“You suck, pls uninstall” - Towards a Better Understanding of Toxic Behaviour in Online Multiplayer Video Games

Lisanne Wartna[1]
l.p.m.wartna@umail.leidenuniv.nl
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Primary supervisor: Dr. Max van Duijn[1]
Secondary supervisor: Marcello A. Gómez-Maureira[1]

[1] Leiden University, Leiden Institute of Advanced Computer Science (LIACS), MSc Media Technology, Niels Bohrweg 1, 2333 CA Leiden, the Netherlands

Abstract. Toxicity or toxic behaviour in online multiplayer games has been a growing concern over the years for both gamers and developers. Researchers have tried to define this problem, but uncertainty remains on how toxicity unfolds and how it impacts people in the context of multiplayer games. This research tries to find a more comprehensive understanding of toxic behaviour by moving beyond the current umbrella terminology. The study asks participants to answer an online questionnaire about toxicity in the game League of Legends or other games specified by the participant. For a subgroup of the participants, the questionnaire is followed up by focus groups to get more in-depth answers. Through getting a better understanding of toxic behaviour, game developers can ultimately design better games.

Keywords: Human Computer Interaction · Online multiplayer games · Online toxicity · Toxic behaviour · League of Legends.

1 Introduction

Imagine the following: it is weekend and someone decides to boot up one of their favourite online multiplayer game. They get into a queue, get loaded in and get started with the game. After a while something happens and a player makes a mistake. The player’s character dies. Instantly there is feedback about this in the text chat: “You suck, you should uninstall this game”. This continues for the rest of the gaming session and the situation gradually becomes worse. Now one of the teammates is not just saying things like “you suck” but has escalated to saying things like “you should die and I hope you get cancer”. On top of that there is also harassment through different systems in the game, for example constantly being spammed with a sound queue triggered intentionally by other users. Finally the game ends for the player. They might have won, they might have lost. In any case the game leaves the player with a horrible aftertaste and the player does not feel like playing any more. For a lot of players of online multiplayer games, this is their reality. This is something that players go through

every once in a while, whilst some might even see this every time they start to play their favourite video game.

Toxic is mostly referred to in the dictionaries as having to do with poison, poisonous materials and so on. This might even be the first thing people think about when they think about something 'toxic'. However, in 2018 the Oxford dictionaries called 'toxic' the word of the year (Steinmetz, 2018). Stating that the usage of the word had moved to a more figurative use. The word toxic is now frequently used to describe hostile behaviour in subcultures, situations, relationships, behaviours, as well as for example toxic masculinity. Toxic masculinity was even one of the main topics of the #MeToo movement. The #MeToo movement was established by Tarana Burke. The movement was to put a spotlight on survivors of sexual violence, assault and harassment (Langone, 2018). Now several dictionaries mention underneath the word toxic that it is now also used to help with describing relationships, situations and much more. In this case most dictionaries describe the word toxic as malicious, harmful, unpleasant, unacceptable and unhappy. The scientific research community has used the word toxic or toxicity for a somewhat longer time (Deslauriers, St-Martin, & Bonenfant, 2020). Currently in many research fields that are in the area of human behaviour and technology, toxicity or toxic behaviour has been used in a similar manner. In fact, in most of these areas the term toxic or toxic behaviour is seen as an umbrella term to describe several harmful or disruptive behaviours. Toxicity is very common in online games. Toxicity is very known by the communities of various games, however there's a big difference between communities in how this is understood. This will be explained more throughout the Background section and a more shared definition of toxicity will be provided. Toxic behaviour and or disruptive behaviour in the context of this research can be seen as a context-dependent multilayered problem that develops over the course of a game where a player or players intentionally or unintentionally sabotage the playing experience of others. This can happen through social types of behaviours (such as verbally abusing someone in chat) or through gameplay related behaviours (such as cheating).

Since it has been difficult to define toxic behaviour, this study will look into how toxicity has historically been defined in gaming research and how it is defined in other contexts outside of gaming research. This is to see if there is a big difference between historical and current usage of the term and if there is a big difference between researchers. To find out more on how toxicity works, it is first necessary to find out how toxicity unfolds. Toxicity has different forms and ways that it is expressed. These expressions usually happen through channels of communication that are commonly used in games. These can include text chats and voice chats. An example would be somebody verbally abusing another player through text chat or voice chat. This could lead to the player that is being targeted to experience negative emotions intentionally inflicted by another player whom they have never met. Therefore, it is also necessary to figure out how toxicity makes people feel.

The larger question driving this study is:
"How can we design games better so that they retaliate toxic behaviour of players?"
To be able to reflect on this question, the following sub-questions will be answered first.
Sub-question 1: How can toxicity be defined, more generally and in the context of gaming, based on existing research?
Sub-question 2: How does toxicity unfold (in practice)?
Sub-question 3: How does toxicity make people feel?

This research will look at one game specifically: League of Legends, one of the biggest online multiplayer games of all times (Bratt, 2016). Riot Games has reported that they had 180 million unique monthly players back in 2021 (Makar, 2021). This was divided over all of their 'Runeterra' (the universe or story where the games are set in) based game modes, which include the PC and mobile version (Wild Rift) of League of Legends, the auto battler Teamfight Tactics and the online card game Legends of Runeterra (Makar, 2021). The study will make use of a survey and focus groups to address sub-question 1, 2 and 3. The participants for this study will therefore be players of online multiplayer games and more specifically, League of Legends players.

2 Background

This chapter discusses the history of toxicity, the differences in the definition of toxicity between different research fields, a broader shared definition of toxicity and a part about League of Legends and toxicity. In toxic behaviour related studies, toxicity is referred to as an umbrella term. This raises questions such as: where does this terminology originate from? How did it develop? This will be answered in 2.1. Part 2.2 will discuss all the different research fields that have included toxic behaviour and how they define it. In part 2.3 all of the previous parts will be synthesized to form a more shared understanding of toxicity. The last part of 2.4 will discuss what League of Legends is and why it was specifically chosen in this study to explore toxicity through.

2.1 History of toxicity: from the online disinhibition effect to toxic behaviour

Going back in time, the theory of toxicity is said to derive from the 'masculinity theories' as is written by Deslauriers et al. (2020). The masculinity theories are out of the scope of this research, but they have to do with how men's genders are stereotyped. Deslauriers et al. (2020) describe that the masculinity theories later on started being used as a way to describe several (toxic) behaviours. One of the earliest papers that mentions anything similar to toxic behaviour in games is a paper by Foo and Koivisto (2004). Foo and Koivisto describe something that is called 'grief play'. They state that this was researched in the 1990s and was then called anti-social behaviour. They define a 'grief player' by quoting researchers Mulligan and Patrovsky (2003): "*a player who derives his/her enjoyment not from playing the game, but from performing actions that detract from the enjoyment of the game by other players*". Foo and Koivisto

(2004) as well as Maher (2016) state that it is usually a very small percentage of players that act very toxic in games routinely.

However, even a small percentage can still influence a lot of players. It is unclear when researchers started evolving the terms like 'grief play' and 'anti-social behaviour' to fall under the term toxic behaviour. This is further stated by the paper of Kwak et al. (2015) where it is said that there is a lack of a clear definition of toxic behaviour. They quote the paper of Chesney et al. (2009) for this absence of a comprehensive definition on toxic behaviour. The paper of Chesney et al. (2009) starts off by going into 'bullying, cyberbullying and griefing'. They also state at the start that bullying does not have a proper or clear definition. To give an explanation of what these definitions are, they will be defined as how they are defined in the dictionary. Bullying is defined as behaviour where someone intends to hurt someone that is less dominant than the person that is bullying. Cyberbullying is defined as using the internet to hurt someone online, through for example sending hurtful messages. In the list of definitions by Chesney et al., there are also definitions that nowadays would most likely fall under the umbrella terminology of toxic behaviour (such as harassment and abuse). Chesney et al. (2009) come to a conclusion saying that griefing is most similar to cyberbullying. Thus, toxic behaviour has become an umbrella term for several anti-social or disruptive behaviour in games. However, people still use these several terms for similar behaviours.

The expression toxic behaviour comes most likely from toxic disinhibition. Toxic disinhibition is a sub-part of the online disinhibition effect. The paper of Suler (2004) is one of the most influential papers in toxic behaviour research. The online disinhibition effect is described as a key principle of contributing to toxic behaviour. In Suler (2004) paper on the online disinhibition effect he describes the effect as people feeling more free online to speak their mind. Suler distinguishes online disinhibition into two types. The first one being 'benign disinhibition' and the second one being 'toxic disinhibition'. Benign disinhibition being a more positive type of online disinhibition, a type where people overshare personal status (such as secrets, anxieties, etc.) and are really helpful to other people. Toxic disinhibition is described as the opposite of benign disinhibition. This is where people display signs of aggression and harassment. Here people do certain things that they normally would not do outside of the online realm (such as visiting the dark web). However, Suler also mentions that between benign and toxic there are some cases that are ambiguous.

Suler further states that: "*in the very wide variety of online subcultures, what is considered asocial behavior in one group may be very à propos in another.*" Suler writes that there are 'six factors' that make up the online disinhibition effect: 'dissociative anonymity', 'invisibility', 'asynchronicity', 'solipsistic introjection', 'dissociative imagination' and 'minimization of status and authority'. In the paper it is mentioned that 'individual differences' are also part of the disinhibition effect. It differs depending on people's personalities. The term coming from toxic disinhibition is also how Blackburn and Kwak (2014) start by introducing the problem of toxic behaviour. Blackburn and Kwak write:

> "*the boundary of toxic playing is unclear because the expected behavior, customs, rules, or ethics are different across games. Across individuals, the perception of this grief inducing*

> *behavior is unique. Subjective perception of toxic playing makes toxic players themselves sometimes fail to recognize their behavior as toxic. This inherently vague nature of toxic behavior opens research challenges to define, detect, and prevent toxic behavior in a scalable manner.*"

This is very similar to how Suler states that one group might see something as toxic, whilst another group might think that it is not. That it most likely also depends on the game that is being played. Thus, how toxic behaviour is described as a term, is most likely because of toxic disinhibition.

2.2 Differences and similarities of toxicity in different research fields

In the following section different fields will be touched upon briefly, summarizing definitions and current approaches to the problem.

Gaming

There has been a lot of research on toxicity in online multiplayer games. In the paper by Kwak et al. (2015) they look at toxic behaviour as a combination of "*cyberbullying, griefing, mischief and cheating*". However, they instantly mention the ambiguous nature of toxic behaviour and that its meaning is different across several games and its communities. The research shows that players rarely take part in reporting toxic players unless enemy players are specifically asked to report another player, then the probability rises. The research also looked at how an older version of the League tribunal worked. The tribunal was a crowd-sourced platform where players could judge whether someone deserved the punishment. The research points out that the tribunal does a very good job in filtering out players that have been unjustly reported. As of now, this crowd-sourcing feature does not exist anymore, the tribunal was too 'inefficient, slow and inaccurate' [1]. Lastly, they state that 'anonymity' is a big part of toxic behaviour in both games and online communities such as Reddit.

Both Maher (2016) and Chandler (2019) talk about similar topics and give a similar description of what toxic behaviour actually is. Maher describes it as follows:

> "*Online gamers have a reputation for hostility. In a largely consequence-free environment inhabited mostly by anonymous and competitive young men, the antics can be downright nasty. Players harass one another for not performing well and can cheat, sabotage games and do any number of things to intentionally ruin the experience for others — a practice that gamers refer to as griefing. Racist, sexist and homophobic language is rampant; aggressors often threaten violence or urge a player to commit suicide; and from time to time, the vitriol spills beyond the confines of the game.*"

Maher (2016) and Chandler (2019) both talk about the occurrence of GamerGate in 2014. In essence GamerGate is a internet conflict between two groups that either wanted more inclusivity in gaming or not (Dewey, 2014). Toxic masculinity is very

[1] https://nexus.leagueoflegends.com/en-us/2018/08/ask-riot-will-tribunal-return/

much part of the toxic behaviour history. Chandler comments on this fact stating that statistics show that the stereotype of what a 'gamer' is, which Chandler describes as 'young white male' is true. Maher talks about Justin Reich who on his part talks about the fact that it is not just games that need to become more welcoming, but the Internet as a whole.

Kou (2020) defines toxic behaviour as an umbrella terminology at the start of his study. Stating that researchers have used several terms to define toxic behaviour and that its whole terminology has become a mix of multiple terms. However, Kou's research says something about the context of the toxic behaviour. That toxic behaviour is something that happens over time. Kou redefines toxicity as emotions or actions of players that put teamwork in a disadvantage. Kou states in his conclusion:

> "*We consider toxic behaviors as emergent processes and explore contextual elements that could help inhibit the happening of toxic behaviors and the becoming of toxic players. The social and emotional underpinnings of toxicity call into question the simplistic view of toxic behavior as bad and destructive. If toxicity is an organic component of a particular community/culture, then much nuanced perspectives and solutions should be taken to approach it for the ultimate goal of promoting community development and wellbeing.*"

Media studies and social media

Online games are not the only place where toxic behaviour is common. Toxic behaviour is very much a problem on social media as well. In terms of toxicity on social media, the paper of Sheth et al. (2022) gives an interesting look at this problem. In their paper they describe that toxicity seen as "*threats, obscenity, insults and identity-based*" is not enough. They say to also include "*harassment and socially disruptive persuasion (misinformation, radicalization and gender-based violence)*". They state, however, that culture is the basis for any toxic content. Munn (2020) writes about how two social media's are designed (Facebook and YouTube) and how their design (could) lead to toxic behaviours of their users. Munn concludes that the main focus of Facebook is "clicks and views". To help the environment or behaviour to get better, it needs to stop this drive.

For YouTube Munn concludes that the recommendation system and comment system are what causes most problems and they need to be re-designed. Munn describes that these platforms can always be re-designed. To quote Munn: "*In this way, design alerts us to alternatives, to other ways of keeping us informed, structuring sociality, and valuing the people and things surrounding us.*" At the last part he states that (social) media is responsible for keeping civilized communication online. Munn finds it very important that designers of these platforms learn how to re-design these types of platforms to make sure that toxicity has no place and that the environment is more welcoming.

Design

In the paper by Beres et al. (2021) and Deslauriers et al. (2020), an organisation called the Fair Play Alliance (FPA) has started to take shape to deal with this problem. It is a gaming industry alliance to improve the online gaming environments in their games. The FPA tries to tackle this by designing a framework that gaming companies can adopt to lower toxicity in online gaming. The Fair Play Alliance (2020) started by renaming toxicity to 'disruptive behaviour' and 'harmful conduct'. They find that the word "toxic" is too ambiguous and that it is better to use disruptive behaviour. Disruptive behaviour is described as involving both the experience players have and how the community behaves. The FPA gives as an example that people can have different beliefs about what they want to get out of a game or a match. Other subjects they include in disruptive behaviour are "hate or threats of violence" (Fair Play Alliance, 2020, p. 14). The FPA labels harmful conduct as a sub part of disruptive behaviour. This is the behaviour which "*causes significant emotional, mental or even physical harm to player or other people in the player's life such as family and friends*" (Fair Play Alliance, 2020, p. 14). They mention that it is possible that harmful conduct is sensitive to the context where it happens. Further on, the FPA categorises disruptive behaviour into four different categories: expression, delivery channel, impact and root cause (Fair Play Alliance, 2020, p. 16). Expression is how the players showcase disruptive behaviour, how they 'express' it. It is a list for designers that explains each behaviour and helps the designers understand them. The unexplained list can be seen in Fig 1. The delivery channel is the way the disruptive behaviour is delivered. This can be through: "*in-game communication, in-game mechanics, meta-game systems, the broader ecosystem and/or direct targeting of a studio, employee or game service*" (Fair Play Alliance, 2020, p. 24). The impact is seen as how the behaviour can impact not only the individual, but also the community or even broader the society around it. The root cause tries to dive into what triggers this type of behaviour. They divide them into four categories: *"in-game factors, out-of-game factors, limits of digital spaces and other factors and forces*" (Fair Play Alliance, 2020, p. 31). These can be seen in Fig 2.

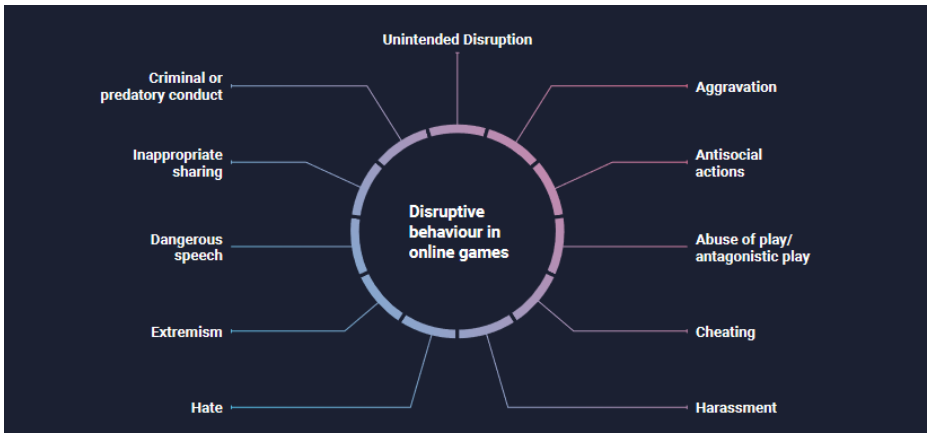

Fig 1. Expressions of disruptive behaviour as explained by the FPA (Fair Play Alliance, 2020, p. 17).

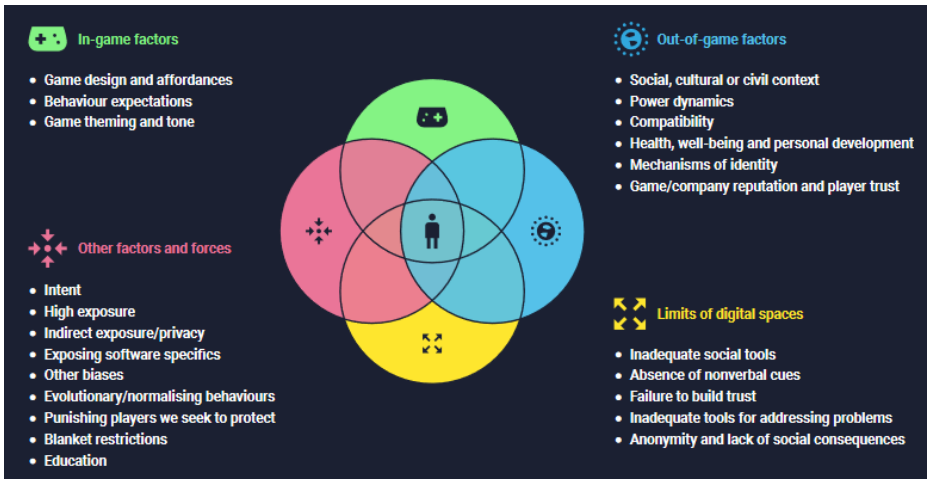

Fig 2. Root causes as explained by the FPA (Fair Play Alliance, 2020, p. 31).

In the research papers by Kordyaka and Kruse (2021), they refer to toxic behaviour as an umbrella term and relate it back to the online disinhibition effect. Their study showed that 'transparency' and 'imminent feedback' in game design are underappreciated parts of design that can effectively help with toxic behaviour. A. Sparrow et al. (2021) tried looking at the design problem from a games industry perspective and how they can design these systems ethically. Their study found out that the industry does not look at ethical design enough. They state that because the game industry changes so fast that it is difficult to keep up with development in terms of ethicality.

Machine Learning

Machine learning somewhat combines all of the previous mentioned fields. They are most likely combinations or a solution in a field. The understanding of toxicity in this respect comes from the field it provides a solution for. These solutions are machine learning algorithms such as a Natural Language Processing (NLP). A lot of these papers are also in the realms of gaming, making the definition of toxic behaviour similar. This is also the case in the research of Kwak and Blackburn (2014). They did linguistic analysis on the toxic text of League of Legends. They define toxic behaviour in their paper as follows: *"Toxic behavior, also known as cyberbullying, griefing, or online disinhibition, is bad behavior that violates social norms, inflicts misery, continues to cause harm after it occurs, and affects an entire community* (Kwak & Blackburn, 2014, p.1)." Further examples of this would be: A study of Almerekhi et al. (2019) used a Long Short-Term Memory (LSTM) neural network to discover what are common words that start a toxic discussion or do not start a toxic discussion on Reddit. They could pin-point the top ten words that would cause a toxic discussion to start and a top ten that would almost never result in a toxic discussion. In another research by Sengün, Salminen, Jung, et al. (2019) they used a dataset from League of Legends and afterwards they could write down the most commonly used swear words by Middle East North Africa (MENA) players in League of Legends. The study of Kim et al. (2022) where they research the chat and emotes on Twitch (a platform where people can stream themselves playing games etc.). They state that toxic chat is: *"a hateful speech or an offensive language via chat"*. In their study they use Natural Language Processing techniques (NLP). In the study of Sengün, Salminen, Mawhorter, et al. (2019) they define online toxicity as "*rude, disrespectful, or unreasonable behaviour that is likely to make one leave a discussion*". In their study they looked at toxicity in chat and its relation to culture. They wanted to see how the game design and content could influence this toxicity. For their study they used a big dataset of MENA players of League of Legends. These players can mostly be found on the Europe West (EUW), Europe Nordic East (EUNE) and Türkiye (TR) servers of the game as those servers are the closest to MENA. The researchers concluded that 'dictionary-based techniques' are not good enough to help tackle the problem. This is because toxicity in text chat is context-based most of the time. They also write that toxicity can differ per region and that having a diverse player base can help racial and ethnical toxicity. Neto et al. (2017) define toxic behaviour by griefing and toxic disinhibition. They call the result of toxic behaviour 'toxic contamination'. In their study they looked at the same dataset that was used by Blackburn and Kwak. However, they used it to study performance of players, what the contamination of toxic behaviour was, what the vocabulary was of toxic players versus non-toxic players and did some behaviour study. For the vocabulary part they used machine learning based approaches. To combat 'toxic contamination' the researchers say that it would be a good idea to implement something that would improve players' moods and teamwork. A lot of these studies use some form of machine learning to determine what words or text are toxic. A solution to a problem in gaming would then be to filter out certain words in chats. In the case of the linguistic analysis paper of Kwak and Blackburn (2014), they suggest implementations of systems that check whether someone

starts exhibiting toxic behaviour in chat and letting them know that the vocabulary they are using is considered toxic. A similar approach is taken by Neto et al. (2017). They suggest giving players a warning when their vocabulary has been toxic over a period of time.

2.3 Towards a different and shared understanding of toxicity

Many studies paint toxic behaviour as a problem that is easily countered by using some algorithm to detect toxic behaviour. This is a solution that could be used to soften the problem a bit. As stated by Sengün, Salminen, Mawhorter, et al. (2019), a lot of text based toxicity is context dependent. Thus, solutions such as filtering out certain words might not be enough for the problem. Then there's also the fact that some people might view something as offensive and others might not. Furthermore, text chat is not the only place that is used for toxic behaviour. A lot of passive toxicity is also found in the abuse of various in-game systems.

Kou (2020) writes that toxicity happens as an 'emergent process'. Kou writes that players sometimes start as not-toxic, but over time become more toxic. The game industry is aware that toxic behaviour is a problem, as is evident through their efforts to mitigate it. In 2017 the FPA was started and almost every big company in the gaming industry has joined them to start tackling the problem. The FPA also sheds a different light on the topic of toxic behaviour. They start by redefining it as disruptive behaviour as they find that toxicity is too ambiguous. They also find just as Kou that it is something that influences the experience players have and that it has to do with how the community behaves. It is sometimes the case that players themselves sometimes do not view their behaviour as toxic behaviour. This varies a lot within different games and different communities in gaming. This is also written by Blackburn and Kwak (2014). Every type of toxicity differs per game and even per match. To answer the question, how should we define toxicity or toxic behaviour right now? It should be key that toxic behaviour should be seen as a multilayered problem that is emergent. It involves several channels and is context-dependent. Thus, toxic behaviour and or disruptive behaviour can be seen as a context-dependent multilayered problem that develops over the course of a game where a player or players intentionally or unintentionally sabotage the player experience of others.

2.4 League of Legends and toxicity

An example of a game that is considered toxic is the game 'League of Legends'. On the internet it has been described as 'the game with the most toxic community' (ESB Staff, 2023).

The game League of Legends was published in 2009 by the company Riot Games. It was based on Defense of the Ancients (DotA) which was a modification of Warcraft III by Blizzard Entertainment and later on became DotA 2 developed by Valve Corporation (2009). League of Legends is a multiplayer online battle arena (MOBA). In League of Legends players use one of the now 159 characters referred to as 'champions' in a 5 versus 5 player game. The main game mode is 'Summoner's Rift', this is visible in Fig 3. The main goal of the game is to defeat the enemies' team "Nexus", which is found

in each teams base. Defeating the Nexus is done by going from the player's base to their opponent's base. The base has one nexus, two nexus turrets, three inhibitors and three inhibitor turrets. In front of the base are turrets, these turrets are called inner and outer turrets. There are six in total and they are in each lane. There are three lanes that go from one base to the opponent's base. Between the lanes there is a jungle. In the jungle there are several objectives a team can get to set themselves ahead of the other team. So, typically to win a game, a team has to push through one of the lanes, thus defeating all the turrets and an inhibitor that are in between the Nexuses and defeating the Nexus.

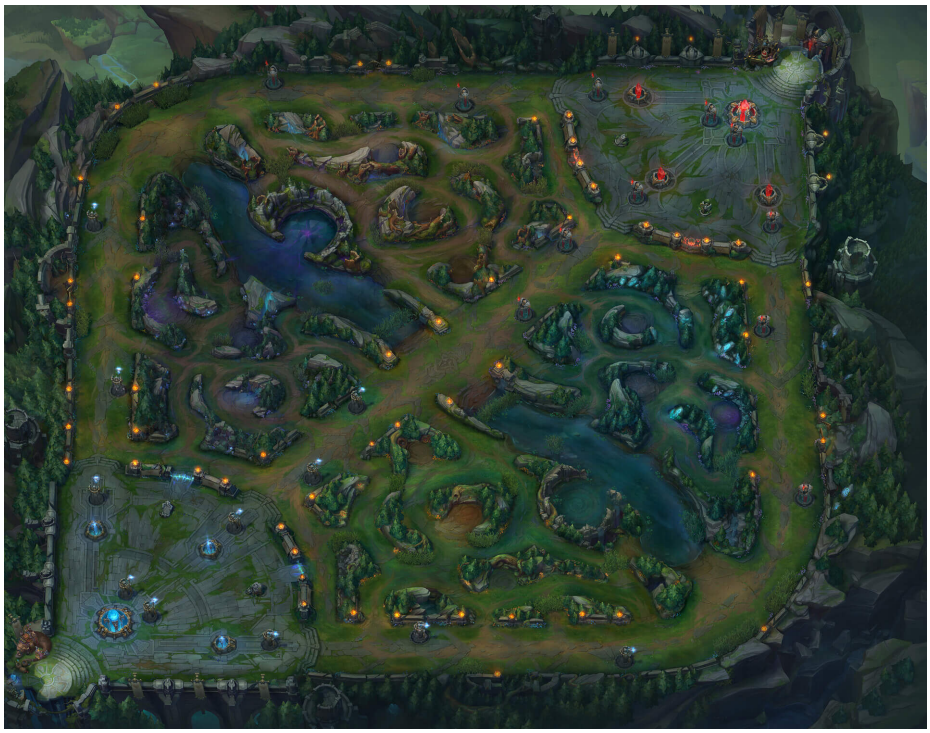

Fig 3. Summoner's Rift. (Riot Games, 2019)

There are other game modes besides Summoner's Rift, there is ARAM, and rotating game modes such as Ultra Rapid Fire (URF). Some of these rotating game modes take place on Summoner's Rift, ARAM and in some cases entirely different maps. The rules for these game modes usually stay the same: defeat the turrets and get to the opponent's nexus to win the game. The auto battler Teamfight Tactics (TFT) is also part of the League of Legends client, but is a completely different game then League of Legends. Under Summoner's Rift, the player has the option to select different modes: 'blind pick, draft pick, ranked solo/duo and ranked flex'. Blind pick is meant as a way to quickly and instantly start a normal game of League of Legends. Draft pick features the option to select your two preferred roles. After queueing and getting into champion

selection draft pick features a pick and ban system. Ranked solo duo/flex are essentially the same as normal draft pick. However, 'ranked', means that the player gets assigned a 'rank' to their name. These ranks range from Iron (lowest) to Challenger (highest). This means the environment is a bit more competitive than a 'casual' game of draft pick.

A player starts the game by selecting one of the previously mentioned modes. The player then enters what is called 'Champion Select'. In champion select the player can choose their preferred champion. Depending on the mode they selected, they can either ban a champion they do not want to appear in the game (draft pick) or they can instantly pick a champion (blind pick). After the pick and ban phase or after the timer runs out on blind pick the game starts. Depending on the champion and lane the player buys starting items and goes to their lane or jungle in case of the jungler. Top laner, mid laner and bot lane, which is often filled with the Attack Damage Carry (ADC), are generally farming (which is killing the minions for gold) the minions in the lane. The support does not do that nor does the jungler. The jungler kills the jungle monsters that can be found in different locations in the jungle. The support is a support for the ADC during the laning phase.

Most of the communication between team members during the game is done through either text chat or through the ping system. The chat system can be seen in Fig 4. The ping system got updated fairly recently and can be seen in Fig 5.

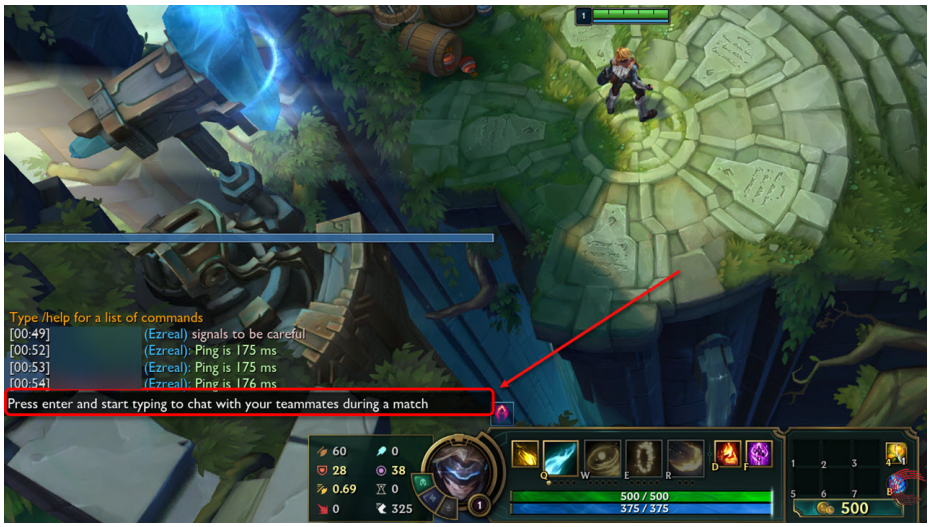

Fig 4. Chat. Picture made by Singh (2022)

Fig 5. Updated ping system. (Riot Games, 2022)

3 Methodology

This chapter explains the methodology of the study that is conducted to address the second and third sub-questions:

Sub-question 2: How does toxicity unfold (in practice)?
Sub-question 3: How does toxicity make people feel?

In part 3.1, the research design will be explained. Section 3.2 will elaborate on participants and the procedure of the study. In part 3.3 the survey and the design of the survey will be discussed and in the last part the follow-up of the survey, the focus groups, will be described.

3.1 Research design

This research makes use of a combination of qualitative and quantitative research methods. The research aims to answer the questions through the usage of a questionnaire and follow-up focus groups. The questionnaire focuses on both the sub-questions, but also on the main question. In the questionnaire the aim is to specifically get online multiplayer video game players and League of Legends players. The reason the study chose a questionnaire is because it is the easiest way to get direct feedback and to see how this could reflect on the part of a population of online multiplayer games specifically. The follow-up focus groups are with participants of the questionnaire to get an even more in depth and broader insight in how they experience toxicity and how they think the problem could be solved by presenting them or asking them with ideas.

3.2 Participants and procedures

All of the participants in both the questionnaire and focus groups had to be above the age of 18. Participants were either recruited through convenience sampling/snowball sampling or stratified sampling. The convenience sampling was done through channels such as, WhatsApp and Discord. The stratified sampling was done through posting the survey online on SurveyCircle and SurveySwap.io. Participants were required to play or have played a multiplayer online video game such as League of Legends.

3.3 The survey and survey design

The design of the survey was made based on previous research. The questionnaire is split into two parts. One part that continues as a general toxicity questionnaire and one part that goes into League of Legends specifically. This was done so to have the questionnaire available for a broader audience, but the key participant needs to be someone who plays or has played online multiplayer video games. Some of the general questions overlap with the League of Legends questions, but the questions go more in depth with League of Legends. The reason for this is that it makes it possible to compare the data between other games but also be able to go more in depth with one specific game's toxicity.
The questionnaire starts with general questions. Most of the questions are multiple choice except for some questions where they are specifically asked to specify something. If there are questions that are multi-select it is stated at the end of the question. The questions in the questionnaire were based on previous studies. Certain answer options were based on report options that are available in League of Legends. The questions can be found in the appendix A of this research.

The survey ran from 13 October 2022 till 14 November 2022. In this time the questionnaire gathered a total of N = 122 participants. Out of these 122, 112 were finished fully and were usable for the research. The questionnaire was split into two parts after the first general question part.

The following part are the demographics of all 112 participants. From those participants 83 (74.1%) identified as male, 28 (25%) identified as female and 1 (0.8%) as other. This can be seen in table 1.

Q1	Frequency	Percent
Female	28	25
Male	83	74
Other	1	1
Missing	0	0
Total	112	100

Table 1. Frequencies for Q1 - How do you identify?

The mean age of the participants is 25 and ranges from 18 to 43. This can be seen in the figure 6.

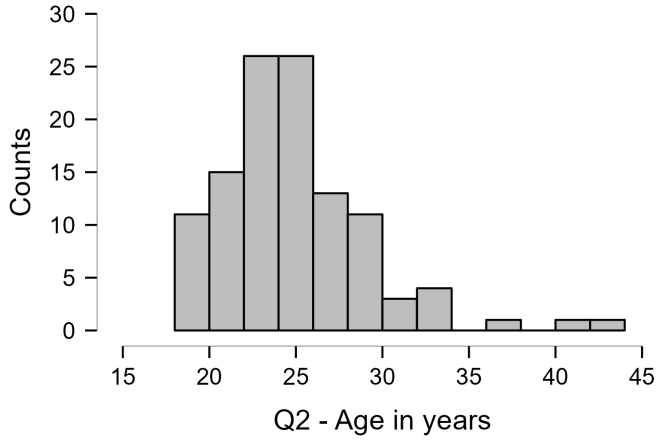

Fig 6. Frequencies for Q2 - What is your age?

Most of the participants were European 102 (91.0%). The other participants were either from Africa or North America. The other regions, South America, Asia and Oceania did not gather any participants. This can be seen in table 2.

Q3	Frequency	Percent
Africa	2	2
Europe	102	91
North America	8	7
Missing	0	0
Total	112	100

Table 2. Frequencies for Q3 - What region are you from?

In the general questions part of the questionnaire people were asked about certain demographics. In this part the filter was created for either people that play League of Legends, League of Legends or any other online multiplayer games, do not play League of Legends but do play other online multiplayer games or do not play games at all. The last option, 'I do not play games' was put in as a safety option in case participants started the questionnaire and did not play games or online multiplayer games at all. This leaves the actual workable results with N = 98.

At the end of the demographics section, the question was asked whether participants played League of Legends. If they did so exclusively, they could go for the option 'I play League of Legends'. When the participants played League of Legends, but also played other multiplayer online games they could select 'I play League of Legends

and other online multiplayer games' which would then ask them to please specify the other games they play. This was also done for the people that did not play League of Legends, but do play online multiplayer games. They could select the option 'I do not play League of Legends, but I do play other online multiplayer games'. The last option participants could choose was the 'I do not play games or do not play multiplayer online games' this was added to filter out participants that started the questionnaire without understanding this key inclusion criterion.

Q4	Frequency	Percent
I play LoL	15	13
I play LoL and other online multiplayer games	41	36
I do not play LoL, but I do play other online multiplayer games	42	38
I do not play games, or do not play multiplayer online games	14	13
Missing	0	0
Total	112	100

Table 3. Frequencies for Q4 - League of Legends or any other multiplayer games

3.4 The focus group and design

The design of the focus groups was based on the survey design. The reason for choosing focus groups after the questionnaire is to get an even more in depth look on how people perceive the problem of toxic behaviour in online multiplayer games. This broad look could help to figure out how people define toxic behaviour, how it makes them feel and how they think toxic behaviour can be improved. The focus groups were done in small groups of four. Each participant in the group had to play or have played League of Legends before. The participants in each of the groups had to know each other beforehand and had to have played League of Legends together. For the focus groups there was a minimum of 12 participants set in total. This meant three groups of four participants. The reason for the small groups as well as the requirement of having participants know each other and play the game together was to allow for a more comfortable conversation about the topic. However, the drawback in this case might be the fact that friends share a similar opinion on the topic at hand.

In total there were N = 12 participants. The focus groups were split into 3 groups of 4 participants.
The focus group questions were written in English. During the focus groups participants were allowed to speak their native language if all the participants spoke that language and the moderator would have to speak their native language too. The questions would then be translated and the participants would talk freely in their native tongue. The questions that were asked during the focus groups were categorised in certain topics according to research questions.

The topics being the following:
Topic 1: how to define toxic behaviour?
Topic 2: how does toxic behaviour unfold?
Topic 3: how does toxic behaviour make you feel?
Topic 4: how toxic do you think you are yourself?
Topic 5: how do you think we can improve game environments to have less toxic behaviour?

All of the topics would have their own sub-questions. These can be found in the appendix B. The results of the focus groups will be discussed per topic.

4 Results

4.1 Questionnaire

Differences between League of Legends players and other online multiplayer games players

In total there were N = 56 participants that filled in the questionnaire for League of Legends and in total there were N = 42 participants for the general part of the survey only. From the League of Legends participants 6 were from Europe Nordic East server, 44 from Europe West server and 6 from North America server. There were no participants from any of the other servers. Most of the participants play League of Legends for less than 2 hours a week and for the general participants this is quite similar, some play a bit more (2-3 hours). The majority of participants play League of Legends on the main game mode, Summoner's Rift. This is a total of 41 participants. ARAM was picked by 12 participants as their main game mode. Most participants come across toxic behaviour in League of Legends about half of the time. Most of the League of Legends participants voted that the 'text chat' is most frequently used in connection to toxic behaviour. This is the same for general players. The second highest pick was pings, this was different for general players. Their second highest was gameplay related. The type of toxicity that was chosen by the LoL participants that occurred the most in the channels was 'Verbal abuse'. This was the same for general participants. The other two that were chosen a lot were 'Harassment' and 'Disruptive gameplay'. This was also the same for general participants. Most of the LoL participants tend to mute the player or ignore toxicity when it happens and this was similar to general participants. A small percentage starts fighting back to the one that is toxic or starts playing disruptively. Most LoL participants that have encountered toxicity will report the toxicity that occurred. Very few participants ignore it or go after the person that was toxic. This was different for general participants. Most of the general participants will ignore it. Participants of the LoL part find gameplay/intentionally disrupting the game the most annoying/harmful in their opinion. Participants of general find that it is a mix of 'text chat', 'voice chat' and 'gameplay'. Most of the LoL participants say that the toxicity usually starts in the 'text chat'. A smaller percentage says it starts in with pings. The lowest were 'emotes' and 'gameplay'. Of the general participants

most say it starts in 'text chat' or 'voice chat'. On the question of which channel(s) toxicity evolves to most LoL participants answered 'Text chat' and 'Gameplay'. Another big percentage were 'Pings'. A very small part of the participants said it evolves to 'Emotes'. The general participants answered quite similarly: 'text chat and 'gameplay' were first and second. The third one being 'voice chat'.

Questions – LoL	Frequency	Percentage	Questions – General	Frequency	Percentage
Q8 – How often toxic behaviour is seen LoL			**Q7 – How often toxic behaviour is seen in their selected game**		
Never	1	1.79%	Never	4	9.52%
Sometimes	13	23.21%	Sometimes	23	54.76%
About half the time	23	41.07%	About half the time	9	21.43%
Most of the time	18	32.14%	Most of the time	5	11.90%
Always	1	1.79%	Always	1	2.38%
Q9 – Most frequently used channels in connection to toxic behaviour			**Q8 – Most frequently used channels in connection to toxic behaviour**		
Text chat	53	49.53%	Text chat	30	40.54%
Emotes	6	5.61%	Voice chat	16	21.62%
Pings	29	27.10%	Emotes	5	6.76%
Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)	17	15.89%	Pings	2	2.70%
Other	2	1.87%	Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)	20	27.03%
			Other	1	1.35%
Q11 – What players do when toxicity occurs			**Q10 – What players do when toxicity occurs**		
Mute the player or players (if there's an option to do so)	37	37.37%	Mute the player or players (if there's an option to do so)	21	26.25%
Fight back to the one being toxic	17	17.17%	Fight back to the one being toxic	12	15.00%
Ignore it	35	35.35%	Ignore it	30	37.50%
Leave the game	0	0.00%	Leave the game	8	10.00%
Start playing disruptively	3	3.03%	Start playing disruptively	2	2.50%
Other	7	7.07%	Other	7	8.75%
Q12 – What players do after encountering toxicity in a game			**Q11 – What players do after encountering toxicity in a game**		
Report it	43	76.79%	Report it	16	38.10%
Ignore it	5	8.93%	Ignore it	20	47.62%
Go after the person that was toxic	5	8.93%	Go after the person that was toxic	4	9.52%
Other	3	5.36%	Other	2	4.76%
Q13 – Most annoying/harmful channel in terms of toxicity			**Q12 – Most annoying/harmful channel in terms of toxicity**		
Text chat	18	32.14%	Text chat	11	26.19%
Emotes	0	0.00%	Voice chat	17	40.48%
Pings	6	10.71%	Emotes	1	2.38%
Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)	30	53.57%	Pings	0	0.00%
Other	2	3.57%	Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)	11	26.19%
			Other	2	4.76%
Q14 – Channel the toxicity usually starts			**Q13 – Channel the toxicity usually starts**		
Text chat	37	66.07%	Text chat	22	52.38%
Emotes	2	3.57%	Voice chat	13	30.95%
Pings	15	26.79%	Emotes	0	0.00%
Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)	2	3.57%	Pings	0	0.00%
Other	0	0.00%	Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)	7	16.67%
			Other	0	0.00%
Q15 – To what channels the toxicity evolves, if it does			**Q14 – To what channels the toxicity evolves, if it does**		
Text chat	36	35.64%	Text chat	24	30.38%
Emotes	3	2.97%	Voice chat	19	24.05%
Pings	23	22.77%	Emotes	6	7.59%
Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)	38	37.62%	Pings	3	3.80%
Other	1	0.99%	Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)	25	31.65%
			Other	2	2.53%

Fig 8. Differences between LoL players and General players

4.2 Focus groups

How to define toxic behaviour?

Most of the groups start off unsure with how to define toxic behaviour. It is described very broadly in terms similar to something that is intended to be hurtful, intentionally being annoying, trying to get someone down, negative behaviour towards

other players and that it comes from irritation and frustration. However, two groups settled on a common definition towards the end. One of the groups chose to go with the definition of: 'Toxic behaviour is disrespect against other players and for the game that is being played', whilst another group went for 'Intentionally being annoying, but not just being annoying, it is also trying to get someone down without trying to help or improve them in their play' and another group went for 'Intentionally trying to get somebody down'.

Common characteristics that are described as toxic behaviour by the groups include: verbal abuse, sexism, gameplay related (intentionally feeding), ping spamming, farm stealing, name calling, lane inting and troll picking. However, the group that mentioned inting, said that inting is difficult, because inting can be seen as intentional, whilst a lot of people make mistakes that are not intentional. These characteristics can be said towards ones own team and towards the opposing team. One group also mentions that toxic behaviour is something that is context-dependent. Certain things can be 'funny' in one context, but 'toxic' in another.

Most groups mention that they see toxic behaviour most of the time or more times than they wish to see. One group made an estimate that they see it once every four games in League of Legends. However, two groups remark that they feel the game mode 'ARAM' is generally less toxic then the 'Summoner's Rift' game mode. One group also mentioned Elo (rating system for skills) [2] having to do with the amount of toxicity seen in game and that it is much worse in lower Elo then in higher Elo. One participant of one of the groups said that this is something that definitely also happens in other team games such as Overwatch (Blizzard Entertainment, 2016) and Counter-Strike Global Offensive (CS:GO) (Valve Corporation, 2012).

How does toxic behaviour unfold?

The groups all have a slightly different view on how toxic behaviour unfolds. However, there is a lot of common ground. One group agrees that it is something that happens after someone dies in game or when you yourself make a fault or misplay. Afterwards there is a lot of usage of pings and chat messages. Another group said it usually always starts in the chat or with pings. One participant of one of the groups said that there are usually disruptive things happening. Two other participants of the same group mention that they see the atmosphere changing and that a lot of the time other players will respond disruptively. This group went on to have a discussion whether chatting or typing can already be considered disruptive, as in essence, the game is not being played and players are typing. They came to the point that a lot of the positive players will most likely not type in chat as they are the ones actually playing the game. They took the scenario further and said that people will most likely type more when they die in game and will continue to do so if they keep on dying. As when the player is dead, there is nothing for them to do. This will probably make players more keen to start typing. Dying is not something good in the game as it puts the team behind. Thus, when players that are dead begin to type in chat, they are probably not in a really positive mindset in that moment.

[2] https://dotesports.com/general/news/elo-ratings-explained-20565

All the groups agreed on the fact that they think text channels are the most used for toxicity. However, one group later on changed their opinion and said they think pings are probably more frequently used and text channels come in second place. Another group mentioned that it used to be much more of a problem in the post-game lobby, but since the post-game lobby got reworked, it has been much less of an issue.

In terms of what participants in all of the groups thought was the most annoying or harmful for them was super divided. Some say pings, whilst others will say chat and some will say voice chat when they are playing other games. One group mentioned that they found gameplay the most annoying as it influences the game directly and the fun of playing it. A participant in a different group remarked that they not really understand what the pings mean, so that pings do not really do anything to that participant. That participant said that text is much more of an issue as it directly targets what is going wrong.

In terms of how toxicity evolves over time the groups disagree. One group said it goes from gameplay to chat, which continues into chat to chat. Another group said it either starts in chat or with pings. If it starts with pings it will go into chat and vice versa. Lastly, one other group agreed on ping to text to behaviour. However, one participant in that group mentioned that it can also start in the chat of draft pick and then just moves from text to behaviour.

How does toxic behaviour make you feel?

In general, most of the groups do not like how toxic behaviour makes them feel. One participant mentioned it was the reason to stop playing DotA 2. Another mentioned also having spent many hours in the game Paladins and quit playing it for the same reason. One group gets annoyed by it, but finds it funny from time to time. Another group mentions that being verbally abused does not bother them too much, however they say that being stuck with a team member that is not trying their best for 30 to 40 minutes is the most annoying.

For most of the groups the toxicity encountered in the game does not stick around for long. For some it sticks around longer, but then it mostly depends on how they already felt before. If they felt bad before, it sticks around longer. One group mentions that the only way they would continue playing the game is if they can get a full group of five together.

All of the participant have different ways of how they deal with toxic behaviour, some choose to ignore it, some mute it, some try to positive reinforce someone and some just stop playing the game after the toxic game is over.

How toxic do you think you are yourself?

Every group has admitted that they have been toxic sometimes. Most of the groups said this almost immediately after the question was asked. However, some participants do mention that they are usually not the ones to start the toxicity, but do engage in the toxicity.

Some participants in certain groups will change their behaviour when they are being told that they are behaving 'toxic'. One group mentions that there are certain scenarios where, when the team is losing and suddenly makes a comeback play, the whole game changes and the mood gets better.

How do you think we can improve game environments to have less toxic behaviour?

All groups have very different ideas on how to improve game environments. One group thinks the whole 'gamer' culture or the gamer stereotype is something that needs to change. Some groups mention that certain aspects can be improved such as: better match making, not as easy to make a new account (smurf) and low priority queues when flagged as toxic (this is done in DotA 2).

Groups think there is not a lot of information on how to deal with toxicity, but do not expect this from a company either. They do think the least a company can do is give feedback when someone has received punishment for being toxic. They think this is really good to know. Two groups state that there are abilities such as muting which is a good option to have less toxicity in your game. There is not a hundred percent way too have no toxicity at all.

Interestingly enough, two groups mentioned that there is no ability to 'avoid someone as a teammate' and they would really like to see this implemented. To the question of whether they think current solutions such as the 'honour system' work well, all groups answered that it is nice, but in their opinion it does not have a really big impact. The old tribunal system is something that some were sceptical of whilst others would like to see its return. One participant mentioned that something similar was implemented recently into DotA 2. The one in DotA 2 does not give any rewards, however some content creators make use of it to create content.

5 Discussion

Most studies previously mentioned in this thesis have a hard time defining toxic behaviour. It is commonly seen as an umbrella term with lots of other definitions falling under it. A lot of studies look at this from a data perspective, but rarely engage in a conversation with actual players for the definition of toxic behaviour. Very little researchers have actually used conversations with players about what is toxic behaviour as was also stated by Kou (2020) and even Kou only uses Reddit comments to verify what is considered toxic by a certain community.

According to the answers from respondents of the questionnaire there is a difference between League of Legends players and other game players and how they interpret toxicity. The participants that filled in the questionnaire for League of Legends generally tend to see toxicity about half the time, whilst the participants that filled in the questionnaire with a game of choice generally tend to see toxicity sometimes. Twenty four participants in the questionnaire filled out that they play League of Legends for less than two hours a week, but sixteen of them see toxicity half of the time or more when they are playing. Whilst the participants that play for more than two

hours up to eight hours say that they see toxicity at least half the time when playing League of Legends. There are certain patterns known on how toxic behaviour develops. However, there are a lot of unknowns. Therefore, this was looked at in the thesis too. After defining the channels, both participants of the questionnaire and the focus groups were able to write down a pattern of how the toxicity start and how it evolves.

The most frequently used channel in connection to toxic behaviour is for both League of Legends players as well as general online multiplayer game players the text chat. In both the questionnaire as well as in some of the focus groups it was clear that disruptive gameplay is seen as the most game breaking experience in League of Legends by far. Some of the focus group participants said that they would like to see a voice chat implemented into League of Legends. However, 40% of general players, state that it is the most annoying/harmful channel for recipients and 30% say that toxicity starts in the voice chat.

There is a big difference between what League of Legends players and general online multiplayer game players do after playing a game. Most League of Legends players will report the perceived toxic behaviour after a game, whilst the general online multiplayer game players will not. The latter is more of a mixture of reporting and ignoring it. Participants of the focus group said that they enjoy getting feedback from a report. Kordyaka and Kruse (2021) said that games should change their design to show to players instantly what their behaviour is. This is being done right now by Riot by adding in-game chat bans when a player is using words that are inappropriate. This was also written by Kwak and Blackburn (2014). However, they are unclear about what is considered inappropriate and this is something that Kordyaka and Kruse state that needs to be described better. Gaming companies need to be more transparent. Furthermore, Sengün, Salminen, Mawhorter, et al. (2019) argued that something needs to be seen in context and that just filtering out bad words is not good enough.

Both the general and League of Legends players find that 'text chat' is the channel in which toxicity usually starts. Furthermore, according to both groups, toxic behaviours evolves from text chat to 'text chat' or 'gameplay'. However, in games where voice chat is commonly used, participants stated that the toxic behaviour evolves to voice chat too.

In this study, the participants of the focus groups tend to know very well what is considered toxic behaviour, but still, agreeing on a clear definition seems not easy. Most of the groups tend to start with a very broad definition. However, most are able to narrow it down to something more comprehensive. A lot of focus group participants mention that toxicity is something that is very context-dependent. Thus, the synthesis arrived at here is: 'toxic behaviour and or disruptive behaviour can be seen as a context-dependent multilayered problem that develops over the course of a game where a player or players either intentionally or unintentionally sabotage the player experience of others'. Alternative definitions based on the focus groups include 'Toxic behaviour is disrespect against other players and for the game that is being played' or 'Intentionally being annoying, but not just being annoying, it is also trying to get someone down without trying to help or improve them in their play'.

Interestingly, a lot of focus group participants mention disruptive behaviour when talking about toxic behaviour. A lot of industry professionals have been calling toxic

behaviour disruptive behaviour or are trying to change the term to disruptive behaviour. This was written in the background section of this thesis.

A participant in one of the focus groups mentioned that DotA 2 had implemented a crowd sourcing system of reports. This is something that was removed from LoL. This is where the study of Kwak et al. (2015) came into play. They used old data sets of the tribunal to do experiments on. Their study said that players do not actively report someone, even though the participants of the questionnaire and focus groups do state that they report someone after they encountered toxic behaviour. This study also mentioned that crowd sourcing reporting is really effective.

6 Conclusion

Sub-question 1: How can toxicity be defined, more generally and in the context of gaming, based on existing research?

A lot of existing research towards toxicity does not have a clear definition of toxic behaviour. Some try to give a small definition or combine previous suggestions from earlier research, though most define toxic behaviour as an umbrella term. The industry is calling for a transition of the term toxic behaviour into disruptive behaviour. This is something that researchers and the industry eventually need to decide. Seeing how participants of the focus groups sometimes mention disruptive behaviour when referring to toxic behaviour, then it is something that is worth considering. As for a definition, toxic behaviour and or disruptive behaviour can be seen as a context-dependent multilayered problem that develops over the course of a game where a player or players either intentionally or unintentionally sabotage the player experience of others.

Sub-question 2: How does toxicity unfold (in practice)?

Generally all players (LoL and other online multiplayer game players) see toxic behaviour most in the text channels. The focus group participants agreed on the fact that they think text channels are the most used for toxicity. However, some would say that pings are more used. Although, this might be something that is not the case for a lot of other online multiplayer games as not all of those carry a ping system.

Most players agree that toxic behaviour starts in text chat and will then evolve into one of the other channels. The focus groups disagree with one another on how it evolves. The questionnaire participants tend to agree with each other for both LoL and other online multiplayer games. The questionnaire participants see toxic behaviour starting in text or for other online multiplayer games in text or voice. For both groups this would primarily evolve into gameplay related toxicity, secondarily evolving to text chat and thirdly evolving to pings for LoL players and voice for other online multiplayer games players.

Sub-question 3: How does toxicity make people feel?

Toxicity is a big problem in the gaming industry as people do actually stop playing games because of toxic behaviour. This was also seen in one of the focus groups where two of the participants confessed they had stopped playing certain games because of the toxic behaviour encountered in those games. In the questionnaire, though not a big percentage, players have stopped playing LoL because of toxic behaviour.

It varies a lot from player to player how they feel about toxicity. Some don't mind being verbally abused at all, but do find the fact of being stuck with someone that is not trying their best for 30 to 40 minutes is by far the most annoying experience. Most of the times players state that the toxicity they experiences does not stick around for long. However, it sticks around for a bit longer if they themselves are already not in a positive mindset.

The previous questions were used to answer and reflect on the main question of this research.

How can we design games better so that they retaliate toxic behaviour of players?

There is not one set of answers to tackle toxic behaviour of players. Previous studies do not involve group interviews or specific focus groups with players of this type of games. However, talking with players can result in interesting solutions to retaliate toxic behaviour in games. Thus, it is a good idea to involve your community actively in resolving the problem as two out of the three focus groups mentioned that having a crowd-sourcing platform to combat the toxic behaviour would be a good solution. Furthermore, participants mentioned that there should not be rewards bound to crowd-sourcing platforms. Players that will look at these types of behaviours will most likely do it from a perspective of helping the community forward. It would be in the best interest of companies to be more open in what they consider as toxic behaviour, especially when it comes to text chat. Participants also shared that they would like to see an option of being able to avoid a team member that displayed toxic behaviour in a prior game. A limitation of the research is that the results are subjective and based on the opinion of players of games. Future research could compare conversational data on the topic of toxic behaviour with data from several games to see if these results align or differ. Another limitation is that most of the participants are European and there might be different experiences on not European servers. This could be an interesting topic for future research. It might also be interesting for further research to see how the problem is perceived by different genders.

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Appendix A

Consent form

Welcome to this study!

We are interested in understanding how toxic behaviour unfolds. You will be presented with information relevant to toxic behaviour and asked to answer some questions about it. Please be assured that your responses will be kept completely confidential.

The study should take you around 5-10 minutes to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without any judgment. This research is carried out by Lisanne Wartna under the supervision of Dr. Max van Duijn and Marcello Gómez-Maureira, lecturers at Leiden University. Data collected in this experiment will only be used for the Master Thesis of the student involved. The procedures of this study have been reviewed by the Media Technology MSc ethics board and have been approved.

Given that this study focuses on toxic behaviour, please be aware that it may trigger memories of unpleasant past experiences. By giving consent below, you acknowledge that your participation in the study is voluntary, you are at least 18 years of age, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

In case of any further questions or comments, you can contact the researchers Lisanne Wartna via l.p.m.wartna@umail.leidenuniv.nl or Max van Duijn via m.j.van.duijn@liacs.leidenuniv.nl.

Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.

P.S.: This survey contains credits to get free survey responses at SurveySwap.io

I consent, begin the study

I do not consent, I do not wish to participate

General questions

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1. How do you identify?

Female

Male

Please specify:

Prefer not to say

---

2. Please specify your age in years

---

3. What region are you from?

Europe

North America

South America

Africa

Asia

Oceania

---

4. Do you play League of Legends or do you play other multiplayer online games?

I play League of Legends

I play League of Legends and other online multiplayer games, please specify the other games you play:

I do not play League of Legends, but I do play other online multiplayer games, please specify the other games you play:

I do not play games, or do not play multiplayer online games

League of Legends questions

The following questions are about your experiences with toxic behaviour in League of Legends. Some questions have a multi-selection option. This will be stated in the question itself.

---

5. On which server do you play?

EUW (Europe West)

EUNE (Europe Nordic East)

NA (North America)

OCE (Oceania)

LAN (Latin America North)

LAS (Latin America South)

BR (Brazil)

RU (Russia)

TR (Turkey)

Korea

Japan

---

6. How many hours per week do you play League of Legends specifically?

Less than 2 hours

2-3 hours

3-5 hours

5-8 hours

8+ hours

---

7. Which game mode do you usually play?

Blind pick, Summoner's Rift

Draft pick, Summoner's Rift

Ranked Solo/Duo, Summoner's Rift

Ranked Flex, Summoner's Rift

ARAM

No idea or please specify,

Toxic behaviour/toxicity is often seen as player(s) disrupting the game intentionally (or sometimes unintentionally) by sabotaging/interfering with the gameplay experience of other player(s) through various means such as swearing, intentional feeding, cheating, etc.

8. How often do you come across toxic behaviour in League of Legends?

Never

Sometimes

About half the time

Most of the time

Always

---

9. What communication channels are most frequently used in connection to toxic behaviour? (multi-selection available)

Text chat

Emotes

Pings

Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)

Other, please specify

---

10. What type of toxicity occurred through those channels? (multi-selection available)

Harassment

Disruptive gameplay (e.g. griefing, intentional feeding, etc.)

Identity hate (e.g. age, race, gender, etc.)

Cheating

Verbal abuse

Other, please specify

11. What do you do when toxicity occurs? (multi-selection available)

Mute the player or players (if there's an option to do so)

Fight back to the one being toxic

Ignore it

Leave the game

Start playing disruptively

Other, please specify

12. What do you do when you have encountered toxicity in a game?

Report it

Ignore it

Go after the person that was toxic

Other, please specify

13. When toxicity happens in whichever channel, which one is the most annoying/harmful for you, in your opinion?

Text chat

Emotes

Pings

Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)

Other, please specify

14. In which channel does toxicity start usually?

Text chat

Emotes

Pings

Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)

Other, please specify

15. To what channel(s) does the toxicity evolve, if it does? (multi-selection available)

Text chat

Emotes

Pings

Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)

Other, please specify

16. Did you stop playing a match or did you leave the game fully after exposure to toxic behaviour?

I have stopped playing a match, but I do still play League of Legends

I have stopped playing a match and I have also stopped playing League of Legends fully after being exposed to toxicity

I have not stopped playing a match despite people being toxic and I still play League of Legends

I have not stopped playing a match despite people being toxic and I have stopped playing League of Legends fully after being exposed to toxicity

General questions continued

The following questions are about your experiences with toxic behaviour in games in general. Some questions have a multi-selection option. This will be stated in the question itself.

5. Please write down which game you play the most and please keep this game in mind when answering the questions below.

6. How many hours per week do you play this game specifically?

Less than 2 hours

2-3 hours

3-5 hours

5-8 hours

8+ hours

Toxic behaviour/toxicity is often seen as player(s) disrupting the game intentionally (or sometimes unintentionally) by sabotaging/interfering with the gameplay experience of other player(s) through various means such as swearing, intentional feeding, cheating, etc.

7. How often do you come across toxic behaviour in this game?

Never

Sometimes

About half the time

Most of the time

Always

8. What communication channels are most frequently used in connection to toxic behaviour? (multi-selection available)

Text chat

Voice chat

Emotes

Pings

Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)

Other, please specify

9. What type of toxicity occurred through those channels? (multi-selection available)

Harassment

Disruptive gameplay (e.g. griefing, intentional feeding, etc.)

Identity hate (e.g. age, race, gender, etc.)

Cheating

Verbal abuse

Other, please specify

10. What do you do when toxicity occurs? (multi-selection available)

Mute the player or players (if there's an option to do so)

Fight back to the one being toxic

Ignore it

Leave the game

Start playing disruptively

Other, please specify

11. What do you do when you have encountered toxicity in a game?

Report it

Ignore it

Go after the person that was toxic

Other, please specify

12. When toxicity happens in whichever channel, which one is the most annoying/harmful for you, in your opinion?

Text chat

Voice chat

Emotes

Pings

Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)

Other, please specify

13. In which channel does the toxicity start usually?

Text chat

Voice chat

Emotes

Pings

Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)

Other, please specify

14. To what channel(s) does the toxicity evolves, if it does? (multi-selection available)

Text chat

Voice chat

Emotes

Pings

Gameplay/intentionally disrupting the game (e.g. intentionally trying to lose a game)

Other, please specify

Appendix B

Focus group discussion topics

Topic 1: how to define toxic behaviour?

How would you define toxic behaviour?

What do you describe as toxic behaviour?

How often do you come across toxic behaviour (in general and in League of Legends)?

Topic 2: how does toxic behaviour unfold?

If toxicity happens, can you give a general description of what happened?

What channels are mostly used for toxicity?

What are the most annoying/harmful channels in your opinion?

How does toxicity evolve from channel to channel if it does?

Topic 3: how does toxic behaviour make you feel?

How does toxicity make you feel?

How long does the toxicity stick with you or does it have consequences for you?

What do you do when toxicity happens and can you remember or describe a specific situation of a toxic event?

Topic 4: how toxic do you think you are yourself?

Do you think you have been toxic sometimes?

Have there been instances where you changed your behaviour? (On your own or if other people made you realise this)?

Topic 5: how do you think we can improve game environments to have less toxic behaviour?

If you could change anything to stop toxic behaviour, what would you change?

Do you feel like you have enough information to help you cope with toxicity you have experienced or handles to help you deal with toxicity and why?

Is there any tooling you think that could help with toxic behaviour or is reporting enough?