preference(플레이어 선호도), Player type (플레이어 유형)

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1. Research background

1.1 MMORPG and character development system

MMORPG, also called Massive Multiplayer Online Role-Playing Game, is a game type that combines role-playing games (RPG) and massively multiplayer online games (MMO)[1], [Fig. 1]. In general, popular MMORPGs include World of Warcraft, Final Fantasy XIV, Black Desert, Guild Wars 2, Lineage 2, Moonlight Blade, Meng Huan Xi You, Perfect World, etc[Fig. 2].

[Fig. 1] MMORPG=MMO+RPG

[Fig. 2] Popular MMORPGs

In MMORPG, the character development system[1] is a gameplay centered on improving the character development value. The character development value consists of multi-dimensional attribute values, such as Base Stats, ATK Stats, DEF Stats, Contest Stats, etc. Players need to selectively upgrade different attribute values according to specific character occupations. It is noteworthy that increasing the development value of the character can make the character stronger[Fig. 3]. Based on this, various upgrade systems, equipment creation systems, equipment enhancement systems, gem inlay systems, skill upgrade systems, pet growth systems, and so on have been extended[Fig. 4].

[Fig. 3] Character Development System of Perfect World and Final Fantasy XIV

[Fig. 4] Equipment creation systems of World of Warcraft and gem inlay systems of Perfect World

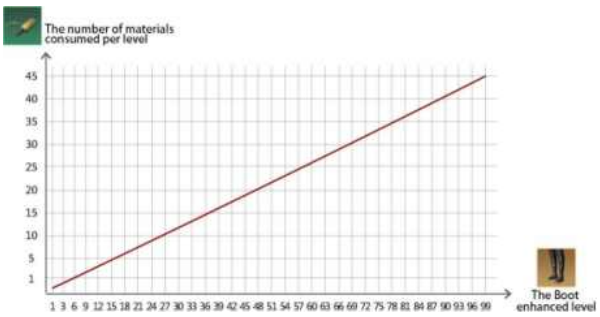
Different systems have different qualities, and each improvement in quality requires the consumption of specific materials. Players need to complete specific quests to obtain these materials[Fig. 5].

[Fig. 5] World of Warcraft, Final Fantasy XIV and Moonlight Blade's quest execution and quest rewards

1) Character development System:In almost all MMORPGs, the growth of the player's character is the primary goal. Almost all MMORPGs have a character development system. Players can gain experience points through their actions and use these experience points to reach the character's "level", which allows them to do better no matter what they do.From Mulligan, J. & Patrovsky, B, "Developing Online Games: An Insider's Guide", New Riders, 2003.

1.2 MMORPG character development value curve and Grinding

In MMORPG, the rhythm of increasing the development value of game character is called the development value curve of MMORPG character. Its characteristic is that in the early period of the game, the development rate of the character is increased quickly, and the acquisition of materials is relatively easy. However, in the middle and late period of the game, the development rate of the character gets slower and slower, the difficulty of obtaining materials becomes higher and higher, and the quantity required of materials is increased. It takes much time and energy to participate repeatedly[2],[Fig. 6].



[Fig. 6] The growth value curve of the enhancement level of the boots in Moonlight Blade

In MMORPG, the behavior of repeatedly receiving quests and completing quests in order to obtain quest rewards is called "Grinding".[2]In the middle and late period of MMORPG, more and more time and energies are consumed due to Grinding, and they are also constantly repeated. Thus, it is easy for the players to feel bored and quit the game.

2. Research necessity

In MMORPGs, Grinding is designed to increase the character development value. Most of Grinding's design does not focus on the content, while more attention is paid to the positive feedback stimulation brought by quest rewards. Nowadays, the mature Skinner box theory is applied to the growth value curve of MMORPG characters. It not only cultivates the player's behavior habits but also immerses the player in the stimulation of positive feedback[3].However, it only relies on the addiction after the “Operant Conditioning”[3] stimulation to retain the player,ignores the fun of the quest content itself, excessively focuses on external motives, and neglects internal motives. Thus, in the middle and late period of the game, players are easy to feel bored and quit the game. In some studies, Grinding's repetitive, boring, and poor experience have also been raised[4,5,6].

In the middle and late period of the MMORPG character development system, it is filled with a lot of Grindings. In order to

2) Grinding:In video games, grinding is performing repetitive tasks, usually for a gameplay advantage or loot . Many video games use different tactics to implement, or reduce, the amount of grinding in the gameplay. The general use of grinding is for "experience points", or to improve a character's level. In addition, the behavior is sometimes referred to as pushing the bar (leveling up), farming (acquiring loot repeatedly from one source), or catassing.From Grinding (video games), Wikipedia, 2021.

3) Operant Conditioning:also called instrumental conditioning is a type of associative learning process through which the strength of a behavior is modified by reinforcement or punishment. It is also a procedure that is used to bring about such learning.B.F. Skinner (1904 - 1990) is referred to as the Father of operant conditioning.From Operant Conditioning,Wikipedia, 2021.

improve the overall MMORPG experience, it is important to enhance the design of MMORPG Grinding, pay attention to the fun of the game itself, and maintain the curiosity and passion of the game itself. Therefore, it is necessary to deeply investigate the design of MMORPG Grinding that players like.

3. Research purpose

This paper mainly studies whether there are differences in the preferences of different types of players for the “Grinding” type. If there are differences, this paper will further study the relationship between different types of players and MMORPG “Grinding” type preferences, and propose an optimized MMORPG ‘Grinding’ design plan from the perspective of player tendency.

4. Theoretical Research

4.1 Grinding and Quest

In medieval romance literature, there is a quest narrative structure. The protagonists in novels such as The Lord of the Rings and Harry Potter all take risks for something, defeat enemies and achieve goals. The American writer, Joseph Campbell, summed up a structure of “heroic journey”, namely setting goals - adventuring and struggling - achieving goals. According to Joseph Campbell, this narrative structure helps readers understand the stages that many heroes go through, and its prototype is the foundation of all cultures[7].

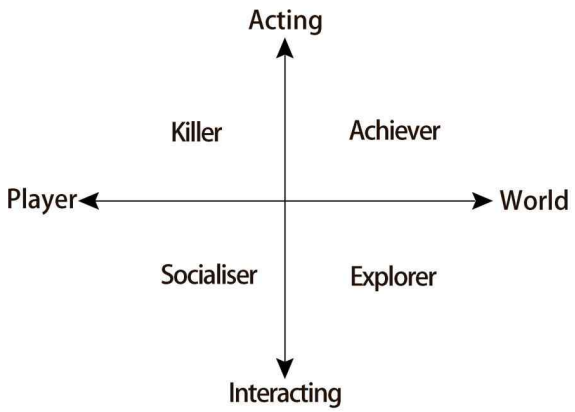
As pointed out by Jesper Juul, in terms of games and narratives, the task is a way to resolve the dispute between “narrative scientists” (taking games as stories) and “game scientists” (taking games as rule-based simulations)[8].Jeff Howard believed that the quest concept is an attempt to connect the open structure of the game and the closed structure of the story. The quests in the game can help build an interesting bridge between the rules of the game and the game novel, because the game can contain a predefined sequence of events, and the player needs to perform these events[9].Mihaly Csikszentmihalyi, a psychologist at Claremont Research University in the United States, pointed out that the flow occurs when a person’s skills are just right to deal with challenges and when they accept quests with clear goals and timely feedback[10].Based on the previous research results, the quest in the initial game is to provide the player with the goals and guidance, and the players can experience the sense of immersion while completing the quest.

In the video games, Grinding is to perform repetitive quests, usually for gameplay or loot considerations. It is a type of quest and evolution, which is mainly present in RPG and MMORPG[11].MMORPG needs to extend the time of players playing the game as much as possible, and guarantee DAU (Daily Active User). Thus, the “Grinding” of the MMORPG character development system is popularized. In the middle and late period of character development, the Grinding aimed at increasing the growth value occupies the main content, while the main narrative quest is weakened. In addition, the timed quests aimed at player retention and DAU attract players to go online

every day and continue to go online, such as daily quests, weekly quests, and timed benefits.

4.2 Bartle taxonomy of player type

Richard Bartle was one of the first developers to develop MUD in 1978 (Multiple User Domain, multi-user virtual space game, which is the collective name for text online games, and also the earliest online game without graphics but with only text and character paintings). He spent 16 years observing the behavior of players in multiplayer games. In terms of player needs, Richard Bartle divides players into four types: Killer (killer player), Achiever (achievement player), Explorer (exploratory player) and Socialiser (social player)[12],[Fig. 7].

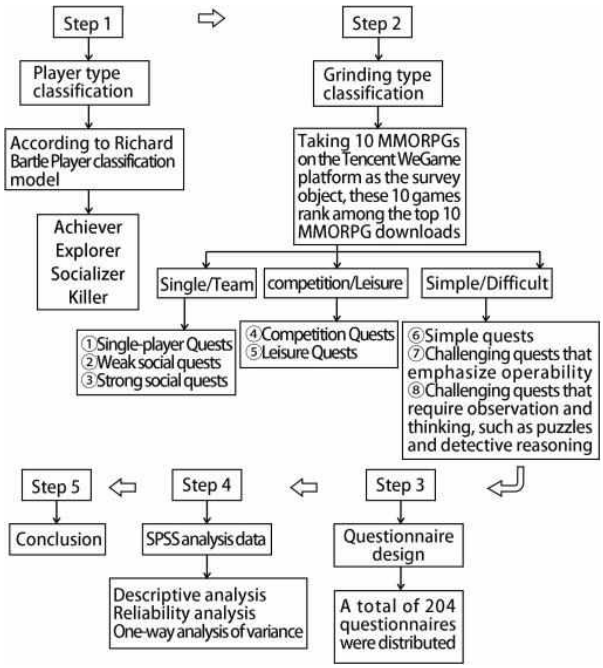


[Fig. 7] Richard Bartle's player classification model

The Y axis represents interaction (interaction with it) and action (taking action on it), and the X axis represents the player (personal player) and the world (game world). Richard Bartle better shows the player's preferences and needs in the above two dimensions, which can help designers evaluate the game mechanism system.

5. Experimental research

5.1 Research method



[Fig. 8] Research method

Firstly, according to the Richard Bartle player classification model, players consist of four types: achievement type, exploratory type, social type and killer type. Secondly, since there is no academic discussion on the type of MMORPG Grinding, the type of MMORPG Grinding is investigated and classified. From the three dimensions of Single/Team, Competition/Leisure and Simple/Difficult, it is classified into eight types of Grinding: Single-player quests, Weak social quests, Strong social quests, Competition quests, Leisure quests, Simple quests, Challenge quests that emphasize operability, Challenging quests that require observation and thinking, such as puzzles and detective reasoning. A

total of 204 questionnaires have been distributed. The purpose is to investigate whether there are differences in the preferences of the four types of players for the Grinding type, and study the relationship between four types of players and MMORPG Grinding type preferences. Finally, SPSS software is used to perform descriptive analysis, reliability analysis, and one-way analysis of variance on the collected data, and draw conclusions.

5.2 MMORPG Grinding type

Since there is no academic discussion on the type of MMORPG Grinding, the type of MMORPG Grinding is investigated and classified. Apart from that, 10 MMORPGs on the Tencent WeGame[4] platform are taken as the survey object, and these 10 games rank among the top ten MMORPG downloads. According to single or team, game competition or leisure, simple or difficult level, it is classified into eight representative characteristics .See [Table 1].

[Table 1] MMORPG Grinding Classification

<table>
<tr><td rowspan="2">1</td><td rowspan="2">Single/Team</td><td>Single-player Quests</td><td colspan="2">Social Quests</td></tr>
<tr><td>A single person can complete the quest</td><td>Weak social quests, which need to be completed in teams, are not rigorous, and are generally automatically matched by the system.</td><td>Strong social quests, which have certain requirements for team members, cannot be automatically matched by the system, and have certain social requirements.</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Competition/ Leisure</td><td>Competition Quests</td><td colspan="2">Leisure Quests</td></tr>
<tr><td>PVP and PVE</td><td colspan="2">Collecting, fishing, cooking, building homes, etc.</td></tr>
<tr><td rowspan="2">3</td><td rowspan="2">Simple/Difficult</td><td>Simple and easy Quests</td><td colspan="2">Challenging Quests</td></tr>
<tr><td>The content is simple. It is easy to operate and complete the quest.</td><td>Emphasizing operability</td><td>Puzzle, detective and reasoning quests, etc are challenging quests that require observation and thinking</td></tr>
</table>

5.3 Questionnaire design

5.3.1 Player type determination

The questionnaire for player type determination uses a Likert five-level scale, in which 1-5 represent ‘very low’, ‘relatively low’, ‘average’, ‘relatively high’, and ‘very high’ respectively.See [Table 2].

[Table 2] Player type determination

Achiever factor	1	When you play the game, the degree of willingness to achieve the goal in the game (e.g. completing levels, achieving high scores, winning victory, and reaching full level)
	2	When you play the game, the degree of willingness to pursue the battle value and the

4) Tencent WeGame is developed by Tencent. It is one of the largest agent sales platforms for stand-alone games and online games in China.

		leaderboard
Explorer factor	3	When you play the game, the degree of willingness to explore the game world autonomously
	4	When you play the game, the degree of willingness to regard proficiency in the game and mastering the gameplay as the goal of the game
	5	When you play the game, the degree of willingness to post a game guide on the game forum
Socialist factor	6	When you play the game, the degree of willingness to think that meeting social needs is the most important thing
	7	When you play the game, the degree of willingness to participate in social organizations such as guilds and gangs
Killer factor	8	When you play the game, the degree of willingness to participate in PVP, team battles, help stations, city battles, etc.
	9	When you play the game, the degree of your desire to defeat your opponent

The above questionnaire items are divided into four categories. To be specific, 1-2 items correspond to the achiever factor, 3-5 items correspond to the explorer factor, 6-7 items correspond to the socialist factor, and 8-9 item items correspond to the killer factor. The questionnaire scores of each category are averaged, and the category with the highest average value represents the player type determination of the player.

5.3.2 Questionnaire

The questionnaire use a Likert five-level scale, with 1-5 representing ‘Dislike very much’, ‘dislike less’, ‘average’, ‘like more’, ‘like very much’, respectively.See [Table 3].

[Table 3] Questionnaire

1	A single person can complete the quest.
2	Weak social quests, which need to be completed in teams, are not rigorous, and are generally automatically matched by the system.
3	Strong social quests, which have certain requirements for team members, cannot be automatically matched by the system, and have certain social requirements.
4	Competitive quests require defeating opponents, such as PVP and PVE.
5	Leisure quests, such as collecting, fishing, cooking and building homes.
6	The content is simple. It is easy to operate and complete the quest.
7	It emphasizes operational and challenging quests.
8	Puzzle, detective and reasoning quests, etc are challenging quests that require observation and thinking.

The questionnaire composition in Table 3 comes from the 8 representative types of MMORPG Grinding in Table 1.According to the interviewee’s scoring of each type of Grinding, the player’s preference for the type of MMORPG Grinding can be judged.

6. Result analysis

6.1 Descriptive analysis

A total of 204 respondents were surveyed in this survey. After 4 invalid questionnaires were excluded, a total of 200 valid questionnaires had been collected. Five questions about the background survey of the respondents were set up on the questionnaire, which were mainly used to calculate demographic characteristics, including gender, age, education, occupation, and personal monthly income.

[Table 4] Descriptive analysis

Basic Information	Option	Number of people	Percentage
Gender	Male	124	62.0
	Female	76	38.0
Age	18 years old and below	23	11.5
	19-25 years old	65	32.5
	26-30 years old	72	36.0
	31-35 years old	27	13.5
	36 years old and older	13	6.5
Education Level	Junior high school and below	42	21.0
	High school and technical secondary school	45	22.5
	Undergraduate and college	106	53.0
	Master degree and above	7	3.5
Occupation	School student	27	13.5
	Civil service/public institution	39	19.5
	State-owned enterprise	59	29.5
	Private enterprise/foreign enterprise	22	11.0
	Self-employed persons	15	7.5
	Freelancers	30	15.0
	other	8	4.0
Average Personal Monthly Income	1000 yuan and below	36	18.0
	1000-3000yuan	64	32.0
	3001-5000yuan	73	36.5
	5001-10000yuan	22	11.0
	10000 yuan or more	5	2.5

6.2 Reliability analysis

[Table 5] Reliability analysis of the questionnaire

Cronbach's Alpha	Number of Items
0.764	22

SPSS is used to analyze the reliability of the 22 variables of the questionnaire. The overall reliability coefficient value is 0.764, which is greater than 0.7, showing that the reliability of the research data is of high quality and can be used for further analysis.

6.3 One-way analysis of variance

This study makes a one-way analysis of

variance to study whether there are statistical differences in the preference for single-player quests、weak social quests、strong social quests、competition quests、leisure quests、simple quests、challenging quests that emphasize operability and challenging quests that require observation and thinking, such as puzzles and detective reasoning among the four types of players. The abbreviations 1, 2, 3, and 4 used in LSD in the analysis of variance table refer to Achiever, Explorer, Socialist, and Killer, respectively.

[Table 6] Analysis on the difference of the four types of players' preference for single quests

Player Type	N	Mean	Standard Deviation	F value	P value	LSD
Achiever	60	3.27	1.163	36.261	0.000	4>1、2>3
Explorer	60	3.67	1.115			
Socialist	42	1.81	0.917			
Killer	38	4.24	1.218			

From the above table, it can be seen that there is a statistical difference in the degree of preference for single-player quests by respondents of different game types ($P<0.05$). Furthermore, pairwise comparisons show that Killer's degree of preference for single-player quests> Achiever and Explorer's degree of preference for single-player quests>Socialist's degree of preference for single-player quests. There is no statistical difference between Achiever and Explorer's degree of preference for single-player quests.

[Table 7] Analysis on the difference of the four types of players' preference for weak social quests

Player Type	N	Mean	Standard Deviation	F value	P value
Achiever	60	3.58	0.979	0.890	0.447
Explorer	60	3.43	1.031		
Socialist	42	3.26	1.149		
Killer	38	3.34	1.021		

As shown in the above table, the four types of players' preference for weak social quests is not statistically different ($P>0.05$).

[Table 8] Analysis on the difference of the four types of players' preference for Strong social quests.

Player Type	N	Mean	Standard Deviation	F value	P value	LSD
Achiever	60	3.52	0.892	18.790	0.000	3>1>2>4
Explorer	60	2.98	1.408			
Socialist	42	4.02	0.811			
Killer	38	2.37	0.883			

From the above table, it can be seen that there is a statistical difference in the degree of preference for strong social quests by respondents of different game types ($P<0.05$). Furthermore, pairwise comparisons show that Socialist's degree of preference for strong social

quests>Achiever's degree of preference for strong social quests>Explorer's degree of preference for strong social quests>Killer's degree of preference for strong social quests.

[Table 9] Analysis on the difference of the four types of players' preference for Competition quests.

Player Type	N	Mean	Standard Deviation	F value	P value	LSD
Achiever	60	2.88	1.091	5.452	0.001	1,3,4>2 ; 1<4
Explorer	60	2.43	1.294			
Socialist	42	2.98	1.316			
Killer	38	3.42	1.056			

From the above table, it can be seen that there is a statistical difference in the degree of preference for competition quests by respondents of different game types ($P<0.05$). Furthermore, pairwise comparisons show that Socialist, Achiever, and Killer's degree of preference for Competition quests>Explorer's degree of preference for Competition quests. Meanwhile, there is no statistical difference between Achiever's degree of preference for Competition quests and Socialist's degree of preference for Competition quests. Besides, there is no statistical difference between Explorer's degree of preference for Competition quests and Killer's degree of preference for Competition quests.

[Table 10] Analysis on the difference of the four types of players' preference for Leisure quests.

Player Type	N	Mean	Standard Deviation	F value	P value
Achiever	60	3.27	1.191	0.273	0.845
Explorer	60	3.17	1.342		
Socialist	42	3.33	1.097		
Killer	38	3.37	1.076		

From the above table, it can be observed that the four types of players' preference for leisure quests is not statistically different. ($P>0.05$)

[Table 11] Analysis on the difference of the four types of players' preference for Simple quests.

Player Type	N	Mean	Standard Deviation	F value	P value	LSD
Achiever	60	2.77	1.442	7.341	0.000	3>1,2,4
Explorer	60	2.85	1.424			
Socialist	42	3.90	0.850			
Killer	38	3.08	1.302			

According to the above table, there is a statistical difference in the degree of preference for simple quests by respondents of different game types ($P<0.05$). Furthermore, pairwise comparisons show that Socialist's degree of preference for Simple quests>Achiever, Explorer and Killer's degree of preference for Simple quests. In addition, there is no statistical difference between Achiever, Explorer and Killer's degree of preference for Simple quests.

[Table 12] Analysis on the difference of the four types of players' preference for Challenge quests that emphasize operability.

Player Type	N	Mean	Standard Deviation	F value	P value	LSD
Achiever	60	3.78	1.059	11.023	0.000	1>2,3,4 ; 4>2
Explorer	60	2.43	1.661			
Socialist	42	2.81	1.254			
Killer	38	3.24	1.218			

As shown in the above table, there is a statistical difference in the degree of preference for challenge quests that emphasize operability by respondents of different game types ($P<0.05$). Furthermore, pairwise comparisons show that Achiever's degree of preference for this type of quest> Socialist, Explorer and Killer's degree of preference for this type of quest, Killer's degree of preference for this type of quest> Explorer's degree of preference for this type of quest. At the same time, there is no statistical difference between the Explorer, Killer, and Socialist's degree of preference for this type of quest.

[Table 13] Analysis on the difference of the four types of players' preference for Challenging quests that require observation and thinking, such as puzzles and detective reasoning.

Player Type	N	Mean	Standard Deviation	F value	P value	LSD
Achiever	60	3.05	0.999	9.614	0.000	2>1,4>3
Explorer	60	3.67	1.020			
Socialist	42	2.40	1.563			
Killer	38	3.03	1.174			

From the above table, it can be seen that there is a statistical difference in the degree of preference for this type of quest by respondents of different game types ($P<0.05$). Furthermore, pairwise comparisons show that Explorer's degree of preference for this type of quest>Achiever and Killer's degree of preference for this type of quest>Socialist's degree of preference for this type of quest. There is no statistical difference in Achiever and Killer's degree of preference for this type of quest.

7. Conclusion

In the middle and late period of MMORPG, in the case of unchanged positive feedback rewards, the game system can first determine the player's type characteristics, extract the player's preferred Grinding type from the task library, and provide it to the player so as to reduce the player's bad experiences.

For achievement players, they can be provided with many challenging quests that emphasize operability, single-player quests, strong social quests, and challenging quests that require observation and thinking (e.g. puzzles and detective reasoning), together with a few weak social quests and leisure quests. However, simple quests and competition quests should not be given.

For exploratory players, they can be provided with many challenging quests that

require observation and thinking (e.g. puzzles and detective reasoning), simple quests, together with some weak social quests and leisure quests. However, simple quests, strong social quests, competition quests and challenging quests that emphasize operability should be avoided.

For social players, they can be provided with many strong social quests, simple quests and competition quests, as well as a few weak social quests and leisure quests. Nonetheless, challenging quests that emphasize operability and challenging quests that require observation and thinking (e.g. puzzles and detective reasoning) should not be given.

For killer players, they can be provided with many single-player quests, competition quests, simple quests, and challenging quests that emphasize operability, as well as a few weak social quests and leisure quests. However, strong social quests and challenging quests that require observation and thinking (e.g. puzzles and detective reasoning) should be avoided.

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