

# Analysis of Player Profiles in Electronic Games applying Bartle's Taxonomy

Marvin Oliver Schneider<sup>1\*</sup>

Érika Tiemi Uehara Moriya<sup>1</sup>

Alexandre Vieira da Silva<sup>1</sup>

João Carlos Néto<sup>1</sup>

Senac University Center, Applied Technologies Research, Brazil<sup>1</sup>

## ABSTRACT

The following paper aims at the application of Bartle's Taxonomy in a real life environment. For this purpose, a questionnaire with twenty direct questions linking to each profile type was created. In addition to the questionnaire a game was developed and typical characteristics were written to a result table during game play. Both questionnaire and game were applied to a population of gamers. Results showed links between the theoretical and practical aspects, but also revealed the impact of other influences such as overall gaming proficiency or the fact that boundaries between profiles are blurred, i.e., large intersections between profiles may be found. In future steps of this research, the practical possibilities of analyzing individuals by games shall be evaluated, especially also as a tool in non-game applications such as selection of professionals by human resources departments or inside classrooms in order to customize learning experience.

**Keywords:** Player Profiles, Bartle's Taxonomy, Bartle Test, Game Customization

## 1 INTRODUCTION

When Sid Meier's infamous "Pirates!" game was launched, one thing was very clear: It was not a game for female players as it offered only the perspective of a male pirate, treating adventure on the seas as well as romance only from a male perspective. Meaning, any female player would feel somewhat uncomfortable with the game. Perhaps this focus was given through a thinking that there would be a greater male audience anyway and that physical toys have frequently specialized in genders. So why not "software toys"? While this obvious lack of vision of the 1980s has been partially corrected in the current days, yet, player differences and individualities are often not taken into account during the creation of games. We trust that, to reach a larger audience, games should customize what they present and thus become truly inviting. In this paper we elaborate on an approach to analyze profiles, crossing what we found with the taxonomy presented by [3].

## 2 RELATED WORK

There is a considerable amount of research, which has been conducted firstly to evaluate personal profiles and particular characteristics of an individual and secondly analyze individuals with focus on player profiles [2][3][5][6][7][11]. Some of the approaches are merely different ways of "slicing the cake", some lead to practical applications or try to treat problems. Here are some commented examples:

Goldberg [6], who has been used as a basis for a series of subsequent researches and studies, for instance, applies the traditional "Big Five" traits of surgency, agreeableness, conscientiousness, emotional stability and culture. Afterwards he

divides them further, mapping concepts to numbers as well as attributes. The study is yet of general application, not focusing on gamers.

Brocklebank et al. [5] address some of the issues that come up when trying to link game experiences with stable personality traits such as reliability of preferences, use of personality instruments with limited cross-study comparability and issues of more than one motive leading to a choice showing that links can be established despite the issues pointed out.

Nacke et al. [7] present a taxonomy aiming at players and classifying them into Seeker, Survivor, Daredevil, Mastermind, Conqueror, Socializer, and Achiever and providing insights into fun factors and player satisfaction. This taxonomy has similarities with Bartle [3].

Worth and Book [11] study different forms of interaction in Blizzard's World of Warcraft game, such as Player-versus-Player, Social Player-versus-Environment, Working, Helping, Immersion, and Core Content, linking them to personality traits. These are also a handy way of defining functions to be modelled or included in a complex gaming environment.

Backes et al. [2] finally provides an idea of how adjustments in games could be made, offering the following concepts: modelling player actions, modelling player tactics, modelling player strategies, and player-profiling.

In our approach we follow Bartle [3] because of the practical simplicity presented, with profiles that appear plausible to several gamers and good chances of direct application through a strong link with the electronic games environment. Bartle [3] divides gamers into four profiles:

- Achievers, who seek maximum points, new achievements or rewards in games with an ambitious mindset and a wish to be better than others.
- Explorers, who like to explore virtual worlds with all their aspects as well as all possibilities of game play, typically being very curious.
- Socializers, who see games as just another way of connecting to people and making friends.
- Killers, who display aggressive and competitive behavior aiming at the elimination of other players in the virtual world.

In 2000 Erwin Andreasen and Brandon Downey developed a test from Bartle's taxonomy calling it the Bartle Test - also mentioned by Bartle himself in Bartle [4]. From this time onwards several gamers have taken the test and a lot of controversy has emerged (as seen in [8]). The test presents questions asking the candidate to choose, in a binary fashion, which he/she prefers in given situations with two alternatives only. It may be accessed at [1], with a slightly

\*e-mail: marvin.oschneider@sp.senac.br

different nomenclature labelling the “killer” type gamer as “griever”.

### 3 OVERVIEW

Our approach is composed of a system, which includes a questionnaire and a game. The user is first presented to the questionnaire of 20 questions, and then receives visual instructions on the elements of the game. He/she can subsequently start the game with the possibility of using up to three “continues”. As soon as the player loses the game or manages to achieve all game objectives, results of the questionnaire are shown on screen (identifying the type of player indicated by the questionnaire and giving further explanations). The system then saves a report on questionnaire results along with some indications on player behavior during the game. If requested, the player may save a picture with the questionnaire results for publication on Facebook or have access to the more detailed report as a text file.

### 4 QUESTIONNAIRE

The questionnaire, which was elaborated, consists of twenty direct questions following the mechanics of similar approaches as in Pacini and Epstein [9]. It does not include any type of attempt to verify if candidates are not telling the truth as these may be difficult to establish (see, e.g., [10]), with little estimated benefit for the results (as the given questions do not aim at exploring characteristics candidates might want to hide or are ashamed of). It also does not use any metaphors with questions outside the digital game domain as behavior might be very distinct and impulse normally cannot be translated directly (see also [5]). The test is based upon the four player types indicated by Bartle [3], but instead of the classical Bartle Test’s binary choices, which contrast two characteristics with each other (e.g. one answer indicates a socializer profile and the other a killer one), the test prompts the candidate for his/her identification with single characteristics. The benefit of this is that a player, who does not identify at all with one of the profiles, will have a score of 0% for that profile and not “slip” into some profile percentage by preferring B to A in a binary choice as in the classical Bartle Test.

In our approach, candidates may choose from these options:

- “I do not understand/I do not identify myself” (0 points);
- “I identify myself a little” (1 point);
- “I identify myself partially” (2 points);
- “I identify myself” (3 points);
- “I identify myself totally” (4 points).

The questionnaire contains the following characteristics. Please note that in the real questionnaire the lines are mixed without indication of a concrete profile, to which they belong, in order not to influence the candidates’ answers.

- Achiever
  - “I like to conquer new badges in games”;
  - “I get impressed with players that conquered high rewards”;
  - “I play electronic games until the end with 100% of achievements”;
  - “I love new items and medals”;
  - “I like exposing my achievements (for example, on Facebook)”.
- Explorer
  - “I like exploration type games like Myst, Zelda or Monkey Island”;
  - “I like varied experiences in games and exploring new sides”;

- “I like finding hidden items in games”;
- “I like finding new bugs in games”;
- “I like open world games and could explore for hours”.
- Socializer
  - “I like to know that I am playing against other human players”;
  - “I like sharing my experience in games with others”;
  - “I have several friends I got to know in online games”;
  - “I love multiplayer games”;
  - “I love World of Warcraft or Dota style games”.
- Killer
  - “I am very competitive in games”;
  - “I like exploding things in games”;
  - “My favorite games are first person shooters”;
  - “I am known for my aggressiveness in games”;
  - “I do not like talking in games, what I really like is shooting”.

For every profile, a candidate would have a minimum of 0 and a maximum of 20 (5 x 5) points. We can thus study, which profile is the most adequate (highest points), how adequate a profile is by itself (which percentage of 20 points was achieved?) and finally how much a candidate identifies with the entire questionnaire (possibly indicating overall interest in electronic games).

A time limit to answer the questions is not imposed. Candidates of our test population typically took around 5 to 10 minutes.

### 5 GAME

The subsequently loaded game puts the candidate into a pirate style game context with basic graphical details and sound effects (see Figure 1).

The player is inserted as a pirate character into a cursed pirate island with skeletons, that wish to kill the pirate by collision and can be killed by gun shots. The player has a limited amount of ammunition (8 shots), which can be recharged collecting a recharge object. The pirate may not pass over/through elements as trees stones or bushes (i.e., the way is blocked by these items). Entering potholes, the pirate loses one life (of the initial five lives). Lives cannot be “recharged”. Information items, indicated with the letter “I”, can be picked up and give useful information to the player of which main and side quests are currently available. Main quests during the game are:

- Reaching 1000 points (which can be done by shooting skeletons or picking up items).
- Recharging the gun five times (done at recharge symbols). Shooting is optional.
- Finding and opening five treasures (which are at the South of the island).

Side quests aim at valuable items, which can be picked up: rings, coins or a bracelet.

The player should furthermore avoid carnivore plants (which “move” on the spot) and sharks, which can be found near the shore. Trying to swim at the beach also diminishes lives due to the existing currents.

The island consist of a world of 25 different single parts (views). The pirate may move through the parts by entering another one approaching the limits of the current view.



Figure 1: The pirate starts in the Northwest of the island at the beginning of the game

Different views were designed to explore typical profile characteristics:

- A view with hidden objects in water. Typically, an explorer should become interested in them (see Figure 4).
- A view with many treasures and dangers, which should interest an achiever (see Figure 5).
- A view with many skeletons that a killer might want to kill (see Figure 2).



Figure 2: A view full of skeletons aiming at the killer type profile of gamers

The social interaction was a challenge, as the player cannot interact online with other players. The system is standalone. However, the system provides a possibility to leave messages to others players that might be read by the next player. This “mailbox” is depicted in Figure 3 below.

During one match the player may lose five lives until “Game Over”. The player may use up to three “continues” until the end. Finishing all main quests also terminates the game.



Figure 3: Simple mailbox window being used to simulate player interaction.



Figure 4: View with lake and hidden elements



Figure 5: Example of view with treasure and ring

## 6 PREPARATION

As said above, the game provides a final report as a file. It compiles the following characteristics:

- Questionnaire Results
  - Player type, indicating one of the four type according to [3];
  - Description of the type;
  - Certainty level for the given type, calculated by the number of positive answers to questions linked to that type;
  - Indication of percentages for every profile (achiever, explorer, socializer, killer);
  - General identification, being the number of overall positive answers.
- Behavior during the game
  - General performance
    - Number of finished main quests;
    - Number of finished optional quests (detailed below);
    - Points.
  - Details of optional quests
    - Coins recovered? (yes/no);
    - Ring recovered? (yes/no);
    - Bracelet recovered? (yes/no);
    - Ancient treasure chest recovered? (yes/no).
  - Aggressiveness, indicating performance towards items more linked to a “killer” type profile
    - Number of killed skeletons;
    - Attacked plants or sharks (they do not die, but an aggressive player might want to shoot anyway);
    - Shots spent;
    - Recharges of the gun;
    - Player entered the view with many skeletons (Figure 2)?
    - How many skeletons were killed in that view?
  - Behavior in water, more linked to explorer types
    - Player entered water? (players might not know if it is safe)
    - Shot fired in water? (it is not clear from the beginning whether that works – it actually does not)
  - Adverse events, analyzing deaths of the pirate character
    - Number of deaths by skeletons;
    - Number of deaths by plants;
    - Number of deaths by swimming in the ocean;
    - Number of deaths by sharks;
    - Number of deaths by potholes;
    - Injuries, indicating the number of times each player tried to pass through trees, stones or bushes (without dying).
  - Exploration, indicating numerical performance of exploring the island
    - Total passages from view to view;
    - Passages during first objective quest;
    - Passages during second objective quest;
    - Passages during third objective quest;
    - Number of chests opened;
    - Number of information read.
  - Socializing
    - Did the player pick up the mailbox item?
    - Did the player send a message?
  - Exposure of achievements
    - Did the player save the result image for publication on Facebook?
  - Time factors
    - Beginning of the game (timestamp);
    - End of first objective quest (timestamp);
    - End of second objective quest (timestamp);
    - End of the game (timestamp).
  - Use of “continues”, which could indicate overall interest in the game
    - Number of continues used.

The questionnaire and game were applied to an initial population of 25 students/analysts in two university laboratories. All of the candidates had a link to IT and/or game design.

## 7 RESULTS

We analyzed all results individually and tried to find out if game behavior was directly linked to questionnaire results, or not. If there was something as a clearly defined and limited profile, this profile should show up in both contexts, given that both questions were made directly to the point and the game offered concrete performance values.

As a first parameter, we analyzed the profile results given by the questionnaire:

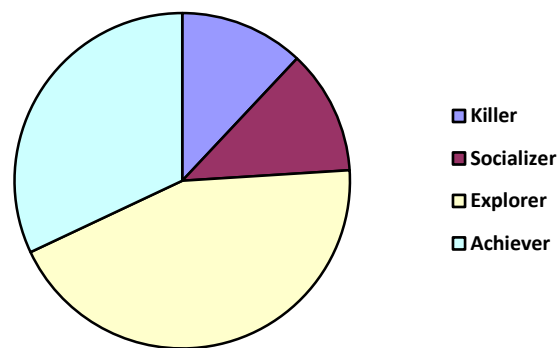


Figure 6: Player profile distribution

As expected, player profiles did not distribute in a uniform manner. There were many explorers and achievers, less socializers and killers (see Figure 6). Achievers, killers and socializers, however, showed identification levels of over 60% with their type whereas explorer had very mixed results, sometimes not fully identifying themselves with their type.

Secondly, we studied overall performance on quests (Figure 7). Our initial expectation was to have achievers perform better because of their ambitions and we were surprised to find that explorer and socializers explored quests in a better way. This might be due to the way the game was developed (meaning that

exploration eases the achievements of quests). However, it may also indicate the fact that profiles have blurred limits and that a good identification.

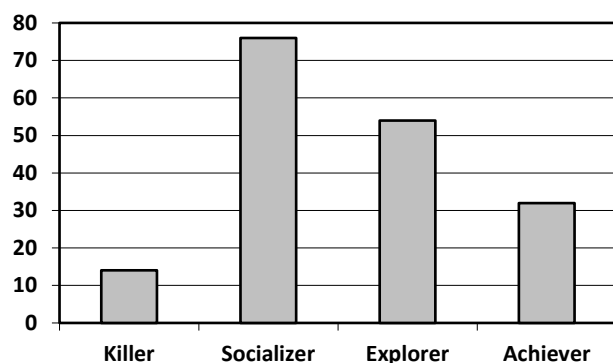


Figure 7: Performance completing quests

Analyzing the time every type played the game (Table 1), we found that explorers and socializers were taking more time, whereas achievers got soon frustrated. It was expected to have explorers playing more time as they like to explore new sides.

Interestingly though, socializers showed most interest in passing from one view to the other, with a medium of 45 passages in a universe of 25 individual views. This might be interpreted that they were looking for interaction, thus their objective left them exploring, which actually points to another profile (explorers). Yet again, blurred profile limits may be an explanation.

Profile	Average Playing Time
Killer	0:06:26
Socializer	0:08:47
Explorer	0:07:43
Achiever	0:04:42

Table 1: Time each type played the game

Overall, only a little above the half of all candidates saved their results for sharing and the only profile, which presented more candidates sharing the results than simply closing the game was the explorer profile (Figure 8).

General performance on points was also analyzed. Again, it was, at first, expected that achievers, due to their ambitions, might lead. During the test we observed that general proficiency with games was interfering. This (as well as the number of quests achieved as seen in Figure 5) is reflected in Figure 9 and leads us to one more challenge. How can we define a profile from the practical side if general abilities, not linked to any profile, come into play? And by how far should we consider such as a fifth variable? How can we customize a game for a proficient killer or how for a “newbie” socializer?

We found that the amount of information read had a strong link to the profile and that, as expected, explorer and socializers were performing well (Figure 10). Explorer read information because of their exploration attitude. Socializers read a lot of information, possibly seeing it as a social activity (communication).

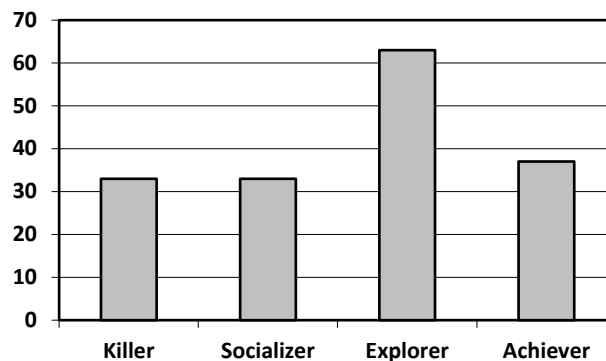


Figure 8: Sharing of results

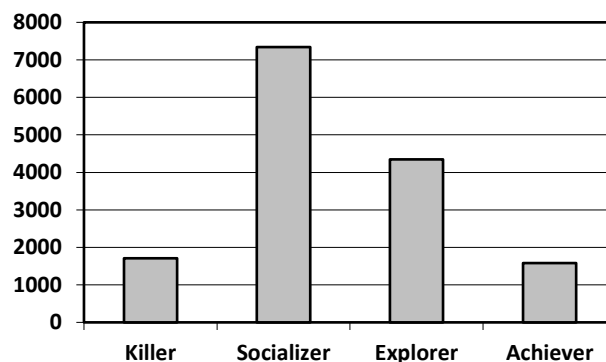


Figure 9: Overall points

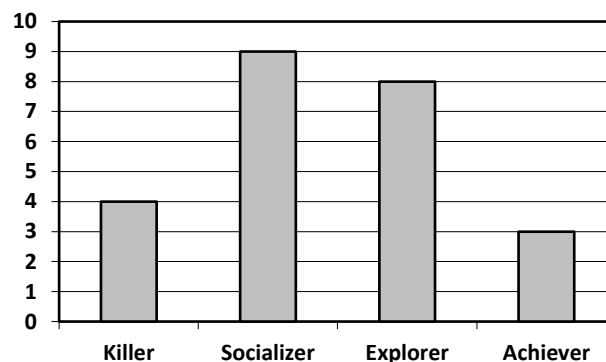


Figure 10: Information read during game play

Looking at the parameters of overall continues used, we analyzed the interest of each player type in the game. Socializers showed a slightly higher use of continues, which, however, does not appear to be significant in practice (Figure 11). Yet, only a small percentage did not use any continue at all. Overall interest in the game, although being simple, can thus be interpreted as good.

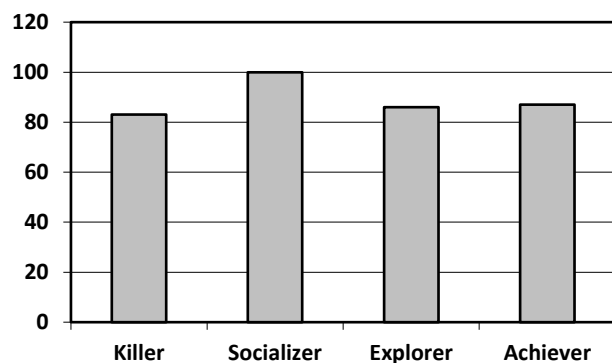


Figure 11: Continues used

Finally, we should have a look at the average of total deaths and injuries, i.e., when a player tries to pass over a blocked path (Figure 12).

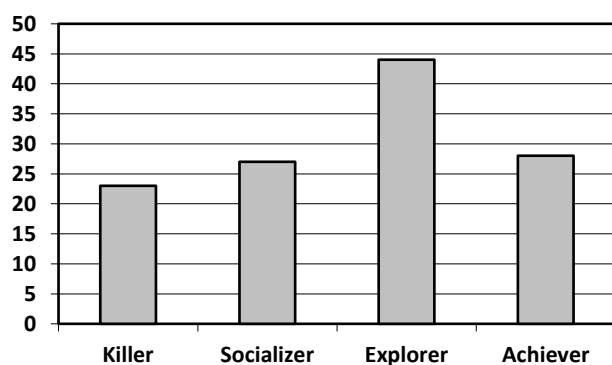


Figure 12: Total deaths and injuries per player type

The result can be justified by the explorer becoming more exposed to many different NPCs as exploration goes on, thus increasing considerably the chance of dying by any attack as well as being blocked by plants or stones. Killers might also show a slightly higher proficiency in the treatment of such situations, which explains the low number.

Concerning many other variables, for the time being, no strong relationship could be established. This might be achieved with a larger universe of candidates.

The following points in our results should be highlighted:

- A specific mindset does not always lead to practical consequences in games, which is due to the game setup itself, but also additional factors as overall gaming proficiency, interest in the theme itself or distractions.
- Links can be established for a series of characteristics combining theory and practice; however, profiles appear blurred and may present obvious intersections between them, which, thus, lead to somewhat unexpected results. Consequently, the practical application of the profiles may be partially questioned. At least, when it comes to customizing a game, a more secure approach may be to analyze behavior of a player in the very game, which should be adapted to his/her player experience and not take “general profiles” as a truth.

## 8 FUTURE WORK

We trust that the following steps should be taken in the future to provide results of increased quality and further develop the approach:

- Firstly, a larger population for testing should be invited. This is moreover an organizational issue than a technical one. Perspectives are the inclusion of more students at our institution or opening up the game for download to a larger population online.
- Depending on the findings, a conceptual remodeling of the profiles should be studied. Although the mindset can be interesting, the practical use is of greater purpose and therefore anything found must be based on practical aspects and findings first.
- A possible way of fitting different characteristics into one single game must be developed. As there are highly different game types and platforms on the market and not every user has the same proficiency in all of them, ways must be found not to hide results behind lacking proficiency.
- Games may turn into much more satisfactory experiences and include many different groups of users that are nowadays excluded. A game that relies on sound empirical data to be customized can be a game of great success on the market and might pave the way to a new general tendency of the industry. Our research should contribute, in a later stage, to the creation of such possibilities.
- A future perspective is the use of a mature approach that can analyze profiles through a game situation in non-gaming contexts as professional selection at human resources departments or the customization of a learning experience inside a classroom, either online or face-to-face.

## 9 CONCLUSION

The present approach elaborated a practical vision on Bartle's Taxonomy. Such a taxonomy may be used to analyze gamers and to customize games accordingly, thus producing more satisfying gaming experiences. We have shown some of the possible challenges in the translation of the theoretical aspects into a practical approach. It appears that further variables have to be included in profile analysis and that types might be defined more clearly. Yet, some characteristics can be directly linked and we trust that further approaches might not only help in gaming situations, but also have applications in other areas.

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