

**Power vs. Appearance: Gacha Game Player's Preference for Powerful or Attractive
Characters**

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1 Introduction

1.1 Concept of Gacha Games

Gacha game is a type of free-to-play game (F2P) that utilizes the gacha mechanic, which originated in Japan. The name is generated from “Gashapon”, a kind of capsule toy derived from Japanese Bandai company that consumers can get a random one from a set of given capsule goods in a loot box (Toto, 2012). Today’s gacha mechanic in F2P games focuses on virtual items, including characters, weapons, materials, skins and other items (Yamakami, 2012). Though players usually have free access to the rest of the game’s content, such as story mode, daily quests, special events, and activities, in order to obtain rare and/or valuable items, a certain amount of monetary purchasing can be expected.

While there is extensive research on gacha games, most focus on the negative aspects of gacha and their relation to gambling and addiction. Nevertheless, limited studies have concentrated on gacha game players’ experiences and preferences (George et al., 2022). Despite the negative influences, gacha games are popular among players and have earned a significant amount of money for game companies (Kaneko et al., 2018). This study’s purpose is to understand the influence of certain features of gacha game characters on player preference and provide more insights for character design and game mechanics.

1.2 Player’s Preference for Powerful Characters

Gacha games usually have a rarity system, in which rarer characters have higher overall power and thus could help players progress further in the game and complete more difficult tasks. Bycer (2020) points out that in games like Marvel Strike Force, without a pool of five and six-star characters, the player will be stopped by the increased complexity of the game. Player skill itself is insufficient to overcome these difficulties. Since rarity is a limiting factor in terms of power,

statistically speaking, there will ultimately be instances where low-rarity characters are unable to defeat the strongest enemies.

Restricted time of gaming is another factor that has been shown to motivate players to prefer more powerful characters. Many gacha game players have real-time commitments that could prevent them from sinking more time into gaming (Jiang, 2022). Some countries have also sought to control how much time minors can spend playing games online. For instance, in China, minors are allowed to play online games for only an hour a day on Fridays, weekends and public holidays (Soo, 2023). Given the limited gaming time, players could clear levels much more efficiently and receive better awards with more powerful characters. Overall, having powerful characters in a gacha game can enhance the players' experiences and increase their chances of success.

1.3 Player's Preference for Attractive Characters

Gacha games often have exquisite artwork and design for their characters. These visually attractive characters can be eye-catching and may evoke certain emotions of players. For instance, players may prefer characters with a cute and adorable appearance because they arouse feelings of warmth and comfort. According to Lee (2020), who is a veteran Arknights player, despite having developed a team of characters over a period of almost nine months, with whom she is able to tackle most challenges, she still engages in daily login and material farming activities in order to upgrade other characters in her possession. This is because such upgrades lead to a transformation in the artwork of the characters, resulting in more aesthetically pleasing portraits showcasing their abilities. Witnessing the evolution of these artworks instills a profound sense of satisfaction and gratification within her. In this case, character appearance plays a vital

role in determining a player's affinity towards a character, and thus evokes positive emotions and preferences.

1.4 Measuring Player Preference

This study focuses on the characters from *Arknights*, a free-to-play mobile game developed by Hypergraph. *Arknights* is unique in that it mixes elements from both tactical RPG and tower defense games, which contributes to its rising popularity both in mainland China and worldwide following the game's international release (Arknights Wiki, 2019). *Arknights* employs the gacha system, but is fairly straightforward. Unlike games such as *Genshin Impact* and *Granblue Fantasy* that involve upgrading summons, weapons, and other equipment for characters, *Arknights* only requires upgrading the characters and their skill levels (Lee, 2020). As a result, *Arknights* is considered to be an appropriate game for this study, as the core mechanic of the game highly relies on its characters.

Three aspects are relevant to looking at player preference in *Arknights*. First, to progress in the game and overcome challenges, players need to spend time leveling up and upgrading the characters. By increasing the levels of characters, players can increase their stats, unlock new skills and talents, and improve their overall performance in battles. Spending time cultivating the character is also a justification for purchase behavior. To acquire virtual items for their characters, players must have devoted a significant amount of time that they believe is justifiable. This effort can contribute to the attachment of 'sentimental value' to virtual items, especially when spending real money on them (Jack, 2015). In this study, players who spend longer time cultivating a character are considered to have higher preference for that character.

RQ1: Do players prefer to spend more time cultivating a character with more power?

RQ2: Do players prefer to spend more time cultivating a character with a better appearance?

Second, many gacha game players enjoy customizing their characters with unique skins to show their love and support for their favorite characters. In the research conducted by Woods (2022), participants felt a sense of completeness through the acquisition of skins. Completeness is “rooted in ownership, and having the ability to control how the character looks.” Purchasing skins for the character enhances the experience of the game and dissolves the boundaries between the player and the character. In this study, players who are more willing to spend money buying a skin for a character are considered to have higher preference for that character.

RQ3: Are players more willing to buy a skin for a character with more power?

RQ4: Are players more willing to buy a skin for a character with a better appearance?

Last but not least, many gacha games, including Arknights, are team-focused. Figuring out the right balance of classes and roles of the team is part of the decision-making of playing (Bycer, 2022). Possessing a character with the highest rarity level might be sufficient to overcome most of the early challenges. However, without a well-balanced team, it is still difficult to pass the more complicated levels. Some Arknights players also frequently use their favorite characters regardless of their rarity in the battles to gain experience points or to simply to see the special effects of their skills. In this study, players who are more willing to use a character in the battle are considered to have higher preference for that character.

RQ5: Are players more willing to use a character with more power in a (high difficulty) battle?

RQ6: Are players more willing to use a character with a better appearance in a (high difficulty) battle?

Additionally, this study intends to explore other factors, such as vanity levels, that could potentially influence player preference.

RQ7: Do any other factors emerge that may be influencing player preference?

2 Method

This study had two independent variables (power and appearance) and a single dependent variable (player's preference). As a result, a 2x2 factorial design was used for the experiment (Figure 1). The experiment was held entirely online to avoid the Hawthorne effect (participants modifying or improving their behavior in response to the awareness of being observed or studied). Participants were recruited from Arknights and other gacha game communities.

Power/Appearance	High Appearance	Low Appearance
High Power	Player's Preference	Player's Preference
Low Power	Player's Preference	Player's Preference

Figure 1: 2x2 factorial design

Participants (N = 120) were randomly assigned to one of the four experimental conditions, with 30 participants in each group. Among the participants, 45 were male, 65 were female, 10 were non-binary/genderqueer. All participants were gacha game players, 82 of whom were current/previous Arknights players. In each group, participants were required to fill out a questionnaire, and a stimulus was shown in the middle of the questionnaire. The questions before and after the stimulus were completely the same. There were four stimuli in total. They were all Operators from Arknights and each Operator has one of the following characteristics: Attractive & Powerful, Attractive & Not Powerful, Not Attractive & Powerful, Not Attractive & Not Powerful. All the four Operators belong to the "Snipers" category and the only differences were their appearance and power. Descriptions were provided for each character to help non-Arknights players understand the features of that character. A pre-test had been conducted before the experiment to ensure participants would understand the intention of the stimuli. Participants were informed at the beginning of the questionnaire that the study was entirely voluntary and anonymous.

In the questionnaire, participants were asked to answer questions before and after the stimulus. The questions before the stimulus asked if they were a gacha game/Arknights player and if they felt disappointed if few people liked their social media posts (to measure vanity). The questions after the stimulus measured the influence of the stimulus on their preference. They were asked to select the time they were willing to spend cultivating the character, to rate their willingness to buy a skin for the character and the likelihood they would use the character in a battle on a scale of 1-7 (1:Not Likely; 7:Very Likely). At the end of the questionnaire, they were asked to report their gender.

3 Result

Group 1: High Power, High Appearance

In Arknights, Operators can be promoted to further improve them by increasing the cap of their level and attributes, and unlocking new skills and talents...ving this Operator's levels and thus promoting her?
30 responses

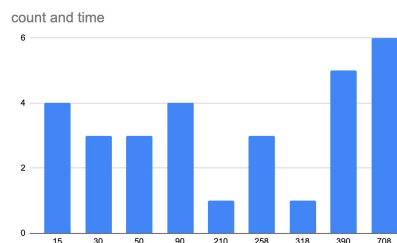
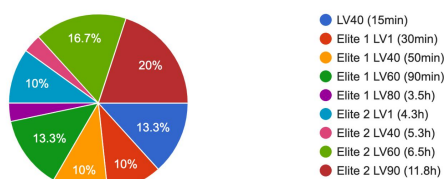
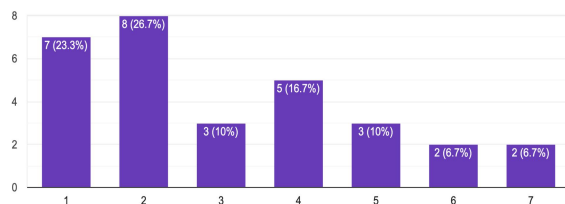


Figure 2.1.1 & 2.1.2: Group 1's time spent cultivating the character

If this Operator's skin costs 18 dollars, how likely are you to buy a skin for her?
30 responses



How likely are you to use this Operator in a battle (high difficulty)?
30 responses

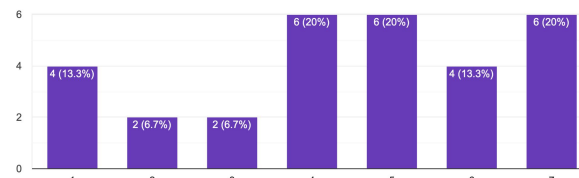


Figure 2.1.3: Group 1's willingness to buy a skin Figure 2.1.4: Group 1's willingness to use in a battle

For group 1, the average time players are willing to spend cultivating the character is 272 min. The average willingness to buy a skin for the character is 3.1. The average willingness to use the character in a battle is 4.5. The correlation between vanity and willingness to buy a skin is 0.13.

Group 2: Low Power, High Appearance

In Arknights, Operators can be promoted to further improve them by increasing the cap of their level and attributes, and unlocking new skills and talents...ving this Operator's levels and thus promoting her?
30 responses

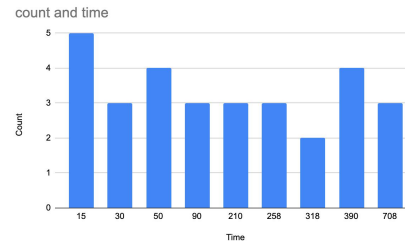
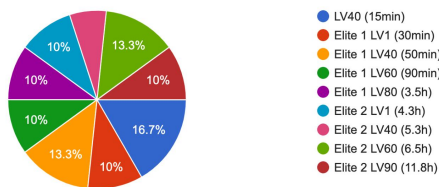
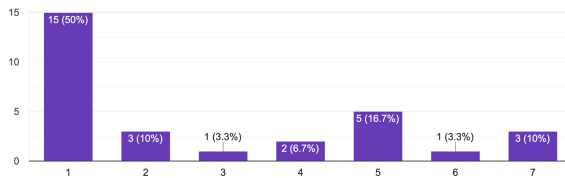


Figure 2.2.1 & 2.2.2: Group 2's time spent cultivating the character

If this Operator's skin costs 18 dollars, how likely are you to buy a skin for her?
30 responses



How likely are you to use this Operator in a battle (high difficulty)?
30 responses

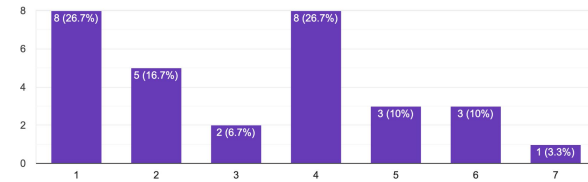


Figure 2.2.3: Group 2's willingness to buy a skin Figure 2.2.4: Group 2's willingness to use in a battle

For group 2, the average time players are willing to spend cultivating the character is 212 min. The average willingness to buy a skin for the character is 2.8. The average willingness to use the character in a battle is 3.1. The correlation between vanity and willingness to buy a skin is 0.44.

Group 3: High Power, Low Appearance

In Arknights, Operators can be promoted to further improve them by increasing the cap of their level and attributes, and unlocking new skills and talents...ving this Operator's levels and thus promoting her?
30 responses

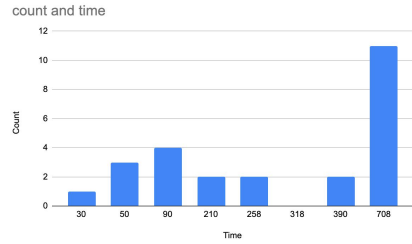
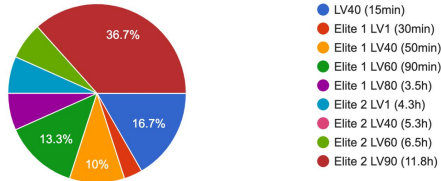
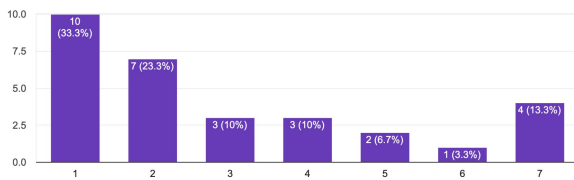


Figure 2.3.1 & 2.3.2: Group 3's time spent cultivating the character

If this Operator's skin costs 18 dollars, how likely are you to buy a skin for her?
30 responses



How likely are you to use this Operator in a battle (high difficulty)?
30 responses

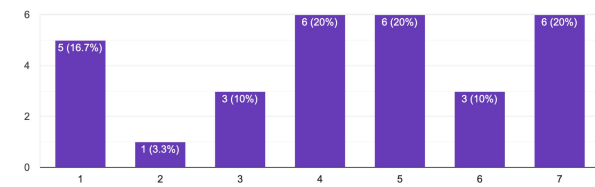


Figure 2.3.3: Group 3's willingness to buy a skin Figure 2.3.4: Group 3's willingness to use in a battle

For group 3, the average time players are willing to spend cultivating the character is 337 min. The average willingness to buy a skin for the character is 3.0. The average willingness to use the character in a battle is 4.3. The correlation between vanity and willingness to buy a skin is 0.21.

Group 4: Low Power, Low Appearance

In Arknights, Operators can be promoted to further improve them by increasing the cap of their level and attributes, and unlocking new skills and talent...ving this Operator's levels and thus promoting him?
30 responses

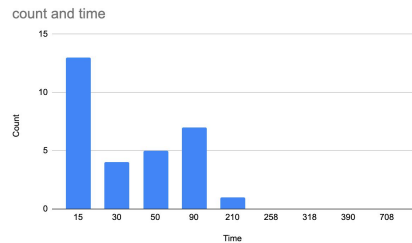
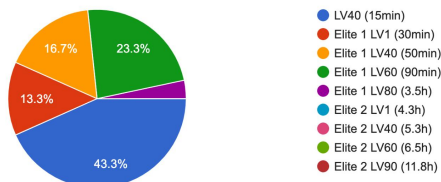
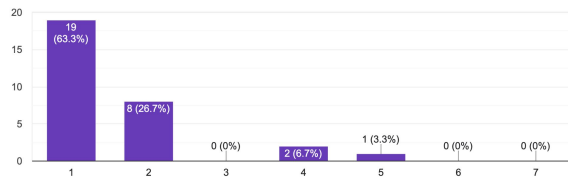


Figure 2.4.1 & 2.4.2: Group 4's time spent cultivating the character

If this Operator's skin costs 18 dollars, how likely are you to buy a skin for him?
30 responses



How likely are you to use this Operator in a battle (high difficulty)?
30 responses

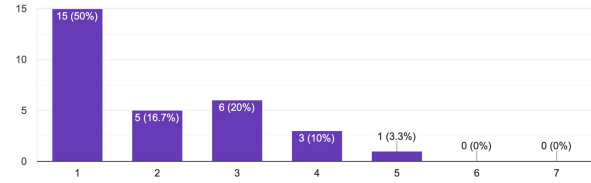


Figure 2.4.3: Group 4's willingness to buy a skin Figure 2.4.4: Group 4's willingness to use in a battle

For group 4, the average time players are willing to spend cultivating the character is 47 min. The average willingness to buy a skin for the character is 1.5. The average willingness to use the character in a battle is 2.0. The correlation between vanity and willingness to buy a skin is 0.31.

	High Power, High Appearance	Low Power, High Appearance	High Power, Low Appearance	Low Power, Low Appearance
Avg time cultivating the character	272	212	337	47
Avg willingness to buy a skin for the character	3.1	2.8	3	1.5
Avg willingness to use the character in a battle	4.5	3.1	4.3	2
Correlation between vanity and willingness to buy skin	0.13	0.44	0.21	0.31

Figure 3: Summary of the experiment results

Based on the summary of the experiment results (Figure 3), for RQ1 and RQ2, players are more willing to spend time cultivating the character with higher power or a better appearance. For RQ3 and RQ4, there is no significant difference between the player's willingness to buy a skin for the character except for the situation when the character has low power and a low appearance. For RQ5 and RQ6, players are generally more willing to use the character with higher power or a better appearance in a battle. However, if the character has high power, low or high appearance will not significantly influence the willingness. For RQ7, in all four groups, vanity is positively correlated to willingness to buy skin. The strongest correlation appears when the character has low power and a high appearance.

4 Discussion

The present study examines the influence of a character's power and appearance on player preference. To further investigate the rationales for the participants' choices, four short interviews were conducted with veteran Arknights players.

When considering how much time should be spent cultivating a character, one interviewee pointed out that she would refer to the comments and recommendations of Arknights community members, in which powerful and attractive characters would appear more frequently in the discussions. Communities are indispensable in promoting the popularity of gacha games. Within a community, players can create advanced tactics to overcome obstacles in the game. They can also form social bonds with other players, which can be utilized to excel at the game. Additionally, they can discuss other topics they're interested in, such as buying downloadable content or creating fan art (Britt, 2021). Consequently, gacha game developers should pay attention to the trends in gaming communities, and design characters based on the feedback and needs of community members.

The willingness to buy a skin is not strongly influenced by the character's power and appearance. In fact, according to one interviewee's opinion, their possession of the character is the determining factor. Another interviewee stated that if he owned the character, even if the skin did not look so attractive, he would still buy it; in contrast, if he did not have the character, even if the skin was extremely beautiful, he would hesitate to buy it. Another interviewee believed that the main reason to buy a skin was to decorate the character and to see the character wear it in the battle. However, if she did not even possess the character, the skin would become useless. As a result, when designing the skin for a character, gacha game developers should also consider how many players own that character. If only a few players have it, it is unlikely that a large

number of players will purchase the skin. One interviewee also said that he would be willing to buy a skin for a character with a low appearance if the skin could improve the character's appearance. Based on this information, it is possible to increase the player preference for a character with a low appearance by designing an attractive skin for that character.

When building the team for a difficult battle, all interviewees preferred to use more powerful characters. They often watched videos from popular Arknights streamers, who often used high-rarity characters, and referred to their strategies to pass the difficult levels. Sometimes they would also try to use low-rarity characters to challenge themselves, but only when they had enough time for gameplay, because it could take much longer to come up with a strategy with less powerful characters. To make their less powerful characters more appealing, gacha game developers could create game modes that encourage players to use low-rarity characters. For example, in Arknights's new roguelike game mode "Integrated Strategy", characters that are generally considered mediocre picks for regular gameplay become essential. The cheap cost and quick re-deployment of the four-star Operator, Jaye (who was commonly considered as a low-power Operator), could save the player on several maps that required assassinating several enemies early on (Jiang, 2022).

Additionally, the present study also measures the correlation between vanity and willingness to buy a skin. The fact that the strongest correlation appears for the character with low power and high appearance could be explained by the main reason for a player to buy a skin. Interviewees admitted that they understood skins did not improve the character's power, but they still bought them because they wanted to be admired by other players. According to Jack (2015), virtual objects are typically perceived as having no expiration or limitation since they are created through computer code. However, when such items are only available for a limited period, the

demand for them intensifies. Interviews revealed that gamers spend more money on exclusive items that have an expiration date. In a social gaming environment, these items represent a symbol of achievement and self-expression. The limited availability of skin is an important motivation for the player to buy it for a character even if that character does not have high functionality.

5 Limitations and Future Research

The present study focuses on the mobile game *Arknights*. However, due to the limited time and resources, a small proportion (31.7%) of the participants are not *Arknights* players. Though the researcher has provided detailed descriptions of the stimuli, it is still possible that the responses from non-*Arknights* participants could be significantly different from *Arknights* players. Future research could study the reasons for player preference on a deeper level by collecting qualitative data. Future research could also study player preference for other features of characters, or player preference for weapons or materials in gacha games. Gacha games are among the most popular categories of F2P games, and more research is needed to understand the development and impact of their popularity.

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Appendix

Experiment Questionnaire

1. Do you play Arknights, or have you played Arknights before?
2. If you don't play Arknights, do you play other *gacha* games, such as FGO or Genshin Impact?
3. Does the following description sound like you: I feel frustrated if few people like my social media posts.

[Picture and description of the stimulus]
4. In *Arknights*, Operators can be **promoted** to further improve them by increasing the cap of their level and attributes, and unlocking new skills and talents. **There are two stages of promotion: Elite 1 and Elite 2.** When an Operator is promoted, their power will be significantly improved. However, in order to promote an Operator, you have to collect enough materials and currency. Assume the maximum level of this Operator is Elite 2 LV 90. How much time would you like to spend in improving this Operator's levels and thus promoting him?
5. If this Operator's skin costs 18 dollars, how likely are you to buy a skin for her?
6. How likely are you to use this Operator in a battle (high difficulty)?
7. How would you describe your gender identity?