
Identifying Play-Personas in First-Person Shooter Games by combining Questionnaires and Game Metrics

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Abstract

In this paper we describe the methodology of an experiment, which combines a play-persona questionnaire with large-scale game metrical data sets to identify play-personas in first-person shooter games. Furthermore, the experiment relates game metrical data items to the personas to find specific items, which show potential to predict play-personas in fps games based on the behavioral data.

Keywords

play-persona, game metrical data, first-person shooter

ACM Classification Keywords

K.8 [Personal computing]: Games; J.4 [Social and Behavioral Sciences]: Psychology

General Terms

Experimentation, Human Factors, Measurement

Introduction

In the area of games research several methods are used to evaluate the gaming habits, the perceived game experience or other player reactions to the game or one of its components. Popular methods are e.g.

heuristics, questionnaires, biofeedback and game metrical analysis.

Game heuristics apply as a low-cost tool to evaluate usability problems in games by using experts to judge certain aspects of a game [1] [2], but the weak inter-rater reliability makes the method questionable [3]. A frequently used method in game research is questionnaires. By generating qualitative data questionnaires are good in providing information about “what and how” [4] happened during gameplay and the player’s intention to do so. However, questionnaires are used after a play session and for this reason it is difficult to relate the results to specific actions or events, which occurred during the session. Therefore other methods like biofeedback or game metrical analysis are more suitable to track objective and detailed information about the player’s habits during play [5]. Biofeedback methods track physical reactions on psychological stimulations [5] [6].

Game metrical data in general can be used to analyze gaming behavior in real-time to adapt the game to the player’s skills or behavior (i.e.: artificial intelligence) or to analyze gaming habits of a potentially large user group in order to identify bugs or balancing issues within a game. Metrical data is basically numerical data expressing the user’s interaction with a game (i.e.: keystrokes, decisions or psychophysiological data). The data is automatically recorded during a play session and provides objective data in various degrees of temporal and spatial resolution [4]. By logging specific game events it is possible to offer insights into how users are playing games [7].

Multi-method approach

One shortcoming of quantitative methods like the use of game metrics is the lack of possible predictions about social factors, the internal state of the user or other emotional experiences felt during a game. The problem is the missing link between the user’s internal state and the events during a gaming session [4]. For this reason, a combination of game metrics and a second method providing the missing information about the social interaction or emotional state is a possible solution to overcome this problem. Popular multi-method approaches are combinations of metrics with interviews (i.e.: [8]) or with (game experience) questionnaires. By combining questionnaires and game metrics analysis it is possible to give meaning to certain variables, actions or behavioral patterns, which otherwise would not be explainable from the data itself. Therefore the questionnaire’s data can be used to measure the user’s state or specific social factors. These results can then be linked to certain decisions the player did consciously or subconsciously.

Play-Personas

One growing research area is the detection and analysis of different play-personas to identify certain gaming habits or play styles. These can be used e.g. to adapt the game to the players gaming habits or to improve the game design. In computer science and game research play-personas can be defined as a “larger-order patterns that can be defined by observing the players gaming habits and decisions” [10]. Tychsen and Canossa used higher patterns to detect and describe player behavior regarding choices and reaction to events made during a gaming session. They identified different types of events which can be triggered: navigation metrics, interaction metrics, narrative

Achievement
Advancement Progress, Power, Accumulation, Status
Mechanics Numbers, Optimization, Templating, Analysis
Competition Challenging Others, Provocation, Domination
Social
Socializing Casual Chat, Helping Others, Making Friends
Relationship Personal, Self-Disclosure, Find and give Support
Teamwork Collaboration, Groups, Group Achievements
Immersion
Discovery Exploration, Love, Finding Hidden Things
Role-Playing Story Line, Character History, Roles, Fantasy
Customization Appearances, Accessories, Style, Color Schemas
Escapism Relax., Escape from RL. Avoid RL Problems

Table 1: The subcomponents revealed by Nick Yee, grouped by the main component they fall under (9)

metrics and interface metrics [10]. While Tychsen and Canossa tried to identify these personas through automatically collected data, the research for play-persona is also addressed with questionnaires. Nick Yee developed a questionnaire with forty items to identify different kinds of play-personas in role-playing games [9]. Yee discovered ten components, which can be split into three categories (Table 1). While game metrics can be easily obtained, aggregated and analysed, the questionnaire brings quality into the quantitative data of the game itself. The combination of both might combine the advantages of both methods especially to rate the different variables collected by the game metrical data analysis.

Experiment to discover Play-Personas in FPS Games with Game Metrical Data Analysis

Based on a combination of Yee's persona questionnaire and game metrical data we aimed at discovering play-personas within the first-person shooter game Battlefield Bad Company 2 (BFBC2). Our experiment focused on two questions, which derived from the research findings of Yee:

1. Is a modification of Yee's questionnaire suitable to identify play-personas in fps games?
2. Do the play-personas – if identified – relate in some way to the game metrical data?

BFBC2 is a very popular first-person shooter (FPS) game, which was released by Electronic Arts in 2010, sold 6 million copies and has a metacritic score of 87/88 (PC/Xbox360 & PS3). Although the game offers a typical FPS game singleplayer, BFBC2 is best known for its multiplayer experience. It offers a class system with four different archetypes of soldiers (recon, medic,

engineer, assault), which differentiate through weapon and equipment options. Especially the gadgets like medipacks, vehicle repair tools or ammunition packs support different styles of gameplay. In addition, BFBC2 offers an interface to personalized player statistics including detailed information about gaming habits and preferences of more than 10 million player profiles. The web platform bfbc.com stores more than 9.600 items for each player profile like e.g. the total playtime amount, player kills and deaths, scores for team actions or achievements.

Our first goal of the experiment was to identify possible play-personas within the group of BFBC2 players. For this purpose we used a questionnaire based on Nick Yee's instrument for identifying the motivation in playing online roleplaying games [9]. Five researchers checked all items of the original questionnaire for compatibility to the FPS genre in general and specifically for BFBC2 and adapted them if necessary. The items were then presented to a group of professional BFBC2 players and the process was reiterated until they approved every item. The questionnaire participants were recruited from different forums, blogs or social networks. 560 participants filled out the questionnaire with 189 valid sets of data. Although mentioned in the beginning of the questionnaire, the highest drop-out rate was registered at the point where people had to enter their player profile name (only name, no password required). Only 67 subjects provided a valid BFBC2 player profile name. The player profile names were then used to gather the corresponding data sets of the questionnaire participants. We used a self-made crawler to send automated requests to the bfbc.com platform and stored the data sets within a database. We sorted all

9.600 player data items and identified 631 useable variables and assigned them to categories like statistics (e.g. kill-death-ratio, playtime, win-lose ratio), scores (e.g. class scores, team scores), pins (e.g. duration and efficiency of using specific items), achievements and insignias and weapons (e.g. time used, ratio).

To identify personas in BFBC2 we conducted a factor analysis, which identified eight socializer and nine achiever questionnaire items with factorial loadings from 0.40 up to 0.70 describing a similar attitude. These items were then used to correlate with the collected game metrical data. For this reason we performed a correlation analysis to identify significant correlations between the two personae (achiever and socializer) and the game metrical data. Results showed significant better scores of achievers in combat-related items (e.g. weapon efficiency), whereas the socializer showed correlations within the areas of team play (e.g. team scores, squad actions). Furthermore, achievers preferred the recon class, which focuses on long-range weaponry and can be played as a lone wolf, whereas socializers picked the medic or engineer classes, which rely more on team actions like healing or vehicle repair.

These results show the potential of a two-step experiment to use questionnaires at first to identify play-personas and in a second step relate them to a set of large-scale game metrical data to proof the findings and provide a better understanding of how play-personas can be identified using large-scale game metrics. Given these results, further work needs to be done to proof if the presented method is able to identify play-personas in other fps games.

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