

Playstyles analysis and strategies used in MOBAs

Antonino Frazzitta
s5117080
Creative Technology
Bournemouth University, UK
s5117080@bournemouth.ac.uk

ABSTRACT

Identifying how playstyles are incorporated by League of Legend players and examine their actions and if there are variations across the tier levels. This study also examines player activities and what are the most shared patterns between them, the investigation will be executed under two different lenses.

One will be using a more quantitative perspective taking under the scope the League of Legends API data using python and Pandas tools to identify statistics about the playstyle distribution over the players and if tier level affects their integration.

The second lens will analyse more the qualitative side focusing on player aggressiveness and playstyle priorities by taking under examination a series of participants in a user study. Firstly, by acquiring their behavioural data with a gameplay session and secondly acquiring attitudinal data with an interview meeting. With the use of this approach, we are capable of understanding both their gameplay routine and thought process and if players what are the main differences between newer players and more experienced ones.

KEYWORDS

Playstyles, Player aggressiveness, Player strategies, In-game ranking, MOBA analysis

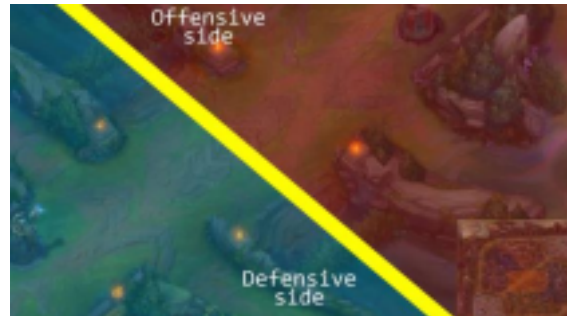
1 Introduction

This research will answer the following questions:

- What are the playstyles in MOBAs?
- What are the most shared patterns of strategies?
- Is there a connection between playstyles and level of experience of the player?

1.1 How to understand player positioning

Figure 1: A player that tends to stay more in the defensive side when is tanking while they tend to stay more in the



offensive side if they are pushing the lane. In this mode it will be asked to play on the blue team to remain faithful to this example.



Figure 2: If a player tends to invade other lanes entering the roam state, usually this happen with an assassin or a jungler however lane pushers tend do this too sometime once the lane is pushed and they have nothing to do.

^aOne of the key points of these observational methods will be the examination of map to see what paths have been the most preferred and if this has resulted advantageous to the player or not.

2 Background

Identify player playstyle personas

By using Bartle's player typologies (Bartle 1996) to understand their social behaviours. With a little "poetic license" we can see that there are four common patterns shared with MOBAs players, those partners go along four archetypes.

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The achiever:

“Players give themselves game-related goals, and vigorously set out to achieve them”.

Some aspects of this persona shared in the **Lane Pusher** which is a playstyle oriented to essentially destroying the towers and push the minions to the enemy’s nexus.

The Explorer:

“Players try to find out as much as they can about the virtual world.”

We can translate this into the **jungler**, which is more of an explorative role, but in this context the player is not exploring the environment to find out new locations but to find out more about player positioning and clearing the jungle camps.

The socializer:

“Players 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.”

This type of interaction can be identified in the **support/tank** who has the most of interaction between of all the other roles, in fact this player always accompanies the AD carry ensuring they are staying alive, in addition to that they are more responsible of warding affecting the whole team vision.

The killer:

“Players use the tools provided by the game to cause distress to (or, in rare circumstances, to help) other players”.

This playstyle can be affiliated with the **assassin** whose aim is to kill the enemy champions and establish a form of domination towards the opponents (arguably also in a psychological manner).

3 Telemetry Analysis

For this study it was used data available through the Riot Games API using the version 7.12 released on 14th June 2017.

3.1 Methodology

Step 0: Data Extraction

The data of 1000 matches have been imported and flatten into a unique data frame, the data has been separated of the following categories:

Participant data: information about the single participants and their statistics for each match.

Team data: information about the teams for each match.

Participant ID data: information about the users.

Step 1: data cleaning

For the benefit of answering the objective more accurately some data has been filtered out avoiding errors.

In this case, the examined data was only of the winning participants (5000 participants), this is because after several attempts it has been confirmed that in most cases the losing team has less agency hence participants have less opportunity to show their true playstyle.

For example, a potential “loser” assassin might score 0 kills therefore no possibility to show his/her playstyle in the metrics.

^aThe master tier has been taken out of the calculation due to be a small number (4 participants) and could result inaccurate data.

Step 2: Identify playstyle

For this part, it has been set a few conditions to meet in order to be considered within certain playstyle, to enter a category a participant has to score more of the average in a certain task, for example a support is considered as such when the participant has scored more than the average in wards placed or, for the assassins they will have to score more kills than average.

Step 3: Processing the Tier level and number of playstyles To get close to the objective, there are two things to be made, translating the tiers into integers and count the number of the playstyles per each player.

Step 4.1: Correlation between tier and number of playstyles

Subsequently, it has been done a correlation between tier level and number using the Pearson’s Correlation coefficient of playstyles in order to verify if the increase of number of playstyles is connected of the increase of the tier level.

The result was: $r = 0.3262790093199939$, which is a slightly moderate positive correlation, confirming the connection.

Step 4.2: Significance using T-test

To verify that the result of the test is not a coincidence, it has been applied a t-test for every rank. And there are different results indicating that each tier in League of Legends have their own behaviours, this is because being a game with such old age (8 years if taking in account the data examined) there are some inner mechanics to be considered.

3.2 Findings

As shown also in the Figure 3 there is an increase of the number of playstyles until 3 (gold) and then a decrease by going forward.

This is a sign that participants play more freely as they progress with the game. This part can be considered a range where participants tend to play more casually and experiment with their playstyle.

Although, after the gold tier threshold is when players start to play more seriously and abandon the idea of being multipurpose. This is also could be potentially affected of the Esports scene where

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participants tend to emulate professional players and stick with their main and only role.

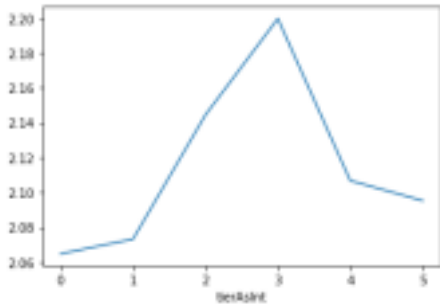


Figure 3: This is a graph is describing the mean of playstyle per tier. 0 being unranked and 5 being diamond.

Unranked and Platinum	p = [0.52150078]	Non significant	People start to be competitive. They try to stick more to their main role.
Unranked and Diamond	p = [0.78456973]	Non significant	People are extremely competitive. They try to stick to their main role.

Table 1: T-test results of the tiers.

Tier examined	p value	Significance	Possible reasons
Unranked and Bronze	p = [0.89189348]	Non significant	Smurfing, those tiers are very similar. Player is still trying to learn the game.
Unranked and Silver	p = [0.12742602]	Non significant	Smurfing present but less. People tend to stick to their role as there are still learning.
Unranked and Gold	p = [0.0172193]	Significant	People are inclined to be stuck in this tier more and have a tendency to play "less seriously" incorporating different roles.

^b Smurfing: a high-skilled player that has a secondary account used as a disguise to play against low-skilled players.

Table 2: Playstyles Distribution

Assassin	2015	2016
Lane Pusher	2267	45.34
Support	2172	43.44
Tank	2021	40.42
Jungler	1994	27.08

4 UX User Study

For the user study it has been observed and interviewed six different participants, three of them being in the low kill range and the other being in the high skill range.

4.1 Methodology

Introduction: 5 minutes

We assume that the subject knows already League of Legends since it has been introduced before so this should be quite short. This part should include the setting up for technical preparation. In this phase the player will be asked to start the game client and create custom game with bots. Player will be assigned to one of the skill ranges.

For this study we are going to classify the players using a persona based on their skill level, to aid in this task we are going to separate the players in to two main archetypes using the *Elo ranking system* present inside League of Legends also called “League system”.

The archetypes are the following:

Low Range: Unranked – Iron – Bronze- Silver

High Range: Gold - Platinum -Diamond - Master - Grandmaster – Challenger

“In case a player has never played a ranked match, but he/she has some experience in the game (at least more than 1 month), it will be done a calculation based on their statistics such as kills/Death/Assist ratio. For this part it will used “League of Graphs.com” calculating the rank using the last 10 matches played. All the subjects with less than 1-month experience they will be assigned to unranked.

Gameplay: 10 minutes

On this point the game has started as well as the recording, the data recovered will be the screen capture of the game. This will be operated under 2 methods - Telemetry and Usability test.

Telemetry annotation: we can undertake an examination to understands some key points, this part is vital to understand in what role the player fit in.

To do this, there will be an examination to understand what their priorities are, based on that we are going to assign them a playstyle persona:

commentary where the player will be asked to explain what they

Lane Pusher: Minions killed, turrets destroyed.

Jungler: Neutral Minions Killed, jungle bosses killed.

Assassin: Enemy champions killed, player roaming.

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Support: Crowd control spells, wards placed.

Tank: Total damage taken; player tends to play defensively a lot more than usual.

^d One of the key points of this method will be the examination of map to see what paths have been the most preferred and if this has resulted advantageous to the player or not.

Usability Test: The player will be asked to perform the following tasks so we can analyse what approach was used and how it differs depending on the skill range and play style, based on these guidelines:

Kill 10 minions

Kill 1 enemy champion

Destroy 1 tower

Coding key points:

Tasks, Decision point, Frequency, Mistakes, Outcome, Options

All types of notes both digital and handwritten will be destroyed after the ethics due date. All personal information will be anonymized, in this case, because participants have chosen different champions, they were referend with the champion name, which helped the differentiation.

4.2 Results

1H S - A (Vel'Koz) 2H LP - A (Lee Sin)

3H T - LP - A (Olaf) 1L LP (Darius)

2L LP (Riven) 3L LP (Lux)

6

Interview: 15 minutes

Post-talk Aloud: This method mentioned by Matthew Higgins 4 (Higgins and Howell 2020) will be used as a post-game

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5 5 5
4 3 4

5

4 3 4 4

3

2

2

2

were thinking and what they were trying to do in specific phases of the game.

^e We can appreciate more this method used in this way since the game itself require player’s attentions at all time, forcing them to talk could result on a loss of play quality.

During the gameplay, the player will be asked to play the champion that they tend to play the most as well as mastered the most. This also passively indicates their playstyle tendency.

The player will be also asked the following questions per phase. Reviewing some focal parts of their gameplay. They will be called highlights. These highlights will involve a champion death or a tower destruction.

Questions

- For how long have you been playing the game?
- In what playstyle you think you fit in?
- What was your strategy undertaken in this part?
- Did the result go as expected or could it have been better? (if bad outcome such as death of the player) if you could rewind the game at that moment what would you do?
- Did your approach was towards offensive or

defensive? ^f All answers will be audio recorded and annotated.

After Interview: undefined

Transfer all notes from game play and interview into a digital document, graphs, and spreadsheet to identify common patterns for qualitative analysis through a process of eyeballing then it has been used Goodman’s coding process that focusses on “establishing the sequence of actions” (Goodman et al. 2012) to support the classification.

Start - phase Mid - phase End - phase

Figure 4: This type of study has been broken down into 3 phases Start (from 0 min to 3 min), Mid (from 3 min to 6 min), End (from 6 min to 10 min) and H means High skill range and L Low skill range. The aggressivity score goes 1 to 5 but it has been assigned an extra point on the ones who invaded other lanes.

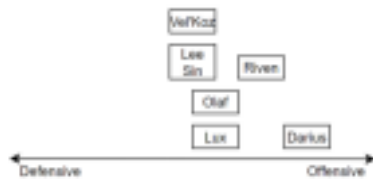


Figure 5: Using Goodman’s spectrum (Goodman et al. 2012) shows that the overall aggressiveness is uniform, the

0

difference is in how it has been managed over the phases.

Analysis

Difference of aggressiveness over time

All the players in the low skill range (L) started very aggressively, this resulted to readjust their aggressivity into a more defensive playstyle. This is because they overexposed initially leaving them vulnerable in later gameplay

While this was the opposite for the high skill range (H). They started very defensive, and by the time they get their first advantage they managed to exploit creating a gap allowing them to “snowball”.

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This happens because of the gap of experience between the two categories,

Because player in L have less experience they only rely on the feedback given in the game, which in most of the cases was the death of their champion, making them to being more careful in later parts, resulting a more defensive style.

In the other hand player in H knew their actions and how consequences allowing them to take advantage increasing the advantage even more, allowing them to play more aggressively.

From this we can deduct that the game structure relies a lot on the initial phase and this affect exponentially the later gameplay.

Participants preferred priority is to kill other enemy champions.

Player priorities differences between skill level

Players in L tend to solely stick to their tasks given, while players in H are interpreting the tasks as a secondary part of the gameplay, this is given due to their confidence with the game, hence the completion of the tasks given is much easier to them. Based on the observations made, players in H also tend to deviate their gameplay using their own play style adding some extra challenges such as kill the blue or flank the other lane.

Through the process of eyeballing, we can identify shared patterns between the participants, the key words are the following.

- Destroy tower Buy Items Take minions Get gold Kills Enemy champion Push the lane Optimisation Flank Deal damage Levelling up Get Killed Engage Engage Overextend Crowd Control**

Offensive vs defensive observation

This type of examination was used to analyze the participants level of aggressivity, this study was conducted examining player positioning of the figure (figure 1). If the player overextends more into the red area, they receive a higher rating while if they stay

more in the blue area, they receive a lower rating.

From figure 3 overall players in L tend to be over aggressive and this affect them in the later part making them more defensive. While players in H tend to be more defensive and wait for the enemy to overextend which this result into a more offensive gameplay afterwards.

This phenomenon in MOBAs is also called “snowballing” which is a form of positive feedback loop granting the winner a significant advantage gap that gets bigger over time if maintained.

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Goodman, E., Kuniavsky, M. and Moed, A., 2012. Observing the user experience: A practitioner's guide to user research (pp. 423-451). Elsevier.

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Table 3: code categorization

Category	Code #
<i>Farming</i>	Minions 4
	Kills 6
	Tower 5
	Items 3
	Level up 1
<i>Fighting</i>	Damage 3
	Kills 6
	Enemy 4
	Poke 2
<i>Laning Phase</i>	Engage 1
	Minions 4
	Lane 4
<i>Objectives</i>	Push 3
	Minions 4
	Kills 6
	Tower 5

Kills: How many times the killing enemy champions has been performed.

Gank: When a player decides to flank another lane.

Poke: When an enemy health is slowly taken down during the fighting 1 v 1 in lane.

Enemy: Any champion belonging to the enemy's team.

Push: When the player is assisting his minions to go towards the enemy side.

Lane: One of the main three paths in the map. Top, Mid and Bottom lane.

Engage: When a player decides to fight with an enemy champion and deal as much damage, he/she can.

5 Conclusions

There is a connection between the ranks and playstyle increase, this has been showed in both studies but with a further examination this trend stops after the gold tier.

As shown in table 2 players prefer to use the assassin playstyle the most (also confirmed by the interviews in the user studies, most of them described the killing of other champions the most fun part of the game).

REFERENCES