How to play the game?

A study on MUD player types and
their real life personality traits

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Contents

Abstract

MUDs (Multi-User Dungeons) are the predecessors of the graphical MMOGs (massively multiplayer online games) or MMORPGs (adding RP for role-playing), but still continue to draw in players despite the popularity of the latter. Bartle (1996;2003) has argued that people play virtual worlds, because players want to have fun. What parts of the game bring fun to a player differs per person and Bartle distinguished between four different player types: the achiever, the explorer, the killer and the socialiser. Although these are widely known and used, several authors criticise this categorization and therefore this research attempted to test the typology by using empirical data. A fifth additional player type (the role-player) was added, based upon the findings of Yee (2006a). Furthermore it was deemed that online behaviour should have at least some root in offline personality, so the personality traits of the Big Five (extraversion, agreeableness, conscientiousness, emotional stability and openness to experience) were inserted in the online MUD player survey, held during May 2007, as well.

A principal component analysis was performed on the player type items and the four initial player types were reproduced together with the additional role-player type. Linking the components to demographics, MUD type, player characteristics and offline personality by doing several multiple regression analyses, it was found that offline personality leads to a significant improvement of the explained variance among the player types. Furthermore the player types seemed to be much related to the characteristics of the main type of MUD that they play. The findings were used to create a new model for player types. The different types of game and their subsequent playing style at the bottom, the achiever player type above that base, trying to advance within the specific MUD type and the explorer player type on top, looking for new ways to extract fun from the game, when achievement has been gained. This model has a lot in common with the hierarchical player categorization of Hedron (1998) and links Bartle, Yee and Hedron into one model.

Preface

With pride I present to you my master thesis about playing styles for online games. Although finished in time for the deadline, it took some time to reach this state. Being a musician myself, I was certain, even before the thesis themes of leisure studies were introduced, that I wanted to graduate on something music related. However, the themes that would allow a music related thesis did not match my main musical interest – the personal enjoyment of music itself. Fortunately, the theme "virtual communities" neatly provided another option, because I am also administrator of such a virtual community: the Multi User Dungeon (MUD) "Rage of Vengeance".

The work on this theme lead to a theoretical paper and individual thesis proposal about the "consequences of playing" at first, but this proved far too ambitious to be conducted as a research in the given time frame. The player types of Bartle, which were already somewhat included in the first theoretical paper, had fascinated me before and therefore, when I had to make a choice between either the qualitative side on consequences or the quantitative side for playing styles, I chose the latter, knowing that I was throwing away almost ninety percent of my previous work. I never regretted making that choice though and I enjoyed writing this thesis very much, although it was written in a tight time frame combined with several other study related obligations and my own leisure activities.

One of the most important of these leisure activities, that received far too little attention during the coming along of this project, is my own MUD home: Rage of Vengeance. At this point I want to thank all of the players and administrators that currently play and have played Rage of Vengeance in the past. Next to Rage of Vengeance, I of course want to thank Erik van Ingen as my supervisor. Being the lazy and more leisure enjoying individual that I am, he kept me going on this project, even when the time schedule became more and more tight, especially because of the massive load of returned surveys that had to be put into the statistical programme of SPSS. This leads directly to a very great amount of thanks that I want to hand out to all players and MUD users that have taken the ten minutes time to fill out

my survey and all administrators that decided that this research was worth their attention and put it through to their player bases.

Richard van Meurs
Delft, August 2007

List of Abbreviations and MUD-Related Concepts

Admin(istrator)	The operator of a MUD.
Bugs	Flaws in the code base allowing unwanted actions/benefits.
Builder	A MUD user that creates new areas or content for the MUD.
Code base	The main programming of a MUD, often derived and elaborated from (an)other MUD code base(s).
Coder	A MUD user that makes changes to the code(base) of the MUD.
God	Overarching term for highly experienced players and sometimes also the operators of a MUD.
Immortal	Overarching term for highly experienced players and the operators of a MUD.
MMOG	Massively Multiplayer Online Game.
MMO(RP)Gs	All online, virtual and *graphical* worlds.
MMORPG	Massively Multiplayer Online Role-Playing Game.
MOO	MUD Object Oriented: A specific type of MUD
MU*	A term that was intended to cover all different MUD types.
MUD	Multi User Dungeon.
MUDs	All online, virtual and *text-based* worlds.
MUSH	Multi User Shared Habitat or Hallucination: A specific type of MUD
Newbie	The overarching name for any player new to a specific MUD or MUDs in general.
OOC	Out of Character: actions in role-playing MUDs that are outside the character's in-game role (IC, or "in-character", is the opposite).
PK	Player-Killing: the killing of other "real life" players.
Player	In running text: Any person that uses a MUD.
RL	Real Life: the life of a player outside the MUD.
RP	Role-Playing: playing the role of an in-game character.
Wizard (Witch)	Highly experienced player, sometimes with operator abilities.
XP	Experience (Points): these are mostly needed to gain levels.

1. Introduction

MUDs are *"places where the imaginary meets the real"* (Bartle, 2003, p1). Insiders will probably agree immediately with this statement, but for outsiders this statement probably raises more questions than it provides an answer. The term MUD stands for Multi User Dungeon and in essence it is a computer programme that people can log in to and immerse themselves in an imaginary "dungeon". Real people can interact with an online persisting, imaginary environment and with several other 'real life' persons around the world. This online world is created solely by text. You are able to see where you are by reading descriptions like: 'the immense wall that surrounds the castle is an impressive sight' or 'a beautiful sparkling fountain decorates this square'. You handle your character by typing commands as 'get sword' and 'drink waterskin' leading to textual responses as 'you get a sharp broadsword' or 'you drink water from a waterskin', and you can see other characters entering or leaving the room that you are in and interact with them: 'Costrako sneaks in from the east' and 'you grin evilly at Costrako.'

The first MUDs stem from the early days of the internet and were mainly designed to be games. In essence, they had a lot in common with early text-based single player adventure games like ADVENT, ZORK and HAUNT[1], but with multiple players who could communicate and cooperate with each other. The very first MUD, simply called MUD at the time, was developed from 1978 onwards by Trubshaw and Bartle at Essex University, England, and can still be found running under the name British Legends nowadays (www.british-legends.com). Inspired by this MUD, later to be known as MUD1 to distinguish it from the other MUDs, several new ones were developed, with various themes; from pure player-killing MUDs (where the main goal is to kill other players) to more social role-playing MUDs (in which the focus is on story and interaction) and even MUDs without any combat system at all, purely based upon creating, building and inhabiting a virtual world. New code

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[1] Due to the computer systems at the time, these names had an all uppercase filename with a maximum of six characters. In fact, the 'D' for dungeon in MUD stems from a version of ZORK: DUNGEN. (Bartle, 2003)

bases were developed, giving rise to a full MUD tree (Keegan, 2003). This tree displays the development of the genre and the rise of different MUDs. Most stem from an early version of AberMUD which links back to MUD1.

Due to these developments in MUDs, the term MUD became loaded. Some MUD players, particularly among social MUD users, felt a strong distinction between social MUDs, where the focus lies on socialising with other players, and game-like MUDs, in which the game is more profound. The term MUD was linked to *game-like* MUDs only, while the social MUDs tried to find new names, leading to names like MOO (MUD Object Oriented) and MUSH (Multi User Shared Habitat or Hallucination). This lead to a lot of ambiguity, leading to a new overarching term, MU*, although this never became very popular[2].

The genre has use for an overarching term, even more so because of the rise of the graphical MUDs, and therefore this thesis will use the term MUD in its original meaning. Graphical MUDs, often labelled MMORPGs (Massively Multiplayer Online Role Playing Games) or more recently MMOGs, leaving out the role playing aspect, have many similarities, but also some structural differences to text-based MUDs. Therefore this thesis will use the term MUD to represent Multi User Dungeons involving multiple users inhabiting an online, virtual and *text-based* world[3]. The users of MUDs will in this paper often be referred to as players, since it is the easiest way of classification, and dates back to the early MUD1 as a game.

1.1 Laying out the Research

The useful technology and ideas behind MUDs have inspired several new ways of online interaction, leading to various kinds of virtual communities. Therefore MUDs have a lot in common with the notion of virtual communities as described by Rheingold (2000). He defines virtual communities as: *"social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace."* (http://www.rheingold.com/vc/book/intro.html). This is exactly true for the social and educational MUDs around. Due to their origin, however, most MUDs remain (adventure) games rather than places to carry on discussions only. The game environment does nevertheless enhance personal relationships with sufficient human feeling. Players interact and form friendships with other players. Rheingold does therefore include

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[2] Bartle (2003) claims that this is analogous to naming dinosaurs *saurs, because 'dino' (or deinos in Greek, meaning fearful) might imply that all 'saurs' (or saurus, meaning lizard) are carnivorous monsters, while there are definitely other types as well.

[3] The acronym MUD has also been said to stand for multi user *domain* or *dimension*. This is all the same, as long as it indicates *ALL* text based versions of MUDs.

MUDs in his book, although his main focus is on their sometimes dramatic impact on real life[4].

Virtual communities in general and MUDs in particular are an interesting topic for research. Not only are virtual communities and online games a rather new phenomenon, it is a massively growing one as well. For example the South-Korean Cyworld has twenty-two billion page views per month (Oates, 2006) and, more specific on online games, Second Life now has more than eight and a half million 'residents' listed of which more than one and a half million logged in within the last sixty days (www.secondlife.com, figures from August 5, 2007), while Blossom (2006) only mentioned slightly more than one million residents for Second Life at the end of October 2006. These figures indicate that a lot of people seem to be interested in being part of online communities and making contact with people that they have never seen once in their lifetime and might at that never meet in the flesh. Still people keep connecting and participating in communities, often several hours a week even when they have a fulltime job. There must be something drawing them in.

1.1.1 Towards Different Playing Styles

According to Bartle (1996), people log in and play MUDs to have mere fun. The main question becomes then: which part of the business on MUDs constitutes fun to make people come back time and again? As Bartle (2003) asks: *"Is having your character killed by a monster fun? Is waiting three hours for a dragon to spawn that may (but probably won't) be carrying a rare item fun? Is spending forty minutes tromping across a desert without meeting a single fellow player fun?"* (p. 129). Of course these events in itself are not rewarding, but if you finally succeed in killing the monster or finding the forgotten palace, the agony of striving for it is balanced. On the whole, there has to be something about MUDs that satisfies people and make them come back. Naturally, what satisfies a player differs per person. For example, someone might like the interaction with other players, while another tries to acquire the best items in the game. Some people like the thrill of the experience, and some other strive for victory and achievement.

To shed some light on what constitutes fun for MUD players, Bartle (1996) developed a categorization of playing styles consisting of four categories (achiever, explorer, socialiser and killer)[5]. These player types are a mix of behaviour as well as motivation. Several actions and strategies can be distinguished in the playing style and different goals motivate the player. For example, the achiever's main objective is "beating the game" and therefore the subsequent goals and actions are all attuned to that objective. An achiever will try to score

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[4] In this context: Some authors mention MUD to be an acronym for Multi Undergraduate Destroyer due to the popularity among and classes failed by students because of too much time spent on playing MUDs. (for instance by Reid, 1994)

[5] His newer model stemming from 2003 has eight categories, but as he indicates himself: "*The conflicts between some of the eight are meaningful, but for others the old types work just as well and are better at encapsulation.*" (Bartle, 2003, p.170)

the most points, or try to attain the highest rank in a guild, or plot against a more powerful player to be able to take over his or her position. Most actions, strategies and goals for an achiever will be related to achievement within the game context.

Although Bartle's categorization is one of the best known and widely used, it has been subtracted from a discussion among the 'wizzes'[6] of MUD2 rather than grounded in empirical research and therefore might be flawed. In fact, there has been a lot of criticism on his typology. One of the main issues raised is the fact that the actions, strategies and goals that Bartle ascribes to the player types, result from discussion rather than actual behaviour. For example, Bartle clusters role-playing behaviour with the socialiser player type, but talking with other players might not even be related to role-playing. Another issue is about the generalizability of his summary, since it was a discussion by users of one specific MUD only and one that allowed player killing as well. It might well be that the type of MUD can account for some playing styles, instead of the specific game content itself, yet Bartle (1996) claims that his initial player types can be used among all the different types of MUD. All in all there are several questions that can be posed around Bartle's typology.

1.1.2 Online versus Offline

If the different player types exist, they will probably relate to certain characteristics in the players. Next to the more standard demographic variables like age and sex, there should be other, more important explaining variables. The most likely characteristics that would influence a certain playing style would be differences in MUD type and differences in players. There are different types of MUD as mentioned above. For instance, social MUDs, role-playing MUDs and player-killing MUDs and some even mix these parts. Moreover differences in players, like time online, the playing of multiple MUDs or for how many years they are playing MUDs, could affect the style of play. These variables could well explain a certain part of the variation among player types.

However, one of the main differences in players could well be their offline personality. This is an interesting line of thought, since online behaviour must stem (at least partly) from the offline personality of the player. It might well be, that someone who is extraverted may act more openly to other players online as well, or maybe a person open to experience in real life might be interested in all the different facets of a MUD. Of course people may act different online as well: An agreeable person in real life might try to oppose as much other players as possible online, for whatever reason. Therefore it will be interesting to see if the typology of Bartle has any relation to personality traits.

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[6] Wizzes is a "*gender non-specific*" term, "*meaning wizards and witches*" (Bartle, 2003, p.165) and are the more experienced players of MUD2.

The Big Five model, the result from several factor analyses on descriptive vocabulary, became the most popular model for describing personality during the 1980's (McAdams, 1995). The Big Five theory maintains that the personality of people can be described by rating them on five different dimensions: extraversion, agreeableness, conscientiousness, emotional stability and openness to experience. All five dimensions are bipolar, meaning that they are a continuum between two opposites, leaving ten personality types. Costa and McCrae (1992 in: Howard & Howard, 1995) named the ten resulting types and those can be found in table 1.1 together with some associated traits taken from the mini-marker test of Saucier (1994). Interesting to note about table 1.1 is the explorer, which is also in Bartle's typology. This suggests that there might indeed be a link between offline personality traits and online behaviour.

Table 1.1: Costa and McCrae's (1992, in: Howard & Howard, 1995) labels for the opposites on the Big Five factors and some associated traits taken from Saucier (1994).

Big Five Factor	Positive *(traits)*	Negative *(traits)*
Extraversion	Extravert *(talkative, energetic)*	Introvert *(shy, quiet, bashful)*
Agreeableness	Adaptor *(sympathetic, warm)*	Challenger *(cold, rude, harsh)*
Conscientiousness	Focused *(organized, efficient)*	Flexible *(sloppy, careless)*
Emotional Stability	Resilient *(unenvious, relaxed)*	Reactive *(moody, jealous, touchy)*
Openness to Experience	Explorer *(creative, intellectual)*	Preserver *(uncreative, unintellectual)*

1.2 Research Question, Goal and Relevance

This research will try to test Bartle's categorization of playing styles in a more scientific way and extend the research on playing motivations of pioneering researchers like Yee (2006a). In addition, this research will try to find similarities between the online playing styles and the offline characteristics of the Big Five model. Therefore this thesis will be guided by the following research question:

- *Are there different online playing styles of MUD players in general and can these playing styles be related to offline personality traits?*

This research question can be divided into two parts: the online playing styles of MUD players in general with Bartle's (1996;2003) typology and Yee's (2006a) research on player motivation as a starting point, and the offline personality traits of the players as measured by

the Big Five mini marker test of Saucier (1994) in combination with other explaining variables as demographics and MUD and player characteristics. To investigate the relationship between these two parts this thesis uses two sub-questions:

- *Which specific actions, strategies and goals can be clustered to make up different playing styles and what do they look like?*
- *How are these online playing styles related to the offline personality traits of the players and other explaining variables as MUD and player characteristics?*

The main goal of this thesis is to find a categorization for different types of playing styles and to relate online behaviour to offline personality traits. If Bartle's initial four player types can be reproduced, it will strengthen his theorising on them. However, if this research leads to different outcomes, this thesis will try to revise the theory to match the findings. Also the combination between online behaviour and offline personality traits will lead to a more scientific grounding of the player types literature.

The scientific relevance of this thesis will be to add to the literature on player types and interests of MUD players. As indicated before, the existing model is based upon theorizing from a discussion, but only partly tested empirically. The research will try to provide a conclusion to the theory. The link between online and offline traits could give insight in the build-up of the playing styles and provide interesting knowledge for further research. The practical relevance will be to provide some insights into a rapidly growing phenomenon and to present a working model of online player types that can be used as indication for target group marketing and management. Subsequently, the link between online playing styles and offline, Big Five, personality traits, like agreeableness and emotional stability, might give insight in which areas to invest to attract players.

The structure of the thesis is as follows: chapter two will discuss the theoretical framework about player types and interests and deals with the offline personality traits of the Big Five, leading to the conceptual model. Chapter three will discuss the research method: an online survey followed by an exploratory principal component analysis on the player interests to find underlying player types and subsequent multiple regression analyses to relate the found player types to Big Five offline character traits and the other variables. Chapter four will contain the results of the research and a thorough discussion of the findings. Chapter five will provide a conclusion which will link back to the research question posed above and will contain recommendations for further research.

2. Online Playing Styles and Offline Characteristics

According to Bartle (2003), there are two reasons why it is important to know who plays your MUD and why they are playing it, both being marketing issues. Firstly, because if you know which people like to play your MUD, you could search for newbies that match your MUD and secondly, if you know which type of players you want, you can revise your MUD in order to make it appeal to your targeted player base. Demographics are useful statistics, but mostly *"demographics mean generalizations, generalizations mean stereotypes and stereotypes mean problems"* (Bartle, 2003, p.126). As stated in the introduction, people play MUDs to have fun, so what people do in the MUD depends on which activities they enjoy. Therefore it would be much more useful to have a model that categorizes players on what they do in the MUD, rather than who they are outside the MUD. Bartle (1996; 2003) provides such a model, although it is not rooted in science. His original model is the subject of this research.

The following paragraphs hold the theory for this thesis. The first paragraph will deal with the initial typology of Bartle (1996), classifying players into four categories: achiever, killer, socialiser and explorer. The core of the theoretical body consists of these player types. Also this paragraph will deal shortly with the Bartle test: a test that supposedly measures which type of player you are. The second deals with criticism on Bartle's (1996; 2003) typology. The main rival for Bartle's player types is the research of Yee (2006a) about the motivations of MMORPG players. Although graphical MMORPGs are not exactly the same as text-based MUDs, Yee provides a different insight by focussing on motivations. His factor analysis does not reproduce Bartle's whole model and this might give an interesting twist to the theory. One of the main issues about Bartle's model is his claim that it can be used for *any* kind of MUD. A fair amount of MUD users and other researchers argue that it only goes for the game-like MUDs and that players of social MUDs, for example, will always fall into the socialiser type and that role-playing is hardly mentioned.

The remainder of the chapter will deal with alternative ways of classifying players and motivations for playing (paragraph 2.3) and will deal with the Big Five model as a

measurement for offline personality traits and possible links with online behaviour in MUDs (paragraph 2.4). Lazzaro (2004) as well as Fullerton et al. (2004) report different playing styles and motivations. Their theories will be discussed briefly as well as a few hierarchical classifications of players like Farmer's (1992) and Hedron's (1998). The theory behind the Big Five model will be explained briefly and after that the separate factors will be discussed and related to certain behaviours and characteristics of Bartle's player types. The final paragraph is reserved for the conceptual model and the hypotheses. This research is foremost an exploratory research, but with an indicated direction based upon Bartle's theory. Therefore it is hard to formulate specific hypotheses. The conceptual model gives some indication about how some things are related, but other than that it would have no added value to define specific hypotheses. This will be explained further in paragraph 2.5.

2.1 Bartle's Typology of Player Types

Bartle (1996;2003) was the first to theorize about the existence of certain player types. He based his theory, as mentioned in the introduction, upon summarizing a discussion between the highly experienced users (wizzes) of MUD2. The discussion was started by the question: "What do people want out of a MUD?". This question spawned several hundred of posts by almost the full range of the active wizzes at that time. They talked about what players would and would not like and what excited players and themselves about the online games. When the supply of new arguments ran dry, Bartle, being the senior administrator of MUD2, summarised the debate and found four things that people seemed to enjoy while playing their favourite MUDs: achievement within the game context (achievers), exploration of the game (explorers), socialising with others (socialisers) and imposition upon others (killers)[7]. The following sections will first introduce the four player types and than display the original model that Bartle proposed, complete with a short description of the dynamics between the player types. The last part will deal with the Bartle test.

2.1.1   The Four Player Types

The first of the player types is the achiever. Achievers *"give themselves game-related goals, and vigorously set out to achieve them"* (Bartle, 1996, p.2). Everything that achievers do is in the interest of advancement within the game context and being recognised for their achievement. These are the players that are extremely sensitive to rating lists and in a single player game these players would play to win. A multiplayer game, however, can not exactly

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[7] Bartle (2003) agrees with the fact that the word killer is rather unfortunate. 'Griefer' may be a better term, following Foo and Koivisto (2004)

be *won* since it is a persistent world, so they seek their fun in being the best. The exact behaviour is dependent on the kind of game. If gaining levels and becoming powerful are the main goals in the game, the achiever will try to kill everything that moves to gain experience and equipment. If the main goal is player killing, an achiever may set out to hunt every player to score points. And if the goal is enforced role-playing, the achiever will make sure he is never out-of-character. Achievers are always busy with the outcome of their actions and if those actions help them to reach their goals. According to Bartle (1996, p.3) they say things like: *"Sure I'll help you. What do I get?"* and *"Only 4211 point to go"*. In essence, achievers are the only ones that really see MUDs as games (Bartle 2003).

The second player type is the explorer. Explorers *"try to find out as much as they can about the virtual world"* (Bartle, 1996, p.3). The main interest for the explorer is the game content, which will lead them to start out exploring the breadth of the MUD (the areas and maps) before moving on towards puzzling out the depth of the MUD (the game mechanics). Their behaviour is aimed at the discovery of new things, areas, workings and even bugs through which they understand the world of the game more fully. A typical explorer thing to say would be: *"Hmm…"* or *"Why is it that if you carry the uranium you get radiation sickness, and if you put it in a bag you still get it, but if you put it in a bag and drop it then wait 20 seconds and pick it up again you don't?"* (Bartle, 1996, p.4). Explorers see the game as a pastime, like reading (Bartle, 2003).
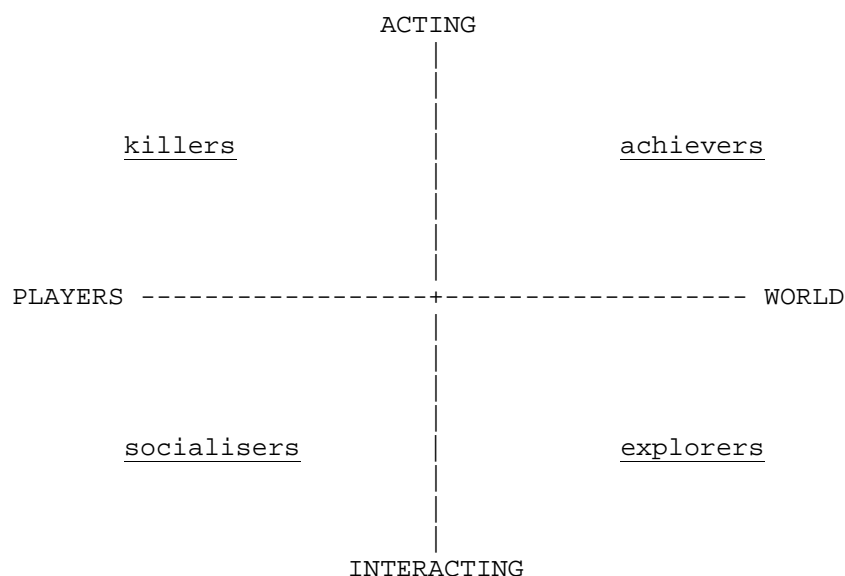
The third player type that Bartle (1996) distinguishes is the socialiser. Socialisers *"use the game's communicative facilities, and apply the role-playing that these engender, as a context in which to converse (and otherwise interact) with their fellow players"* (p.3). Socialisers are concerned with people, not just the players in game. They like to interact with the people behind the character by listening, sharing information and emphasizing. Their main interest is to know people and form worthwhile relationships with them. Phrases associated with socialisers according to Bartle (1996, p.4) are: *"Hi!"* or *"Yeah, well, I'm having trouble with my boyfriend."*. The MUD is entertainment to these players (Bartle 2003).

The final player type mentioned by Bartle (1996) is the killer. Killers *"use the tools provided by the game to cause distress to (or, in rare circumstances, to help) other players"* (p.3). These kinds of players like to impose themselves upon others, mostly causing distress in their wake. In some cases it might move towards helping, although the good feeling resulting from it is insubstantial to the feelings of power and influence by dominating other players. This behaviour often results in killing other characters, which gives it the name, but the underlying motive is the joy of doing it. According to Bartle (1996, p. 5), killers are people of few words by saying things like: *"Coward!"* and *"Die"*. Killers see the MUD as sport, like hunting and fishing.

2.1.2 The Player Types Model and Dynamics

After having determined and described the player types, Bartle (1996) started looking for similarities and differences between the types. The fact that killers and socialisers are more involved with the players of the MUD and that achievers and explorers were more devoted to the game itself presented the first axis of his model. He created a continuous dimension ranging from more player-oriented to complete world-oriented. Thereafter he needed to determine similarities between either killers and achievers or killers and explorers. Bartle (2003) reports that it was harder to find an explaining dimension for these differences, but in the end he settled for acting on the one hand (matching achievers with killers by being active) and interacting on the other (matching socialisers and explorers by interacting with either players or world). This resulted in the player interest graph, displayed in figure 2.1.

Figure 2.1: Player Interest Graph (taken from Bartle, 1996, p.6)

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                              ACTING
                                 |
                                 |
                                 |
           killers               |            achievers
                                 |
                                 |
                                 |
                                 |
  PLAYERS ---------------------+------------------- WORLD
                                 |
                                 |
                                 |
                                 |
         socialisers             |          explorers
                                 |
                                 |
                                 |
                            INTERACTING
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After having put the model together, Bartle theorized about dynamics between the four types, focussing on the effect of increasing or decreasing the number of any single type. For example increasing the amount of socialisers will lead to more killers and more socialisers and a decreasing amount of achievers leads to fewer killers and a slight decrease in socialisers. Although these dynamics described by Bartle might be very useful, they are rather irrelevant for this research, because this research is about validating the grounds on which the dynamics are based. If the player types can be validated, it will lend strength to the different dynamics. But if the player types are different or can not be found, the dynamics might need serious revision or can even be put aside. An important part that Bartle mentions

with the dynamics though is the balance between the player types in a MUD. If a MUD succeeds to attract a myriad of the different player types, it provides the best way of survival and success for the MUD.

2.1.3 The Bartle Test

In response to Bartle's (1996) article about player types, Andreasen and Downey wrote the Bartle test (mentioned in Bartle, 2003), which was about testing the theory. Players can take an online, thirty item, binary-choice questionnaire[8], resulting in a percentage per player type. For example, a player that scores 33% on Achiever, 47% on Explorer, 47% on Killer and 73% on Socialiser will be denoted as SEKA[9]. As Bartle has nothing to do with the development of the test, he himself looks critical towards it. Some critique on the Bartle test mentioned in Bartle (2003) includes the self-selecting nature of the participants, the lack of a 'neither' answer, answer options that apply to two or more player types and the fact that ties are not handled very well (see the above example: It could as well be SKEA instead of SEKA, although those could be difference player types).

Next to these critical issues, the main point is left out: This test is designed to measure the theory of Bartle. It has proven to be reliable, giving the same Bartle Quotient to the players when they are filling out the questionnaire the same way, but measuring your intelligence by measuring the size of your head is also reliable, but most authors would not agree that you are measuring intelligence that way. It is the validity of the Bartle test that might be an issue. Although Bartle's (1996) categorization might be a good representation of player types, there have been several criticisms on his categorization and the grounding in experience rather than science. This criticism is addressed in the next paragraph.

2.2 Criticism on Bartle's Player Types

Although Bartle spent a great deal on expanding his initial theory, he admits himself that it is all based upon experience. Nevertheless, this typology is still often mentioned in many writings on playing styles (For instance, Foo & Koivisto, 2004 and Keegan, 2003). Yee (2006a) is one of the researchers that provides a more scientific approach, by questioning the specific behaviours attributed to the four player types. For example, Bartle mentions role-playing as a part of socialising as well as using the communication systems, but role-playing might not even be related to communication with other players. Yee tried to cluster

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[8] The Bartle test used to be at www.andreasen.org/bartle, but it was taken over by the Guildcafe and is now hosted on www.guildcafe.com/zQuest.php.
[9] This is the score obtained by selecting the first of the two options on every question.

behavioural and motivational items together into factors, trying to replicate Bartle's model. This is much like this thesis will try, although Yee's focus was on motivations for playing instead of playing styles, which is not fully compliant to Bartle's model.

Another critique, partly addressed by Bartle himself, is the social versus game-like debate. Bartle considers his player types valid for all different types of MUD focussing on the overall behaviour in MUDs. Bartle's reasoning is straightforward and has similarities with the ambiguity of the term MUD as mentioned in the introduction. This also relates to another issue: are there different player types or are there players of different MUDs instead. This paragraph will deal with the above mentioned criticisms. First it will look into Yee's (2006a) pioneering work on MMORPGs (2.2.1) and secondly, the social versus game-like debate and its consequences for the player types will be addressed (2.2.2).

2.2.1 Yee's Player Motivations

As stated in the introduction, MUDs are the predecessors of MMORPGs and have a lot in common with them. Yee (2006a) studied the motivation of MMORPG (or MMOG) users. However, Yee's motivational approach is not the same as Bartle's playing styles. A motivation is the reason why someone does something, behaviour is the actual doing it. Bartle's player types is about what players like to *do* in a MUD and Yee's player motivations are *why* someone plays an MMORPG. Nevertheless, Yee used behavioural items in his test (for example: *"I usually don't chat much with group members"* and *"I beg for money and items in the game"* , Yee, 2006, p.46-47) and Bartle's typology also involves some motivational issues since it came from the question: "What do people want out of a MUD" (Bartle, 1996, p.2) focusing upon the reward for people. So, although this distinction exists and needs to be kept in mind, there are several similarities between Yee's five motivational factors and Bartle's four player types.

The five[10] motivations for playing MMORPGs by Yee (2006a) are summed up in table 2.1, displaying the corresponding items loading on these factors. Yee labelled them Relationship, Manipulation, Immersion, Escapism and Achievement. Within these five motivations, at least one does not account for a player type: escapism. How do you act on escapism in the game? Would you flee the virtual world then as well? Of course, this could be a valid motivation for participating, but will not necessarily lead to a specific type of play. The other motivations are more like Bartle's player types, although seen from a different angle (with socialisers being closely related to the relationship motivation, killers being closely related to manipulation motives and achievement being the main motive for

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[10] Yee's five factor model is the best known and therefore the one used in this thesis. Different articles by Yee, however, mention differing numbers of factors. For instance Yee (2004) lists six factors, breaking up relationships in a casual and serious socialiser, and Yee (2006b) reports a ten factor model that can be clustered into three groups: Achievement, Social and Immersion. These differences are probably due to the series of online surveys that Yee conducted.

achievers. The only real distinctions between Bartle and Yee are the explorer player type and the immersion motivation.

Table 2.1: Yee's Player Motivations and related test items (based upon Yee, 2006, p.47-48)

Motivation	Related Test Items
Relationship	- I find myself having meaningful conversations with others. - I have made some good friends in the game. - I talk to my friends in the game about personal issues. - Friends in the game have offered me support when I had a RL[11] problem.
Manipulation	- I like to taunt or annoy other players - I beg for money or items in the game. - I like to dominate other characters/players. - I like to manipulate other people so they do what I want them to. - I scam other people out of their money or equipment.
Immersion	- I like to try out new roles and personalities with my characters. - *People who role-play extensively bother me[12]*. - I like the feeling of being part of a story. - I make up stories and histories for my characters.
Escapism	- I like the escapism aspect of the game. - Playing the game lets me forget some of the real-life problems I have. - Playing the game lets me vent and relieve stress from the day.
Achievement	- It is very important to me to get the best gear available. - I try to optimize my XP[13] gain as much as possible. - I like to feel powerful in the game. - Doing massive amounts of damage is very satisfying.

As mentioned before, one of the criticisms on Bartle is that he does not deal with role-playing. The immersion factor in this motivational model, might indicate that this is indeed a deficit in Bartle's typology. Bartle mentions role-playing somewhat in the socialiser type, but Yee's results seem to indicate a more independent motivation. The fact that people try out new roles and want to feel themselves a part of the story is not addressed by Bartle. Bartle (1996) notes, however, that he favours *"the view that role-playing is merely a strong framework within which the four types of player still operate"* (p.22). With Yee's immersion motivation in mind and the load of encouraged and enforced role-playing MUDs available[14], this study will attempt to see if a separate role-player type can be found or if Bartle's argument holds. This is also closely related to type of MUD and the social versus game-like debate (see below).

On top of this 'new' immersion motivation, the lack of discovering the explorer motivation is also an interesting case, since it is one of the archetypes of Bartle (1996). Several explanations seem plausible. First of all, an earlier analysis (Yee, 2004) lead to the

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[11] RL stands for "real life". Yee (2006a) seems to assume that everyone is familiar with this by putting it in an item.
[12] Negatively correlated to the immersion motivation.
[13] XP stands for "experience", or "experience points". Again Yee (2006a) seems to assume familiarity with the term.
[14] The Mud Connector lists over 300 enforced role-playing MUDs and 650+ encouraged role-playing MUDs. (figures July 2007)

conclusion that the explorer, although several items should have measured him/her, was not important enough on its own account. However, some of the items intended for the explorer did correlate some with achievement. This might indicate that exploring in itself is not a playing style, but rather a means to achievement.

A second explanation for the lack of the explorer might be that the knowledge of game mechanics and workings is only highly interesting to game designers and developers. Only immortals, coders or builders might be interested in game mechanics. In MUDs, it is rather common to advance up to a higher standard. Several MUD administrators and coders have at some time played their own or other MUDs (see also the hierarchical career paths mentioned in the next paragraph). It might well be that the ones that want to design and develop or are interested in workings and game mechanics are the ones that are more likely to advance. For MMOGs this works slightly different, because they are run by companies and have a larger player base. Although there might be some advancement in MMORPGs, they remain a paid service, and the company pays their builders, developers and coders to create content. These people are hired and are not always raised from playing the game itself (next to the fact that there are far more players in the game competing to become content creators). This is exactly the reason why explorers might be found on MUDs, but lack in MMOGs.

Although the above is highly hypothetical, it needs to be taken into account when MUDs are considered. Therefore this thesis uses Bartle's MUD player types as the base rate and Yee's MMORPG motivations as additional information. The exact methodical work-out can be found in chapter three.

2.2.2   The Social Versus Game-Like Debate

According to Bartle (1996), the development of the TinyMUD code, which completely lacked a combat model, lead to a small schism between social MUDs and game-like MUDs. This has, as displayed in the introduction, lead to different names for different kind of MUDs, with the term MUD related to the adventure game types and terms like MOO and MUSH related to socially oriented MUDs. Bartle argues, however, that although the social MUDs might be a different branch of the MUD tree, and a major one too, they are nevertheless part of it anyway (See Keegan, 2003). This thesis already supported using the term MUD as an overarching concept, so in this it agrees with Bartle.

However, Bartle (1996) also argues that the player types are useful for social MUDs and game-like MUDs alike. He focuses on the fact that social MUDs *do* have their killers, although it manifests itself more griefer-like, due to the lack of options to do it in a head-on fight. He mentions several negative occurrences of grief play, famous in MUD research history, like the virtual rape mentioned by Dibbell (1998) and the deliberate, terrorism like,

fracturing of a community by Whitlock (n.d.). Also Bartle mentions that social MUDs have their achievers, for instance people that want to build the 'best' area or want to possess the 'best' rooms on the MUD. This seems a valid point, but the MUD community does not fall for this it seems.

Also game-like is a very broad range and contains two subcategories. Role-playing games are games that are driven by playing a specific role in the game. The players are supposed to stay close to the story of the game and the story behind their online characters. Player-killing games are games that allow the online "killing" of other real life players instead of only killing computer operated monsters in the game. These different games are not as separable as they look in this respect, because MUDs combine different levels of both. A MUD could offer restricted player-killing in an enforced role-playing environment. This could, for instance, involve a player playing a vampire, that can attack other players, but only if he/she is hungry in the game. Other MUDs allow pure player killing and only accept role-playing behaviour if people feel like it. The main goal of the MUD becomes killing others in that respect.

As posed in this way, it is not surprising that this might have an effect on the player types. An achiever on a pure player-killing MUD would be an ideal killer type and achievement within an enforced role-playing MUD would be to stay as close to the character, minimizing out-of-character behaviour. Therefore it will be interesting to see if the player types are related to the different MUD types or if the claim of Bartle holds that the different MUDs will also find their specific player type.

2.3 Alternative Ways of Classifying Player Types and Motivations

Next to Bartle's player types there have been other attempts to categorize players. Two of them (Farmer, 1992 and Hedron, 1998) are hierarchical in nature, describing the development of the player base from newbie to MUD operator. According to Bartle (2003) these views are not the same as his player types, although he proposes a common career path through his player types leading from killer to explorer to achiever to socialiser. The other two are more like a categorization, although Lazzaro (2004) based her model, like Yee (2006a), upon *motivations* for playing, rather than player types. The last categorization by Fullerton et al (2004) is a rather loosely summed up list of player types, but can nevertheless be said to have similarities to Bartle's player types. The two hierarchical are based upon (graphical) MUD players, the latter two are based upon games in a more general way.

2.3.1 Hierarchical Categorizations

Farmer (1992) studied one of the first graphical MUDs, named Habitat. Farmer distinguishes between passives, actives, motivators, caretakers and geek gods, which generally complies with 'growing up' within the game. The passives comprise the newbies who still need to find their way in the game and the passive players, that only log on to see who is online, whether there is news, or to participate shortly in an event before logging off again. According to Farmer, three quarters of the player base easily falls into this category. The active players are naturally more active participants of the game. They will log in, stay for an extensive period of time and immediately start finding the hottest news and things to do. The motivators and caretakers are massively involved in the game and their main drive is to keep the game going, to help other players and intermediate between conflicts. Finally, the geek gods are the designers and implementers of the game.

Another example of a hierarchical categorization of players are the 'circles' of Hedron (player pseudonym, 1998), at that time an active player of Ultima Online, also a graphical MUD. He theorized about a set of concentric circles (survival, competence, beat the game/excel, prove mastery, seek new challenges and everything is one) with players starting out in the outer circles advancing towards the inner circles[15]. At the first stage, survival, players are striving to learn the game and stay alive. When a player gets used to the game, he or she would like to display more competence and the game becomes more fun. When the player has full grasp of the game, beating the game or at least excelling in the game begins to gain importance. Hedron mentions that this stage has a side effect: the rise of cheaters. People do not like to lose and exploit the bugs they come across. As Aarseth (2003) notes, Bartle does not mention cheaters in his typology, although these "lowly creatures", as Aarseth calls them, would probably fall into the explorer category, attempting to find and exploit bugs.

After beating the game, it is time to prove that you master the game fully. This can be done in two ways: Either helping people to become better, or killing everyone that threatens your position. After having proven your mastery of the game, boredom might strike and players try to find new ways of getting fun out of the game. Hedron (1998) mentions seven possible ways, with an additional eighth option for players: finding another game (which is of course the thing that you want to prevent). The final circle is Zen game-play: All is one. This occurs when the players have internalized all options (except number eight) of the fifth circle and turn them into a mix for an interesting game experience.

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[15] This is analogous to the mandala of Buddhism (Bartle, 2003)

2.3.2 Other Classifications

Further playing styles and/or player motivation research that can be mentioned are Lazzaro (2004) and Fullerton et al (2004). Lazzaro (2004) mentions four key reasons for playing games: hard fun, easy fun, altered states and the people factor. Hard fun is the overcoming of obstacles, like solving puzzles or trying to beat meaningful challenges. This motivation for playing has things in common with Bartle's (2003) achiever type. Easy fun is the enjoying of the game experience itself and the admiration of detail and story. This motivation has some things in common with the explorer type of Bartle and even more with the proposed role-player type. The altered states key is about the feeling of the game: to generate emotion by participating. It is about avoiding boredom and feeling better about oneself. Although this is not quite a match, the only one player type of Bartle that would fit this key to some extent is the killer, which kills for the fun of it, for feeling themselves better and to beat their own boredom. The final key is the people factor. A lot of players like the interaction with other players inside and outside the game. This motivation makes even those who do not like the game play, because their friends are there. This has a lot in common with the socialiser player type.

Fullerton, Swain and Hoffman (2004) list at least ten different types of players based upon the film "The Promise of Play" by the Institute for Play and InCA Productions. Several of these player types overlap the types of Bartle (2003). For instance the collector and the achiever match Bartle's achiever and the explorer and parts of the storyteller and craftsman fit Bartle's explorer. Bartle's killer is represented by the competitor and part of the joker and Bartle's socialiser can be found in the performer and the other half of the joker. Only the director can not be reproduced by Bartle's model, although Yee's (2006a) findings find a leadership factor in his initial factor analysis. The proposed role-playing player type can be found in the storyteller and the artist and to some extent in the performer. The craftsman, although having some overlap with the explorer might be found more among social MUDs, based upon building areas and creating objects.

2.3.3 Relevance of Alternative Classifications

The above mentioned categorizations, both hierarchical or descriptive, are about showing that there are different ways of categorizing player types. The categorizations of Fullerton et al. (2004) and the motivations of Lazzaro (2004) show that there are similarities to be found with Bartle's (1996) model. This indicates that in the time passed since Bartle's original work, there have been other attempts at categorization, but it relates much to the original work. Nevertheless, none of the above categorizations have become as popular as Bartle's model. This is exactly the reason for this thesis to take Bartle's typology as a starting point, without omitting the fact that there are other categorizations that should be taken into account.

The hierarchical classifications are relevant in another way. Bartle (2003) proposes a relatively standard career path through the player types (killer -> explorer -> achiever -> socialiser)[16]. The hierarchical classifications do not fully agree with Bartle though. Farmer's (1992) model fits most to Bartle's career path. Passives are the newbies and hardly involved players. Actives are the killers, explorers and achievers. Motivators and caretakers are socialisers. Geek gods fall outside Bartle's model. Hedron's (1998) model has a different path. He also starts out with newbies in the survival and competence circles (in which competence could have a bit of explorer inside). Then they advance to beating the game. Comparing this to Bartle this would be the achiever. Proving mastery could be done in two ways according to Hedron: either helping other players (this should be a more socialiser approach) or killing every threat (as a killer would). After this stage a time of exploration starts and all kinds of possible ways to have fun in the game will be attempted. This is the exact explorer as Bartle sees it, therefore Bartle's career path should be different: achiever -> socialiser or killer -> explorer. To check for at least some development in the game the years that someone plays a MUD will be taken into account.

2.4 The Big Five / Offline Character Traits

All the above mentioned player types and motivations are mainly based upon the *online* behaviour of players. For *offline* description of personality we have the theory of the Big Five. The Big Five has become a well-known model of classifying personality traits. It would be interesting to see if the different online playing styles can be explained by the offline personality traits covered by the five factors of the Big Five even when controlled for standard social demographics like sex and age and MUD type and player characteristics, like time spent online and years playing. This paragraph will give a short introduction to the theory behind the Big Five in general and will then briefly discuss the five separate factors.

The Big Five has not always been the main model for classification of personality traits. For instance Eysenck (1952;1967;1991 as mentioned in McAdams, 1995) has kept up with a three-factor model and the Myers-Briggs Type Indicator (MBTI), a personality model designed in the 1940's and based upon the personality theory of Jung (Howard & Howard, 1995), has been a popular instrument during the 1970's. The test itself is often used in career planning and management training. The Big Five model is not a radical shift from the Myers-Briggs type Indicator, but can be said to have evolved from it. (Howard & Howard, 1995)

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[16] Bartle does not include newbies in his proposed career path. Newbies should first learn the game somewhat and only then they will start falling into one of the four player types.

The Big Five emerged during the 1980's, when the heavy preliminary work of Allport and Odbert (1936 as mentioned in McAdams, 1995) finally got recognized for its value. Allport and his colleagues used a 'lexical approach' and catalogued almost 18,000 terms from a 550,000 word dictionary that referred to psychological traits and evaluations. Catell (1943 as mentioned in Goldberg 1990) started to construct 171, mostly bipolar, scales, using the terms of Allport. By letting people use the scales to describe others, he reduced the number of terms to about 35 bipolar clusters. Several subsequent research and replications by various researchers (See for example Goldberg, 1990, or McAdams, 1995 for an overview of names) revealed that only five factors could be replicated over all.

During the behaviourist days in the 1960's and 1970's the Big Five never found true acceptance, because the behaviourists' focus was on stimulus and response instead of traits. With the rise of cognitive science at the start of the 1980's that view dwindled and traits came back to the fore. During the 1980's and 1990's, there was extensive research on the five factor model, amongst them Goldberg (1990) and Costa and McCrae (1992 as mentioned in Howard & Howard, 1995). The five factors were also found in different languages thereafter (for example in Dutch, German and even Chinese and Japanese language, all mentioned in McAdams, 1995), giving strength to the lexical trait taxonomy.

All five factors can be seen as clusters of trait descriptions, like five buckets filled with corresponding descriptive words and terms. Although the five factors themselves have been assigned different names, indicating disagreement over the meaning of certain factors, the overall picture (or the content of the buckets so to speak) is nevertheless surprisingly the same. Because this research will use the mini-marker test of Saucier (1994), this thesis will use his assigned names of the Big Five factors, which are heavily based upon Goldberg's (1990) labels. I: Extraversion (2.4.1), II: Agreeableness (2.4.2), III: Conscientiousness (2.4.3), IV: Emotional Stability (2.4.4) and V: Intellect, Openness, or Imagination (2.4.5). All five will be discussed shortly in the remainder of the paragraph along with possible links with the player types.

2.4.1 Extraversion

The extraversion factor, sometimes called surgency, encompasses items like spirit, expressiveness and spontaneity (Goldberg, 1990). Extraversion is seen as one end of the spectrum of this factor with 'introversion' on the opposite side. Items related to introversion are for example aloofness, silence and shyness. (Goldberg, 1990). People scoring high on extraversion talk more often and sooner, and tend to make more eye-contact with other people than introverts. People scoring low on extraversion (introverts) on the other hand are more solitary and are more attracted to artists, mathematicians and engineers (McAdams, 1995).

McAdams (1995) reports several studies that indicate important and interesting conclusions about the extraversion factor. First of all, it is relatively stable. Conley (1985b: in McAdams, 1995) came to this conclusion after a fifty year longitudinal study, which showed extreme consistency in extraversion. Secondary, extraverts report more positive feelings. This does not mean that they report less negative feelings, however. Part of this might be explained by the fact that extraverts respond less to punishments than introverts. A study by Pearce-McCall and Newman (1986: in McAdams, 1995) revealed that extraverts even seem to taunt the punishment by continuing in a more risky way after experiencing punishment. The third conclusion about the extraversion factor is that extraverts seem to have a lower state of arousal given standard conditions, which lead Eysenck (1967: in McAdams, 1995) to believe that extraversion/introversion is rooted in human nature. Both extraverts and introverts strive for an optimal amount of arousal, but due to a higher arousal standard in introverts, they are unable to tolerate the same increase in arousal that extraverts can. This might also explain why introverts will try to avoid stimulating environments and extraverts on the contrary tend to seek them out.

It might well be that extraverts tend towards the player side of Bartle's interest graph, because they are good in the interaction between human beings, and introverts towards the world side, since they are more solitary and calculating. Extraverts might risk themselves after a nasty experience (showing killer behaviour), and introverts might minimize their additional arousal, by avoiding humans and start out to explore the world, on their own pace (showing explorer behaviour).

2.4.2 Agreeableness

The agreeableness factor harbours items like cooperation, amiability and empathy, opposing the other end of the factor with items as overcriticalness, bossiness and rudeness (Goldberg, 1990). According to Howard and Howard (1995) people that score high on agreeableness (adapters) are people that *"will march to the drumbeat of many different drummers, while low agreeableness persons march only to their own drumbeat"* (p.5). McAdams (1995) notes a low agreeableness (challenger) is the worst thing that can happen to you by words: they are malicious and untrustworthy and do not regard for the feelings of other people. Along with conscientiousness, there has been less research on this factor than on the other three. Overall, this factor seems to be linked to the need for affiliation and need for nurturance scales (McAdams, 1995) and is generally matched with love.

Agreeableness, along with extraversion, seems to relate to the player versus world axis of Bartle's model with the adapters at the player end and the challengers on the world end. Looking more closely, the action-interaction axis might be a better predictor with killers

and achievers being less agreeable and socialisers and role-players/explorers as more agreeable (towards the players or the world respectively).

2.4.3 Conscientiousness

The conscientious factor is positively linked with items like organization, efficiency and precision, while negative terms associated with conscientiousness are disorganization, inconsistently and forgetfulness (Goldberg, 1990). People scoring high on conscientiousness are labelled focussed and those scoring low flexible (Howard & Howard, 1995). While these terms both seem at least to some extent positive, the negative traits associated with flexible terms them highly unreliable people. Focussed persons are goal-oriented and work towards concise overviews and never loose the overall picture. So this makes them reliable. As mentioned at the agreeableness factor, there has also been less empirical research on this factor (McAdams, 1995), but it is often matched with work or work-related issues.

Combining this factor with the player types of Bartle, every style of play seems to work to some related goal: socialisers want many relations, explorers/role-players like to submit to or interact with the world, achievers want to become the best and killers want to create havoc and mayhem. Although all types have their subsequent goals, the one most related to the game itself will be the achiever, which makes achievers a possible match to the conscientious factor, although role-players in an enforced role-playing environment or killers on a pure player-killing MUD could be seen as such as well.

2.4.4 Emotional Stability

This factor has often been called neuroticism or negative emotionality, although that is inconsistent with the other factors, placing the emphasis on the negative part of the factor. This might well be because Goldberg's (1990) factor analysis (although he labels this factor positively as emotional stability) only shows two positive items: placidity and independence. Some of the negative items related to this factor are insecurity, instability and emotionality (Goldberg, 1990). The labels put to people scoring high or low on emotional stability are resilient and reactive, with resilient people being more rational about the world around them, sometimes even impervious[17], and reactive people being more unhappy with their life and experiencing more negative emotions than most people (Howard & Howard, 1995).

Part of the conclusions on extraversion can be found as well in the emotional stability factor (McAdams, 1995). Emotional stability is also stable over time, which was concluded in the same fifty year longitudinal study (Conley, 1985: in McAdams, 1995). Also people that report a low emotional stability report a higher amount of negative feelings, which again does

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[17] Howard and Howard (1995) supply a nice anecdote about a non-reactionist response: Their choir director *"did not miss a beat during a dress rehearsal when the podium on which he was standing collapsed forward. He just placed his feet at angles like a snow plow and kept his baton moving"* (p.4), while all instrumentalists and singers laughed their head off.

not indicate that these people report less positive feelings. So while extraverts experience more positive feelings while there seems no effect on negative feelings, it is the opposite for reactives. Eysenck (1967: in McAdams, 1995) also theorized that emotional stability has to do with human nature, but although there is some support (For instance Davidson & Tomarken, 1989: in McAdams, 1995), the research is not consistent on the findings.

Emotional Instability is linked with a lot of negative and bad feelings. Research by Bolger and Schilling (1991: in McAdams, 1995) provides some insight in the reasons. First of all people with a low emotional stability reported more daily stressors. This was not due to oversensitivity for negative affects, because their spouses supported the accuracy of the reports. Low scores on stability seem to expose individuals to more stressful events. A second conclusion was that emotionally unstable persons not only reported more stressors, but that they also reacted more strongly upon them. Bolger and Schilling argue that this is due to ineffective coping strategies: highly neurotic people are less able to take the matter into their own hand and fall victim to their anxiety and depression. The last conclusion was that the negative feelings of emotionally unstable persons can not be explained away by their daily experiences. Overall it can be said that even when the day does not bring bad experiences, neuroticism provides bad feelings.

Relating the above factor to the player types, there seems hardly any overlap on any of the player styles. The only qualifiers might be the victims of killers, which could be any type of player. On the whole, negative experiences will occur though (see for instance the part about what constitutes fun for players, mentioned in the introduction) and it will probably depend on the player him- or herself whether they can cope with them, rather than their playing style.

2.4.5 Intellect, Openness, or Imagination

This factor has been named differently by many. Openness to experience is probably the most widely known. Goldberg (1990) calls this factor intellect and contains positive terms like intellectuality, insight and intelligence. On the opposite side are terms like shallowness, unimaginativeness and stupidity. Intellect, as Goldberg names the factor, does not reveal the total scope of the factor though. Creativity and inventiveness are also part of this. Openness to experience seems a little better, but leaves out the most of the intellectual part. It is therefore for the best, that Saucier (1994) in his mini-marker test uses the above name: intellect, openness, or imagination, which covers the range more fully.

Howard & Howard (1995) call people that score high on this factor, explorers. They tend to find out new things and have many interests. McAdams (1995) complements this view with the subsequent term of absorption which has been positively related to parapsychological phenomena and dreams. People scoring low on intellect, openness, or

imagination, called preservers (Howard & Howard, 1995), have narrower interests and more conventional views. Put simply, people that score low on this factor are more worldly and traditional than people that score higher.

Putting this in relation to MUDs and the player types by Bartle, it must be noted that this seems a highly relevant factor. Because of the text-based nature of MUDs fantasy and imagination are needed to see through the text. Also an open mind, being able to distinguish that mere text can provide a worthwhile gaming experience, seems mandatory. It would therefore probably be no surprise if most players score on the positive side of this trait to begin with. Nevertheless, this factor will probably link more to the world side of Bartle's model and still even more with the action/interaction axis: so the explorer and/or role-player. As McAdams (1995, p.288) puts it: *"absorption is associated with an intense and vivid fantasy live. Persons who score high on absorption may become so immersed in their imaginative experiences that they lose all track of time, place and identity"*. This links closely to immersion in the game environment.

2.5 Conceptual Model and Expectations

Now that all theory and criticism has been laid out, it is time to set up a conceptual model. Before we do so, a small summary will be provided (2.5.1). Due to the exploratory nature of this study it is hard to formulate specific hypotheses. Therefore this thesis will suffice with a few formulated expectations along with the conceptual model at the end of this paragraph (2.5.2). Chapter five will link back to this model and to the research question posed in the introduction.

2.5.1   Summary of the Theory

This chapter started with describing Bartle's (1996;2003) typology and proposed to use it as a basis for further research, because it is so well-known, but hardly empirically tested. Bartle states that there are four player types: the achiever, the explorer, the socialiser and the killer. Every MUD player has something of all four, but one will be dominant, according to Bartle. The Bartle test took this typology for granted and built a reliable but rather invalid measurement tool for it. Yee (2006a) criticised Bartle's typology, mainly because it was not empirically tested. Yee tried to find motivations for playing and found three motives highly similar to Bartle's socialiser, achiever and killer. On top of those he found the immersion and escapism motives. However, Yee was unable to find Bartle's explorer in his work. The only trace of it was a low reliability explorer scale that was correlated with achieving, but not near any significance to be called a single motivation. The other player types mentioned in

paragraph 2.3 did not add much with Lazzaro (2004) naming four motives, pretty congruent to Bartle and Yee and Fullerton et al (2004) just mentioning possible types that again have a lot in common with the types mentioned by Bartle and Yee. The hierarchical classifications, although they seem rather irrelevant for the purposes of this thesis, could provide interesting findings if combined with Bartle's proposed 'career path'.

With so many overlap between the player styles and motivations, this research will look for the four original types proposed by Bartle. Only one additional player type based upon Yee's immersion motivation (see paragraph 2.2.1), which differs greatly from the concept of the socialiser as Bartle proposed, will be added to see if this holds. Combining the immersion factor with Bartle's four quadrant model, it might be interesting to see if the role-player fits the spot of the explorer if the explorer does not show up, since role-playing involves interaction with the story/world. Although this might be interesting to look at later the main goal will be to try to reproduce these five player types: achiever, explorer, role-player, socialiser and killer/griefer.

After the player types, the theory started looking into the offline personality traits of the Big Five. The Big Five factors (extraversion, agreeableness, conscientiousness, emotional stability and intellect, openness, or imagination) were shortly described and a possible link between the factors and the player types of Bartle was suggested. After determining if and which player types can be abstracted from the data, it will be interesting to see if those player types are linked to offline personality. The Big Five will, next to more standard variables like demographics and MUD and player characteristics, be used to draw conclusions about the player types. If the player types can be reproduced, there might be interesting links between online and offline. It would be useful to see if the offline personality can be used to predict online behaviour.

2.5.2   The Conceptual Model and Expectations

Now that the theory has been presented, the time has come to set up the conceptual model for this thesis. Of course, the MUD playing style is the dependent variable. The thesis expects to find the four player types of Bartle and an additional role-playing player type. These can be subtracted by clustering a number of statements about behaviour and experience of the MUD. The precise method can be found in chapter three. The resulting rough conceptual model is displayed in figure 2.3. The most important independent variable is the offline personality measured with the Big Five factors. Next to the influence of personality, other factors will probably explain the differences between player types. The most important of those are the MUD characteristics (what kind of MUD the people play) and player characteristics (like differences in time spent on the MUD and years of experience playing MUDs). Social MUDs require another playing style than a player-killing MUD for

instance. And a MUD set up for educational purposes will probably attract a very different player base. Also people that have played for an extensive amount of years will develop another view on a MUD than players who have just started to discover MUDs and players that play multiple MUDs might have a different playing style on either one. Of course, next to the above explaining variables, part will probably be explained by more standard independent demographic variables like sex, age, education and marital status.

Figure 2.3: Rough conceptual model
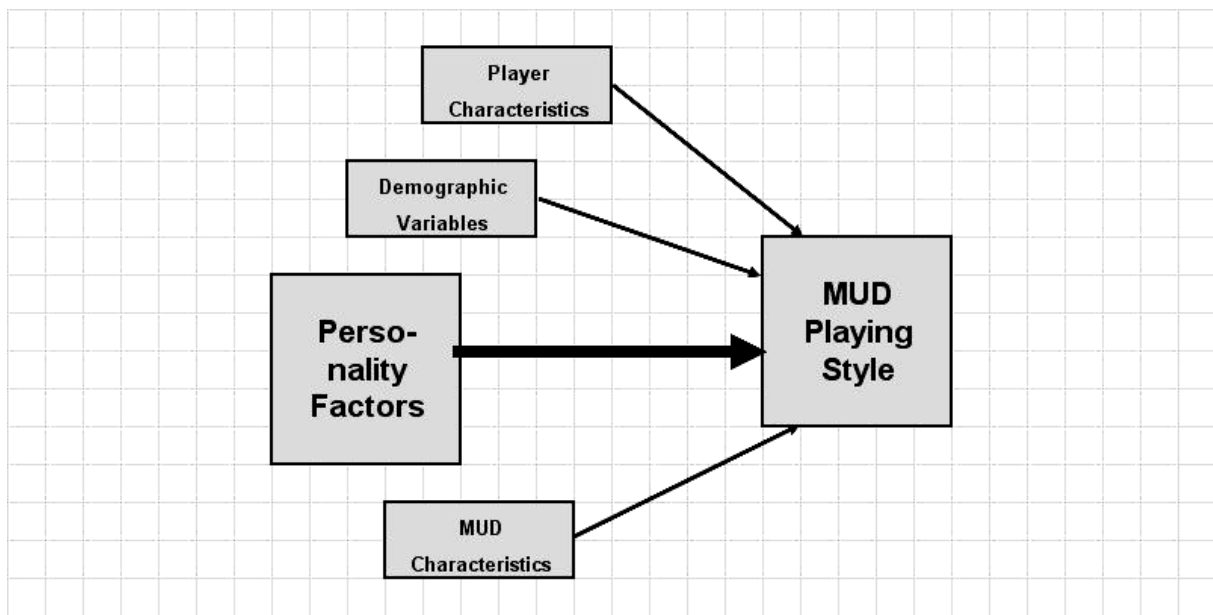
As mentioned before, it is hard to pose specific and very clear hypotheses in this exploratory research. Nevertheless there are a few expectations that can be mentioned beforehand. Of course it is expected to be able to find at least some of the mentioned player types. The achiever, the socialiser and the killer/griefer show to be remarkably stable over the categorizations. The explorer and the role-player are also expected to be found, although they might differ a bit from Bartle's explorer or Yee's immersion motivation. Next to this, it is expected that the independent variables of MUD and player characteristics together with demographic variables will explain at least a substantial part of the difference in playing style. The link between offline personality and online player type distinction is expected to explain an additional part of the differences in playing style.

3. Research Method

The player types were never studied thoroughly and are hardly grounded in empirical data. To enable a firm empirical analysis it was necessary to get as many respondents as possible. Also it was deemed better to try to reproduce the player types first than to attempt to colour the picture based upon the current player types. A qualitative approach would not be sufficient because of its limitations for sample size and the extensive data that would have to be analysed in the given time frame. A quantitative approach would be much more convenient, as well for the possible number of MUDs and different players that could be studied as well as for the ease of analysing. Furthermore, it could allow the number of respondents for a principal component analysis, much like the method Yee used to find his player motivations.

Therefore this thesis chose to use an online survey as the quantitative research method. Several reasons can be mentioned for making it an online survey. The first and most important one is the fact that the targeted research subjects are people playing an online game. Internet access would be no problem, because people need to have it anyway in order to be able to play a MUD. Secondly, it is supposed to be a global study and sending letters all over the world would not only be very expensive, but there were no specific home addresses available as well. Additional reasons were the ease of and small amount of time needed for filling it out and the possibility of a large number of respondents.

3.1 Making the Variables Operational in the Survey

The survey was hosted on a private server, enabling a full control of the layout and coding of the variables. A dark-blue frame on a black background was used with white letters. The front page displayed the logo of Tilburg University and a short introduction to the survey. In total the survey itself existed of ten pages, four with questions about general information (part A, 3.1.1), three with the items for playing style (part B, 3.1.2) and another three for the Big

Five items (part C, 3.1.3). After filling out the last page with Big Five factors, people had the opportunity to submit their email-address to receive a copy or a summary of the research and/or if they wanted a chance on a gift certificate of $15 for www.amazon.com. Three lots were drawn from all the respondents that had answered the survey seriously and fully and indicated to be interested in the gift certificate reward. The overall time associated with the survey was about ten minutes and a counter at the top of the page showed how many pages were still to come to let the participants know their progress. Nevertheless, several respondents did not finish the complete survey. If there was enough information submitted, the respondent was kept inside the sample and the rest was labelled as missing values. Appendix A shows the complete survey as it was hosted on the server, complete with the introductory text and thank-you-pages.

3.1.1 Part A: General Information

The first part of the survey, about general information, consisted of fifteen questions, spread out over four pages. The first two pages contained questions about demographic variables. The first contained four questions: gender (closed: male/female), age in years (open: max 3 digits), country of origin (closed: drop-down-menu with 255 different countries) and occupational status (closed: full-time/part-time/student/homemaker/unemployed/retired). Both gender and occupational status had HTML coded radio buttons that allowed only one answer and the drop-down-menu of country of origin could only select one of options (the default option was: "Please select your country"). The second page contained three questions: education (closed: primary/secondary/higher/none of the above), marital status (closed: single/married/divorced) and if the respondent had children (closed: no/yes). All three questions were with HTML coded radio buttons, allowing only one answer. Due to the difficulty of education in a global survey it was kept simple by only dividing it in three options and a none option. Higher education also contained university. The marital status had a specific divorced option, although such a person would also be single. The answer options also listed 'not living together' and 'living together' behind single and married to cover all possibilities.

The third page was mainly about player characteristics and contained four questions: how many hours a week the respondent played (open: max 3 digits), if the respondent played multiple MUDs (closed: no/yes), for how many years the respondent had played MUDs (open: max 2 digits) and what the usual business was on the MUD (closed, more options possible: player/builder/wizard/administrator/coder). The multiple MUDs question had radio buttons of which only one could be selected and the usual business question had five checkboxes which allowed multiple answers. The answer options for the usual business on

MUDs was taken from the MUD players directory signup (http://www.mudconnect.com/mpd/), although the order was altered.

The fourth page also contained four questions, but those were about MUD characteristics: The full name of the respondent's main MUD (open: max 60 characters), if the respondent's main MUD offered role-playing (closed: no RP/accepted RP/encouraged RP/enforced RP), if the respondent's main MUD offered player-killing (closed: no PK/restricted PK/plenty PK/pure PK) and if the respondent's main MUD was educational or research-oriented (closed: no/yes). The last three had radio buttons as answer options to allow only one answer. The main MUD was necessary to be able to evaluate if the sample contained players of different MUDs or if they came from one MUD in particular. The three questions about the kind of MUD needed to be posed apart from each other, because MUDs combine different levels of PK and RP.

The different levels of RP and PK were taken from the MUD connector (www.mudconnect.com) that rates all their MUDs on these PK and RP levels. A MUD with restricted player-killing is allowing PK only in specific instances, for instance in specific events or only if both players choose to be player killers. Plenty of PK and pure PK MUDs are MUDs that do not put a lot of restrictions on the player killing and player killing might always be a threat to any player. For role-playing, accepted role-playing MUDs are MUDs that put the stress on freedom to express role-playing behaviour if people like that. Encouraged and enforced role-playing MUDs put more focus on the story and role-playing components, with often rewards for staying in character and punishments for out-of-character actions. Next to a rating on player-killing and role-playing the MUD connector also mentions if a MUD is educational or research oriented. A lot of these latter MUDs are social in nature, for instance teaching how to code or how to build areas for MUDs.

The above questions all served as background information and were intended to measure the smaller squares of the conceptual model. Most of the questions did what they intended, only the specific MUD characteristic questions about role-playing, player-killing and educational MUDs gave very different answers per MUD. The same MUD, for example, was rated as enforced role-playing and the opposite of no role-playing by different respondents. Probably this was due to the experience of players. This information might be valuable, but did not serve the purpose of the study. Therefore, to create a reliable measure per MUD for these characteristics, the submitted MUD names were matched with the entries that exist for all the different MUDs on www.mudconnect.com and www.mudmagic.com. These entries are submitted by the MUD administrators themselves and therefore closely match the administrator's view of the MUD. With this method it was also determined if a MUD was socially oriented or not. With the general information settled the two biggest parts of the conceptual model needed to be measured.

3.1.2 Part B: Playing Style

The second part of the survey was dedicated to measuring the different playing styles. Thirty-six items were created to measure the behaviour in the game. These were clustered beforehand to allow for a guided search. Appendix B holds all the initial items clustered per category. The categories were based on Bartle's constructs of the four player types and Yee's immersion (role-playing) motivation. Since Yee had already managed to reproduce the achiever, socialiser and killer/griefer, only six items were created for those playing style, trying to match the full range of the construct. The explorer type could not be found specifically by Yee, so therefore nine items were created to see if it would show up. The same accounts for the immersion motivation or role-player type. Also nine items were created, because Bartle did not cover it in his typology.

The second part was divided into three pages, with twelve items on each. The items were randomized in the survey, so as not to cluster the corresponding items together. Also the items were already randomly posed in negative and positive formulation as to control for "mindless checking". All items were measured on a five-point Likert scale, ranging from strongly disagree to strongly agree, created with HTML coded radio buttons.

The items were intended to be as general as possible to allow for a broad response range. Nevertheless, several administrators criticised the items by replying the initial request email[18]. Some respondents implied that the items were too much specific for game-like MUDs. This might have been the case in the opinion of some MUD administrators, because much was drawn from Bartle's initial player types descriptions. Indeed some MUDs do not have levels or mobs and such. As one administrator posed:

> *"Your questions would not likely be appropriate on a game such as HDR, where there are no levels, no mobs, and no other MUD-style "hack-n-slash" elements. We are a role-play-only game, and the only resemblance we bear to a MUD is that both are text-based game interfaces"* (reply by an administrator of Heroes Dreams: Rebirth MUX)

Although this reply might be valid in the case of this particular MUD, there were role-playing items in the survey and those might have been related to this particular MUD. Part of these problems relate to multi-stage sampling, which will be dealt with in paragraph 3.2 about the sampling method.

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[18] Of course these replies were again answered by the author to urge them to reconsider and participate to enable drawing valid conclusions about it, whether Bartle sees it wrongly or not.

3.1.3 Part C: Describe Yourself

The final part was intended to measure the Big Five characteristics. Since the standard test, developed by Goldberg (1990), contains a hundred items, it was deemed to be far too big to add to this online survey. Part of the reasoning behind an online survey was the small amount of time that the respondents would need to fill it out. Therefore a smaller test was used: the mini-marker test of Saucier (1994). This forty item test proved to be a robust and reliable version of Goldberg's test and minimizes the use of difficult words (like imperturbable) and negation words (like uncharitable). The full range of items can be found in table 3.1.

Following the format provided in Saucier's article the items were ordered in alphabetical order and rated on a nine-point Likert sale ranging from extremely inaccurate to extremely accurate. This was also done with HTML coded radio buttons, like the items for playing styles. Three pages were used for the forty items, twelve on the first, together with a small introduction, and fourteen on the second and third pages.

Table 3.1: The Big Five Factors and associated items taken from Saucier (1994).

Big Five Factor	Positive Items	Negative Items
Extraversion	Talkative, Extraverted, Bold, Energetic	Quiet, Bashful, Withdrawn
Agreeableness	Sympathetic, Warm, Kind, Cooperative	Cold, Unsympathetic, Rude, Harsh
Conscientiousness	Organized, Efficient, Systematic, Practical	Disorganized, Sloppy, Inefficient, Careless
Emotional Stability	Unenvious, Relaxed	Moody, Jealous, Temperamental, Envious, Touchy, Fretful
Intellect, Openness, or Imagination	Creative, Imaginative, Philosophical, Intellectual, Complex, Deep	Uncreative, Unintellectual

3.2 The Sampling Method

With the survey being finished, respondents were needed to gather the data. Unfortunately players do not present themselves directly. In an attempt to reach players directly there were forum messages posted at the forums of www.mudconnect.com and www.mudmagic.com. Both websites are related to MUDs, contain MUD listings, host forums and provide other resources and information for MUD players. Next to this direct attempt to reach the players, a more bold way of attracting players to the MUD survey was used. All MUDs listed on www.mudconnect.com also provide the email-address of the administrators. All the administrators of MUDs listed in the database were sent a one-time only request email,

asking for their cooperation in spreading the message about the survey on their own MUD. Over 1600 emails were sent separately, correcting for double email-addresses as much as possible[19]. In a way this was a multi-level model of sampling.

This multi-level sampling provides its own problems. The main ones being non-response and "selection at the gate". The first problem was that almost a quarter of the sent emails were returned because the email-address (or MUD) did not exist any longer. A few did reply, but mentioned that the MUD that was targeted had died years ago. Selection at the gate was even worse, leading to a different kind of non-response. Some of the administrators replied with positive messages but a greater part of them did not think that their MUD should be in the sample. Mentioning Bartle in the introduction might have been a bad idea, because administrators often replied that they were familiar with Bartle's typology and that it did not suit their MUD. This is probably due to the social versus game-like debate. Of course all administrators that replied in this way were urged to still put it through to their player base, since it would allow statistical control over those types of MUD. The earlier mentioned email in 3.1.2 about the playing style items not being valid for that particular MUD is one example of selection at the gate. A reply from another MUD administrator indicates clearly the problems that some people see in the usage of Bartle's terminology:

> "I don't think this stuff really applies to a MUSH. I've read Richard Bartles stuff about MUD playing styles and half of them just don't really apply. Anybody who plays long term on a MUSH is going to be a socialiser in his terminology, the other ones usually simply aren't applicable" (email by an administrator of the Greatest Generation).

Next to the self-selection nature of administrators, the way that they communicate it to their players could also influence the results. Some administrators were very eager to put it through to their player base, but others just posted a note in the MUD or forum post on their website and left it at that. Therefore it is hard to determine if the sampled MUDs and MUD players are representative of all MUDs and MUD players. To prevent this as well as possible *every* MUD entry on www.mudconnect.com was emailed, ensuring that at least every MUD administrator listed got the email.

The above mentioned steps (posting on the forums and emailing all administrators listed) lead already to an overwhelming amount of over 1800 respondents. Because time grew short, both due to the amount of time needed to put it all in the statistical programme SPSS and the time left in which to analyse the results, there was no follow-up email or forum post.

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[19] There were 1673 MUDs listed during the sampling phase (April/May 2007). At the moment, however, maybe due to the author's mention to the MUD connector about the load of experienced returned "unable to deliver" emails, there are only 1515 MUDs listed. (figures August 2, 2007)

4. Results and Discussion

This chapter will present the results of the MUD player types survey. An overwhelming amount of 1824 surveys were returned. 1741 remained after removal of cases that were not filled out seriously or listed graphical MUDs as their main MUD and after recoding of missing values like an age of one, or a systematic entry of all fives on the nine-point scale for the Big Five. These 1741 cases will be used for the following results. Paragraph 4.1 will deal with the demographics submitted by the respondents, paragraph 4.2 will deal with playing styles and paragraph 4.3 will link the playing styles to the offline characteristics of the Big Five before chapter five will see a conclusion and a revisiting of the research question.

A note of caution need to be mentioned before the real results are discussed. As mentioned in chapter three the main part of the sampling had a multi-level problem. This could be influencing the data, because it is impossible to see if the players of different MUDs that responded are a good sample of all MUDs and their players. An advantage in this respect is the amount of respondents though, because it allows averages over a lot of cases and therefore the means should be closer to the original mean of the population and less susceptible to making a type I error (rejecting a hypothesis when it is actually true). Nevertheless these multi-stage problems should be kept in mind throughout the complete chapter.

4.1 Descriptive measures of the complete sample

Almost a quarter (24.1%, N=1733) of the sample is female. The average age is 28.48 (N=1729, SD=8.62) with a range from 13 to 67. Women playing MUDs (M=31.23, SD=10.11, N=417) are significantly (t=-6.692, p<0.001) older than the men that play MUDs (M=27.61, SD=7.89, N=1310). Nearly forty percent (39.4%, N=1735) indicates to be married or cohabitating and almost twenty three percent (22.8%, N=1736) indicates to have children. Given the average age of over twenty eight, this is hardly surprising. Over seventy percent

(71.0%, N=1736) is working on or has finished a higher education. Nearly twenty four percent (23.7%) lists a secondary education as their highest completed or current education.

People have been participating on MUDs for an average of 8.97 years (N=1726 SD=3.92) with a range of 0 (probably due to playing less than a year) to 30. Also the age that people started playing (age - years playing) varies widely with a range of 8 to 58 and an average age of 19.52 (N=1715, SD=8.02). Almost everyone (94.4%, N=1738) indicates to be a player occasionally, but almost a third of the sample (31.9%, N=1738) indicates to be more active on a MUD than being a mere player, for instance as a builder or coder. Mere players spent a significant (t=-3.193, p=.001) amount of years less (M=8.76, SD=3.94, N=1176) on MUDs than more active players (M=9.41, SD=3.86, N=549). There is no significant (t=1.566, p=.118) gender difference between mere players and more active players, but more active players spent a barely significant (t=-2,078, p=.038) amount of hours more on MUDs (M=20.24, SD=17.30, N=540) than do mere players (M=18..67, SD=14.28, N=1170).

People, on average, spend an awful lot of hours on their MUD(s): Over nineteen hours a week (M=19.23, SD= 15.32, N=1710). Moreover, almost fifteen percent (14.8%) report playing more than thirty hours a week with values as high as ninety and hundred hours a week. Women significantly (t= -3.833, p<.001) spend more hours on MUDs (M=21,73, SD=15.31, N=415) than men (M=18.43, SD=15.25, N=1288). Almost seventy two percent (71.8%, N=1736) are loyal players to one MUD only, but respondents indicating playing multiple MUDs (M=22.55, SD=16.74, N=485) spend significantly (t=-5.340, p<.001) more hours in the game than respondents that indicate to play one MUD only (M=17.93, SD=14.52, N=1223). More than half of the players (56.5%, N=1735) mention being employed full-time and over a quarter of the sample (26.1%) indicate to be in full-time education. When occupational status is taken into account, the time spent in the game increases when players have less time-consuming responsibilities (F=15.900, p<.001) It seems that the more free time available at home, the more time is spent on playing MUDs. Table 4.1 gives the mean amount of hours spent on the game, split out by occupational status.

Table 4.1: Average amount of hours spent on a MUD divided for occupational status

Occupational Status	N	%	Average Playing Time
I work full-time	980	56.5	17 hours and 31 minutes
I am a student	453	26.1	18 hours and 46 minutes
I work part-time	144	8.3	22 hours and 22 minutes
I am retired	16	0.9	25 hours and 11 minutes
I am a homemaker[20]	70	4.0	27 hours and 16 minutes
I am unemployed	72	4.1	30 hours and 20 minutes

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[20] The question in the survey about occupational status did not use "I am a homemaker", but *"I am taking care of my family and/or home."*

The respondents listed an overwhelming amount of 244 different MUDs, although seventy six percent of the respondents come from only twenty MUDs. The rest was mentioned by less than ten respondents. This is probably an effect of the multi-level problem. Some administrators were very enthusiastic about the study and managed to motivate their player base, others did not participate and some MUDs just do not have a large player base. The ten most mentioned MUDs are listed in table 4.2. with the associated number of cases, percentage of the total, and along with their associated properties on role-playing and player-killing. This top ten, given the multi-level sampling, show some similarities to the MUD connector entries about the player base. The first four in this list indicate a player base of more than 100 at any given time (figures August 2, 2007)[21].

Table 4.2: Top ten of most mentioned MUDs in the sample, with their associated properties.

Name of the MUD	N	%	Role-Playing	Player-Killing
Gemstone IV	423	24.2	encouraged	Yes
DragonRealms	289	16.5	encouraged	Yes
BatMUD	149	8.5	accepted	Restricted
Discworld	112	6.4	accepted	Restricted
Dark and Shattered Lands	57	3.3	enforced	Yes
Armageddon	46	2.6	enforced	Yes
Arctic	31	1.8	accepted	Yes
TorilMUD, the Sojourner's Home	30	1.7	encouraged	No
Solace	20	1.1	encouraged	Yes
Ironclaw Online	17	1.0	enforced	Restricted

To be able to classify the mentioned MUDs, the survey asked for a rating on role-playing, player-killing and whether the MUD was educational. As mentioned in chapter three, these figures turned out to be highly unreliable to classify the different MUDs on these qualities and seem to indicate that these qualities are highly susceptible to the experience of the player. Therefore the mentioned MUDs were matched with their listed properties on the MUD connector (www.mudconnect.com). Of these 244 MUDs only seven classify themselves as educational, and ten could be classified as a social MUD by their theme. This is probably due to the non-response as mentioned in the sampling method in chapter three. So unfortunately, these only account for 1.5% (N=1698) of the respondents and it will therefore be hard to control for those during the player types results (paragraph 4.2). 161 of the 244 MUDs (66.0%) are listed as an encouraged or enforced role-playing MUD and cover 73.6% (N=1698) of the respondents. 89 out of 244 MUDs (36.5%) classify themselves as unrestricted or pure player-killing MUD, accounting for 62.3% (N=1698) of the respondents.

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[21] The fifth (Dark and Shattered Lands) had no entry on their minimum number of players online at all times, but they are the number one in player votes on the MUD connector at the time of writing (figures august 2, 2007).

Of the 244 MUDs mentioned, there are 178 MUDs (73.0%) that have their geographical location in the United States. Therefore it is not really surprising that the majority of the respondents comes from the United States (71.2%, N=1741). Second in number of respondents is Finland (geographical home of BatMUD) with 5.9 percent (N=103). The respondents come from 49 countries in total and those are closely related to the number of MUDs that have their geographical location there. A summary of the findings can be found in table 4.3.

Table 4.3 shows the top nine of the mentioned countries in the survey together with their associated number and percentage of respondents. Also in the table are the number and percentage of MUDs that have their geographical location in that country. These two numbers show a rather similar picture. There are only three countries that seem to diffuse the ranks and those are Finland (due to the large amount of Finnish players of BatMUD, which has its geographical location there), Australia, which has only one MUD listed but seems to have a very 'scattered' player community and Germany, which has five MUDs listed, but just some players, which might be a language issue, although this remains to be seen. In correspondence to this, there are several Russian MUDs listed on the MUD connector (www.mudconnect.com) that indicate Russian as the main language. The relation between geographical home of the MUD and the nationality of the players is an interesting topic, moreover because the internet should cross geographical borders and therefore this might be a nice indication for further research. For this research it is rather irrelevant.

Table 4.3: Division of respondents per country (N=1741) and MUDs per country (N=244)

Rank	Country	# of resp.	%	# of MUDs	%	(Rank)
1	**United States**	1233	70.8	178	73.0	(1)
2	**Finland**	103	5.9	3	1.2	(6)
3	**Canada**	85	4.9	14	5.7	(2)
"	**United Kingdom**	85	4.9	14	5.7	(2)
5	**Australia**	46	2.6	1	0.0	(10)
6	**The Netherlands**	25	1.4	7	2.9	(4)
7	**The Russian Federation**	19	1.1	3	1.2	(6)
8	**Sweden**	17	1.0	3	1.2	(6)
9	**Germany**	14	0.8	5	2.0	(3)
--	**Other**	114	6.5	16	6.5	(-)

4.2 Playing Styles

Part B of the survey was intended to measure playing style and the items were based upon Bartle's (1996) typology in combination with the immersion motivation that Yee (2006a) found

in his research (see also chapter three). In the first part of this chapter an exploratory principal component analysis will be performed to cluster the items again. After the player types have been defined, the second part will deal with who the people are that fit the player type by a regression on the sum scores. The distinction between offline and online will be kept for paragraph 4.3.

4.2.1   Determining Different Player Types

The thirty six items related to the playing styles were put into an exploratory principal component analysis to see which items would cluster together. The choice for a component analysis is the underlying assumption of Bartle that everyone tends at least a little to all four, but one of the types has the overall preference. This would need a model that has the possibility of related components. Component analysis is capable of this. Principal component analysis is a method for data reduction that attempts to explain as much of the variance in the variables as possible with a smaller amount of components or factors. In other words, this small number of factors tries to reproduce the correlation matrix as well as possible. Principal component analysis (PCA) tries to reproduce the full matrix and can only be used explorative, like this paper does. PCA reproduces the communal variance, the item-specific variance and the error variance related to the item.

A few assumptions need to be taken into account before doing a PCA. Every set of items has a linear relation and the item has five or more categories. This is the case for all thirty six items, which were measured on a five point scale. Furthermore N needs to be bigger than 100 and N needs to be at least five times the number of items. Five times thirty six is 180, which is already above 100. The sample contains 1568 usable cases for the component analysis, which fulfils the assumption. An additional assumption is that the data should consist of independent cases. This could provide some problem, because of the additional level in reaching the respondents by emailing the administrators and asking to put the request through to their player base. Although this lead to a serious amount of respondents, still about half of them came from only four MUDs as mentioned in the previous paragraph. Nevertheless these MUDs have a large player base and combined with the smaller MUDs in the sample, this could provide some independence. There is, however, no way to be certain that the sampling error will divide equally among the respondents, since players were self-selecting after the initial barrier of the administrators. Next to the above assumptions the Bartlett's sphericity test was significant and the Kaiser-Meyer-Olkin measure (KMO) was above 0.6. Both are assumptions mentioned in Pallant (2004, p.153).

Furthermore there should be correlations between the items in order for data reduction to work. After close inspection of the correlation matrix, four items were removed, because they lacked serious correlations. These were two intended role-playing items ("I

think that realism in the game is important" and "I like to try out new roles in the game") and two intended explorer items ("I like to explore all the areas in the game" and "I like maps, charts and tables with information about the game"). An additional achiever item ("I want to be noted for my achievements") was removed later on, because it loaded slightly on two components, but did not add to either scale reliability.

The socialiser items provided a different problem. Looking at the correlations only, four of the items had very low correlations. This would mean only two specific socialiser items. Looking at the inter-item correlations and alpha they seemed to be a decent scale with an alpha of .657 and lower alpha's when items were deleted. The inter-item correlations were all above .295, very close to the rule of thumb of .300. For these reasons and to enable a decent coverage of the socialiser construct they were kept in the component analysis.

The initial principal component analysis was meant to discover the number of components. Although six components had an Eigen value higher than one, the scree plot indicated that the sixth factor would not add much to the model and explained just a small amount of the variance. To be sure, four additional factor analyses were done, two varimax rotations and two direct oblimin rotations, with either five or six factors. Five components lead to the best and most interpretable simple structure. The Oblimin rotation (see appendix C for the complete pattern matrix) produced the best solution, because there appeared to be some correlation between some components. A disadvantage of using the oblimin rotation in this occasion is that the component scores for the killer/griefer component are negatively rated, leading to some kind of anti-griefer. Nevertheless the same items related to each other well and created reliable scales for the subjectively named achiever type (7 items), role-player type (7 items), (negative) griefer[22] type (6 items), socialiser type (6 items) and explorer type (also 6 items). An overview of these player types components, their associated traits and their related reliability can be found in table 4.4.

Table 4.4: The five resulting components, associated traits and their reliability as a scale.

Component	Reliability[23]	Associated Traits
Achiever	α = .809	Power, collect items, rise in levels, rating lists, competition
Role-Player	α = .848	Role-play, importance of story-(lines), immersion, in-character play
Griefer	α = .818	Causing distress, killing, domination, imposition, competition
Socialiser	α = .657	Meaningful talk, know players, group up, communicate, help players
Explorer	α = .751	Find bugs/secrets, know game mechanics, show knowledge

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[22] The name of griefer instead of killer seems to suit better to the items loading on the component. This is analogous to the term that Foo & Koivisto (2004) use and even Bartle (2003) agrees with the unfortunate name of killer since it does not always involve the actual killing of other players.

[23] Reliability based on Cronbach's alpha (total item-correlation > 0.295 and alpha if item deleted < scale alpha)

As mentioned above, some of the components correlated with the others. The main correlation is found between the achiever and the explorer: r = .311. This seems analogous to what Yee (2004) notes in his research about the explorer and achiever being related to each other, although the explorer is a separate and important component here, contradicting some of the findings of Yee. This could be, as mentioned in chapter two, be due to the fact that it is easier to become more than a mere player in MUDs than in MMORPGs.

Two other correlations above .150 can be found. The first between the explorer and the socialiser (r = .211). This is probably due to the factor loadings of the explorer component on the "I want to be known for knowledge" and "I like to show my knowledge of the game". This is of course related to socialising, because it needs others to be recognised and acknowledged as a knowledgeable person. The second (r = -.160) is found between the griefer and achiever components. This is probably due to the fact that competition is favoured by both, but in a different way.

4.2.2 Colouring the Picture: Who are the people behind the components

It is nice to know that the items can be structured in the way as displayed above, but it would be even better to know which persons fall into these components. To be able to draw conclusions about this, a multiple regression was done on these components. To provide a measure for the components, the related items were added up to create a sum score. The sum score was favoured above component scores for the ease of interpretation[24]. The results can be found below. All mentioned regression tables can be found in appendix D to save up space.

The sum scores for the player types were regressed on thirteen variables, most of which speak for themselves. A few need further explanation though. The big amount of higher education and university scores made it more plausible to create a dummy (0=no higher education, 1=higher education) instead of using the ordinal range. Marital Status was recoded into a dummy (0=single, 1=together) by adding the people rating divorced as single. Next to these demographic variables the different businesses on MUDs (player/builder/immortal/administrator/coder) were recoded into a dummy (0=mere player, 1=more than player) as well as the role-playing and player-killing MUD characteristics (0=no or accepted RP, 1=encouraged or enforced RP and 0=no or restricted PK, 1=plenty or pure PK). Occupational status was left out of the regression, because every coding and recoding of the variable let to very high multicollinearity problems, which probably indicates that occupational status can be predicted by the other independent variables in the model. This is not really surprising with age related to retirement or being a student, for example.

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[24] Component scores and sum scores, although different scale measures, ought to have a very high correlation and therefore would produce rather similar results.

The multiple regression for the achiever player type can be found in table D.1. For the demographic variables only gender and age are significant. Men seem to be more of the achieving type than women and this is also the main predictor for the achiever. This seems compliant with the somewhat stereotypical view of males as achievers and women as caretakers. Age also affects the achiever significantly, with younger people scoring higher on achievement. Having children does have a small positive effect on achievement, but this is not significant. Marital status and having a higher education are very much insignificant. Looking at player characteristics, it can be seen that the hours spent playing have a significant effect. The effect might be the other way around as well though: if you want to achieve something, you will need to invest time into it. Being more than a mere player is also significant. The negative relation is not surprising, because advancing is mainly a matter of the players and not of builders or administrators. The experience on MUDs or playing multiple MUDs have small effects, but are not significant.

For MUD characteristics it can be seen that playing role-playing and social MUDs have a rather large negative effect on being an achiever. It seems that these MUDs do not promote achievement very much. The social MUD variable is not significant though. This is probably due to the small amount of social MUDs in the sample. Playing player-killing MUDs is significantly and positively linked with achievement. This is hardly surprising since player-killing creates competition. Also the insignificance of playing educational MUDs is hardly surprising since those are targeted at learning and not advancement. Overall gender and age predict the most of the variance in the achiever type, with the type of MUD (RP and PK the most) as runner ups. This regression model explains about eleven percent of the variance.

The regression for the role-player can be found in table D.2. Again gender is a significant and important explaining variable, with more women being a role-player than men. Age is the second most important of the demographic variables, but has just a small effect and is not statistically significant. Marital status, having children and being higher educated are also not significant. These real life demographics might not have much influence on someone focused on immersion in a MUD. Also the player characteristics predict insignificant parts of the variation. Only being more that a mere player is positively related to the role-player. This could be related to the creation of role-playing content (i.e. builders and administrators), since making up storylines is one of the items.

The main explanation for the role-player type is the players of role-playing MUDs, which is of course not surprising. If you play an encouraged or enforced role-playing game, your score on the role-player component goes up by more than six, which is on average almost a full point on the seven items that are related to role-playing. Educational MUD is also significant, but negatively related to the role-player. This is obvious, because

educational MUDs are about learning things for real life from a virtual environment instead of immersion in that MUD[25]. The biggest predictors for the role-player are playing a role-playing MUD and gender. The small amount of significant variables nevertheless explains almost 32 percent of the variance in the role-player type.

Table D.3 displays the regression analysis for the griefer component. Again, gender plays a significant role in grieving with men scoring higher on the griefer factor than women. Although this seems plain and could be linked to the stereotypical view about men using violence and women using more covert ways of persuasion and manipulation. The griefer type as a concept should cover both behaviours, though. Age is the most important explaining variable, with younger players scoring higher on grieving than older ones. Stereotypes about the aggressive younger gamer should fit the griefer type. An interesting predictor is the having of children. Of course this could be moderated by other variables, but on the whole, people with children score higher on the grieving factor, controlled for all other variables. For player characteristics, hours spent playing and years playing are both significant, but have a rather small effect compared to age and gender. The effect of MUD experience, as measured by years playing, together with age links to the first stage of the "career path" mentioned by Bartle (see chapter two, paragraph 2.3). Being more than a mere player is also significant. So having advanced in the game could lead to more griefing. This could be linked to having a powerful position with the means to execute griefing in another way. Of course it would be wrong for administrators and other immortals to abuse their position.

The type of MUD, either role-playing or player-killing is an interesting one, with player-killing MUDs scoring high on grieving and role-playing MUDs scoring low on grieving. Player-killing is very much linked to grief behaviour and the competition on those MUDs leads to competition and negative feelings to other players. Role-playing MUDs are more about the story instead of about annoying and imposition upon other players. The fact that so many demographic and player characteristics are significant is compliant with the player axis of Bartle's model. Players are more important in this respect, with age and gender as the main predictors, this model explains almost 15 percent of the variance in griefing.

The regression of the socialiser type can be found in table D.4. Gender is again important, being the second important predictor. Women are more like to be a socialiser than men. This seems to fit the stereotype, of course. Age is also significant, but barely. Younger players are a little more sociable than older players. This could be due to younger people

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[25] The fact that playing an educational MUD relates to role-players *significantly*, clearly states the importance of this variable, given the small amount of educational MUDs that were in the sample.

being less afraid to make contact with other players. The other demographic variables are nowhere near significant, although marital status and children could have been good predictors in theory. The hours spent playing is just barely significant on a two-tailed significance level of .10, with socialisers spending just a little more time on the MUD. Being more than just a player predicts a larger amount and is highly significant. This is hardly surprising when looked at the responsibilities of administrators and immortals towards the player base. They should be social towards their player base and mostly do not have to bother with playing themselves. Experience in years or playing multiple MUDs are insignificant for the socialiser.

The main predictor for the socialiser is the not playing of player-killing MUDs. Of course, this is not surprising since player-killing is quite the opposite of socialising. The negative and significant effect of playing educational MUDs is very interesting, because an educational MUD would be about socialising and helping other players to learn something. It might be caused by the item about grouping up, since that might not be available on educational MUDs. The almost significant score of .066 for playing social MUDs (again probably not significant because of the small amount of associated cases) is not surprising at all. Social MUDs will cherish socialising. All in all, this component is the least explaining regression model of the five with an R^2 of only 6.7%. The main predictors are not playing a PK MUD, gender and being more than a mere player.

The last regression, that of the explorer, can be found in table D.5. Women seem less likely to become an explorer, as are older people. This could maybe be linked to the stereotypes about women not being technical, since the explorer type has items about bugs and game mechanics. Also the show off of knowledge is part of the explorer and therefore more related to the stereotype of the man. Other demographic variables do not seem to predict very much, given the fact that the betas are rather small and insignificant. The player characteristics explain more of the variance it seems. Although experience is only significant on a two-tailed .10 level, the hours spent playing and being more than a mere player are highly significant. The first relates to the time that is needed to explore the game in all its facets and the latter relates to the fact that the depth of the MUD and the dealing with bugs and game mechanics might be more interesting to advanced players like builders, immortals, administrators and coders. They are concerned with the MUD as a whole, and bugs lead to trouble.

Only playing role-playing games is significantly related to the explorer. A player of such a role-playing MUD will less likely be an explorer. This might be due to the fact that role-playing is about the story and not about the world itself. It does not matter how many secrets you find or to know the game mechanics. The experience of immersion will be much

more important. Overall, the demographic and being more than a mere player predict the most of the variance in this model, while this model explains just barely over ten percent of the variation.

4.2.3   Discussion

All in all, the above presents us with the proof that different behaviours link up to specific player types. Of course, it was a guided research, but the fact that it reproduces the four player types of Bartle and the additional role-player based upon the immersion motivation of Yee. One interesting finding is the fact that the explorer comes up, while it was not found in MMORPGs. This might be linked to the expectation posed in chapter two about the possibility of advancement within the game, relating to more depth (for instance by builders and coders) and the ease of creating something with text. As could be seen in the above multiple regressions, the player types could be explained by demographic variables as well as MUD and player characteristics. Table 4.5 (next page) is a summary of the main findings of the regressions. For every component the beta is given and significant betas are marked.

The only demographic variable that is significant for all player types is gender. Men are more likely to be achievers, griefers or explorers, while women are more likely to be role-players or socialisers. Age is significant in almost all player types, except the role-player. It has the biggest effect on the griefer. An interesting finding is that all betas for age are negative. This indicates that younger players are more likely to adopt either one of the playing styles. A possible explanation could be in hours spent playing, which shows the same significance per player type. A single linear regression of hours spent on age reveals that this is not the case because the explained variance is just 1% and the coefficient is not significant. The effects of marital status and having a higher education are never significant or even come very close. Having children is only significant in the griefer player type. A possible explanation is the fact that parents become more competitive again when they have children.

For the player characteristics the main predictors are being more than a mere player and the hours spent playing. Being more than a mere player influences the player style, but only achievers are more likely to be mere players. The effect of being more than a mere player is strongest in the explorer. All player types spent more hours in the game, but this is strongest for the explorer as well. Years playing is only significant for the explorer and the griefer. For the explorer this is not surprising, because a newbie will hardly start to explore the width and breadth of the MUD. A newbie will be more concerned with learning the basics. The significance of experience for griefers might stem from an air of 'I am powerful, because I have been here forever and therefore I can bully all other players'. This seems quite the opposite from the huge negative age effect for griefers. The young, but experienced players

seem to be very likely to impose themselves on their fellow players. Playing more than one MUD seems not to affect any player type.

Table 4.5: Summary table of the β's for the achiever, role-player, griefer, socialiser and explorer, based upon the tables D.1-D.5.

Variables	Achiever R^2=.111	Role-player R^2=.319	Griefer R^2=.145	Socialiser R^2=.067	Explorer R^2=.105
Demographic Variables					
- gender *(0=male, 1=female)*	-.226 (.000)	.163 (.000)	-.194 (.000)	.112 (.000)	-.156 (.000)
- age *(Years)*	-.166 (.000)	-.044 (.087)	-.309 (.000)	-.068 (.024)	-.112 (.000)
- marital status *(0=single, 1=together)*	.012 (.672)	-.037 (.125)	-.016 (.541)	.015 (.602)	.020 (.458)
- children *(0=no, 1=yes)*	.051 (.082)	.015 (.564)	.080 (.005)	.029 (.328)	-.025 (.389)
- higher education *(0=no, 1=yes)*	.010 (.705)	-.011 (.617)	.014 (.578)	-.007 (.776)	-.019 (.451)
Player Characteristics					
- hours spent playing *(Hours)*	.058 (.021)	.032 (.139)	.056 (.023)	.053 (.036)	.084 (.001)
- years playing *(Years)*	.036 (.182)	-.037 (.119)	.089 (.001)	.010 (.721)	.054 (.049)
- multiple MUDs *(0=no, 1=yes)*	.040 (.111)	.002 (.919)	.005 (.846)	.019 (.454)	-.002 (.944)
- more than mere player *(0=no, 1=yes)*	-.107 (.000)	.080 (.000)	.053 (.034)	.108 (.000)	.144 (.000)
MUD Characteristics					
- role-playing MUD *(0=no, 1=yes)*	-.134 (.000)	.490 (.000)	-.105 (.000)	-.022 (.460)	-.111 (.000)
- player-killing MUD *(0=no, 1=yes)*	.127 (.000)	.038 (.134)	.135 (.000)	-.145 (.000)	-.022 (.457)
- social MUD *(0=no, 1=yes)*	-.057 (.077)	.040 (.155)	-.005 (.881)	.060 (.066)	-.004 (.893)
- educational MUD *(0=no, 1=yes)*	.011 (.722)	-.070 (.012)	.015 (.621)	-.079 (.016)	.004 (.891)

The type of MUD seems to predict several of the player types. Role-playing MUDs and player-killing MUDs are the most predictive, but this is hardly surprising given the small amount of educational and social MUDs in the sample. Nevertheless playing an educational MUD is negatively related to both the role-player and the socialiser and playing a social MUD comes close to significance on the achiever (negatively) and the socialiser. Educational MUDs do not attract role-players it seems, which is not surprising given the fact that educational is rooted in real life and role-playing is about immersion in another world. The fact that playing a social MUD predicts the socialiser, but playing an educational MUD does not, is probably due to the fact that social MUDs are about socialising to begin with, while playing educational MUDs are about personal education and not related to socialising. Playing a role-playing MUD predicts being a role-player, which is hardly surprising, all other player types relate negatively with the role-player. Role-playing MUDs might harbour different player types, but those do not correspond much to those of Bartle. Playing a player-killing MUD predicts the griefer and achiever positively and the socialiser negatively. This is hardly

surprising. Playing a PK-MUD is about competition between players, which relates to achievement. The negative link with socialising is because of the opposite nature of grief play and making friends.

Overall, the player types can be explained to a certain extent by the investigated variables, with the most success on the role-player with an explained variance of 31.9%. This is quite exceptional in social research. The other values, 14.5% for the griefer, 11.1% for the achiever, 10.5% for the explorer and only 6.7% for the socialiser, are more realistic scores, although the explained variance for the socialiser is rather low. This provides us with at least some proof that the conceptual model was right about the predicative value of demographic variables and MUD and player characteristics. The conceptual model had one more explaining group of variables, offline personality traits, and these might enhance the explained variance. The next paragraph will deal with these offline personality traits and the relation between online behaviour and offline personality.

4.3 Online Player Types versus Offline Character Traits

The Big Five has been the leading theory in this research used for offline personality traits and the mini-marker test of Saucier (1994) was used to measure it in the sample. First, there will be a description of the findings in the sample, and a check if the items still cluster together to create a sum score for the five dimensions. Thereafter, they will be linked to the online playing styles and will be addressed if the offline traits explain significantly more than the variables already in the regression.

4.3.1　The Items of the Big Five
When running the frequencies of the Big Five items some interesting findings appeared. Although some of the distributions were quite normal, or just a little skewed to either side of the middle "neutral/don't know" answer, some items were quite skewed to one side. Because all the respondents are MUD users, it might be interesting to see which these are and try to explain why MUD users consider themselves scoring either high or low on these.

On first glance the items related to 'agreeableness' and 'intellect, openness, or imagination[26]' seem to score highly skewed towards the positive side. Agreeableness might be a useful trait to be a structural participant of MUDs, since you will always encounter other people online and you will need to know how to get along with them. The factor openness is hardly surprising to be found in MUD players, who need to form a picture of what they are

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[26] For matters of ease 'openness' will be used from here onwards for the 'intellect, openness, or imagination' factor.

doing inside their head from a purely text-based input. A critical note must be made about this, though, because other variables (for instance, the high amount of highly educated respondents) could be related to this skewedness.

By doing a quick principal component analysis to validate if the factors were all related as intended, the Eigen value > 1 brought nine items, but the scree plot indicated clearly that five factors were standing out. After doing a varimax and oblimin rotation with five factors the simple structure advocated by Saucier (1994), became very much apparent[27] in both. Therefore it seems that the intended scale was reproduced and can be used for a sum score, which was constructed by adding the items. The reliability of the scale was also tested and the results can be found in table 4.6. When the sum scores were displayed in a plot, the earlier conclusion that agreeableness and openness would score high was confirmed, because both were skewed towards the right. The other factors were normally distributed on the scores.

Table 4.6: The Big Five Factors, associated items and their reliability as a scale.

Big Five Factor	Reliability[28]	Positive Items	Negative Items
Extraversion	α = .826	Talkative, Extraverted, Bold, Energetic	Quiet, Bashful, Withdrawn
Agreeableness	α = .844	Sympathetic, Warm, Kind, Cooperative	Cold, Unsympathetic Rude, Harsh
Conscientiousness	α = .822	Organized, Efficient, Systematic, Practical	Disorganized, Sloppy, Inefficient, Careless
Emotional Stability	α = .805[29]	Unenvious, Relaxed	Moody, Jealous, Temperamental, Envious, Touchy, Fretful
Intellect, Openness, or Imagination	α = .792	Creative, Imaginative, Philosophical, Intellectual, Complex, Deep	Uncreative, Unintellectual

Because personality is inherent to the person and when we take into account that personality, or at least the extraversion and emotional stability factors, are fairly stable as was discussed in chapter two, a multiple regression would not give us much related information. Therefore the factors will be correlated only to gender and age (which are also mostly used as independent variables), before we link them to the online playing styles.

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[27] By counting the items per factor one factor with 9 items and one with only 7 items was found. When determining where this came from, it was discovered that there had been a typing error in the survey: 'SHY' had been written as 'SLY'. Since this word also exists in English, this was not discovered before the test started. Although the item loaded quite strong on the factor of agreeableness, it was deemed wiser to remove it from the analysis. Therefore there are only 39 items in the results, with only seven instead of eight factors for extraversion (missing shy).

[28] Reliability based on Cronbach's alpha (total item-correlation > 0.3 and alpha if item deleted < scale alpha)

[29] Reliability analysis indicated that if relaxed was removed it would be .806. For matters of keeping Saucier's scale in tact and the small increase the item was left in the scale.

When we correlate gender with the factors, only extraversion shows no significant difference between the means for men and women (p=.875). On the whole, women score significantly higher on agreeableness, openness (both p<.001) and conscientiousness (although only significant on .10 for the latter, two tailed.) If we correlate the factors with age, extraversion (r = .006) and openness (r = 0.10) correlate barely. The correlations between the other three are all positively and significantly correlated, but also with a low correlation (agreeableness, r = .193, conscientiousness, r = .145, emotional stability, r = .109).

4.3.2 Offline Traits Used to Explain Online Player Types

Now it is time to see if the offline personality traits can be used in explaining online behaviour. Therefore we will revisit the multiple regression analyses from paragraph 4.2.2 and add the five factors. Then we will determine if this leads to a significant increase in explained variance and therefore be a better model. To save up space, these multiple regression tables can be found in appendix D.

The regression with the big five factors added for the achiever can be found in table D.6. Achievement seems to be linked to almost all personality traits, except openness. The rest of the regression table is quite similar, but for the hours spent playing, which lost its significance when the personality traits were added. Personality might explain some of the variance in playing time. A regression of hours spent playing on the five personality traits reveals barely two-tailed .10 significance (p<.050) for conscientiousness, emotional stability (both negatively related) and openness (positively related). Gender stays the main predictor, but conscientiousness and emotional stability are second and third in place. Conscientiousness is obvious, since it is all about reaching goals as is being an achiever. Emotional stability is harder to explain, although a possible explanation could be that achieving ensures some sort of base or drive to provide a schedule and a goal, keeping the negative thoughts out. Another might well be, as was mentioned in chapter two, that the negative people unconsciously search out failures and therefore try to achieve with no success. The real explanation can not be provided given the nature and scope of this thesis, but this might be an interesting question for further research. Extraversion and agreeableness are also significantly linked, although agreeableness just barely on a .10 level. A typical achiever will be less agreeable, which is not really surprising. Furthermore an extravert will look into new and exciting experiences and achievement can provide that given that it is linked to competition. The insignificance of openness is logical, since figuring out how things work or imagine the story behind it, does not score points. The R^2 for the model with the offline personality traits has improved, now being almost 15%, which is not bad for the social sciences.

The regression analysis for the role-player is in table D.7. This picture provides less significant big five factors than the achiever regression did. Only conscientiousness and openness are significant, with the openness factor being among the most important predictors. This was also expected in chapter two, because role-playing involves the imagination and openness to experience to be able to *be* the character. The conscientiousness factor is also important and this could be linked to self-restraining. The goal is to stay in character and being efficient and doing this systematic will probably work better than if you would play in a careless manner. The fact that extraversion is not significant, hints that the link that Bartle placed between socialising and role-playing is none-existent. Emotional stability and agreeableness are not significant either, although agreeing with other players or at least with their idea of the story or character could have been. Emotional stability is another issue, for fleeing into an online character or story could save some real life stress. But the insignificance of it clearly supports Yee's finding of two separate motivations for immersion (role-playing) and escapism (fleeing real life). An interesting variable is years playing, since it is significant with the personality added in, while it was not before. The more years you have been playing, the less likely you are to be a role-player. This model also explains more variance than the one without the personality factors and it goes up from the already impressive 31.9% to 36.2%.

Next is the regression of the griefer (see table D.8). The most notable change is the explained variance of course, which has nearly doubled by adding the big five factors. This is not really surprising, since the killer's business is annoying people, and although they do it in the game, it is based upon real life. The more statistical explanation is that there are four Big Five factors with a significant influence. Looking at the standardized beta's negative agreeableness seems to be the main predictor in this. Of course this is obvious, because annoying players and being rude and unsympathetic is the way of the killer. Next to gender and age, extraversion is also an important predictor and again this is no surprise, since you need to dare to talk to players and people and be just plain bold on the whole to be able to create havoc and grief. Openness is related to this as well. Bullying people in the same way every time will be boring and being inventive about it might relate to fun. Emotional stability is negatively linked to the griefer player type. So being less emotionally stable will result in more griefer behaviour. This could be about a reaction on negative experiences in real life. People might be compensating the negativity of real life by bullying others when they are online. Another interesting finding is that the player characteristics are less explaining, when the five personality traits are added to the model. Hours spent playing and being more than a mere player are not significant any longer. The exact reason for this can only be guessed.

The socialiser also relates a lot to the personality traits as can be seen in the regression analysis table D.9. The adding of the personality factors lead to an increase of

over thirteen percent, making a very good predictive model for the social sciences. Even all the Big Five factors are significant. Extraversion and agreeableness seem logical traits to have when being a socialiser and this is confirmed with them being the main predictors in the model. An open mind also comes in handy when dealing with players that you do not know well yet. Conscientiousness and emotional stability are both negatively related to the socialiser, which is not really surprising. Emotionally unstable persons want reassurance and socialising could be the way. Also the goal-oriented view of conscientious people could leave less room for mere socialising, leaving the players that score lower on the trait to be more socially oriented. Playing an educational MUD and age have lost their significance in this newer model. This could be congruent with players of educational MUDs playing for their own personal incentives rather than not wanting to socialise. That age lost its significance might be due that socialising is of all ages, controlling for personal traits.

The last player type is the explorer which can be found in table D.10. In this regression years playing has lost its small significance. The main explaining factors seem to be gender (men are more likely to be explorer) and the additional factor of openness (higher scores are more likely to be explorers). This last is not surprising. The name associated with high scores on openness was explorer and an open mind is the way to explore. Exploring is about the discovery of new areas and new content. You have to be open to new experiences. Almost all big five factors are significant (except for extraversion). Next to the above mentioned openness, conscientiousness is positively related. A systematic way of exploring might be the most successful. Emotional stability and agreeableness are negatively related. The first might be related to the 'attraction' of negative experiences that a lower emotional stability might cause. Exploring might be highly trial and error and negative experiences just happen that way. A lower score on agreeableness leading to a higher score on exploring is hardly surprising though, because doing things differently than others, just to see what it will bring, needs people that do not rely on the standards that are supplied by the masses.

After having discussed the regression models with the additional personality traits it would be good to see if the changes in R^2 are significant. If they are not, the risen predictive quality might be due to chance or sampling errors. In order to check for this, five F statistics were calculated comparing the initial models with the improved models and were checked for significance. All turned out to be significantly (α=.01) improved models ($F_{achiever}$ = 11.082, $F_{role\text{-}player}$ = 18.211, $F_{griefer}$ = 52.906, $F_{socialiser}$ = 44.725, and $F_{explorer}$ = 12.641)

4.3.3 Discussion

The above regression models showed that adding the personality factors of the Big Five lead to an increased predictive quality with higher explained variance. In addition to the

demographic variables and the MUD and player characteristics, playing styles seem to relate to the offline personality. This enables the conclusion that the player types are in a certain way related to the offline characteristics of the person. As can be seen in table 4.7, listing the increases in explained variance, especially the player oriented player types of Bartle's interest graph (griefer and socialiser) were much better explained by adding the personality traits. The Big Five regression coefficients together with their significance are summarised in table 4.8. Significant effects are marked yellow.

Table 4.7: Increases of the explained variances for the initial models and the additional models.

	Initial R^2	R^2 with Big Five	Increase
Achiever	R^2=.111	R^2=.146	4.5 %
Role-Player	R^2=.319	R^2=.362	4.3 %
Griefer	R^2=.145	R^2=.285	14.0 %
Socialiser	R^2=.067	R^2=.199	13.2 %
Explorer	R^2=.105	R^2=.145	4.0 %

Extraversion is linked to the socialiser and griefer, which are not surprising given their player component. Next to this it was also related to the achiever. This might be related to Hedron's "prove mastery" circle in which players want to show their mastering of the game by either helping (socialiser) or killing (griefer). Agreeableness was skewed a little to the right to begin with. Nevertheless it was significant in four of the five player types, with it having a negative effect on the achiever, griefer and explorer and having a positive effect on the socialiser. These are not surprising. A socialiser needs agreeableness in order to keep the peace between his/her friends. Griefing is exactly the opposite and with achievers striving to reach their goals, they will have to follow their own path most of the time. Explorers are interested in the game mechanics and such and think they know how it works. This attitude may not be appreciated by all.

Table 4.8: Summary table of the personality trait β's for the achiever, role-player, griefer, socialiser and explorer, based upon the tables D.6-D.10.

Variables	Achiever	Role-player	Griefer	Socialiser	Explorer
Big Five Personality Traits					
- extraversion	.094 (.000)	.027 (.239)	.173 (.000)	.218 (.000)	-.032 (.230)
- agreeableness	-.055 (.048)	.022 (.366)	-.347 (.000)	.260 (.000)	-.069 (.013)
- conscientiousness	.151 (.000)	-.060 (.010)	-.006 (.808)	-.080 (.002)	.064 (.017)
- emotional stability	-.150 (.000)	-.008 (.722)	-.078 (.002)	-.104 (.000)	-.059 (.030)
- intellect, openness, or imagination	.023 (.389)	.202 (.000)	.086 (.000)	.073 (.004)	.165 (.000)

Conscientiousness, being related to goals and keeping an eye on the overall pattern should relate to the achiever and explorer. In that it does hold, since both have a significant effect according to the regression analysis. The fact that the socialiser is negatively related to conscientiousness is probably because socialising is less goal-oriented. The only surprise might be the role-player that is negatively related to conscientiousness. This could be due to the fact that when you cannot hold the overall view you immerse yourself more in the game and your character. Emotional Stability is negatively linked to all player types, only with the role-player it is not significant. As mentioned in chapter two, negative experiences happen to anyone and not just to a single player type. Only maybe the victims of killers, but those could be of any player type. Why it has no significant effect on role-players, remains the question. Maybe this is due to their view that they play in a story and can relate the negative feelings towards the story instead of themselves. If this is the case should be seen in further research.

The last big five factor was the most important one for MUD players. At least it was thought so in chapter two. The overall distribution was skewed to the right to begin with, supporting that you need a highly creative and open mind to immerse yourself in the text-based game world. The regression analyses for the player types reveal that it plays an effect in almost all player types. Only achievers are not predicted significantly by openness to experience. This might well be a side-effect of the achievement motivation. When you are trying to gain status you will use the known and sure ways and you will not try out the new and uncertain ones, unless the rewards could be extraordinary.

Overall, the player types could be found and they could be explained by using demographic variables, MUD and player characteristics and the Big Five personality traits. The links between the type of MUD and the player types seem very much apparent and therefore type of MUD might have more influence in which player types inhabit a specific MUD than that different player types can be found on any MUD, like Bartle proposes. In the concluding chapter a new model will be proposed based upon the above findings.

5. Conclusion and Recommendations

At the end of the thesis it is time see what can be learned from all of this. This chapter will start with a summary of the findings after which the research question will be answered. After that a new model for player types will be presented and the chapter ends with recommendations for further research.

5.1 Summary of the Findings

This research was heavily guided by Bartle's typology of the four playing styles and subsequent research that criticised it. It set out to reveal which types of behaviour could be clustered together to form specific player types, taking the concepts of the achiever, the explorer, the killer and the socialiser player types by Bartle and the achievement, the immersion, the manipulation and the relationship motivations from Yee as a starting point. Thirty six items were created that should measure the five anticipated player types: the achiever, the role-player, the explorer, the griefer and the socialiser.

The principal component analysis revealed that five clusters of items could account for more than fifty percent of the variance among the items, and surprisingly fit the five anticipated playing styles. The achiever matched with five of the intended items and also with two additional items: one that was supposed to match the explorer (finding new ways to level) and one supposedly linked to the griefer type (competition). The griefer also linked all items nicely to it. For the anticipated socialiser player types, all six intended items fell into the socialiser category, but helping others was also somewhat negatively linked to the griefer player type. The additional role-player playing style items were neatly clustered after removal of the low-correlation items "I like to try out new roles" and "I think that realism in the game is important". This seems to indicate that Yee was right in assuming that there should be a role-playing motivation, or at least player type. The explorer was found as well, reproducing six of

the initial nine items, after removing two very low correlating items. Surprisingly those were *"I like to explore all the areas in the game"* and *"I like maps, charts and tables with information about the game"*, which seem very basic items for the explorer. It seems that the explorer is a more complex character, which is also closely linked to the achiever motivation. Bartle indicated that the explorer would start exploring the breadth of the MUD (the map and areas) before moving on to its depth (the game mechanics and bugs in the game play). It seems that the breadth of the MUD does not concern the explorer types and that depth is much more important.

The second part of the research was about colouring the picture of the different player types by doing five multiple regressions. It was found that demographic variables together with player and MUD characteristics explained a great deal of the player types already. One of the main findings was that type of MUD relates heavily to the type of player with role-players playing role-playing MUDs, griefers playing player-killing MUDs, and socialisers playing social and educational MUDs. Gender was also a significant predictor of the player types with men being achievers, griefers and explorers and women being role-players and socialisers. Being more than a mere player was also related to all the player types, although achievement did it in a negative way, leaving achievers being mere players and the other player types being more than players.

Next to these explaining variables, it was hypothesized in the conceptual model that personality traits would explain great deal of the player types. Next to the fact that the Saucier's mini-marker scale was proven to be robust, it was proven that entering the Big Five personality factors in the regression analyses lead to significant better explained variances. Nineteen of the twenty-five (five player types times five personality traits) predictors were significant. All models were improved by at least four percent explained variance with the socialiser and griefer models being enhanced with 13.2% and 14.0% respectively. No personality trait explained every player type, but the socialiser was explained by all five traits while the role-player was only explained by two traits. Nevertheless the latter already had more than 30% explained variance in the first model.

5.2 A new Player Types Model

Since these five player types came up, it might be good to revisit the model of Bartle that was explained in chapter 2 (see figure 2.1). Although the model provides a clearer picture of the playing styles displayed upon two axes, it seems to have very little specific value. As proposed in paragraph 2.5, based upon the immersion motivation and lack of evidence for the explorer, the picture could maybe be enhanced by replacing the explorer with the role-

player as interacting with the world (or story). Now that this thesis finds evidence for both, it becomes a lot more difficult. The explorer player type as found in this research has virtually no correlation with the role-player. In fact the role-player has the highest (but still very small: .163) correlation with the socialiser type, which links back to Bartle placing the role-playing component under socialiser. Nevertheless, the lack of significance in extraversion for the role-playing could indicate the other opposite. So should we put the role-player in between the socialiser and explorer on the interaction axis? This seems not to make sense, even more if we look at the other correlations between the components as well. As mentioned above the explorer and socialiser are both correlated to the achiever. So should we move the socialiser up in the model, higher on the acting axis? Or should we take it away from the player end of the axis? Or does the achiever have less to do with the game, should we center that one? This last line of thought makes even the most sense, since achieving is different per game type.

When we look at the explaining variables for the player types we gain even more ground for this approach, since the type of the game that players tend to play seems to work out in the playing styles displayed. Whether the game influences the player or vice versa remains to be seen, but the fact is that role-playing is greatly explained by playing a role-playing MUD, that grieving is explained by using a player-killing MUD, and although the number of social MUDs has been small in the sample, there was some evidence that playing a social MUD predicted socialiser. So we have three game types and player types that seem highly linked. Then we have an achiever that wants to achieve whatever the game goal is and then we have the explorer, which wants to have an in-depth knowledge of the world. This also matches with the findings that being more than a mere player is positively linked to all player types, except the achiever. If we try to put this into a model, it would look like the one displayed in figure 5.1.

Figure 5.1: A new model for the player types

```
           E X P L O R E R
            /      |      \
           /       |       \
           A C H I E V E R
         /          |          \
        /           |           \
    (PK MUD)   (SOC MUD)   (RP MUD)
    GRIEFER     SOCIALISER    ROLE-PLAYER
```
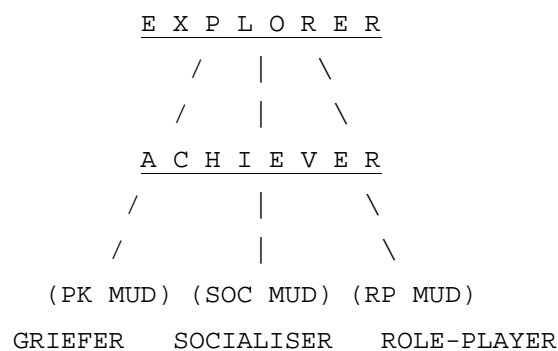
If seen in this way, it shows similarity to the hierarchically ordered player types of Hedron, with the "beating the game/excel" and "proving mastery" circles relating to the achiever player type and the "seeking new challenges" and "all is one" circles relating to the explorer. The lower circles of survival and competence could be linked to the different types of games, with the newbie's adapting to the game or newbie's looking for the game that they want, before they start playing for real. This lends more strength to the hierarchical approach in general as well.

It seems that the kind of game is very much providing the base of this model, instead of specific player types. This allows for a comparison between this and the interest graph of Bartle presented in chapter two. At first glance this interest graph has some similarities with the realms of experience from Pine and Gilmore (1999, p.30). Pine and Gilmore argue that the more realms targeted the richer the experience. This is analogous to Bartle promoting the pursuing of a balance between the player types, more over if we take the above model in account. If the base provides the realms of fun for Bartle, the combination of role-playing, player-killing and socialising might provide a rich game. Also a rich game would provide more interesting options for players that have reached the "seeking new challenges" stage of Hedron and start exploring the full scope of the MUD as explorers. This would prevent them from choosing the eighth option: finding another game. More research about the type of games should be conducted to verify this claim, but it sounds plausible.

The base of the model with different MUDs lead to achievers wanting to advance in the game and every type of MUD provides different goals, but achievement is possible in every game. As Clodius (1994, in Bartle,1996) claims: *"Social MUDs do have their achievers, too: people who regard building as a competitive act, and can vie to have the 'best' rooms in the MUD"*. Finally, players will reach the state of the explorer, in which people are experimenting with aspects of the game that they did not know yet. The model provides a rich base full of players and just a smaller and smaller cone reaching up towards the explorers. This also fits Bartle's notion that explorers are hard to find and if you have them, you need to keep a hold on them. Combined with Bartle's criticism on the commercial MUDs and MMOGs that fail to invest in the 'dedicated' player base, this might explain why Yee did not find the explorer. In MMOGs they have a very large player base, but the opportunities to "make a career" are mostly not provided, leaving only the last option of Hedron's challenges circle: finding another game.

5.3 Conclusion and Recommendations

After the presentation of this new player types model, it would be good to go back to the start of this thesis and see what can be learned. The main research question was about finding different online playing styles and to see if they could be explained by offline characteristics. The two subparts of this question have both been dealt with. In paragraph 4.2 it was discovered that there could be different playing styles defined by clustering specific actions, strategies and goals that were measured by several items. Five specific player types were discovered, which show amazing similarities with both Bartle's player types and Yee's player motivations: the achiever, the role-player, the griefer, the socialiser and the explorer. The pattern matrix in Appendix C shows the specific items that make up the playing styles. The second part of the research question was about determining who these players were with a huge role for the personality traits of the Big Five. Combining the multiple regressions for the player types on demographic variables and MUD and player characteristics it was found that they explained quite some variance. When the Big Five personality traits were added to the model the explained variance was greatly enhanced, foremost in the player related player types of the griefer and socialiser. At least some of the variance in playing style can be attributed to differences in personality.

The main goal of this thesis was to find a categorization for different types of playing styles. This has been successful and it even lead to a preliminary new model, although this model should be tested and validated thoroughly first in further research. The goal to match online with offline was also successful. Personality is not the only offline characteristic of players, but it is an important one. Specific further research on these links between player types and offline personality should be conducted, because in this research the personality was merely like an independent variable in explaining playing styles.

One of the pitfalls that was discovered in this research was about the social MUDs. Although it was known beforehand that there were social MUDs around and the items were designed to be as general as possible, still they seemed to be very much game-like. As mentioned in chapter three some administrators indicated that they did not think that their MUD fit the description and even if they started answering they found out that it was hardly related to their own MUD. A new research about this subject should be designed with more focus on social and educational MUDs to prevent the community from staying divided as it seems to be now.

As this research was exploratory in its approach, real causal explanations are hard to make. Further research will be needed to back up the claims made in this thesis. The player types model presented seems an improvement on the old model, grounded in empirical data and also linking it to the hierarchical player categorizations and to more unrelated research,

like the experience economy. The real challenge, however, will lie in proving or disproving this new model. Furthermore the link with offline personality traits will need to be investigated further. Although they predict the playing styles, the exact reason and origin of the links between some traits and player types is hard to make out by the data provided in this study. Subsequent research should concern itself with validating the presented player types model and causal analysis of the links between offline traits and online behaviour. This thesis can therefore be used as a guide.

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www.mudconnect.com	The MUD Connector
http://www.mudconnect.com/mpd/	The MUD Player Directory
www.secondlife.com	Second Life

Appendix A: The Complete Survey

Welcome to the Player Types Survey

Dear MUD (Multi User Dungeon) user,

Are you always trying to achieve the highest status on a MUD or do you rather find out everything there is to know about the MUD world? Are you trying to make friends among your fellow players or do you rather slice their throats and make them feel miserable? This survey is about MUD playing styles. What do people consider fun and rewarding when they are playing their MUD and in what way do these behaviours relate to character traits in real life.

This survey is part of a research in Leisure Studies of Richard van Meurs at Tilburg University, the Netherlands. I am a MUD administrator myself (after playing extensively for several years) and very much interested in the results. Your contribution to this research is extremely valuable and it will only take about **10 minutes** of your time to complete the survey. Of course everything you submit will be handled **anonymously** and with care. It will only be used to draw general conclusions about playing styles for my research.

At the end of the survey you can indicate if you want to receive a summary of the results or a full copy of the resulting article. In addition to this, you might be rewarded with a **gift certificate** for amazon.com of **$ 15,-**. More information about this will be at the end of the survey.

Thanks in advance for your cooperation

Richard van Meurs

p.s.: If you want more information or validation of the research you can mail to R.L.M.vanMeurs@uvt.nl.

Start the survey

Part A: General information

The survey consists of three parts and ten pages and will only take about 10 minutes to accomplish. For part A, please supply some general information about yourself. As mentioned before, everything you submit will stay anonymous.

1) What is your gender?

- ● Male
- ● Female

2) What is your age in years?

[ ]

3) In which country do you live?

Please select your country ▾

4) What is your occupational status?

- ● I work full-time
- ● I work part-time
- ● I am a student
- ● I am taking care of my family and/or home
- ● I am unemployed
- ● I am retired

Back   Next

B

Part A: General information

5) What is your highest completed/current education?

- ● Primary school
- ● Secondary education/school
- ● Higher education/university
- ● None of the above

6) What is your marital status?

- ● I am single/not living together
- ● I am married/living together
- ● I am divorced

7) Do you have children?

- ● No
- ● Yes

Back   Next

C

Part A: General information

The following questions are about MUDs and your connection to them.

8) How many hours a week do you play MUD(s)

9) Are you playing multiple MUDs at the moment?
- ● No
- ● Yes

10) For how many years have you been playing MUD(s)?

11) What is your usual business on MUD(s) lately?
   (you may check more than one box)
- ☐ I am a player
- ☐ I am a builder
- ☐ I am a god/wizard/immortal
- ☐ I am an administrator
- ☐ I am a coder

Back   Next

D

Part A: General information

Please keep your main MUD in mind when answering the following questions.

12) What is the main MUD that you play?
(fill in the full name, please)

[   ]

13) Does your main MUD offer role-playing?

○ There is no role-playing
○ Role-playing is accepted
● Role-playing is encouraged
● Role-playing is enforced

14) Does your main MUD offer player-killing?

● Player-killing is forbidden/impossible
○ There is restricted player-killing
○ There is plenty of player-killing
○ It is a pure player-killing MUD

15) Is your main MUD educational and/or research oriented?

○ No
○ Yes

Back   Next

E

Part B: Playing style

This next part asks you about your playing style on the MUD(s) that you play. Please indicate if you disagree or agree with the following statements, considering your usual playing style in mind. The categories stand for:

1: I strongly disagree
2: I disagree
3: neutral/don't know
4: I agree
5: I strongly agree.

		disagree		?		agree
		1	2	3	4	5
16)	I consider rising in levels as the most important goal of playing.	○	○	○	○	○
17)	I like to be a part of the storyline of the game.	○	○	○	○	○
18)	I like to explore all the areas in the game.	○	○	○	○	○
19)	I like to group up with other players.	○	○	○	○	○
20)	I like to annoy other players.	○	○	○	○	○
21)	I like to role-play in the game.	○	○	○	○	○
22)	I want to be noted for my achievements.	○	○	○	○	○
23)	I like getting to know my fellow players.	○	○	○	○	○
24)	It is unimportant to fit my character into the story.	○	○	○	○	○
25)	I want to be known for my knowledge of the game.	○	○	○	○	○
26)	I like to know where to find things.	○	○	○	○	○
27)	I want to score high on rating lists.	○	○	○	○	○

Back Next

F

Part B: Playing style

Please answer these questions with your usual playing style in mind. The categories 1 to 5 stand for:

 1: I strongly disagree
 2: I disagree
 3: neutral/don't know
 4: I agree
 5: I strongly agree.

		disagree		?		agree
		1	2	3	4	5
28)	I consider causing distress to other players to be rewarding.	○	○	○	○	○
29)	I often have meaningful conversations with fellow players.	○	○	○	○	○
30)	I hate making people angry.	○	○	○	○	○
31)	I like to be immersed in the world.	○	○	○	○	○
32)	I consider the storyline of the game unimportant.	○	○	○	○	○
33)	I try to find out all there is about the game mechanics.	○	○	○	○	○
34)	I like to compete with other players.	○	○	○	○	○
35)	I always try to find bugs in the gameplay.	○	○	○	○	○
36)	I think that realism in the game is important.	○	○	○	○	○
37)	I often find myself disclosing personal information to other players.	○	○	○	○	○
38)	Rare and powerful items are unimportant to me.	○	○	○	○	○
39)	I never play out-of-character.	○	○	○	○	○

Back   Next

G

Part B: Playing style

Please answer these questions with your usual playing style in mind. The categories 1 to 5 stand for:

1: I strongly disagree
2: I disagree
3: neutral/don't know
4: I agree
5: I strongly agree.

	disagree		?		agree
	1	2	3	4	5
40) I like to show everyone my knowledge of the game.	○	○	○	○	○
41) I like to impose myself upon others.	○	○	○	○	○
42) Becoming powerful is very important to me.	○	○	○	○	○
43) I like to try out new roles in the game.	○	○	○	○	○
44) I like maps, charts and tables with information about the game.	○	○	○	○	○
45) I hardly use the communication channels available in the game.	○	○	○	○	○
46) I always try to find as many secrets as possible.	○	○	○	○	○
47) I like dominating and killing other players.	○	○	○	○	○
48) I want to accumulate as many valuable objects as possible.	○	○	○	○	○
49) I always tend to help other players.	○	○	○	○	○
50) I like to make up storylines for my character(s).	○	○	○	○	○
51) I always try to find new ways to level.	○	○	○	○	○

Back   Next

H

Part C: Describe Yourself

This last part is about your real life. Please use the below list of common human traits to describe yourself as accurately as possible. Please describe yourself as you see yourself in the present time, not as you wish to be in the future. Describe yourself as you are generally or typically, as compared with other persons you know of the same sex and of roughly the same age. Please indicate how inaccurate or accurate the trait is using a 1 to 9 point scale

		inaccurate				?			accurate	
		extr.	very	mod.	slight		slight	mod.	very	extr.
		1	2	3	4	5	6	7	8	9
52)	Bashful	◉	◉	◉	◉	◉	◉	◉	◉	◉
53)	Bold	◉	◉	◉	◉	◉	◉	◉	◉	◉
54)	Careless	◉	◉	◉	◉	◉	◉	◉	◉	◉
55)	Cold	◉	◉	◉	◉	◉	◉	◉	◉	◉
56)	Complex	◉	◉	◉	◉	◉	◉	◉	◉	◉
57)	Cooperative	◉	◉	◉	◉	◉	◉	◉	◉	◉
58)	Creative	◉	◉	◉	◉	◉	◉	◉	◉	◉
59)	Deep	◉	◉	◉	◉	◉	◉	◉	◉	◉
60)	Disorganized	◉	◉	◉	◉	◉	◉	◉	◉	◉
61)	Efficient	◉	◉	◉	◉	◉	◉	◉	◉	◉
62)	Energetic	◉	◉	◉	◉	◉	◉	◉	◉	◉
63)	Envious	◉	◉	◉	◉	◉	◉	◉	◉	◉

Back   Next

Part C: Describe Yourself

		inaccurate				?			accurate	
		extr.	very	mod.	slight		slight	mod.	very	extr.
		1	2	3	4	5	6	7	8	9
64)	Extraverted	○	○	○	○	○	○	○	○	○
65)	Fretful	○	○	○	○	○	○	○	○	○
66)	Harsh	○	○	○	○	○	○	○	○	○
67)	Imaginative	○	○	○	○	○	○	○	○	○
68)	Inefficient	○	○	○	○	○	○	○	○	○
69)	Intellectual	○	○	○	○	○	○	○	○	○
70)	Jealous	○	○	○	○	○	○	○	○	○
71)	Kind	○	○	○	○	○	○	○	○	○
72)	Moody	○	○	○	○	○	○	○	○	○
73)	Organized	○	○	○	○	○	○	○	○	○
74)	Philosophical	○	○	○	○	○	○	○	○	○
75)	Practical	○	○	○	○	○	○	○	○	○
76)	Quiet	○	○	○	○	○	○	○	○	○
77)	Relaxed	○	○	○	○	○	○	○	○	○

Back

Next

J

Part C: Describe Yourself

		inaccurate				?			accurate	
		extr.	very	mod.	slight		slight	mod.	very	extr.
		1	2	3	4	5	6	7	8	9
78)	Rude	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
79)	Sly	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
80)	Sloppy	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
81)	Symphatetic	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
82)	Systematic	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
83)	Talkative	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
84)	Temperamental	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
85)	Touchy	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
86)	Uncreative	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
87)	Unenvious	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
88)	Unintellectual	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
89)	Unsymphatetic	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
90)	Warm	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙
91)	Withdrawn	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙

Back   Next

K

Thank you for your cooperation

Thank you for your time and cooperation. The results of the survey will be used for an article on playing styles of MUD players. If you are interested in a copy of this article or a summary of the results, please leave your email-address below and check the desired information.

In addition to this you obtain the chance to be rewarded with a **gift certificate** for amazon.com of **$ 15,-**. One of all serious participants will be rewarded with the gift certificate. In order to gain a chance you need to submit your email-address and check the corresponding box. The email-address that you submit will never be used for anything other than drawing a lot and sending you either a copy of the article and/or a summary of the results and won't be related in any way to your answers provided before.

Email-address:
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Please indicate what you would like to receive
 (You can check multiple boxes if desired)

☐ I would like a summary of the results
☐ I would like a copy of the article
☐ I want a chance to win the gift certificate

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L

Thank you for your time and cooperation

Appendix B: The Items Used for the Player Types

Achiever

I consider rising in levels as the most important goal of playing

I want to be noted for my achievements

I want to score high on rating lists

Rare and powerful items are unimportant to me

Becoming powerful is very important to me

I want to accumulate as many valuable objects as possible

Socialiser

I like to group up with other players

I like getting to know my fellow players

I often have meaningful conversations with my fellow players

I often find myself disclosing personal information to other players

I hardly use the communication channels available in the game

I always tend to help other players

Killer

I like to annoy other players

I consider causing distress to other players to be rewarding

I hate making people angry

I like to compete with other players

I like to impose myself upon others

I like dominating and killing other players

Explorer

I like to explore all the areas in the game

I want to be known for my knowledge of the game

I like to know where to find things

I try to find out all there is about the game mechanics

I always try to find bugs in the game play

I like to show everyone my knowledge of the game

I like maps, charts and tables with information about the game

I always try to find as many secrets as possible

I always try to find new ways to level

Role-Player

I like to be a part of the storyline of the game

I like to role-play in the game

It is unimportant to fit my character into the story

I like to be immersed in the world

I consider the storyline of the game unimportant

I think that realism in the game is important

I never play out-of-character

I like to try out new roles in the game

I like to make up storylines for my character(s)

Appendix C: Pattern Matrix for Player Types

Pattern Matrix

	Component				
	1	2	3	4	5
Rare and powerful items are unimportant to me	-,734				
I consider rising in levels as the most important goal of playing	,716				
Becoming powerful is very important to me	,691				
I want to accumulate as many valuable objects as possible	,673				
I want to score high on rating lists	,561				
I always try to find new ways to level	,551				
I like to role-play in the game		,827			
I like to make up storylines for my character(s)		,776			
I like to be part of the storyline of the game		,759			
I consider the storyline of the game unimportant		-,717			
It is unimportant to fit my character into the story		-,677			
I never play out of character		,662			
I like to be immersed in the world		,598			
I consider causing distress to other players to be rewarding			-,848		
I like to annoy other players			-,809		
I like dominating and killing other players			-,704		
I like to impose myself upon others			-,661		
I hate making people angry			,661		
I like to compete with other players	,393		-,397		
I like getting to know my fellow players				,746	
I often have meaningful conversations with fellow players				,644	
I like to group up with other players				,606	
I hardly use the communication channels				-,600	
I often find myself disclosing personal information to other players				,572	
I always tend to help other players			,367[30]	,383	
I try to find out all there is about the game mechanics					,702
I want to be known for my knowledge of the game					,695
I always try to find bugs in the gameplay					,657
I always try to find as many secrets as possible					,653
I like to show everyone my knowledge of the game					,628
I like to know where to find things					,557

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.
Rotation converged in 8 iterations.

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[30] This score was left out of the griefer scale, because Cronbach's alpha would be higher if the item was deleted.

Appendix D: Regression Tables for Chapter 4

Table D.1: Multiple Regression for the achiever component on gender, age, marital status, children, higher education, hours spent playing, years playing, multiple MUDs, more than mere player, role-playing MUD, player-killing MUD , social MUD and educational MUD.

Model	B	SD	Beta	T	Sig
(constant)	25.465	.603		42.249	.000
Demographic Variables					
- gender *(0=male, 1=female)*	-2.940	.331	-.226	-8.883	.000
- age *(Years)*	-.105	.019	-.166	-5.564	.000
- marital status *(0=single, 1=together)*	.133	.315	.012	.423	.672
- children *(0=no, 1=yes)*	.671	.386	.051	1.738	.082
- higher education *(0=no, 1=yes)*	.119	.313	.010	.379	.705
Player Characteristics					
- hours spent playing *(Hours)*	.022	.009	.058	2.318	.021
- years playing *(Years)*	.052	.039	.036	1.335	.182
- multiple MUDs *(0=no, 1=yes)*	.501	.315	.040	1.592	.111
- more than mere player *(0=no, 1=yes)*	-1.305	.315	-.107	-4.143	.000
MUD Characteristics					
- role-playing MUD *(0=no, 1=yes)*	-1.750	.371	-.134	-4.714	.000
- player-killing MUD *(0=no, 1=yes)*	1.479	.340	.127	4.344	.000
- social MUD *(0=no, 1=yes)*	-3.164	1.785	-.057	-1.772	.077
- educational MUD *(0=no, 1=yes)*	.726	2.036	.011	.357	.722

R^2=.111

Table D.2: Multiple Regression for the role-player component on gender, age, marital status, children, higher education, hours spent playing, years playing, multiple MUDs, more than mere player, role-playing MUD, player-killing MUD , social MUD and educational MUD.

Model	B	SD	Beta	T	Sig
(constant)	21.282	.532		40.005	.000
Demographic Variables					
- gender *(0=male, 1=female)*	2.142	.292	.163	7.346	.000
- age *(Years)*	-.029	.017	-.044	-1.710	.087
- marital status *(0=single, 1=together)*	-.427	.278	-.037	-1.537	.125
- children *(0=no, 1=yes)*	.197	.341	.015	.577	.564
- higher education *(0=no, 1=yes)*	-.138	.276	-.011	-.500	.617
Player Characteristics					
- hours spent playing *(Hours)*	.012	.008	.032	1.480	.139
- years playing *(Years)*	-.054	.035	-.037	-1.562	.119
- multiple MUDs *(0=no, 1=yes)*	.028	.277	.002	.101	.919
- more than mere player *(0=no, 1=yes)*	.993	.277	.080	3.581	.000
MUD Characteristics					
- role-playing MUD *(0=no, 1=yes)*	6.451	.329	.490	19.629	.000
- player-killing MUD *(0=no, 1=yes)*	.452	.301	.038	1.500	.134
- social MUD *(0=no, 1=yes)*	2.244	1.577	.040	1.423	.155
- educational MUD *(0=no, 1=yes)*	-4.542	1.798	-.070	-2.526	.012

R^2=.319

Table D.3: Multiple Regression for the griefer component on gender, age, marital status, children, higher education, hours spent playing, years playing, multiple MUDs, more than mere player, role-playing MUD, player-killing MUD , social MUD and educational MUD.

Model	B	SD	Beta	T	Sig
(constant)	16.829	.502		33.513	.000
Demographic Variables					
- gender *(0=male, 1=female)*	-2.150	.276	-.194	-7.774	.000
- age *(Years)*	-.168	.016	-.309	-10.629	.000
- marital status *(0=single, 1=together)*	-.161	.262	-.016	-.612	.541
- children *(0=no, 1=yes)*	.904	.322	.080	2.806	.005
- higher education *(0=no, 1=yes)*	.145	.261	.014	.556	.578
Player Characteristics					
- hours spent playing *(Hours)*	.018	.008	.056	2.283	.023
- years playing *(Years)*	.110	.033	.089	3.370	.001
- multiple MUDs *(0=no, 1=yes)*	.051	.262	.005	.195	.846
- more than mere player *(0=no, 1=yes)*	.556	.263	.053	2.119	.034
MUD Characteristics					
- role-playing MUD *(0=no, 1=yes)*	-1.170	.311	-.105	-3.767	.000
- player-killing MUD *(0=no, 1=yes)*	1.337	.285	.135	4.693	.000
- social MUD *(0=no, 1=yes)*	-.224	1.491	-.005	-.150	.881
- educational MUD *(0=no, 1=yes)*	.842	1.701	.015	.495	.621

R^2=.145

Table D.4: Multiple Regression for the socialiser component on gender, age, marital status, children, higher education, hours spent playing, years playing, multiple MUDs, more than mere player, role-playing MUD, player-killing MUD , social MUD and educational MUD.

Model	B	SD	Beta	T	Sig
(constant)	22.613	.403		56.055	.000
Demographic Variables					
- gender *(0=male, 1=female)*	.950	.221	.112	4.295	.000
- age *(Years)*	-.029	.013	-.068	-2.255	.024
- marital status *(0=single, 1=together)*	.110	.210	.015	.522	.602
- children *(0=no, 1=yes)*	.252	.258	.029	.978	.328
- higher education *(0=no, 1=yes)*	-.059	.209	-.007	-.284	.776
Player Characteristics					
- hours spent playing *(Hours)*	.013	.006	.053	2.094	.036
- years playing *(Years)*	.009	.026	.010	.357	.721
- multiple MUDs *(0=no, 1=yes)*	.157	.210	.019	.749	.454
- more than mere player *(0=no, 1=yes)*	.860	.210	.108	-4.094	.000
MUD Characteristics					
- role-playing MUD *(0=no, 1=yes)*	-.184	.248	-.022	-.740	.460
- player-killing MUD *(0=no, 1=yes)*	-1.101	.228	-.145	-4.835	.000
- social MUD *(0=no, 1=yes)*	2.197	1.196	.060	1.838	.066
- educational MUD *(0=no, 1=yes)*	-3.292	1.364	-.079	-2.414	.016

R^2**=.067**

Table D.5: Multiple Regression for the explorer component on gender, age, marital status, children, higher education, hours spent playing, years playing, multiple MUDs, more than mere player, role-playing MUD, player-killing MUD , social MUD and educational MUD.

Model	B	SD	Beta	T	Sig
(constant)	22.076	.459		48.068	.000
Demographic Variables					
- gender *(0=male, 1=female)*	-1.545	.252	-.156	-6.135	.000
- age *(Years)*	-.054	.014	-.112	-3.749	.000
- marital status *(0=single, 1=together)*	.179	.241	.020	.742	.458
- children *(0=no, 1=yes)*	-.254	.294	-.025	-.861	.389
- higher education *(0=no, 1=yes)*	-.179	.238	-.019	-.753	.451
Player Characteristics					
- hours spent playing *(Hours)*	.024	.007	.084	3.369	.001
- years playing *(Years)*	.059	.030	.054	1.974	.049
- multiple MUDs *(0=no, 1=yes)*	-.017	.240	-.002	-.071	.944
- more than mere player *(0=no, 1=yes)*	1.344	.240	.144	5.610	.000
MUD Characteristics					
- role-playing MUD *(0=no, 1=yes)*	-1.103	.283	-.111	-3.900	.000
- player-killing MUD *(0=no, 1=yes)*	-.193	.260	-.022	-.744	.457
- social MUD *(0=no, 1=yes)*	-.183	1.361	-.004	-.134	.893
- educational MUD *(0=no, 1=yes)*	.213	1.552	.004	.137	.891

R^2=.105

Table D.6: Multiple Regression for the achiever component on gender, age, marital status, children, higher education, hours spent playing, years playing, multiple MUDs, more than mere player, role-playing MUD, player-killing MUD , social MUD, educational MUD, extraversion, agreeableness, conscientiousness, emotional stability and intellect, openness, or imagination.

Model	B	SD	Beta	T	Sig
(constant)	24.280	1.429		16.993	.000
Demographic Variables					
- gender *(0=male, 1=female)*	-3.073	.353	-.238	-8.712	.000
- age *(Years)*	-.088	.020	-.137	-4.362	.000
- marital status *(0=single, 1=together)*	-.212	.328	-.019	-.646	.518
- children *(0=no, 1=yes)*	.610	.397	.047	1.538	.124
- higher education *(0=no, 1=yes)*	-.115	.324	-.009	-.355	.723
Player Characteristics					
- hours spent playing *(Hours)*	.015	.020	.041	1.565	.118
- years playing *(Years)*	.044	.040	.031	1.083	.279
- multiple MUDs *(0=no, 1=yes)*	.448	.326	.036	1.375	.169
- more than mere player *(0=no, 1=yes)*	-1.200	.330	-.098	-3.634	.000
MUD Characteristics					
- role-playing MUD *(0=no, 1=yes)*	-1.697	.390	-.131	-4.357	.000
- player-killing MUD *(0=no, 1=yes)*	1.137	.355	.099	3.199	.001
- social MUD *(0=no, 1=yes)*	-3.099	1.757	-.058	-1.764	.078
- educational MUD *(0=no, 1=yes)*	1.270	2.026	.020	.627	.531
Big Five Personality Traits					
- extraversion	.052	.015	.094	3.573	.000
- agreeableness	-.031	.015	-.055	-1.979	.048
- conscientiousness	.079	.014	.151	5.634	.000
- emotional stability	-.078	.014	-.150	-5.516	.000
- intellect, openness, or imagination	.016	.019	.023	.862	.389

R^2**=.146** (R^2 without the Big Five was .111)

Table D.7: Multiple Regression for the role-player component on gender, age, marital status, children, higher education, hours spent playing, years playing, multiple MUDs, more than mere player, role-playing MUD, player-killing MUD , social MUD, educational MUD, extraversion, agreeableness, conscientiousness, emotional stability and intellect, openness, or imagination.

Model	B	SD	Beta	T	Sig
(constant)	14.145	1.259		11.237	.000
Demographic Variables					
- gender *(0=male, 1=female)*	1.756	.310	.134	5.657	.000
- age *(Years)*	-.021	.018	-.032	-1.168	.243
- marital status *(0=single, 1=together)*	-.357	.289	-.031	-1.235	.217
- children *(0=no, 1=yes)*	.128	.394	.010	.366	.714
- higher education *(0=no, 1=yes)*	-.281	.285	-.022	-.988	.323
Player Characteristics					
- hours spent playing *(Hours)*	.012	.009	.032	1.424	.155
- years playing *(Years)*	-.096	.036	-.066	-2.691	.007
- multiple MUDs *(0=no, 1=yes)*	-.114	.287	-.009	-.396	.692
- more than mere player *(0=no, 1=yes)*	.703	.290	.057	2.424	.015
MUD Characteristics					
- role-playing MUD *(0=no, 1=yes)*	6.125	.344	.463	17.810	.000
- player-killing MUD *(0=no, 1=yes)*	.465	.314	.040	1.482	.139
- social MUD *(0=no, 1=yes)*	1.879	1.547	.034	1.214	.225
- educational MUD *(0=no, 1=yes)*	-5.176	1.784	-.081	-2.901	.004
Big Five Personality Traits					
- extraversion	.015	.013	.027	1.179	.239
- agreeableness	.012	.014	.022	.904	.366
- conscientiousness	-.032	.012	-.060	-2.596	.010
- emotional stability	-.004	.013	-.008	-.356	.722
- intellect, openness, or imagination	.145	.016	.202	8.815	.000

R^2**=.362** (R^2 without the Big Five was .319)

Table D.8: Multiple Regression for the griefer component on gender, age, marital status, children, higher education, hours spent playing, years playing, multiple MUDs, more than mere player, role-playing MUD, player-killing MUD , social MUD, educational MUD, extraversion, agreeableness, conscientiousness, emotional stability and intellect, openness, or imagination.

Model	B	SD	Beta	T	Sig
(constant)	20.341	1.116		18.232	.000
Demographic Variables					
- gender *(0=male, 1=female)*	-1.848	.275	-.168	-6.711	.000
- age *(Years)*	-.122	.016	-.224	-7.809	.000
- marital status *(0=single, 1=together)*	-.241	.256	-.025	.941	.347
- children *(0=no, 1=yes)*	.977	.309	.088	3.164	.002
- higher education *(0=no, 1=yes)*	-.075	.252	-.007	-.297	.767
Player Characteristics					
- hours spent playing *(Hours)*	.010	.008	.033	1.369	.171
- years playing *(Years)*	.094	.032	.077	2.965	.003
- multiple MUDs *(0=no, 1=yes)*	.080	.255	.008	.315	.753
- more than mere player *(0=no, 1=yes)*	.459	.257	.044	1.785	.074
MUD Characteristics					
- role-playing MUD *(0=no, 1=yes)*	-.936	.305	-.085	-3.069	.002
- player-killing MUD *(0=no, 1=yes)*	1.245	.278	.126	4.474	.000
- social MUD *(0=no, 1=yes)*	-.164	1.371	-.004	-.120	.905
- educational MUD *(0=no, 1=yes)*	.930	1.581	.017	.589	.556
Big Five Personality Traits					
- extraversion	.082	.011	.173	7.153	.000
- agreeableness	-.166	.012	-.347	-13.749	.000
- conscientiousness	-.003	.011	-.006	-.244	.808
- emotional stability	-.035	.011	-.078	-3.138	.002
- intellect, openness, or imagination	.052	.015	.086	3.547	.000

R^2**=.285** (R^2 without the Big Five was .145)

Table D.9: Multiple Regression for the socialiser component on gender, age, marital status, children, higher education, hours spent playing, years playing, multiple MUDs, more than mere player, role-playing MUD, player-killing MUD , social MUD, educational MUD, extraversion, agreeableness, conscientiousness, emotional stability and intellect, openness, or imagination.

Model	B	SD	Beta	T	Sig
(constant)	16.009	.918		17.442	.000
Demographic Variables					
- gender *(0=male, 1=female)*	.540	.226	.063	2.385	.017
- age *(Years)*	-.024	.013	-.056	-1.865	.062
- marital status *(0=single, 1=together)*	-.261	.210	-.035	-1.243	.214
- children *(0=no, 1=yes)*	.238	.254	.027	.937	.349
- higher education *(0=no, 1=yes)*	-.258	.208	-.031	-1.243	.214
Player Characteristics					
- hours spent playing *(Hours)*	.017	.006	.070	2.773	.006
- years playing *(Years)*	.010	.026	.011	.398	.691
- multiple MUDs *(0=no, 1=yes)*	-.082	.210	-.010	-.390	.697
- more than mere player *(0=no, 1=yes)*	.722	.212	.089	3.411	.001
MUD Characteristics					
- role-playing MUD *(0=no, 1=yes)*	-.368	.251	-.043	-1.470	.142
- player-killing MUD *(0=no, 1=yes)*	-1.371	.228	-.179	-6.003	.000
- social MUD *(0=no, 1=yes)*	2.173	1.130	.061	1.922	.055
- educational MUD *(0=no, 1=yes)*	-1.666	1.303	-.040	-1.279	.201
Big Five Personality Traits					
- extraversion	.081	.009	.218	8.563	.000
- agreeableness	.097	.010	.260	9.756	.000
- conscientiousness	-.028	.009	-.080	-3.080	.002
- emotional stability	-.036	.009	-.104	-3.932	.000
- intellect, openness, or imagination	.034	.012	.073	2.857	.004

R^2**=.199** (R^2 without the Big Five was .067)

Table D.10: Multiple Regression for the explorer component on gender, age, marital status, children, higher education, hours spent playing, years playing, multiple MUDs, more than mere player, role-playing MUD, player-killing MUD , social MUD, educational MUD, extraversion, agreeableness, conscientiousness, emotional stability and intellect, openness, or imagination.

Model	B	SD	Beta	T	Sig
(constant)	19.109	1.078		17.728	.000
Demographic Variables					
- gender *(0=male, 1=female)*	-1.662	.266	-.171	-6.246	.000
- age *(Years)*	-.039	.015	-.081	-2.581	.010
- marital status *(0=single, 1=together)*	.127	.248	.015	.511	.609
- children *(0=no, 1=yes)*	-.242	.300	-.025	-.809	.419
- higher education *(0=no, 1=yes)*	-.297	.244	-.032	-1.216	.224
Player Characteristics					
- hours spent playing *(Hours)*	.020	.007	.071	2.744	.006
- years playing *(Years)*	.039	.031	.036	1.261	.207
- multiple MUDs *(0=no, 1=yes)*	-.050	.247	-.005	-.203	.839
- more than mere player *(0=no, 1=yes)*	1.245	.249	.135	4.997	.000
MUD Characteristics					
- role-playing MUD *(0=no, 1=yes)*	-1.357	.295	-.139	-4.608	.000
- player-killing MUD *(0=no, 1=yes)*	-.197	.269	-.023	-.733	.464
- social MUD *(0=no, 1=yes)*	.189	1.326	.005	.142	.887
- educational MUD *(0=no, 1=yes)*	.941	1.529	.020	.615	.538
Big Five Personality Traits					
- extraversion	-.013	.011	-.032	-1.202	.230
- agreeableness	-.029	.012	-.069	-2.500	.013
- conscientiousness	.025	.011	.064	2.395	.017
- emotional stability	-.023	.011	-.059	-2.173	.030
- intellect, openness, or imagination	.088	.014	.165	6.219	.000

R^2**=.145** (R^2 without the Big Five was .105)