



The name in the game: Patterns in character names and gamer tags[☆]



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ABSTRACT

In online games, often the only truly unique thing about a player is the name associated with an online account or game character. In massively multiplayer online games like *World of Warcraft*, customization options are limited and in multiplayer games like *Battlefield*, there are no ways of customizing the appearance of the players' avatar. This lack of ability to visually distinguish oneself means that names become important in online games, and assists with building understanding of the people that play these games, which is notably important for games operating via Free-to-Play revenue models. Here, a large-scale, cross-game analysis of names and behaviors in games is presented, based on datasets spanning over eight million character names and 80,000 gamer tags with associated behavioral data, from four major commercial game titles: the role-playing game *World of Warcraft* and the tactical shooters *Battlefield 2 Bad Company 2*, *Crysis* and *Medal of Honor*. The results highlight the inventiveness of the names players adopt for their characters or accounts, and describe two different patterns – or communities – of name usage: in *World of Warcraft*, player character names are distributed according to power laws, have semantic meaning (no numbers permitted in names), and name selection is related to the aesthetics and game function of characters, with some names even being predictors of particular classes and races. In the tactical shooters, where all gamer tags are unique, names comparatively more rarely have a clear semantic meaning (numbers and special characters are permitted and often used), and name components are not distributed according to power laws. However, there is to a degree of a non-random relationship between gamer tag and in-game behavior. These results indicate that the name chosen by players for their characters or tags can potentially be useful for player profiling purposes in online games.

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1. Introduction and motivation

The analysis of player behavior in online games has in recent years become important to the game industry for a variety of reasons, for example to monitor the population of persistent virtual worlds, or evaluating game designs based on actual user behavior. In essence, monitoring and analyzing the behavior of the users provides insights on the large scale, whereas traditional lab-based testing methods were limited in practice in the sample size attainable [38,40–42].

One of the key goals of game analytics is to find groups of players who exhibit similar behaviors, using techniques such as profiling, segmentation, clustering or classification [37,44,45]. Finding patterns in the behavior of players in online games is useful for a number of reasons, perhaps the most important being that it reduces the complexity of working with potentially thousands or millions of users to a smaller number of groups characterized by having similar behavior [35]. This forms the fundamental motivation for the work presented here. Hitherto, research on player profiling has been limited to in-game behaviors and some demographic considerations, and ignores the “virtual identity” that a player (user) adopts in an online game context – for example the name of a virtual character or gamer tag.

Formally, a virtual identity or online identity is a social entity that an internet user establishes in an online community. In many digital game contexts, such as the Xbox Live service, gamer tags or character names are important to virtual identities formed in connection with games, because names are fixed after the initial

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selection, and anonymous (in some cases, e.g. *World of Warcraft*, player character names can be changed against payment). Because such names are fixed, players are accountable to others in the community, and a reputation mechanism is established, for example among players interacting in the context of Massively Multi-Player Online Games (MMOGs) [1,48]. MMOGs form virtual societies where users control avatars, or more precisely characters, interacting with the elements of the world as well as with other players. A similar effect can be observed for online First-Person Shooters, where e.g. clans or teams of players compete in a semi-persistent manner within a community of players [2,3].

It is currently not known if there are patterns in how players name their virtual selves in game contexts, and whether these patterns could inform player profiling – i.e. if player behavior somehow relates to how they name their virtual selves. The first step towards investigating this question is taken here, based on explorative, data-driven analysis of two highly different “communities of names”, in the MMOG *World of Warcraft* (WoW) and three tactical shooters *Crysis 2* (*Crysis 2*), *Medal of Honor* (MoH) and *Battlefield Bad Company 2* (BFBC2).

In the research presented here, the focus is not on virtual identities as a whole, but a specific element of them: their names. Even more specifically, the research presented here only deals with names from gamer tags and player characters from digital online games, not e.g. social online media or online forums in general.

The user-generated identities – specifically the component of the identity that can be tracked using telemetry logging – in all four games identify the players in social interactions with each other. The two kinds of identifiers in the games are different – one being related to a persistent avatar, the other being related to an account for a player. Both serve the same overall purpose, i.e. the identifier used by players for interacting with each other. However, no claim is being made here that these two types of identities are identical or that results from an analysis of one type can be related to the other. Rather, the fundamental rules for name generation and uniqueness in the two classes of games necessitated the development of different sets of data mining methodologies in order to locate the patterns that do exist in the datasets investigated. These methodologies are presented here and form a key contribution of the study.

The fundamental approach of the research presented here is basic research – data-driven and explorative. Character names and gamer tags have not previously formed the subject of large-scale quantitative research, which supports an explorative approach. The goal is thus not to provide directly actionable insights to game development, but to investigate if there are – in the data being analyzed – any patterns across names and play behavior, and lay some of the foundation for such insights from future research. While theories outside the domain of digital games can be imported and applied in the context of games, doing so requires contextual data about the users that are not available for the current study (but see e.g. [49,50] for other situations where contextual data are used in conjunction with behavioral data).

1.1. Contribution and results

Apart from the methodological contribution mentioned above, the analysis of the telemetry data from the four games yielded results, which show that there are patterns in character and gamer tag naming strategies, and even tentative relationships between in-game choices/behaviors and name choice:

In *World of Warcraft*, names need to be unique only for individual instances of the game world, and yet the evidence presented points to a staggering variety in the names chosen by players of WoW – 3.8 million unique names out of 7.93 million – notably remarkable given the restrictions imposed on character name gen-

eration in the game. The result highlights the imaginativeness employed in naming characters, indirectly supporting earlier work such as [6,19] in concluding that the choices made during the character creation process are important to the players. Informally, this result appears to be emphasized by the reactions of the WoW player community to coverage of the presented research on various major game websites, e.g. *Kotaku* (where the post was viewed over 60,000 times) and *The Escapist* [54,55], where the most common reaction (roughly 55% of the comments) to the results was to describe the names of the characters of the commenter and why these names were important to the player/how they were generated; or discussing character names in general (roughly 15% of the comments). Example comments include (from *Kotaku*): (a) “The name of a character I play in a game is highly important to me. If the game doesn’t fit the character in some way (based on class, race or backstory) I delete them and make them again and again until I get it right.”; (b) “I have literally spent an hour waffling over names before starting a character. And I’ve deleted them if the name did not set well with me after a few levels”; (c) “Thinking into it more, I rather dislike seeing names that aren’t... ‘names’. You know, that fool running around with the name Xxxxpwnzyounubxxx just seemed juvenile to me – if you can’t come up with a NAME for your character, you probably shouldn’t be playing an RPG at all”. While these comments cannot be taken as representative of the entire WoW player population, this reaction from the player community is worth mentioning.

Character names in WoW follow the same kind of log-distribution as real-world names – despite MMOGs being only about 1.5 decades old and restrictive in terms of name choices.

Previous research on WoW does indicate that character name, appearance and functionality are somehow linked (e.g. [9]); however, previous research is limited in terms of sample size and adopts informal methodologies. The results presented here show that (for the games included in the analysis) the appearance of a character and its gameplay functionality is related to the names given to characters – to a degree where it may be possible to develop predictive models which can assist game developers to evaluate player populations based on character names and similar sparse data (notably in situations where rich datasets are not available [44]). Furthermore, the names given to characters on Role-Playing, RP, realms show differences from those of Player-vs-Player, PvP, and Player-vs-Environment, PvE, realms. Finally, as reported by Thureau and Drachen [31] (the precursor article to the current one), who investigated the sources of inspiration for character names of roughly 120,000 player character names, the sources of inspiration for character names are diverse (38 categories developed via explorative coding), and that names with a negative semantic meaning (e.g. “Nightmare”) are more than six times as common as those with a positive meaning (e.g. “Hope”).

For the three FPS games in the current study, gamer tags must be unique for telemetry tracking to function, and therefore all are unique. While the data collected for these games form a fraction of the WoW dataset (86,005 total), they comprise – to the knowledge of the authors – a larger sample size than any previous study on gamer tags. The results of clustering analysis on these data indicate that gamer tags, based on string distance measures, can be clustered and “archetypical” names for the different clusters located, indicating that there is structure in the distribution of gamer tags. Furthermore, that the behavior of the player and the gamer tag chosen is related to some degree, with purity measures for clustering according to behavioral profiles reaching as high as 61%. Finally, gamer tags did not cluster according to the three games, indicating that for the three shooters at least, the choice of gamer tag is not determined by the game, although some non-randomness was apparent in the analysis (purity 34%).

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