Understanding Player Attitudes Towards Digital Game Objects

Gustavo F. Tondello
HCI Games Group
University of Waterloo
200 University Avenue West
Waterloo, ON, Canada N2L 3G1
gustavo@tondello.com

Lennart E. Nacke
HCI Games Group
University of Waterloo
200 University Avenue West
Waterloo, ON, Canada N2L 3G1
lennart.nacke@acm.org

Rina R. Wehbe
HCI Games Group
University of Waterloo
200 University Avenue West
Waterloo, ON, Canada N2L 3G1
rina.wehbe@gmail.com

Nicole K. Crenshaw
University of California, Irvine
Irvine, CA, USA 92697
crenshan@uci.edu

Zachary O. Toups
Play & Interactive Experiences for Learning Lab
Computer Science Department
New Mexico State University
Las Cruces, NM, USA 88003
z@cs.nmsu.edu

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
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 =

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

Table 1. Livingston et al.’s types of value for game characters [4], used to frame the present study.
29.8). Educational background demographics reveal that 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:

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

**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.

<table>
<thead>
<tr>
<th>Game Genre</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMO RPG</td>
<td>44</td>
</tr>
<tr>
<td>Traditional RPG</td>
<td>23</td>
</tr>
<tr>
<td>Action RPG</td>
<td>16</td>
</tr>
<tr>
<td>Action-Adventure</td>
<td>11</td>
</tr>
<tr>
<td>MOBA</td>
<td>8</td>
</tr>
<tr>
<td>Simulation</td>
<td>8</td>
</tr>
<tr>
<td>CCG</td>
<td>7</td>
</tr>
<tr>
<td>FPS</td>
<td>5</td>
</tr>
<tr>
<td>AR MMOG</td>
<td>5</td>
</tr>
<tr>
<td>Platform</td>
<td>2</td>
</tr>
<tr>
<td>Racing</td>
<td>3</td>
</tr>
<tr>
<td>Strategy</td>
<td>3</td>
</tr>
<tr>
<td>Adventure</td>
<td>2</td>
</tr>
<tr>
<td>Puzzle</td>
<td>2</td>
</tr>
<tr>
<td>Social</td>
<td>2</td>
</tr>
<tr>
<td>Unidentified</td>
<td>4</td>
</tr>
</tbody>
</table>

**Table 2.** Frequency distribution of Game Genres from players’ responses to the question: “Which game contains your favorite object or collection of objects?”
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, removing the negligible categories from analysis. 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 personalization features that appeared in more than 5% of players’ responses, removing 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
ist between game genre and personalization features desired for digital game objects.

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 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-Adventure, 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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**References**


