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# Understanding Player Attitudes Towards Digital Game Objects

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**Abstract**

Humans collect; we examine this behavior in digital game contexts to understand how players' penchant for collecting items can inform game design. As part of an ongoing research agenda to understand player attitudes towards digital game objects, we conducted an online survey about player habits with interviews as future work. We present an initial analysis of our data. Our findings suggest that players value game objects most in Role-Playing Games (RPGs). Utility and Enjoyment were cited as the main reasons for a digital game objects' value, followed by Investment, Self-Expression and Memory. Dyes or color-changing features; physical placement adjustments; and naming or name-changing features were the most frequent personalization features desired for game object customization. We aim to improve game design through a deep understanding of player motivations regarding their game objects.

**Author Keywords**

Player Attitudes; Game Object Value.

**ACM Classification Keywords**

K.8.0 Personal Computing: Games.

**Introduction**

Humans have an innate tendency to collect anything from information to objects. The rationale for retaining these items may vary from anticipated future necessity

<b>Utility</b>	<b>ability to accomplish game tasks</b>
<b>Investment</b>	<b>representation of player time, effort, achievements</b>
<b>Communication</b>	<b>expression to a social group</b>
<b>Memory</b>	<b>a record of player activities in game</b>
<b>Enjoyment</b>	<b>fun to play</b>
<b>Representation of Relationships</b>	<b>representation of player relationships or groups</b>
<b>New Experience</b>	<b>enables new in-game experiences</b>
<b>Creativity</b>	<b>allows players to create aesthetically pleasing forms</b>
<b>Sociability</b>	<b>allows player to engage with friends</b>
<b>Self-Expression</b>	<b>expression of player attitudes or beliefs</b>

**Table 1.** Livingston et al.’s types of value for game characters [4], used to frame the present study.

to nostalgia [7]. The tendency to collect persists in virtual worlds, where humans collect digital objects. Players are often encouraged by games to collect items, achievements, equipment, or—as the tagline “Gotta catch ‘em all!” (The Pokemon Company, 1995) implies—characters. Game designers often use digital collections to motivate players to interact with the game for longer periods of time than they might otherwise.

In this study, we assess player attitudes toward digital game objects to understand how the tendency to collect can be used to improve game design. We conducted an online survey of collecting and personalization behavior. Specifically, we asked in what game genres players prefer to collect digital game objects. We discern why players value digital game objects and which personalization features they consider important for digital game objects. Our initial findings create a rich corpus that may be used to improve future game design, by better enabling designers to understand players’ motivations regarding their game objects.

### Related Work

In non-game contexts, research by Kerne and Koh investigated college students’ collections of digital information [3]. Students invested substantial effort into curating collections.

Prior studies explored how players value game characters. For example, Manninen and Kujanpää [5] studied perceived character value in massively multiplayer online games (MMOs) according to Yee’s [8] motivation of play categorization (achievement, social, and immersive values). The study presented some empirical examples and discussed implications for game economy and commercial applications.

Livingston et al. [4] studied how players value characters in World of Warcraft (WoW). Through interviews and player observation, the study revealed 10 types of value WoW characters provided to players, described on Table 1. We frame our study with these values.

Crenshaw and Nardi [1] studied how MMO players choose and value their characters’ names, supporting Livingston et al.’s values of investment, communication, sociability, and self-expression. Many participants incorporated their character names into their sense of self, suggesting that digital game objects can be important for players’ identity development.

### Methodology

We created an online survey and recruited participants via social media and flyers on the New Mexico State University (Las Cruces, New Mexico, USA); University of California, Irvine (Irvine, California, USA); and University of Ontario Institute of Technology (Oshawa, Ontario, Canada). Snowball sampling via social media was also employed. The survey consisted of four parts: demographic information; questions about players’ attitudes towards digital game objects; questions aimed to assess player type based on the BrainHex Player Typology [6]; and the Ten Item Personality Measure (TIPI) [2]. Answers to the survey were anonymous, but participants could opt into a follow-up interview. Follow-up interviews, planned as future work, will more deeply investigate the themes from the survey through qualitative means.

### Participants

Our data set contains 155 unique responses (105 male, 43 female, 4 non-binary / other, 3 no response). Participants were between 18 and 58 years old (mean =

Game Genre	Frequency
MMO RPG	44
Traditional RPG	23
Action RPG	16
Action-Adventure	11
MOBA	8
Simulation	8
CCG	7
FPS	5
AR MMOG	5
Platform	2
Racing	3
Strategy	3
Adventure	2
Puzzle	2
Social	2
Unidentified	4
<i>Observed once: Arcade, Casual, Gamified Application, Lego, Photo Gallery, Tabletop RPG, TPS, Virtual World</i>	

**Table 2.** Frequency distribution of Game Genres from players' responses to the question: "Which game contains your favorite object or collection of objects?"

29.8). Educational background demographics reveal 18.7% of participants had a High School or equivalent degree, 43.2% had bachelor's or equivalent degree, 21.9% had master's or equivalent degree, and 15.5% had PhD or equivalent degree.

#### Analysis Technique

We conducted an exploratory study. From players' responses, we identified: 1) which game genres most influence the valuing of digital game objects; 2) which reasons most frequently motivate players to value their digital game objects; and 3) which personalization features are most favored by players. We analyzed the association between game genres and reason for value, and between game genres and personalization features.

Questions regarding player attitudes that were used for this initial data analysis were the following: "Which game contains your favorite object or collection of objects?", "What is the main reason that you value your favorite virtual object(s)?", and "Which of the following personalization features do you consider most important for the digital objects you have collected?" Other questions regarding player attitudes, and questions aimed to assess player types, were present in the survey and are the focal point of future work.

To identify game genres, we assigned single genres for each player-named game based on distributor information or Wikipedia.

To reject the possibility of game genres, reasons for value, and personalization features being equally distributed in the responses, we employed a chi-square goodness-of-fit for each variable. Each variable's actual

frequency distribution was compared with the expected frequency under uniform distribution, calculated as:

$$expectedObservationsPerCategory = \frac{totalNumberOfResponses}{quantityOfUniqueCategories}$$

## Results

### Game Genres

We first looked at which game genres appeared most frequently in players' responses to the question: "Which game contains your favorite object or collection of objects?" Results are presented in Table 2.

The data suggest that RPGs more frequently contained players' favorite game objects, including the sub-genres MMORPG, Traditional RPG, and Action RPG (ARPG). The sum of all RPGs subgenres accounted for 53.5% of responses (MMORPG: 28.4%, Traditional RPG: 18.8%, Action RPG: 10.3%). Action-Adventure (AA) games accounted for 7.10% of responses, Multi-player Online Battle Arena (MOBA) and Simulation games accounted for 5.16% each, and Collectible Card Games (CCG) for 4.5%. Other genres appeared in less than 4% of responses. The chi-square test rejected the possibility of game genres being equally distributed in responses,  $\chi^2(23) = 335.6, p < 0.001$ , confirming that players preferred objects from some game genres more often than from others.

### Reasons for Valuing Digital Game Objects

Next, we looked at players' responses to the question: "What is the main reason that you value your favorite virtual object(s)?" Results are presented in Table 3.

Reason for Value	Frequency
Utility	44
Enjoyment	40
Investment	20
Self-expression	13
Memory	12
Creativity	5
Relationships	5
New experience	4

*Observed once: Aesthetic, Charity, Communication, Rarity, Sociability, Status, Uniqueness, Sense of Continuity, Sentimentality, Development Support, Increased value to other objects*

**Table 3.** Frequency distribution of reasons for valuing digital game objects from players' responses to the question: "What is the main reason that you value your favorite virtual object(s)?"

Utility and Enjoyment accounted for the highest percentage of responses (28.4% and 25.8%, respectively), with Investment (12.9%), Self-Expression (8.4%), and Memory (7.74%) appearing a considerable number of times. All the other reasons appeared in less than 5% of responses. The chi-square test rejected the possibility of values being equally distributed in the responses,  $\chi^2(19) = 403.3, p < 0.001$ .

#### *Desired Personalization Features*

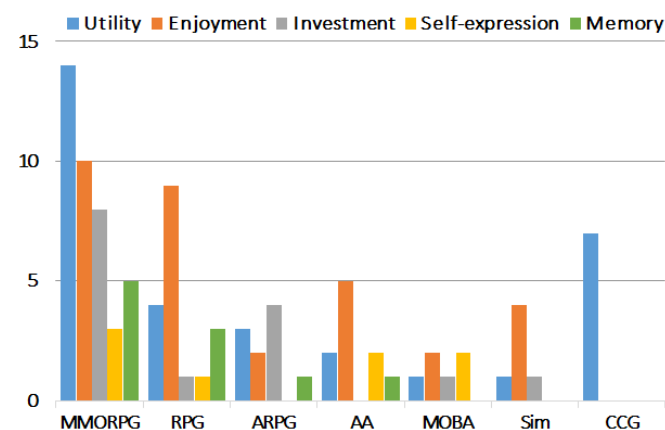
Finally, we looked at players' responses to the question: "Which of the following personalization features do you consider most important for the digital objects you have collected?" Results are presented in Table 4.

The most frequent response was that no personalization feature was preferred (36.1% of responses). This suggests that, to some players, personalization features are not important or that players regard personalization features equally. Dyes or color-changing features (20%), physical placement adjustments (18.1%), and naming or name-changing features (14.8%) were the next highest preferred personalization features. Other personalization features appeared in less than 1% of responses. The chi-square test rejected the possibility of features being equally distributed in the responses,  $\chi^2(20) = 580.3, p < 0.001$ .

#### *Association Between Genre & Reasons for Valuing*

To evaluate the association between game genre and reasons for valuing digital game objects, we considered only genres and reasons that appeared in more than 5% of players' responses, to work with a reasonable matrix size, removing negligible categories from analysis. Our previous analysis suggested that Utility and Enjoyment were the two main reasons for valuing digi-

tal game objects. The results (Figure 1) suggest that Utility is most valued in MMORPGs and CCGs, while Enjoyment is most valued in other genres. The visual data analysis suggests that an association may exist between game genre and reasons for valuing digital game objects.



**Figure 1.** Association between game genre and reasons for valuing digital game object.

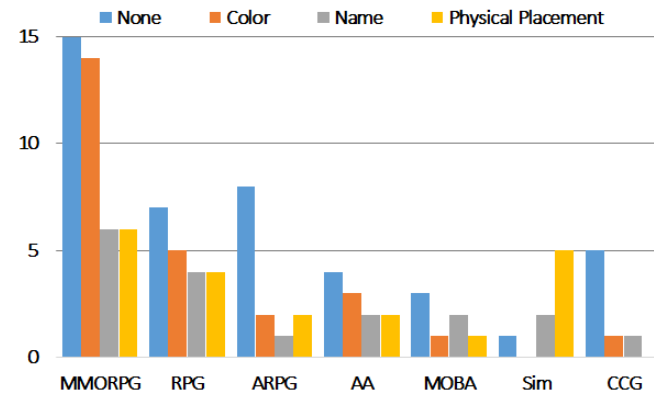
#### *Association Between Genre & Desired Personalization*

To evaluate the association between game genre and personalization features desired for digital game objects, we considered only genres and reasons that appeared in more than 5% of players' responses, removing the negligible categories from analysis. The results (Figure 2) suggest that physical placement adjustment is more valued for Simulation games; that MMORPGs seem to exhibit relatively high preference for dyes or color-changing features; and that overall personalization is less valued in Action RPGs and CCGs. Thus, visual data analysis suggests that an association may ex-

Personalization Feature	Freq.
None	56
Dyes or color-changing features	31
Physical placement adjustments	28
Naming or name-changing features	23
<i>Observed once: Visual aesthetic, Attribute-enhancing features, In-game behavior changing, Clothes for avatars, Tangible customization (weapon mods, stat boosts, appearance), General appearance, Organizing, Physical-model changes, Transmogrification, Protective armor, Team-Building, Accomplishment tracking, Uniqueness of the item</i>	

**Table 4.** Frequency distribution of personalization features desired for digital game objects customization from players' responses to the question: "Which of the following personalization features do you consider most important for the digital objects you have collected?"

ist between game genre and personalization features desired for digital game objects.



**Figure 2.** Association between game genre and personalization features desired for digital game objects.

## Discussion

Our analysis reveals that some genres are more likely to possess objects of high player-ascribed value. Overall, more than half of survey respondents identified an RPG as the source of their favorite digital game object. MMORPGs appeared as the most cited game genre, with RPGs and Action-RPGs following. Action-Adventure, MOBA, Simulation and CCG genres also appeared with considerable quantity of responses. Other genres appeared less frequently.

Closer analysis reveals that utility and enjoyment are the main reasons for perceiving value, accounting for more than half of the responses. Investment, self-expression, and memory also appeared on a considerable number of responses.

Our analysis reveals that one-third of the players did not indicate a preferred personalization feature for customizing digital game objects, suggesting that some players may not give a high value to personalization or do not have a preference for one kind of personalization. We hope to determine which of these statements is true in future research. Dyes or color-changing features, physical placement adjustments, and naming or name-changing features were valued by a considerable number of players.

Our analysis also suggests that players' reasons for valuing digital game objects and personalization of digital game objects varies between game genres. Utility was the main reason for valuing game objects in MMORPGs and CCGs, while Enjoyment was the main reason in other genres, including RPGs, Action-Adventures, MOBAs, and Simulations. Physical placement adjustment was valued highly in Simulation games, while dyes or color-changing features were most valued in MMORPGs.

## Future Work

One limitation of our study is that our sample was not large enough to validate the associations described between genre and value reasoning or personalization features. Therefore, we conducted only a visual data analysis. Data collection is ongoing, and more responses are expected. We plan to interview select respondents, deepening our understanding.

Future work will focus on analyzing rich data collected in our study. The current analysis includes games that contained the players' favorite digital game objects and the main reason for valuing such objects. Our survey also allowed players to list other games and reasons for

valuing game objects. Analysis of these questions will afford the opportunity to further articulate our findings regarding these variables.

Analysis of player types (BrainHex and TIPI) in association with value reasoning and personalization preferences will allow us to discover if player type has any influence on other variables.

### **Conclusion**

To understand player attitudes towards digital game objects, we conducted an online survey of 155 respondents. Initial data analysis has revealed which game genres motivate higher valuations for digital game objects, which reasons players typically use to justify object value, and players' preferred object customization features. Our data analysis suggested possible associations between genre and justification or genre and personalization in the valuing of game objects. This association will be further investigated in future work.

Findings from our research will develop a deeper understanding of why players value digital game objects and how valuing digital game objects changes between genres. We expect this work to be valuable to game designers, game researchers, and educators for informing game design and refinement, understanding player desires for digital game objects in certain genres, and assisting researchers in developing more robust player typologies.

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