Antti Eemeli Pohjanen

Report, please! A survey on players' perceptions towards the tools for fighting toxic behavior in competitive online multiplayer video games

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Author: Antti Eemeli Pohjanen

Contact information: antti.e.pohjanen@gmail.com

Supervisor: Paavo Nieminen

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Abstract: The fast paced and highly competitive online video game environment can cause players to act in bad ways towards their teammates or the enemy team, also known as "toxic behavior". Games usually offer players tools (such as reporting and blocking) to fight back and deal with toxic behavior in the immediate situation. This study focused on these tools designed to combat toxicity and conducted a survey for different competitive games players to figure out the tools' perceived effectiveness in the players' eyes. The collected data suggests that the tools are seen as an effective line of defense, but are far from perfect as they can be misused or the punishments are easily bypassed.

Keywords: Toxic behavior, competitive multiplayer game, reporting tools, punishments

Suomenkielinen tiivistelmä: Kilpailullisten nettimoninpelien nopeatempoinen ympäristö saattaa aiheuttaa pelaajissa huonoa käytöstä joko omaa tai vastustajan joukkuetta kohtaan. Tätä niin sanottua "myrkyllistä käytöstä" vastaan on kehitetty pelien sisäisiä työkaluja, joita pelaajat voivat tarvittaessa käyttää. Tämän kyselytutkimuksen tarkoituksena oli selvittää pelaajien mielipiteitä yleisimpiä huonoa käytöstä vastaan suunniteltuja työkaluja sekä niiden kautta määrättyjä rangaistuksia kohtaan. Tulosten mukaan työkalut ja rangaistukset nähdään hyödyllisinä, mutta myös puutteellisina, sillä työkaluja voidaan käyttää väärin ja rangaistuk-

sia kiertää helposti.

Avainsanat: Huono käyttäytyminen, kilpailullinen moninpeli, ilmoitustyökalut, rangaistukset

Glossary

CMC	Computer Mediated Communication, any human communication that occurs through the use of electronic devices.
DOTA2	Defense of the Ancients 2, a MOBA game developed by Valve.
F2P	Free-to-Play, a game which is free-to-play offers either the whole game or a significant portion of the game to play for free, usually coupled with microtransactions.
HotS	Heroes of the Storm, a MOBA game developed by Blizzard Entertainment.
LoL	League of Legends, a MOBA game developed by Riot Games with millions of concurrent players
MOBA	Multiplayer Online Battle Arena, a sub-genre of strategy video games where two teams clash against each other in a competitive setting.
P2P	Pay-to-Play, a game which requires a single payment to play.
PvP	Player versus Player, a multiplayer interactive conflict between two or more human participants.
ROC	Rules of Conduct, rules and guidelines outlining appropppriate and acceptable behavior in an online gaming environment.

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1 Introduction

Competitive multiplayer video games are a very popular pastime for hundreds of millions of people around the world. Pitting two teams of players against each other in a highly competitive environment results in a multitude of unique situations that can lead to negative interactions between players, or so called "toxic behavior".

Toxic behavior is often used as a high-level synonym for grouping up negative behavior such as cyberbullying, griefing, mischief and cheating (Kwak, Blackburn, and Han 2015). Toxic behavior has been proven to degrade user experience, lower player retention rates (Shores et al. 2014), cause persisting mental damage and in some highly publicized cases even the loss of life through suicide (Chesney et al. 2009; Kwak, Blackburn, and Han 2015). Toxic behavior even has an effect on the quality of games, as fighting against toxicity slows down development time and uses up companies' resources that could otherwise be used towards developing other aspects and features of the games (Grayson 2017).

Video game companies have taken steps in identifying and trying to root out causes for toxic behavior through game design choices and creating systems designed to combat toxic behavior. Players who choose to act poorly towards other players and against the Rules of Conduct (or ROC's) of game companies can face punitive measures after other players report them through the reporting features found in the games. Punishments can range from e-mail warnings to chat silences, gamemode suspensions and even complete account bans, denying all access to the game.

For example, League of Legends (or LoL for short), a Multiplayer Online Battle Arena (or MOBA) game made by Riot Games, used a now-defunct crowdsourced system called The Tribunal to fight against toxicity and bad behavior that goes against Riot's "Summoner's Code" (Riot Games 2016). Likewise, Blizzard Entertainment, the company behind the competitive video games Heroes of the Storm (or HotS) and Overwatch, also offers means of reporting toxic behavior through in-game reporting features (Blizzard Entertainment 2017c).

While some studies towards toxicity have been made suggesting toxic behavior to be a prevalent problem in competitive gaming (see, for example, a thesis by Saarinen (2017)), research

relating to toxicity and competitive gaming in general are still scarce (Faust, Meyer, and Griffiths 2013). Research on the field has mostly focused on what toxic behavior is (e.g., Blackburn and Kwak 2014) and why it happens (e.g., Davis 2002), but most studies have lacked focus on the ways players can deal with toxicity in the immediate situation. As such, this study aims to examine the tools players have at their disposal in the fight against toxic behavior and map out their perceived effectiveness through the players' point of view. The study aims to answer the following questions:

1. In the players' opinion, how effective are the tools in reducing toxic behavior?
2. Are the punishments given to toxic players seen as an adequate way of reducing toxic behavior?

To answer these questions, an online survey was prepared and shared to competitive gaming related social media channels. Through the questionnaire, data was collected from participants with experience in competitive gaming and dealing with toxicity. The collected data hints towards somewhat satisfactory perception of the tools and punishments, which still have problems that should require attention. As toxicity can affect retention rates and player enjoyment, the data gathered could help game designers design better systems to cull toxicity and researches focusing on the competitive gaming scene to better understand the ways players feel about the current tools designed towards fighting toxicity.

The rest of the thesis is organized as follows. Chapter 2 introduces the background for this thesis by focusing on earlier studies on competitive gaming and toxic behavior in online settings. Chapter 3 goes over the different tools players have at their disposal in fighting toxic behavior when they encounter it. Chapter 4 introduces the quantitative survey research approach for this study and goes over the questionnaire in detail. Chapter 5 examines the results gathered from the survey, while in Chapter 6 the results are analyzed further. Chapter 7 concludes the thesis and introduces possible ideas for future studies.

2 Background

This chapter goes over prior research on the field of competitive multiplayer gaming and toxic behavior. Section 2.1 introduces prior research on competitive multiplayer gaming in general, while Section 2.2 delves deeper into what toxic behavior is and how it emerges in different, sometimes vague ways. In Section 2.3, some of the possible reasons for why toxic behavior emerges in online situations are presented. Section 2.4 considers the possible effects that might be caused by toxic behavior.

2.1 Competitive multiplayer gaming

Competitive video gaming has become an essential part of digital culture for millions of players (Wagner 2006). On-line gaming in general has been on a constant upwards rise in profitability (Hsu and Lu 2004), and electronic sports, or "eSports" for short, where professional leagues are created out of popular multiplayer titles with viewer counts in the millions continues to attract new viewers and players alike (Hollist 2015).

Dating back to the early and mid nineties in both western and eastern countries, professional competitive gaming started gaining popularity with the emergence of first person shooters and real-time strategy games (Wagner 2006). As a new and growing field, academic study on competitive and professional gaming, when compared to traditional non-digital games such as chess, is still rather scarce (Faust, Meyer, and Griffiths 2013).

Wagner (2006) states eSports is a "logical and irreversible consequence of a transition from an industrial society to the information and communication based society of today". He suggests that as a new phenomenon, competitive gaming should be approached as a completely separate field of study from traditional sports, as it influences both society and culture.

According to Wagner (2006), competitive gaming creates interconnections between learning, management and usability engineering. Professional gamers train hard, creating what is known as "high-performance teams" in management theory that can communicate and change strategies quickly and efficiently. Through inverse usability engineering, the same

techniques could be applied to, for example, create high-performance teams in traditional hypercompetitive business environments and high speed strategic decision making in management training. Competitive games also act as learning tools for children who are already quite competent in their use of information and communication technology and help them develop skills that will most likely influence the usability of technology in the future.

With the viewer counts for eSports in the hundreds of millions and rising (Hamari and Sjöblom 2017), interest towards the sport is at an all time high. Hamari and Sjöblom (2017) investigated viewers' motivational factors that predicted the frequency of watching eSports. In conclusion, escapism from everyday life, acquiring eSports knowledge, novelty, and the enjoyment of player aggression were all significantly and positively associated with how often viewers watched eSports. Player skills in eSports was also found as having a small positive association with viewing frequency. According to this research, **in-game aggression** among highly popular eSports players or streamers can be a driving force for the popularity of their gaming persona.

The gaming communities have been somewhat active in conducting their own research, mostly limited to questionnaires about certain elements. For example, the Overwatch community on Reddit has done questionnaires on toxic behavior in Overwatch, or other competitive games. One such example of a dissertation questionnaire made by KierenWinter (2017) argued that toxicity is influenced by many things, and that the prevalence of toxicity in competitive games can be explained somewhat through the Dunning-Kruger effect, which is a phenomenon where a person fails to see his own ignorance over a certain subject, such as his skill in a video game (Dunning 2011). This study also raised concerns towards toxicity becoming more and more normalised through competitive online gaming becoming more popular.

In summary, eSports and competitive gaming are still a constantly growing market and a point of interest for millions of players and viewers alike (Wagner 2006; Hollist 2015; Hamari and Sjöblom 2017). As a sport, competitive gaming should perhaps be regarded as a completely separate field of study with applications to other fields instead of combining it with research on traditional sports (Wagner 2006). While competition in video games has been noted as causing aggressive behavior (Adachi and Willoughby 2011) which in turn can

lead to toxic behavior, aggressiveness has also been viewed as one of the main reasons why viewers watch eSports in the first place (Hamari and Sjöblom 2017). Moreover, toxicity is prevalent in competitive multiplayer environments, and is influenced by many different things (KierenWinter 2017).

2.2 Defining toxic behavior

Toxic behavior can be shortly described as undesirable or bad behavior in forms of computer mediated communication (or CMC for short) (Kwak, Blackburn, and Han 2015), which includes activities such as email, chat rooms, online forums, social network services and video games (Thurlow, Lengel, and Tomic 2004). A more scientific term for online toxic behavior is *toxic disinhibition* (Suler 2004), which is defined as the negative results of the loss of social inhibitions in online environments that usually leads to aggressive behavior such as flaming, harassment and acting-out against other players. The expression 'toxic behavior' is usually used in the context of multiplayer video games, where this type of bad behavior can affect numerous players in a negative manner due to the games' reliance on player interaction and can at the same time damage the community of the game (Blackburn and Kwak 2014).

Kwak, Blackburn, and Han (2015) define toxic behavior as a high-level synonym for grouping up negative behavior exhibited in online gaming such as cyberbullying, griefing, mischief and cheating. Davis (2002) describes bad online behavior as 'any aversive behavior users felt did not belong in a particular online environment'. As such, toxic behavior can be seen as a form of cyberbullying, where the intent is to harm others through electronic channels (Smith et al. 2008; Blackburn and Kwak 2014).

2.2.1 Types of online toxic behavior

Toxic behavior can manifest in a multitude of ways which differ in levels of aggressiveness and harm caused. Depending on the act and ways of how the toxic behavior happens, different types of terms have been coined to describe the act, such as cyberbullying, griefing, harassment and cheating. This Section introduces and describes different types of online

toxic behavior found in prior research on the field.

With the popularity of mobile phones, computers and the easy communication methods allowed by the internet, **cyberbullying** has become a growing problem for children and adults alike. Bullying is a repeated, aggressive, and intentional act or behavior that is done by either a group or an individual and is targeted towards a defenseless victim (Smith et al. 2008). Unlike normal face-to-face bullying, cyberbullying is done through electronic forms of contact such as instant messaging, social media and even through video games. For example, sending degrading, sexually explicit or threatening messages and images through an electronic medium can be seen as cyberbullying. (Hoff and Mitchell 2009; Smith et al. 2008)

Griefing can be defined as an act that is intentional, causes other players to enjoy the game less and where the person griefing, henceforth called a 'griefer', enjoys the act (Foo and Koivisto 2004; Warnerm and Raiter 2005). A griefer therefore is a player, who enjoys not necessarily playing the game but performing actions that disrupt the gameplay and cause other players harm and loss of enjoyment of the game (Mulligan, Patrovsky, and Koster 2003; Kirman, Lineham, and Lawson 2012). A griefer can use the different aspects of the game structure, physics, or other systems found in the game for an unfair or disrupting advantage (Warnerm and Raiter 2005). Foo and Koivisto (2004) split griefing further into four different categories: harassment, power imposition, scamming and greed play. Out of these four, three will be explained in the following segment, while the last, greed play, is explained further on in the next section.

In **harassment**, also known as **flaming**, the main motive is to cause emotional distress to the victim through verbal means without the griefer otherwise benefitting from the act. Shouting slurs towards other players, repeatedly spamming chat channels with messages of low relevance or utility, intruding private virtual spaces such as player homes (spatial intrusion) or disrupting player organized events in a harassive manner (event disruption) are all seen as forms of harassment grief play. (Foo and Koivisto 2004)

Power imposition is a type of grief play where the griefer displays power superiority over other players by, for example, killing them with little or no direct benefit to the griefer. The motivation for this, as Bartle (2003) describes it, is to dominate other players in a way that is

not always a "nice" way. For power imposition to be seen as grief play, it is usually combined with other types of griefing such as harassment in the form of verbal abuse or using loopholes in the game to cause harm to other players (Foo and Koivisto 2004). Power imposition is an act that is very circumstance specific; for example, killing another player over and over again for no apparent reason or benefit to the killer could be seen as imposing power on the victim player, while killing another player due to a PvP [Player versus Player] faction war might not be seen as grief play. Hence the demonstration of power in itself is usually not seen by the players as griefing. (Foo and Koivisto 2004)

Scamming is more of a problem in Massively Multiplayer Online Games (MMORPGs) than in the types of competitive multiplayer games this thesis focuses on. Scamming is an act where a griefer swindles another player in a way that the scammed player suffers monetary loss or the loss of virtual goods. For scamming to be seen as grief play instead of just "great roleplaying" it usually has to happen through exploitative measures, such as poorly designed player-to-player trading systems. Moreover, depending on the context and rules of play, breaking promises, identity deception and just straight up lying during a trade between players can be seen as scamming by the victim. (Foo and Koivisto 2004)

Mischief can be seen as a more playful type of grief play where the intent is to not cause harm, but to test the boundaries of acceptability within the virtual environment (Lindley, Harper, and Sellen 2010). For example, cheeky, inappropriate messages and teasing among friends can be seen as types of mischief emerging in different online systems (Kirman, Lineham, and Lawson 2012; Lindley, Harper, and Sellen 2010). Players can use mischief (for example, use silly nicknames, upload confusing or funny imagery inside the game, dress their character in a funny way...) to create a performance that undermines boundaries and stereotypes set in place by the game and elicit more positive than negative reactions from other players (Kirman, Lineham, and Lawson 2012).

Cheating in online games means using security flaws, bugs or loopholes in the game, the client or the surrounding systems, or using external tools to modify the game and turn the favor on the cheater's side (Yan and Randell 2005). By cheating, a player can achieve a target or a goal that they should not otherwise have been able to achieve (Yan and Hyun-Jin 2002). Cheating is often against the Rules of Conduct of multiplayer games, as it hampers

the enjoyment of the game for everyone who becomes a victim of the cheater.

As this thesis focuses on competitive multiplayer games, some behaviors that wouldn't necessarily be considered toxic in other types of multiplayer games should also be taken into consideration: going AFK and intentional feeding. These behaviors, while rather domain specific, can be seen as very damaging towards the team effort due to the design of competitive games (Kwak, Blackburn, and Han 2015).

Going AFK (away from keyboard) is a toxic play where the player in question goes inactive for some time or the entire duration of the match (Kwak, Blackburn, and Han 2015). This can be detrimental towards the success of the rest of the team, as the enemy team has a manpower advantage over them for the whole match. Leaving the game while the match is still being played can also be considered as a form of going AFK.

Intentional feeding, in the context of popular competitive multiplayer games, means dying to the enemy multiple times on purpose, in turn 'feeding' the enemy team by giving them free kills (Kwak, Blackburn, and Han 2015). This can cause the enemy team to have an advantage in character strenght levels, gear or the overall tactical situation of the game.

In conclusion, toxic behavior can emerge in multiple different forms, some of which aren't necessarily as bad as the others. Toxic behavior can range from mildly annoying acts to acts that ruin the gaming experience for the rest of the players.

2.2.2 The vague nature of toxic behavior

The boundaries of what toxic behavior is are sometimes blurry, because the interpretations on what is considered 'bad behavior' vary per person due to differences in expected behavior, customs, rules and ethics across games. Moreover, the context and situation where this behavior occurs highly affects how the behavior is seen and whether it is judged bad or not (Davis 2002; Foo and Koivisto 2004; Suler 2004; Kirman, Lineham, and Lawson 2012; Shores et al. 2014; Kwak, Blackburn, and Han 2015). As such, just playing rough and in irritating ways does not necessarily count as toxic behavior as long as it doesn't cross the boundaries of what other players expect from the social contract of play in the current context (Kirman, Lineham, and Lawson 2012).

Socio-political factors have also been identified as influencers on how and why toxic behavior happens, and as such what is seen as toxic behavior is also affected by broader cultural differences. A study on Korean gamers reports on gaming specific culture called *Wang-tta*, where the worst player in a peer group is isolated and bullied (Chee 2006). Such hostility can be linked to the collectivist nature of Korean society, where similarity grants comfort and those that are different are abused (Kwak, Blackburn, and Han 2015). On the contrary, in individualistic societies such as North America and Western Europe, the focus is more on "my" performance rather than "our" performance (Naito and Gielen 2006). These cultural differences are big, so much so that a significant difference in pardons for toxic players under review for harassment was found between Korean, North American and Western European regions, where Korean perpetrators were more often pardoned likely due to the reviewers emphathizing with the toxic player instead of the victim due to Wang-tta (Kwak, Blackburn, and Han 2015).

Because of the vagueness and subjective perception of toxic behavior, situations may arise where the persons exhibiting toxic behavior fail to recognize what they are doing could be interpreted as a toxic act by other players (Holin and Chuen-Tsai 2005). Foo and Koivisto (2004) define **greed play** as a form of unintended griefing, where the player's motive is to benefit even if his actions annoy other players around him. In greed play, the player will do anything to win and follows the rules of the game. On the other hand, a greed player breaks the spirit of the game and the implicit rules set in place by the players. Even if the game's constituative rules (program code) and operational rules found in the Terms of Services or ROCs of the game allow this type of behavior yet it disrupts the play of other players, can it be considered toxic?

Different perceptions can cause toxic behavior to go unnoticed by players (Holin and Chuen-Tsai 2005) to an extent where it can affect both reporting and reviewing of toxic behavior (Kwak, Blackburn, and Han 2015). Moreover, because of differing subsections that appear in different games and their communities, specific definitions of toxic behavior may differ and be rather situational (Shores et al. 2014). To help alleviate the problem of vagueness of toxic behavior and reporting it, game companies have indicated behavior that is considered toxic by their standards usually through their Terms of Services or Rules of Conduct or within the

game in their reporting system (see e.g., Riot Games 2016; Blizzard Entertainment 2017a, 2017c).

2.3 Why does toxic behavior happen?

While the main point of this thesis is not to study psychological reasons for or the effects of bad human behavior, it is still a good idea to know where the problem of toxic behavior stems from, as it might help fight toxic behavior on a game or system design level. Hence, this section takes a look at prior research on why toxic behavior happens and what the motivations behind players exhibiting toxic behavior are.

There are many possible causes for toxic behavior in online settings. Suler (2004) defined six factors that affect the emergence of toxic behavior in online settings: **dissociative anonymity**, **invisibility**, **asynchronicity**, **solipsitic introjection**, **dissociative imagination** and **minimization of status and authority**. Table 1 defines these factors, as well as a short description for each.

Moreover, individual differences and predispositions affect how likely a person is to commit toxic behavior. Personal feelings, needs, i.e., level and personality styles all affect how a person acts online. (Suler 2004)

2.3.1 Anonymity and deindividuation

Anonymity means the condition of being unknown to others, or in other words nameless or unidentified. When an online user is anonymous their identifying personal details, such as gender, weight, age, occupation, ethnic origin, residential location and so on aren't available to other users. (Suler 2004; Lapidot-Lefler and Barak 2012)

Deindividuation means the condition of losing a sense of individuality, whether it be through blending in with a big crowd or for example, being masked in a way so that the person is unrecognizable to other people. (Diener et al. 1976)

Anonymity and deindividuation have been studied in both face-to-face and online settings (see Diener et al. 1976; Jessup, Connolly, and Galegher 1990), and have each been shown

Factor	Description
Dissociative anonymity	Users can hide some or all of their identity behind a username and their identity is concealed to an extent.
Invisibility	Users cannot see each other physically, or hear other users' voice.
Asynchronicity	Communications and reactions don't happen in real time. Reactions can be delayed until the situation suits a reaction.
Solipsitic introjection	Assigning voices and visual images to other users in one's own mind. Creating imaginary versions of other users.
Dissociative imagination	Online interactions are split or dissociated from real life facts. Online personas and responsibilities don't affect real life.
Minimization of status and authority	Everyone is seen as an equal. Elevated positions have a lesser effect on interactions.

Table 1. Factors for online toxic disinhibition (Suler 2004)

to cause bad behavior regardless of whether it happens online or offline in 'real life' (Diener et al. 1976; Davis 2002; Christopherson 2007). The lack of face-to-face interaction and diminished social presence (i.e., the feeling that others are in the same physical social space) in online settings only works to increase bad behavior (Davis 2002; Suler 2004; Fortunati and Manganelli 2008). In a sense, users are *invisible* to each other during online interactions, which has been found to affect behavioral disinhibition both online and offline (Suler 2004; Lapidot-Lefler and Barak 2012).

Suler (2004) states that online anonymity is one of the most important factors that drives a person towards toxic behavior. Because of the safety of anonymity, it is easy to act out in ways online one would not normally do in real life situations. Anonymity allows people to hide their real life details and even alter their online identity in ways which makes it easy to

separate it from their offline lifestyle and identity. This in turn gives the person a feeling that they might not be responsible for the things they do online, and, as Suler (2004) puts it, think that their online behaviors "aren't me at all".

Anonymity is not just a bad thing, though. In older types of online multiplayer games called Multi User Dungeons (or MUDs for short), which are a form of text-based multiplayer adventure games where players take the form of a character in a fantasy world filled with other players, anonymity has been a driving force in making players socialize with each other. Anonymity helps removing social risks and lowers inhibitions, making players more likely to converse with strangers they find in the game (Curtis 1998). This effect, where online users lose some of the psychological restraints that block or conceal emotions and needs is known as the *online disinhibition effect*, not to be confused with the negative *toxic disinhibition effect* (Suler 2004). Still even with the positive effects of anonymity, players in MUDs have encountered their fair share of harassment due to the protective nature of anonymity. Players behaving inappropriately, sexually harassing others and deliberately acting offensively towards other players are not unheard of (Curtis 1998).

Davis (2002) conducted a survey study on the experiences of bad behavior online, where the participants were asked for reasons why bad behavior occurs in online spaces. In the study, anonymity and the lack of fear of punishment were seen as the two primary causes for bad behavior in online spaces. The most often selected answer was because online spaces are usually anonymous (59,8% of answers), and users don't fear punishment for their actions (51,9% of answers). Other popular answers included attention seeking (43.1% of answers) and the lack of any punitive measures (39,6% of answers). The study also included an interesting option in light of this thesis: "Not enough methods to deal with it" with 32.4% of people picking the option.

In conclusion, anonymity can make toxic users feel that the victims are powerless to retaliate and that they don't have to take responsibility for their bad behavior. Anonymity allows users to socialize safely with each other, but also paves the road for more deviant types of behavior. (Curtis 1998; Davis 2002; Suler 2004) In online settings where toxicity is prevalent, the lackluster tools and punishments have been seen as one possible reason for the emergence of toxic behavior along with anonymity (Davis 2002).

2.3.2 The elements of competition and teamwork

Competition has been found to be a key element in the appeal of games (Hsu and Lu 2004; Liu, Li, and Santhanam 2013). Placing two teams against each other in a competitive environment with opportunities for achievement, immersive experiences and interactions with other players creates unique situations which can lead to both positive and negative consequences.

Adachi and Willoughby (2011) conducted a study on video game violence and competition and how they affect aggressive behavior. Participants played violent and competitive games after which they were asked to create a hot sauce for a "taster" who did not enjoy hot foods, also known as the Hot Sauce Paradigm. The Hot Sauce Paradigm is a method designed to assess aggressiveness by introducing a hurting element into an otherwise safe experiment. The method consists of manipulating a noxious variable in the study hypothesized to influence aggression (in this case, the violence and competitiveness of games) and then asking the participant to create a hot sauce for a target that doesn't like hot sauces, in turn allowing the participant to show their aggression (Lieberman et al. 1999). Due to the tasters preferences, spicier hot sauces were considered a more aggressive choice compared to mild ones. Players who played competitive games were seen creating spicier hot sauces than their peers who played games with violence but low competitive elements. Hence, the authors concluded that competitiveness seemed to be the leading video game characteristic that influences aggressive behavior. Moreover only the highly competitive games in the study elevated the players' heart rates from baseline which supports the theory that psychological arousal can be an affector through which competitiveness influences aggressive behavior in video games.

As the types of competitive games this thesis focuses on rely heavily on teamwork and cooperation between teammates in order for the team to succeed and win, inter-group behavior has a notable role in the appearance of toxic behavior. In their research paper on organizational behavior, Felps, Mitchell, and Byington (2006) explain how a single negative group member can cause detrimental effects on their teammates. According to the research, members who act negatively during a team oriented task can elicit psychological states in teammates, which in turn can cause them to display defensive behavioral reactions. In turn, these defensive reactions can only work to strenghten the negative attitudes within the whole team.

For a group to be successful, according to Felps, Mitchell, and Byington (2006), three major categories of behavior are to be followed. First, every member must contribute adequate work effort towards group goals. Second, group members must create comfortable and positive interpersonal interactions through regulating their expressions of feelings. Finally, every member must perform "contextually" through upholding interpersonal respect and adhering to interpersonal norms. Underperforming in these categories can have a negative impact on the group functioning.

Following the three main categories of successful group functioning described above, Felps, Mitchell, and Byington (2006) list three categories of difficult team member behavior, all of which can impact group functioning in a negative way, and can lead to "a single bad apple spoiling the whole barrel". Difficult team members who *withhold group effort* dodge group responsibilities all the while free riding off the efforts of other team members. Difficult team members can also be *affectively negative* by expressing constant negative mood or attitude and express pessimism, anxiety, insecurity and irritation. Last but not least, team members who are *interpersonal deviants* violate the group's interpersonal norms by making fun of others, saying hurtful things, cursing, acting rudely or in a racist manner or publicly embarrassing someone. Table 2 gives an example on how these three categories could be linked to different types of toxic behavior in a multiplayer game environment.

Category	**Gaming variant example**
Withholding group effort	Going AFK or leaving the game.
Affective negativity	Negative, low relevance chat spamming.
Interpersonal deviancy	Harassment, power imposition.

Table 2. Difficult teammate behaviors and gaming variants (Felps, Mitchell, and Byington 2006)

2.4 Effects of toxic behavior

Even though data suggests that the number of toxic players is small compared to the actual number of players, their actions cause grief to players many times their number (Foo and Koivisto 2004). The effects of toxic behavior range from mild annoyance to longer lasting,

far reaching problems.

Toxic behavior has a negative effect on user experience (Kwak, Blackburn, and Han 2015). Davis (2002) found out that users who experience bad behavior on an online platform might avoid or even leave the platform in question and never return. This can be costly for platforms that are still growing as retention and user acquisition can be a vital element when the user base is still low. Shores et al. (2014) also found in their study about toxicity in League of Legends, a competitive MOBA game, that interacting with toxic players decreased the retention rate (i.e., how often players would come back to the game over a period of time) of new players.

Encountering bad behavior on a regular basis can have longer lasting negative effects on the psyche. Cyberbullying has been associated with depression, anxiety and has been the reason for drastic results such as suicide (Chesney et al. 2009; Kwak, Blackburn, and Han 2015). Students that have been on the receiving end of continued cyberbullying have reported increased levels of anger, powerlessness, sadness and fear, as well as loss of confidence, disassociation from friends and general feelings of uneasiness (Hoff and Mitchell 2009).

On a group level, toxic behavior can have a severe negative impact on the functioning of the group. If a member is withholding effort, it can cause perceptions of inequity in other group members, in turn causing them to decrease their own contributions. Pessimistic tones and affective negativity can influence their teammates' attitudes, moods and emotions, causing the negative feelings (e.g., anger) to spread within the team. Intragroup harassment (making fun of group members, acting rudely, saying hurtful things etc.) acted out by an interpersonal deviant can damage or undermine trust and distract the group from the task, lowering the group's performance. (Felps, Mitchell, and Byington 2006)

Moreover, toxic behavior can cause increased costs and slower development times for game companies. Hiring human moderators to police a designated space, while effective, can be extremely costly for a company (Davis 2002). For example, Jeff Kaplan, a game director working for Blizzard Entertainment, has stated that due to having to fight toxic behavior, the development of their competitive multiplayer shooter, Overwatch, has slowed down (Grayson 2017). Instead of working on new features and bugfixes, Kaplan has stated that

they’re "– – spending a tremendous amount of time and resources punishing people". Kaplan also states that he wishes the Overwatch team "could take the time we put into putting reporting on console and have put that towards a match history system or a replay system instead". (Kaplan 2017a)

3 Ways of fighting toxic behavior

Because toxic behavior has been seen to be such an extensive and reoccurring problem, many video game companies and online platforms have tried fighting against it by different means, for example, hiring human moderators and developing automated reporting systems for players to use. Researchers have also studied the problem, and some suggestions have been made towards different ways of fighting toxic behavior. Overall, preventing and remediating aversive online behavior has been found to be difficult and expensive (Aiken and Waller 2000).

This chapter introduces prior research on techniques in fighting against toxic behavior in Section 3.1, while Section 3.2 describes the available tools on an overall level. Section 3.3 examines the punishments given to toxic players in different games.

3.1 Prior research

Prior research on the field has mostly focused on what toxic behavior is, how it emerges and what kind of effects it has on players. Research focusing explicitly on the tools created as countermeasures for toxic behavior is scarce, yet some studies and ideas can be found.

Manual surveillance techniques are one way of fighting against toxic behavior. Some online communities, such as discussion forums, have hired moderators who have increased privileges over normal users. Moderators review posts, modify or remove inappropriate content and, depending on the privileges granted to them, can remove (i.e., ban) users that repeatedly violate the platform's rules (Shores et al. 2014). While hiring moderators can work well in rooting out aversive or toxic behavior, they can be extremely expensive and administratively cumbersome, as they might require training to avoid abusing their power over other users (Davis 2002).

Automated surveillance is an elementary choice when simple but strict rules are to be forced. Systems that censor profanity, send out warnings or flat out silence or ban repeated toxicity or high severity toxic users can work to an extent. Simple automated systems can

be used to root out clear cases of toxic behavior, such as foul language. Such systems might require manual surveillance to be paired with them, as they can detect simple cases of toxic behavior (i.e. censoring curse words in online users' text), but might not be able to understand the more subtle ways that toxic behavior can emerge in. (Davis 2002)

Automating certain punishing elements can be seen in use in most competitive multiplayer games. While the companies that develop and publish these games usually either deny or give no comment on the inner workings of their reporting systems, the public opinion based on player experiences on social media sites and gaming forums seems to point towards heavily automated punitive systems in most popular competitive multiplayer games. Actions such as muting a toxic player's ingame voice and text chat seem to be usually automatically administered by the system after a certain number of reports have been met and certain actions have been taken. For example, the competitive games Overwatch and Defense of the Ancients 2 have been accused of using such automated administrative measures (see for example, forum posts from ddjj1004 2018; Animator_ 2014), while the developers have remained mostly silent about the possible automation. On the other hand, developers of League of Legends and Heroes of the Storm have more or less confirmed such automation exists in said games (Lyte 2015; Browder 2015).

As anonymity and the lack of fear of punishment have been found to be leading forces in causing online toxic behavior (Davis 2002), researchers have suggested lowering their effects by increasing the social presence of online users. **Online profiles** paired with a **reputation system** is one of the suggestions (Davis 2002), and can already be seen in action on some platforms (Shores et al. 2014). When otherwise anonymous users are connected to an online profile that tracks their actions through assigning them a reputation score, they are more accountable for their actions in online spaces (Davis 2002; Shores et al. 2014). Reputation systems have been seen as an effective way of dispelling toxic behavior, as the ratings a user has gained persist from one interaction to the next and are visible to other users. They allow other users to avoid deviant users who have a negative rating, and, for example, on Ebay, positive user reputation has also been linked to improved performance. (Shores et al. 2014)

As users who experience bad behavior usually have to deal with it by themselves in the immediate situation, online platforms should give users tools that can help them with prob-

lematic users (Foo and Koivisto 2004). Ostracism (i.e., ignoring or excluding someone from a group) against the toxic user can send a powerful message to the perpetrator and help victims enjoy their experience more (Davis 2002). This can be achieved through **'block' or 'mute' mechanics**, where all contact or messages from the perpetrator can be blocked if a user wishes so. However, such options should also send critical feedback to the toxic user for it to be as effective as possible (Davis 2002).

On a design level, online platforms should try and build a positive space from the ground up for norms against bad behavior to develop early on. A **set of community norms**, such as Rules of Conduct that discourage bad behavior should be set in place for players to follow. (Davis 2002; Shores et al. 2014) These norms can also be supported through the inclusion of the aforementioned system level countermeasures such as profanity filters and 'ignore player' options (Foo and Koivisto 2004).

Riot Games has conducted research on toxic behavior in their MOBA game League of Legends, which has millions of players playing it monthly. In a presentation given by Lin (2013), Riot's player behavior team has come up with five core pillars for player behavior management, which they have seen as helpful in the battle against toxic behavior.

First and foremost **players should be shielded from negative behavior**, which Riot approached by making the match-wide All chat channel an opt-in option through the settings menu found ingame. This small change had a large impact: after All chat was made an opt-in option the amount of chat remained the same, but the amount of positive chat was increased by 34.5% and the amount of negative chat was decreased by 32.7%. (Lin 2013)

Second, **toxic players should either be reformed or removed altogether**. After seeing that sending vague warning emails or messages about administered bans to toxic players did not work, Riot started sending feedback to toxic players in the form of "reform cards". These cards included information on the player's Tribunal judgement and peer feedback from other players, and caused reports against some players to go down due to them changing their behavior, or "reforming". With the idea that speed and clarity of feedback play critical roles in shaping behavior, this change incited positive feedback from players in the game forums and even helped some players see their wrongdoings. (Lin 2013)

The third pillar approaches removing toxicity by **creating a culture of sportsmanship**. Riot conducted an experiment in **priming players**, where different tooltips that included fun facts on the game, positive and negative behavior stats, self-reflection and gameplay tips were shown to players in different colors and situations. With 217 unique conditions for the tooltips and 10% of games acting as controls where no tooltips were shown, from hundreds of thousands of games positive results were seen in decreasing negative attitudes, verbal abuse and offensive language reports. The color of the text shown in the tooltips was also seen as a powerful element in shaping how players behave ingame. (Lin 2013)

The fourth and fifth pillars are **reinforcing positive behaviors** and **creating better match chemistry**, which Lin (2013) did not describe in much detail. He states positive behavior should be reinforced by spotlighting good behavior and showing what good behavior is like, and as stated earlier in this section, building a set of community norms can help achieve this. Better match chemistry could mean system level design, where players should be matched with other players in the same skill range, which would make sense, as pairing players with opponents of equal skill can create an experience of flow (Liu, Li, and Santhanam 2013).

3.2 Tools available for players

To try and reduce toxic behavior in their games, game companies have given players tools that can be used in case they encounter toxicity. This section takes a look at these tools and their functionality. Section 3.2.1 goes over reporting systems, a very common tool which can be found in all of the most popular competitive multiplayer games, while Section 3.2.2 takes a look at muting and blocking that can be used to deal with toxicity in the immediate situation. Section 3.2.3 introduces some other features that were ultimately left out of the study due to them being either specific to one game, or not tools players can interact with, but are linked to the other features.

3.2.1 Reporting tools

Very often competitive multiplayer games give players the possibility of reporting other players for toxic behavior. These reporting systems often work automatically, taking action once

a certain number of player reports towards an aversive player has been met (Blackburn and Kwak 2014; Valve 2017). While the core functionality of the reporting tools is usually the same in every game – that is, the user can report a player behaving in a toxic manner which can result in punishments for the player – the tools differ on levels of usability, player interaction and the information available to the user while using the tool. Most visible to the players are the differences in user interface design.

Initiating the act of reporting through these systems usually happens through an ingame menu. More often than not these menus include predefined categories which represent different toxic acts, such as intentional feeding, not participating in the game, offensive language and so forth (Kwak, Blackburn, and Han 2015; Riot Games 2017b; Blizzard Entertainment 2017a). In cases of ambiguity over the predefined categories, the reporting menu might include further descriptions for each option, but this is not always the case. Figure 1 shows an example of such a reporting screen from the game Overwatch. The reporting window in Overwatch includes in-depth examples of what is and what isn't considered toxic in the currently selected category, which the player can choose from the dropdown box on top of the menu (see Figure 2 for an example of this dropdown menu). This gives the player a chance to more easily select the most appropriate category defining the toxic behavior, eliminating some of the ambiguity in category selection.

The categories available can differ from game to game, but overall they follow the same core ideas of toxic behavior in competitive games. The categories usually include options for griefing, verbal harassment of any form, spam, cheating, inactivity/AFK and offensive ingame nickname or account name. For example, Overwatch includes the following categories: spam, bad battletag (username), abusive chat, cheating, griefing, inactivity and poor teamwork (see Figure 2), and players can only choose one category while reporting. On the other hand, League of Legends offers players the following categories: negative attitude (griefing, giving up), verbal abuse, leaving the game/AFK, intentional feeding, hate speech, cheating and offensive or inappropriate name (Riot Games 2017b), and players can select multiple categories in the reporting menu (see Figure 3 for the League of Legends reporting menu in action). Hence, depending on the game, the reporting tools can differ on the functional level.

Figure 1. The description of griefing in the Overwatch reporting menu.

The reporting systems can also include options for reporting other activities than just toxic player behavior. For example, in Overwatch players can report inappropriate custom game lobby names and descriptions along with the usual toxic behavior options. Figure 4 shows an example of the window that appears after the player chooses to report a custom game from the custom lobby browser.

Along with predefined categories to help guide the reports in the right direction, these menus can also contain a fillable text field for the reporting player to include a more in-depth description of the toxic behavior. Figure 5 shows an example reporting menu from Heroes of the Storm, where the player can choose a reason and add a description to go along with the report. Note that this menu doesn't include an explanation for each separate category like in Figure 1. At least in the now discontinued League of Legends Tribunal reporting system, these messages left by the users using the reporting tool have been seen as useful for the reviewers deciding on the case (Blackburn and Kwak 2014).

There are also differences between games in when the option to report other players is avail-

Figure 2. The dropdown menu with all possible reporting categories in Overwatch.

able. For example, in Overwatch and Heroes of the Storm, reporting another player can be done during and after a match, or even from the main menu of the game while not in a match. In contrast, players in League of Legends can only report other players when a match has ended, during the post-game chat (Riot Games 2017b).

3.2.2 Blocking and muting

Players are able to deal with verbal toxic behavior in the immediate moment by muting or blocking perpetrators. While ingame, muting is usually achieved through a menu that shows all players in the match, for example, the scoreboard or a team profile menu. More often than not this menu is the same one where players can initiate reporting toxic players; for an example of such a menu from Overwatch, see Figure 6.

Depending on the game and the communication types available for players, muting can be applied towards public and private text chat, voice chat or ingame pings, such as voicelines, minimap pings and chat messages directed towards ingame objectives. Whether or not mut-

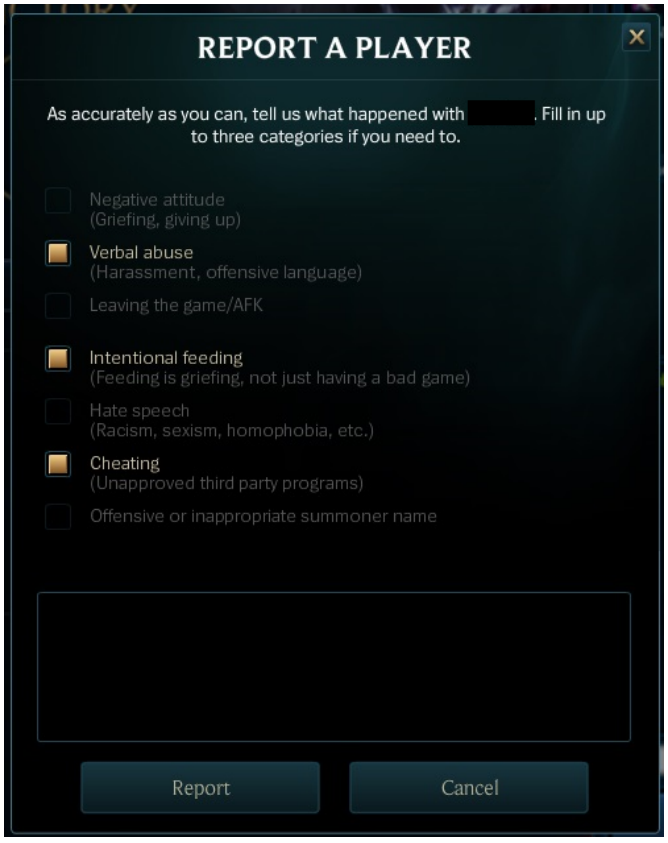


Figure 3. The report menu in League of Legends.

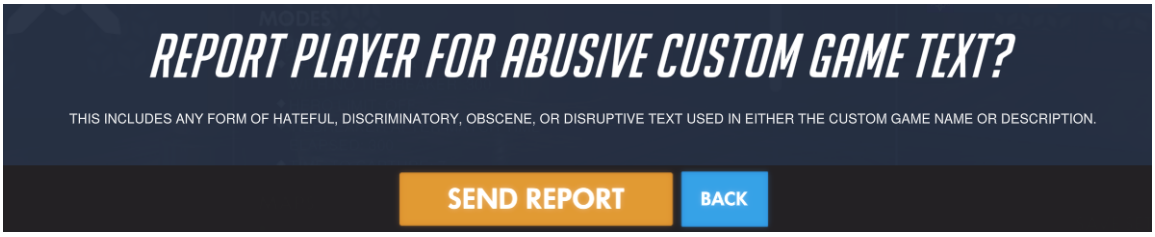


Figure 4. Reporting a custom game in Overwatch.

Figure 5. The reporting window in Heroes of the Storm with a description text field.

ing text chat also mutes all other text based communication, such as pings, from the player depends on the game in question.

Blocking a player is a step towards a stricter communication ban from just simple muting. Blocking a player usually stops all communication from that player, such as public or private ingame text chat, voice chat, pings and friend requests.

3.2.3 Other features

Depending on the game, other features have been implemented to combat toxicity. This section describes some of these game-specific ways of handling toxicity through either tools available for players, or automatic systems in place to reduce toxicity. These features were left out of this study for either being game specific and not found in any other competitive game, or not being tools that players can interact with.

During the writing of this thesis, Blizzard implemented an "Avoid as teammate" feature to Overwatch with the mindset that players can use this option to avoid players who act in a frustrating manner, whether or not their behavior is toxic. With this feature, players can avoid up to two different players of their choosing for seven days. This makes the matchmaking

Figure 6. The "Avoid as teammate" option found under the Groups menu in Overwatch, along with mute, block and report options.

system favor putting the "avoided" player on the enemy team instead of on the team which has a player avoiding said player. After the seven days have passed, the avoided player is dropped off the "Avoid as teammate" list. With this feature, Blizzard wants to give the power of "immediate action" for players, so they can control their gaming experience better. Blizzard also stated this change might create longer queue times, which is why the player limit a person can avoid at one time was decided to be two. Players who are avoided by a large number of other players get feedback through an ingame warning that states they have been avoided by a considerable number of players. It should be noted that the system can't be used to avoid chosen players appearing in the enemy team. (Kaplan 2018) Figure 6 shows the option to avoid a teammate in Overwatch. Figure 7 shows the warning a player gets when they have been avoided by a considerable number of other players.

While automated leaver penalties are not necessarily a tool for players to use, they do incur penalties for players who repeatedly abandon matches, and such systems can also be linked to reports towards AFK and idling in games (Riot Games 2018a). A more in-depth look at leaver penalties can be found in Section 3.3.

An example of a reputation system mentioned in Section 3.1 can be found in Valve's Defense of the Ancients 2 (or DOTA2 for short), in which all players have a "priority" status which starts at Normal priority by default. This reputation can go lower or higher depending on the

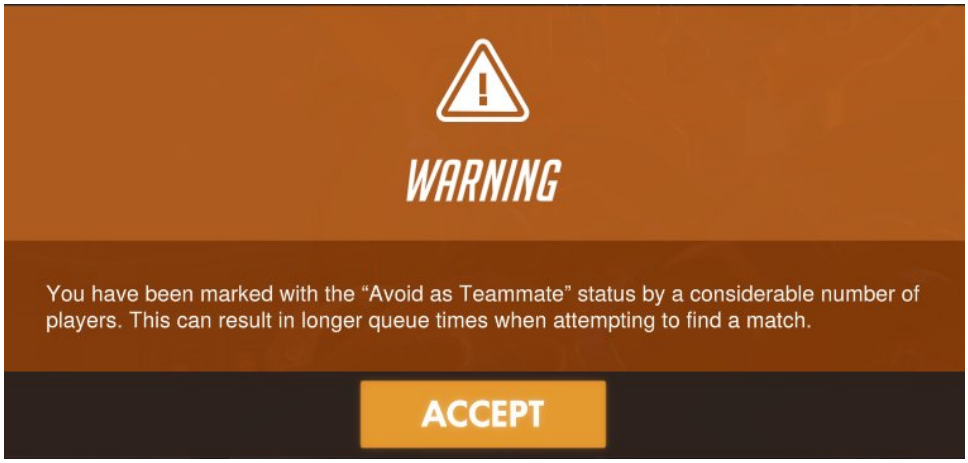


Figure 7. The warning that appears to players who have been avoided by a considerable number of players in Overwatch.

player's actions, for example, abandoning games or getting reported multiple times by other players can lower a player's priority, which can be returned to normal priority by playing and winning a certain number of games (Valve 2017, 2013). Players who have a low priority will experience punishments such as longer than normal queue times, can receive no ingame item drops or trophy points and will be forced to play with other players with low priority in matches (Valve 2017; DOTA 2 WIKI 2017a). If the account continues to gather low priority points, it will be placed on a matchmaking ban, preventing matchmaking altogether (Valve 2017). Third party applications are also available for Riot Games' League of Legends, where crafty users have created reputation modifications where players can commend or report other players ingame and follow their profiles through an online website (Shores et al. 2014).

Games may also offer a simple language or profanity filter option (Riot Games 2017b). When enabled, it will automatically censor curse words and words that are deemed inappropriate or harrassive. This option can be used when blocking all communication isn't an option, or when the user wants to make the language in their gaming environment a little bit cleaner.

3.3 Punishments

Players that receive enough reports to warrant action can be punished in multiple ways. Punishments range from warnings, automatic silences, ingame penalties such as lowered

Figure 8. An automatically silenced player in Heroes of the Storm as indicated by the small cross icon.

experience point and currency gains, game mode suspensions and lowered account reputation to completely banned accounts that have no access to the entire game (Shores et al. 2014; Kwak, Blackburn, and Han 2015; Kaplan 2017b; Riot Games 2018b).

Punishments for abusive chat can lead to automatic silences. A silenced account is usually unable to communicate through the in-game communication channels such as text or voice chat. For example, in Heroes of the Storm, a player who has been reported for abusive chat can receive the Silence Penalty, which in turn blocks the use of in-game Allied, General and Custom chat, and whispers to non-friends, but the player is still able to use map pings to point out objectives, use party chat and send whispers to their friends. Usually the first silence penalty lasts for 24 hours. A silence in HotS also suspends the silenced player from playing the competitive Hero League gamemode. (Valenta 2015) Depending on the game, silenced players can be identified usually from a small addition on their player icons, such as a small crossed out speech bubble in HotS (see Figure 8).

Leaving competitive games can lead to punitive measures, as players repeatedly leaving matches while the match is still in progress can receive automated penalties. Such a system can be seen in action in most of the popular competitive multiplayer games (such as HotS, Overwatch, DOTA2, LoL). Leaving a game can result in players being put into a "low priority queue", which can lenghten their matchmaking times. Leaving a match can also count as a loss towards their match history, Depending also on the game and match type, players can incur penalties that range from reduced experience point gain from matches and locked gameplay modes. (Blizzard Entertainment 2017b; Riot Games 2018a; DOTA 2 WIKI

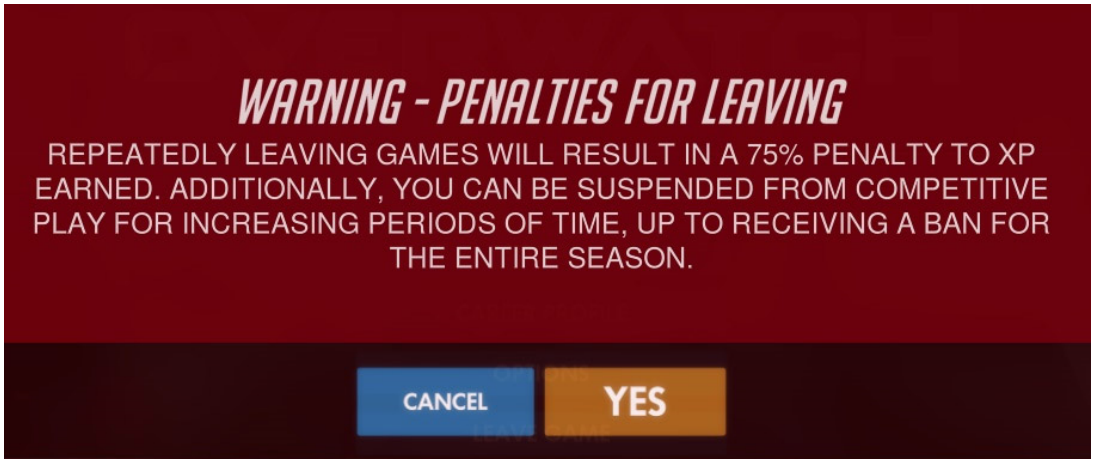


Figure 9. The warning that appears for players who are leaving a competitive match in Overwatch.

2017b). See Figure 9 for an example of feedback given to player that is about to get leaver penalties.

These penalty systems can function with a time limit, where players are placed in low priority queue or suffer ingame penalties for a certain amount of time, or a game limit, where players are penalized for a certain number of completed matches. (Blizzard Entertainment 2017b; Riot Games 2018a; DOTA 2 WIKI 2017b)

For example, in League of Legends, the LeaverBuster system places repeated leavers in a low priority queue for five completed matches. After these matches are completed, the player will be returned to the normal queue. Leaving any games during low priority queue will reset the progress towards normal priority and start the low priority all over again. (Riot Games 2018a) Figure 10 shows the LeaverBuster system warning a player for leaving a game, while Figure 11 shows the warning a player gets when they are placed in low priority queue.

3.3.1 Punishment feedback

Players who are punished by the system are usually informed about the punishment in one way or another, such as an email or ingame notification (Lin 2013). Other types of notifications have also been used; for example, in League of Legends, the players receive a notification in the form of a "reform card" that contains information on the peer review and

Figure 10. The LeaverBuster system warning a player for leaving the game in League of Legends. (Riot Games 2018a)

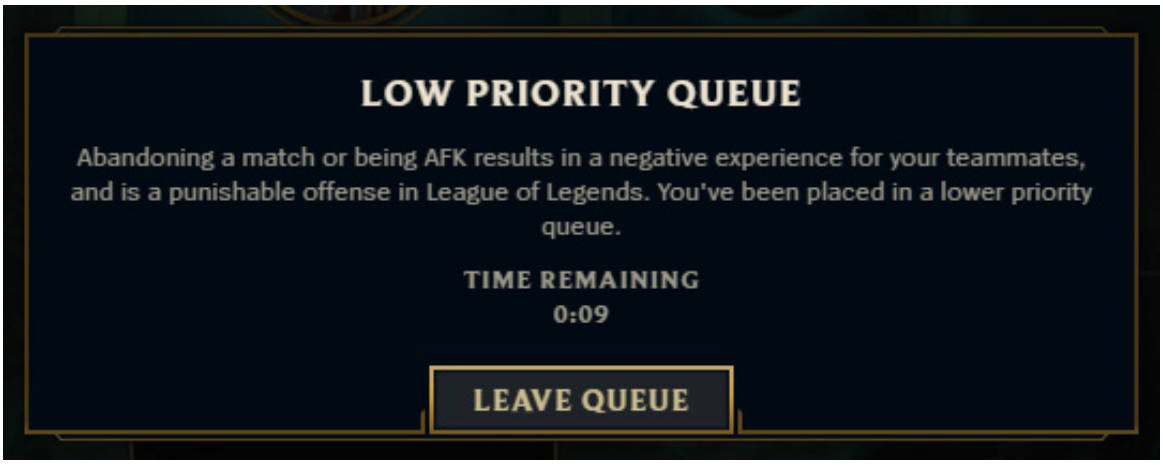


Figure 11. The LeaverBuster system informing the player that he has been placed in the low priority queue. (Riot Games 2018a)

the punishment decision (Lin 2013).

Moreover, some games can also inform the users who reported toxic players that their reports have warranted action. See Figure 12 for an example of such a notification in Overwatch, and Figure 13 for an example from League of Legends.

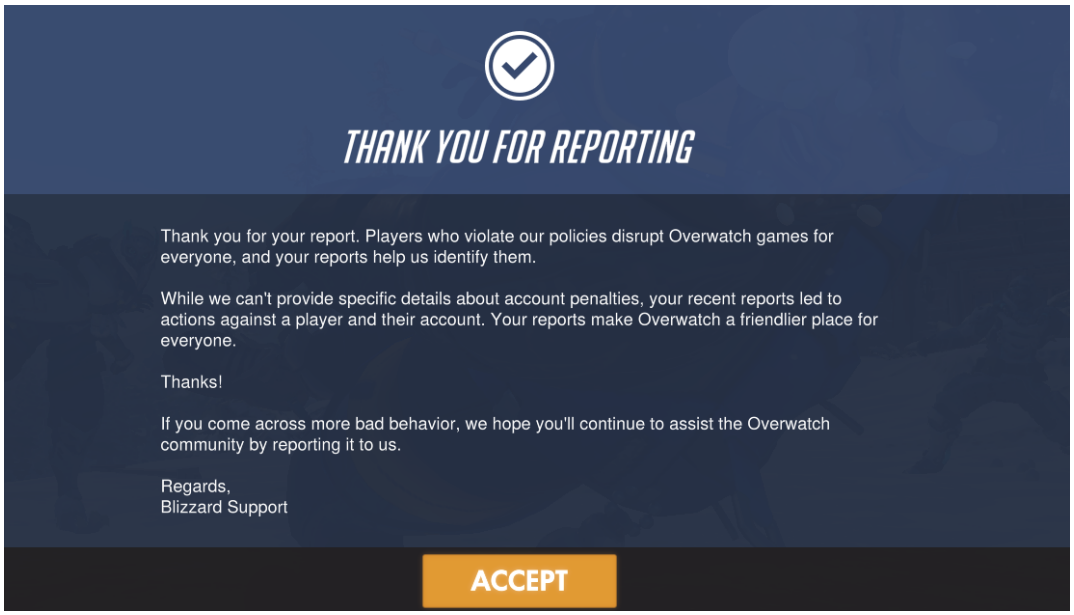


Figure 12. The notification a player gets when their reports have been acted upon in Overwatch.

Figure 13. The notification a player gets when their reports have been acted upon in League of Legends. (Riot Games 2017a)

4 Research approach

This chapter introduces the research approach for the thesis. Section 4.1 explains the research design, while Section 4.2 outlines the survey research method selected for the study. Section 4.3 goes over the online questionnaire created for the study in closer detail.

This study aims to seek answers to questions concerning the usage of tools designed to counter toxic behavior and give an overview on their perceived usefulness from the players' perspective. To recapitulate, the research aims to answer the following questions:

1. In the players' opinion, how effective are the tools in reducing toxic behavior?
2. Are the punishments given to toxic players seen as an adequate way of reducing toxic behavior?

4.1 Research design

As this thesis aims to collect quantifiable data on the usage and popular opinions towards the available tools found in the competitive multiplayer games, quantitative research is chosen as the main research methodology. Quantitative research is a data collection technique that is based on measurement of quantity or amount. Data acquired through quantitative research is usually shown in numbers, and can be pictured in the form of charts or tables. (Neuman 2014) Quantitative research relies on positivist principles and using variables along with hypotheses. A quantitative study tries to verify or falsify hypotheses that have emerged during prior research. (Neuman 2014)

The research is done through a reactive design, where the research engages the studied population through presenting experimental conditions or directly asking questions, for example, through a questionnaire. (Neuman 2014) The opposite, nonreactive research, where research is done through existing statistics, could also be an option, but during research towards the study the amount of data found was considered insufficient or old.

Quantitative methods were chosen due to the expected amount of data from the online questionnaire, making qualitative measurements hard and time consuming. Survey research was

chosen as the main research method. Data collection was done through an online questionnaire which was distributed to different gaming social media sites.

4.2 Survey research

Survey research was chosen as the main research method for this thesis. Survey questionnaires are a fast way of getting focused research data from a sampled group of individuals. Survey questionnaires enable data collection from large numbers of individuals without the researcher ever having to actually meet said individuals in person (Kothari 1990). Moreover, survey questionnaires are easy to deploy and distribute through online forms, which makes them a great option for collecting large amounts of quantifiable data.

Survey research is a research method that is designed to produce statistics about a chosen target population in a quantifiable form. A survey consists of three main components: sampling, designing questions and data collection. (Fowler 2012)

Sampling is the act of selecting a small subset of the chosen population as representatives of the entire population (Fowler 2012). For this study, sampling was done through choosing a handful of selected online discussion areas to which a questionnaire was distributed for **data collection** purposes. The channels chosen for this study were game specific subreddits on Reddit (refer to Table 3 in Chapter 5 for the subreddits the questionnaire was posted to). Each distribution channel was selected due to their affiliation with a competitive multiplayer game. Expectations towards possible participants were:

- Participants answering the questionnaire are quite probably players of a competitive multiplayer game, since they are visiting a social media channel dedicated to such a game.
- Participants who find the questionnaire are either active or semi-active visitors to the social media channel where the main language is English, and as such are able to answer the questionnaire that is presented to them in English.
- Participants are aware of toxic behavior through at least playing competitive games and know what "acting poorly" in a video game means.
- Participants are aware of the tools available to them and have probably used them at

some point during play.

Given how actively players post about bad behavior on the chosen distribution channels and how actively these discussions are engaged in (such discussions are visible almost daily on the front pages of said channels), knowledge of what toxic behavior is and the tools available for the players is expected from participants. The fact that discussions about toxicity are usually very active, the expectations for the amount of data gathered for the study were also high.

Questions in the questionnaire were **designed** based on prior research on the field and the research focus of this study. See Section 4.3.1 for more details about the questions in the questionnaire.

4.3 Online Survey Questionnaire

An online questionnaire was chosen as the main data collection method due to the quantitative nature of the research. The questionnaire was deployed through Google Forms, and was shared to the subreddits on Reddit of popular competitive multiplayer games. The questionnaire was the same for every participant. Due to this, game specific tools for dealing with toxic behavior (such as the "Avoid as teammate" option in Overwatch) had to be left out of the questionnaire, and the focus remained on basic tools available for players (reporting, muting and blocking), which usually act as the first line of defense when toxic behavior is encountered.

This section goes over the different parts of designing, creating and distributing the questionnaire.

4.3.1 Questionnaire design

As questions are an essential part of the survey process, the questions in a questionnaire survey must be designed carefully so that the collected information is relevant to the research. (Kothari 1990) Questions need to be worded properly to prevent ambiguity in answering them, as unspecific wording can produce important differences in the answers. (Fowler

2012)

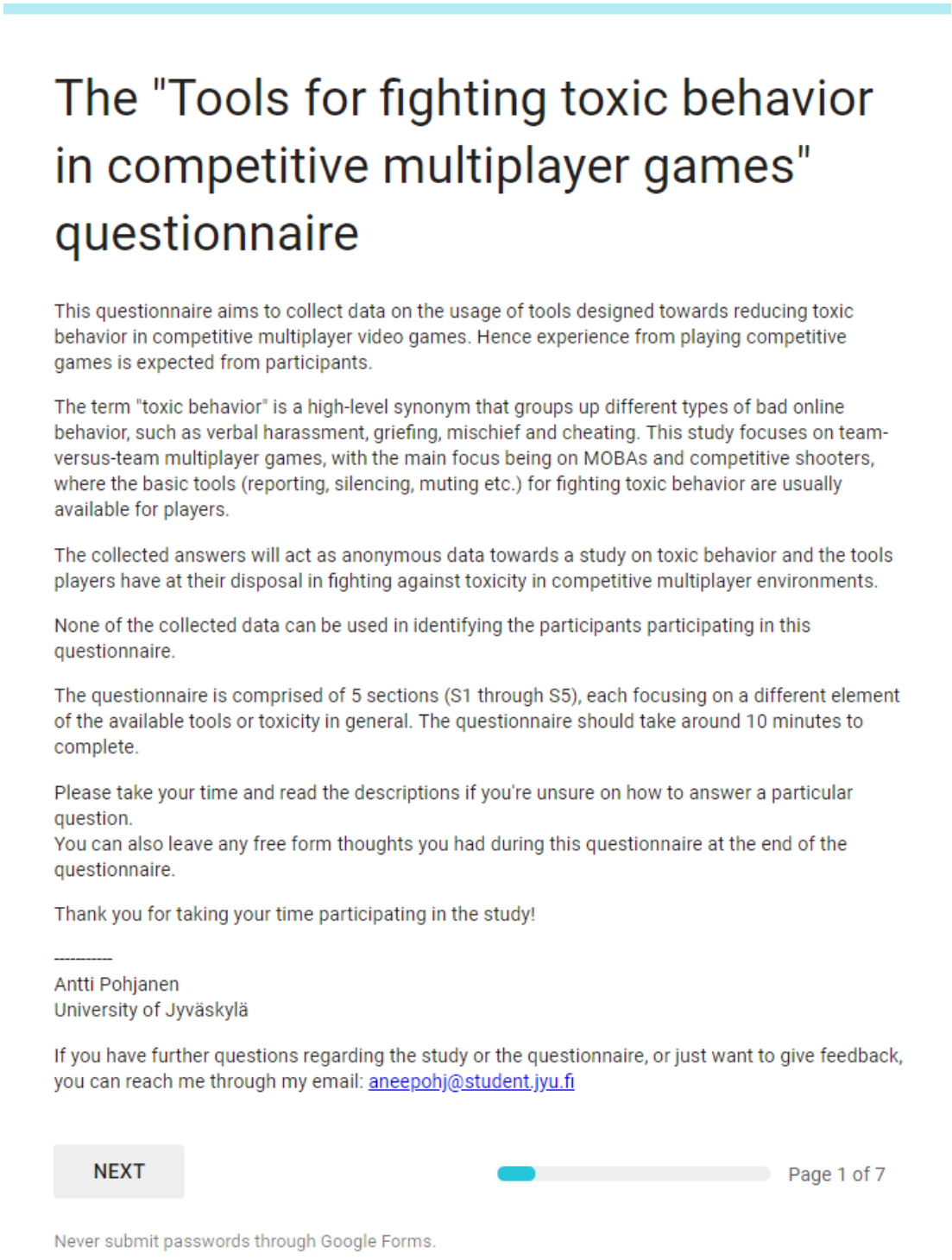
The questionnaire contained dichotomous questions with yes/no answers and questions following the five step Likert response scale. Dichotomous questions were employed in identifying tool usage, experiences concerning feedback and opinions on punishment functionality. Likert scale questions were used in questions considering the effectiveness of the tools and punishments, informativeness of feedback, and in questions concerning general experiences of toxicity. To avoid ambiguity in collected data and to keep the data in an easily quantifiable form, multiple choice (except for demographic questions) and open-ended questions were completely left out from the questionnaire, with the exception of a free form 1000 character text field located at the very end of the questionnaire.

The questionnaire was divided into seven sections, with the first section acting as an introductory section with information on the study and no questions, and the last section acting as a concluding section containing only demographic questions and a "thank you" note for the participants. The sections in between (2 through 6) contained the actual questions for the survey. Each section focused on a different element of toxicity and the tools available. From here on the sections containing the questions will be addressed as sections 1 through 5.

Each section contained a handful of questions, most with descriptions to prevent possible ambiguity. Some sections contained dichotomous questions that lead to follow-up scaled questions. Due to limits in Google Forms' functionality, the follow-up questions could not be hidden without the questionnaire suffering in overall functionality. For follow-up questions where this was the case, a description was written where the question could be skipped if the participant answered negatively to the leading question.

The first section participants saw when linked to the questionnaire included a short introduction to the study, some information on what "toxic behavior" means in the context of this study and expectations towards participants. See Figure 14 for the complete introductory text.

Section 1 ("General") contained general questions concerning toxic behavior and competitive gaming. Section 1 aims to collect data on how often players encounter toxic behavior, how they feel about the current array of tools available to them and whether or not they have



The "Tools for fighting toxic behavior in competitive multiplayer games" questionnaire

This questionnaire aims to collect data on the usage of tools designed towards reducing toxic behavior in competitive multiplayer video games. Hence experience from playing competitive games is expected from participants.

The term "toxic behavior" is a high-level synonym that groups up different types of bad online behavior, such as verbal harassment, griefing, mischief and cheating. This study focuses on team-versus-team multiplayer games, with the main focus being on MOBAs and competitive shooters, where the basic tools (reporting, silencing, muting etc.) for fighting toxic behavior are usually available for players.

The collected answers will act as anonymous data towards a study on toxic behavior and the tools players have at their disposal in fighting against toxicity in competitive multiplayer environments.

None of the collected data can be used in identifying the participants participating in this questionnaire.

The questionnaire is comprised of 5 sections (S1 through S5), each focusing on a different element of the available tools or toxicity in general. The questionnaire should take around 10 minutes to complete.

Please take your time and read the descriptions if you're unsure on how to answer a particular question.
You can also leave any free form thoughts you had during this questionnaire at the end of the questionnaire.

Thank you for taking your time participating in the study!

Antti Pohjanen
University of Jyväskylä

If you have further questions regarding the study or the questionnaire, or just want to give feedback, you can reach me through my email: aneepohj@student.jyu.fi

NEXT

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Never submit passwords through Google Forms.

Figure 14. The questionnaire's first page.

stopped playing a game due to toxic behavior as per findings from Davis (2002) concerning users leaving a platform due to experiencing bad behavior. The first question regarding the current most played competitive game was added before distributing the questionnaire to make it easier to see which communities answered the most and possibly help with going through the data, as the games differ in, for example, the available reporting categories. Any questions marked with an asterisk (*) required answers to be able to continue the questionnaire.

Section 1 questions		
Number	**Question**	**Question type**
1	Which competitive game do you currently play the most?*	Multiple choice with a free form option
2	How often do you encounter toxic behavior when playing competitive multiplayer games?*	Scaled 1 (Never) to 5 (Every match)
3	When you encounter toxic behavior in a video game, do you feel you have enough ways to deal with it in the immediate situation?*	Yes/No
4	Have you ever stopped playing a match because of toxic behavior?*	Yes/No
5	Have you ever completely stopped playing a game because of toxic behavior?*	Yes/No

Section 2 ("Reporting features") contained questions regarding the reporting tools available for players. This section aimed to collect data on the usage of reporting tools (whether or not they're used, how easy they were to use and so forth) and their perceived effectiveness. The section also included a question on how often players "misuse" the reporting feature by reporting players that haven't acted in a toxic manner. The questions in section 2 can be divided into three groups: questions 1-5 focused on the usage experience of the reporting tools, questions 6-8 focused on the misuse of the reporting tools and question 9 focused on the perceived effectiveness of reporting a toxic player.

Section 2 questions		
Number	**Question**	**Question type**
1	Have you ever reported another player by using the reporting tool?*	Yes/No
2	How easy was the reporting feature to use?	Scaled 1 (Very hard) to 5 (Very easy)
3	How well do the available reporting categories match your reporting needs?	Scaled 1 (Not well at all) to 5 (Very well)
4	How often do you report toxic behavior when you see it?*	Scaled 1 (Never) to 5 (Every time)
5	How often do you leave a text description for the report?	Scaled 1 (Never) to 5 (Every time)
6	Have you ever reported someone who wasn't acting in a toxic manner?*	Yes/No
7	How often do you report players who haven't acted in a toxic manner?*	Scaled 1 (Never) to 5 (Every match)
8	How easy would you say the reporting feature is to misuse?*	Scaled 1 (Very hard) to 5 (Very easy)
9	How effective would you say reporting toxic behavior is in reducing it?*	Scaled 1 (Not effective at all) to 5 (Very effective)

Section 3 ("Dealing with toxicity in the immediate situation") contained questions regarding the tools available for players to immediately deal with toxic behavior when it happens. This section collected data on how often the "mute/silence" and "block player" mechanics were used and their perceived effectiveness. Due to the questionnaire being posted to several different games' social media platforms, game specific methods were left out from this part to prevent ambiguity in answering the questions; for example, players who have only played League of Legends would not be able to answer to questions regarding the "Avoid as teammate" option in Overwatch. Hence, only the usual options of muting and blocking players were included.

Section 3 questions		
Number	**Question**	**Question type**
1	Have you ever muted/silenced another player?*	Yes/No
2	How effective do you feel muting/silencing a player is in reducing toxic behavior?*	Scaled 1 (Not effective at all) to 5 (Very effective)
3	Have you ever blocked another player?*	Yes/No
4	How effective do you feel blocking another player is in reducing toxic behavior?*	Scaled 1 (Not effective at all) to 5 (Very effective)

Section 4 ("Tool feedback") contained questions on the feedback that players receive when either their reports have warranted action against another player or they themselves have been punished. Most popular competitive games either give an ingame notification on actions taken from reports or punishments the player has received from the reporting system. This section aims to collect data on how many participants have received such notifications or e-mails and how informative these messages were, as instant feedback has been seen as playing an important factor in reforming toxic players (Lin 2013).

Section 4 questions		
Number	**Question**	**Question type**
1	Have you ever received feedback that your reports have been acted upon?*	Yes/No
2	How informative do you feel the feedback for your reports being acted upon was?	Scaled 1 (Not informative at all) to 5 (Very informative)
3	Have you ever received feedback that punitive actions have been taken against you?*	Yes/No
4	How informative do you feel the feedback for being punished was?	Scaled 1 (Not informative at all) to 5 (Very informative)

Section 5 ("Toxicity & punishments") contained questions regarding the punishments handed out to toxic players. This section aims to collect data on how the current punishments are perceived, how effective they are and whether or not they're seen as "good" punishments. A "good" punishment was described as a punishment that achieves its goal of reducing toxic behavior and helps the community overall.

Section 5 questions		
Number	**Question**	**Question type**
1	How effective would you say silencing a player due to reports is in reducing toxic behavior?*	Scaled 1 (Not effective at all) to 5 (Very effective)
2	Do you feel silencing a toxic player is a good punishment?*	Yes/No
3	How effective would you say banning a toxic player is in reducing toxic behavior?*	Scaled 1 (Not effective at all) to 5 (Very effective)
4	Do you think banning a toxic player is a good punishment?*	Yes/No
5	How effective would you say suspending a player from playing certain gamemodes (for example, competitive) is in reducing toxic behavior?*	Scaled 1 (Not effective at all) to 5 (Very effective)
6	Do you think suspending a player from playing certain gamemodes is a good punishment?*	Yes/No

The final section, titled "Final stretch" contained demographic questions and a free form text field for open discussion. The demographic questions were moved to the end of the questionnaire after feedback that the most interesting questions should come first. The free form text field was added so that participants can freely write their thoughts after completing the survey on the matter of toxicity and the tools designed to fight it.

Final section questions		
Number	**Question**	**Question type**
1	What gender do you identify as?*	Multiple choice
2	How old are you?*	Multiple choice
3	Where do you live?*	Multiple choice
4	Do you have anything else you would like to add regarding toxic behavior or the tools players can use?	Free form text field, 1000 characters maximum

4.3.2 Survey distribution

The online survey was distributed to subreddits found on Reddit. Reddit is a social media aggregation platform, where users can post and rate online content such as images, links and text posts. Reddit is comprised of "subreddits", which are user-created areas dedicated to a certain interest, such as a hobby, city or a specific video game. (Wikipedia 2018)

For this study, the link to the questionnaire created with Google Forms was distributed to subreddits dedicated to certain competitive multiplayer games. The subreddits chosen for the study were:

- r/heroesofthestorm
- r/leagueoflegends
- r/Smite
- r/Overwatch
- r/DotA2
- r/Rainbow6

Each of these subreddits were active at the time of posting the questionnaire, the current active online users ranging from 2 thousand to 30 thousand, and with the subscriber count ranging from 195 thousand for r/heroesofthestorm to 1.5 million for r/leagueoflegends and the rest settling somewhere in between these two numbers. Due to Reddit's nature of posts gaining visibility depending on users upvoting and downvoting them, the questionnaire was posted multiple times between May 26, 2018 and May 31, 2018. During this time the survey

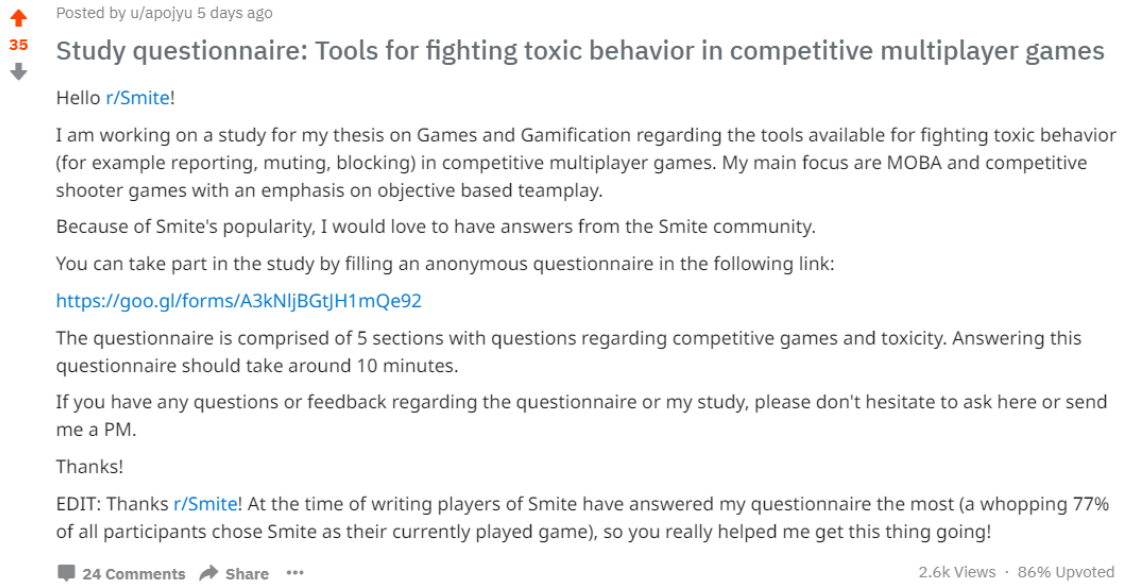

Figure 15. The link posted to Reddit's r/Smite subreddit dedicated to the Smite MOBA game.

was posted 5 times to r/Overwatch, twice on r/Rainbow6, twice on r/heroesofthestorm, twice on r/DotA2, and once on r/Smite, with many of the submissions going rather unseen by the subreddit communities either due to downvotes or low post viewcount.

The survey was posted as a text post with the flair "Discussion" or "News & Discussion". The text posts contained a greeting, a short introduction to the study, a link to the survey, a call for feedback and a "thank you" note. The text post was personalized for each subreddit. The submission was titled "Study questionnaire: Tools for fighting toxic behavior in competitive multiplayer games", or something akin to it. See Figure 15 for an example of the message posted to r/Smite.

4.3.3 Problems with the questionnaire

In spite of testing the questionnaire with a small pilot group of players, some minor and possibly major issues were discovered that might skew the results in some way.

The first problem was the lack of a question differentiating participants between PC and console players. This was brought to attention by a Reddit user in a feedback posted to one

of the Reddit submissions. As the available tools differ between PC and consoles, this can skew the results when no distinction can be made between players on PC and players on console platforms. Participants that play mainly on console might also have thought that the term "reporting tools" refers to the platform specific tools that are run by the platform owners (e.g., Microsoft, Sony) and that are not related to the competitive games or the developer companies at all.

The second problem was the achieved post visibility in the different subreddits. Even though the basic tools included in the questionnaire are found in all of the chosen competitive games, the games have different reporting features with differing functionalities. For example, the questionnaire posted to the Rainbow 6 subreddit, a game with a reporting feature that has no categories to select from when reporting another player, achieved the most visibility and hence gained the most popularity among survey participants. This can skew the results in a way, since other games, such as Heroes of the Storm, League of Legends and Overwatch have reporting tools that differ vastly in the available categories and features the reporting tool offers. The biggest competitive game communities didn't get to really participate in the survey. The survey was posted multiple times but didn't gain enough attention to pop out from all the other submissions on the subreddits.

The third problem arose from Google Forms' technical limitations, where follow-up questions to other questions couldn't be hidden unless the questionnaire was designed in a way where follow-up questions would appear in their own sections. As creating multiple sections just for singular questions could've hampered the flow of answering the questionnaire, a simple note in the description of the question was added instead. Another technical limitation arose when designing the scaled questions, as only the first and last choice could be labeled with a text description (such as 1. Never and 5. Always), but the choices in between (such as 3. Sometimes) could not be labeled at all.

5 Survey results

This chapter introduces the results of the online survey. Each section in this chapter focuses on a different part of the questionnaire. Section 5.1 examines the results regarding the demographics and questions about toxicity in general. Section 5.2 goes over the answers regarding the reporting features, while Section 5.3 focuses on the answers regarding the mute and block tools. Section 5.4 inspects the answers regarding the feedback players receive from the tools. Last but not least, Section 5.5 goes over the answers regarding the punishments given to toxic players.

The questionnaire also contained an open text field with a 1000 character limit. 202 participants left a free form message of some sort. These messages included opinions on toxicity in general, the functionality and effectiveness of the available tools, and joke answers with no value to the study. Some of these answers will be included in chapter 6.

5.1 Demographics and toxicity in general

The questionnaire was closed on 1.6.2018 after acquiring answers from 756 participants. The posts that were posted on the subreddits received around 8272 views combined, so the participation percentage was around 9,14%. Out of all participants, 4 had chosen or freely typed a game that didn't either match the focus of this study, or didn't exist, which brings the number of participants to 752. The majority of participants came from the r/Rainbow6 subreddit, bringing the total number of participants that chose Rainbow 6 as their most played game to 404 (around 53.7% of all participants) with r/Smite following as the second most chosen game at 208 (around 27.7% of all participants) and Overwatch as the third most chosen game with 67 (around 8.9% of all participants). Around 63% of participants chose a Pay-to-Play game (where a single payment is required to get access to the game) as their most played game whereas around 37% chose a Free-to-Play game (where a free account is required to play the game). See Table 3 for a breakdown on what the participants chose as their currently most played competitive games.

Out of all participants 89.6% were male, 4.8% female, 1.5% other and 4.1% did not wish

Game	Participants	% of all	Game type	Access
Rainbow Six: Siege	404	53.7	Shooter	P2P
Smite	208	27.7	MOBA	F2P
Overwatch	67	8.9	Shooter	P2P
Defense of the Ancients 2	37	4.9	MOBA	F2P
Heroes of the Storm	25	3.3	MOBA	F2P
League of Legends	6	0.8	MOBA	F2P
Counter Strike: Global Offensive	5	0.7	Shooter	P2P
	752	100		

Table 3. The most played competitive games in the survey.

to specify their gender (refer to Figure 16). The majority (48.1%) of participants fell into the 18-24 age bracket with the 25-34 year olds being the second most represented group and 12-17 years old the third most represented group (refer to Figure 17). North Americans answered the questionnaire the most with 449 (59.7%) of all participants hailing from North America and Europe coming in second with 234 (31.1%) participants (refer to Figure 18).

Seeing toxicity seems to be a somewhat recurring event in competitive games, as on a scale of 1 (Never) to 5 (Every match) a majority of the participants reported seeing any kind of toxicity at least in some of their games (mean = 3.178). See Figure 19 for a breakdown on the answers to how often players see toxicity in their competitive matches. When comparing the results on a Pay-to-Play and Free-to-Play basis, no major differences are visible. See Figure 20 for a comparison between P2P and F2P. Hence, toxicity seems to be present whether or not playing the game requires spending money on it.

In a situation where players meet toxic behavior, the tools available play an important part in helping players deal with it in the immediate situation. When asked if participants felt they have adequate ways of dealing with toxicity in the immediate situation, 51.3% of all participants answered no, while 48.7% felt the currently available tools in their chosen game are good enough (see Figure 21 for a breakdown). When looking at each game separately (see Figure 22), the only game in which more than half of the players seem to be unsatisfied with the current tools was Rainbow 6 with 61.63% of participants reporting that the current

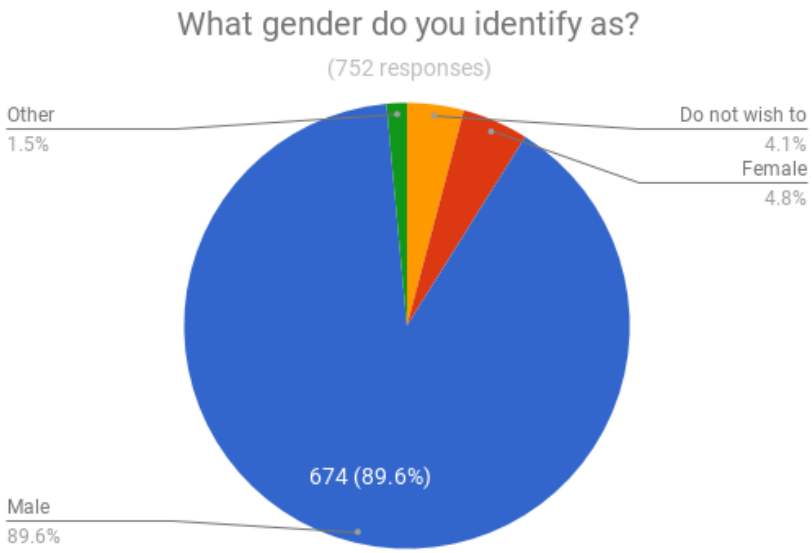

Figure 16. Participants by gender.

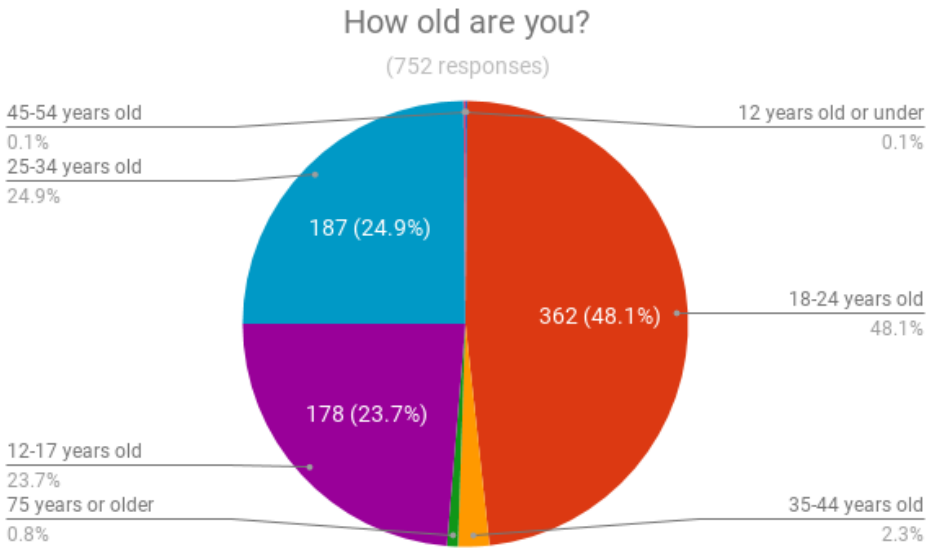

Figure 17. Participants by age.

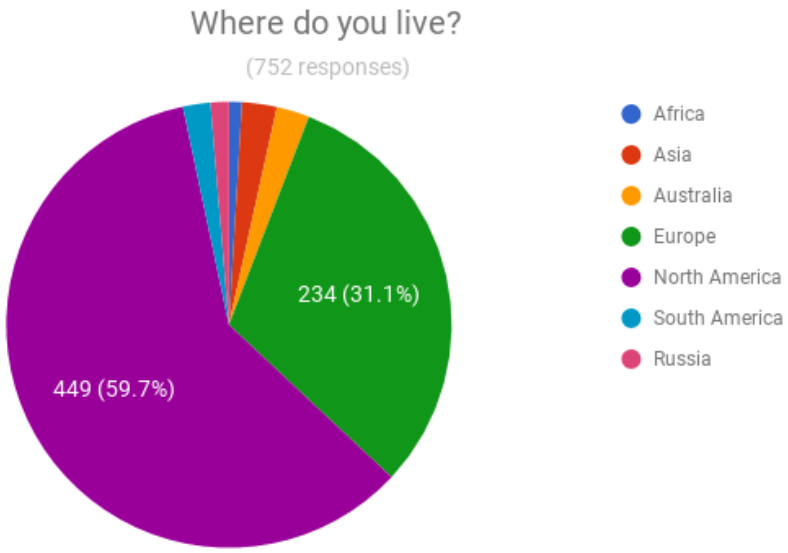

Figure 18. Participants by region.

Figure 19. How often players see toxic behavior while playing a competitive game. (1 = Never, 5 = Every match.)

How often do you see toxic behavior when playing competitive multiplayer games?

	Pay-to-Play	Free-to-Play
Never	1.89%	0.72%
2	22.48%	17.03%
3	41.60%	40.58%
4	30.25%	36.23%
Every match	3.78%	5.43%
	100.00%	**100.00%**
n =	**476**	**276**

Figure 20. How often players see toxic behavior while playing a competitive game, P2P and F2P comparison.

tools aren't enough.

Per Davis (2002), users who experience bad behavior might leave the platform in question and never return. Participants were asked whether or not they have ever stopped playing a single match due to toxicity, and whether or not they have completely stopped playing a game altogether because of toxicity. 51.1% reported they have stopped a single match due to toxic behavior, while players completely quitting a game and never returning back was a more rare occurrence with only 21.8% reporting they have taken such drastic measures (see Figure 23 for a breakdown).

5.2 Reporting tools

Of all the participants, 98.3% (739) stated they have used the report function at least once to report another player (refer to Figure 24). The following data regarding the usage of reporting tools was taken from these participants. Overall, using a scale from 1 (Very hard) to 5 (Very easy), the reporting tools were seen as quite easy to use with the majority (66.8%) choosing Very easy (mean = 4.538) (refer to Figure 25). The categories available when reporting matching the reporter's needs on a scale from 1 (Not well at all) to 5 (Very well) was seen as below average overall with a mean score of 2.723 (refer to Figure 26). On a scale from 1 (Never) to 5 (Every time), players who have used the reporting tool state they're

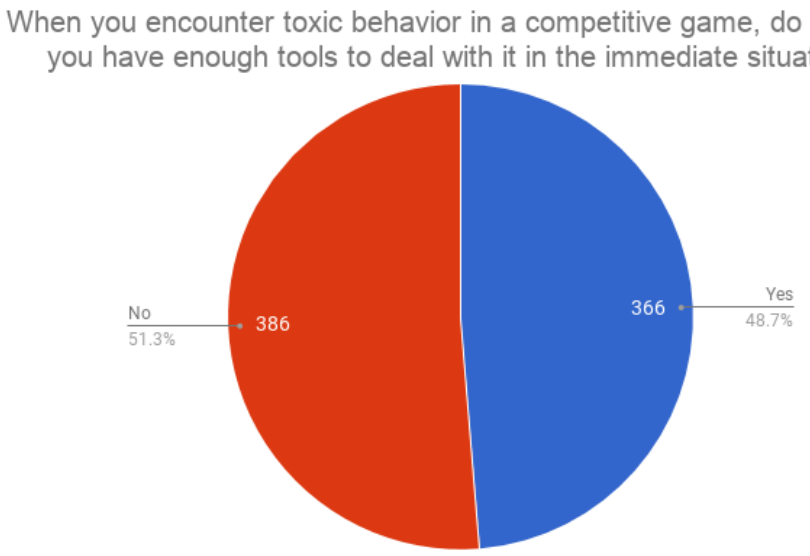

Figure 21. How players perceive the currently available tools when they encounter toxic behavior.

When you encounter toxic behavior in a competitive game, do you feel you have enough tools to deal with it in the immediate situation?

	Counter Strike: Glo	Defense of the A	Heroes of the St	League of Legen	Overwatch	Rainbow Six: Sie	Smite
No	40.00%	32.43%	48.00%	33.33%	44.78%	61.63%	37.98%
Yes	60.00%	67.57%	52.00%	66.67%	55.22%	38.37%	62.02%
Grand Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**
n =	**5**	**37**	**25**	**6**	**67**	**404**	**208**

Figure 22. How players feel about the currently available tools when they encounter toxic behavior, answers for each game separately.

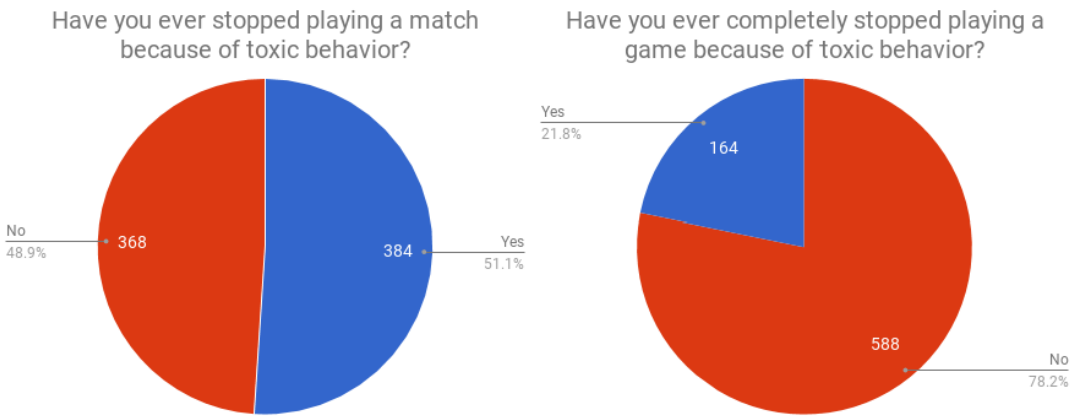

Figure 23. The number of participants who have either quit playing a match or completely quit playing a game due to toxic behavior.

very active reporting toxic behavior (mean = 4.123), but don't leave a text description quite as often as they report toxic behavior (mean = 2.709) (refer to Figure 27). Refer also to chapter 6 for discussion about these particular results.

Unwarranted reporting among players seems to happen with 26.7% of participants saying they've reported someone who might not have deserved it, yet on a scale from 1 (Never) to 5 (Every match) the frequency of unwarranted reporting seems to be quite rare with the majority of participants stating they never report players who don't deserve it (mean = 1.388). Falsely reporting other players and misusing the system is seen as quite problematic, as on a scale from 1 (Very hard) to 5 (Very easy) players feel the reporting feature is quite easy to misuse and abuse (mean = 3.903). See Figure 28 for a breakdown on the results for questions regarding unwarranted reporting and misuse of the reporting tools.

Out of all participants, whether or not they have used the reporting system, reporting toxic behavior isn't seen as very effective by the players as a mean of reducing it. On a scale from 1 (Not effective at all) to 5 (Very effective), the majority of participants felt that reporting is either quite ineffective (2) or not effective at all (1) (mean = 1.997). See Figure 29 for a breakdown on how participants felt about reporting effectiveness.

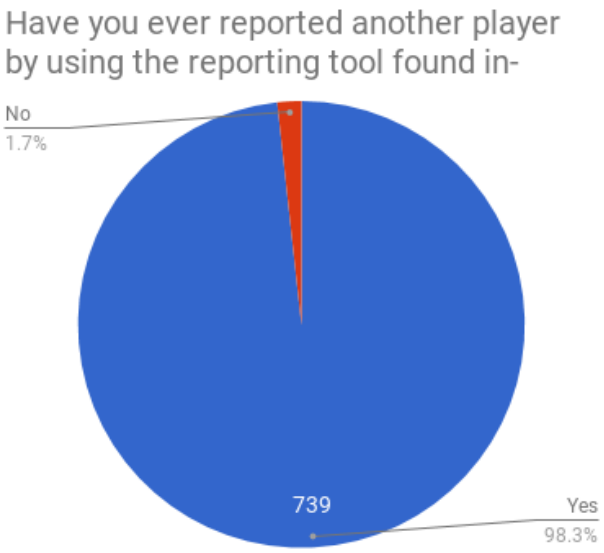

Figure 24. Usage of the report tool found in-game.

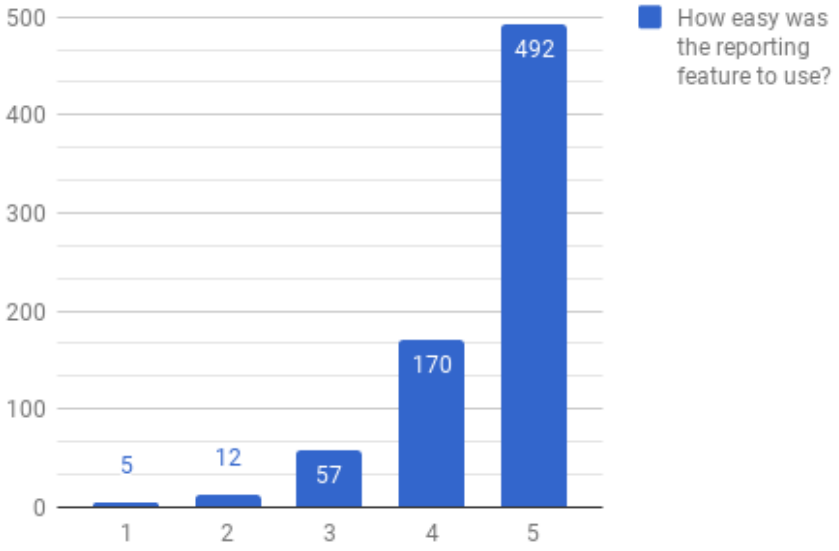

Figure 25. How easy participants felt the reporting features were to use (1 = Very hard, 5 = Very easy).

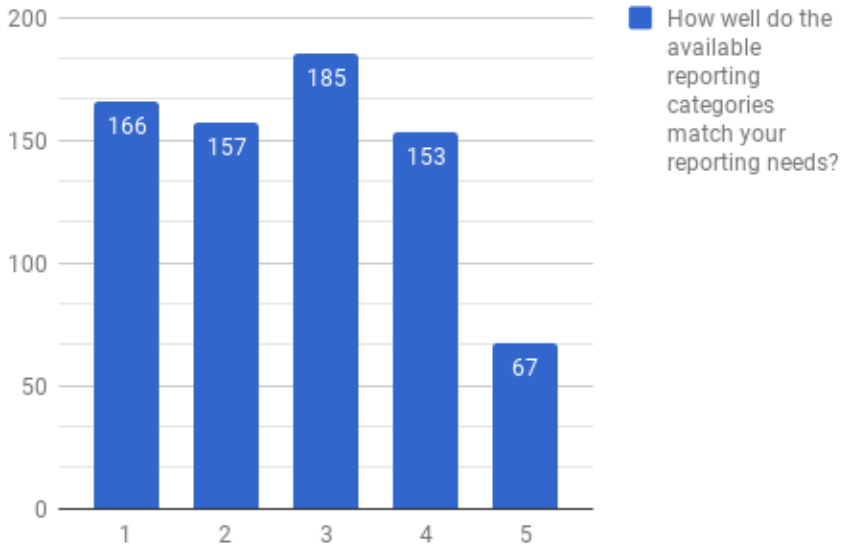

Figure 26. Out of all who have used the report feature, how well the categories match the participants' reporting needs (1 = Not well at all, 5 = Very well).

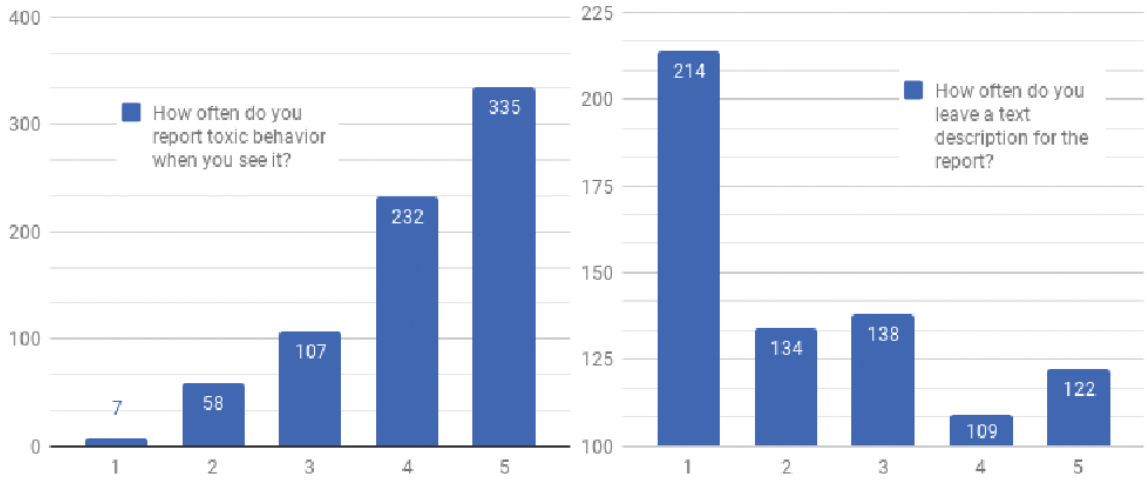

Figure 27. Out of all who have used the report feature, how often participants report toxic behavior when they see it and how often they leave a text description (1 = Never, 5 = Every time).

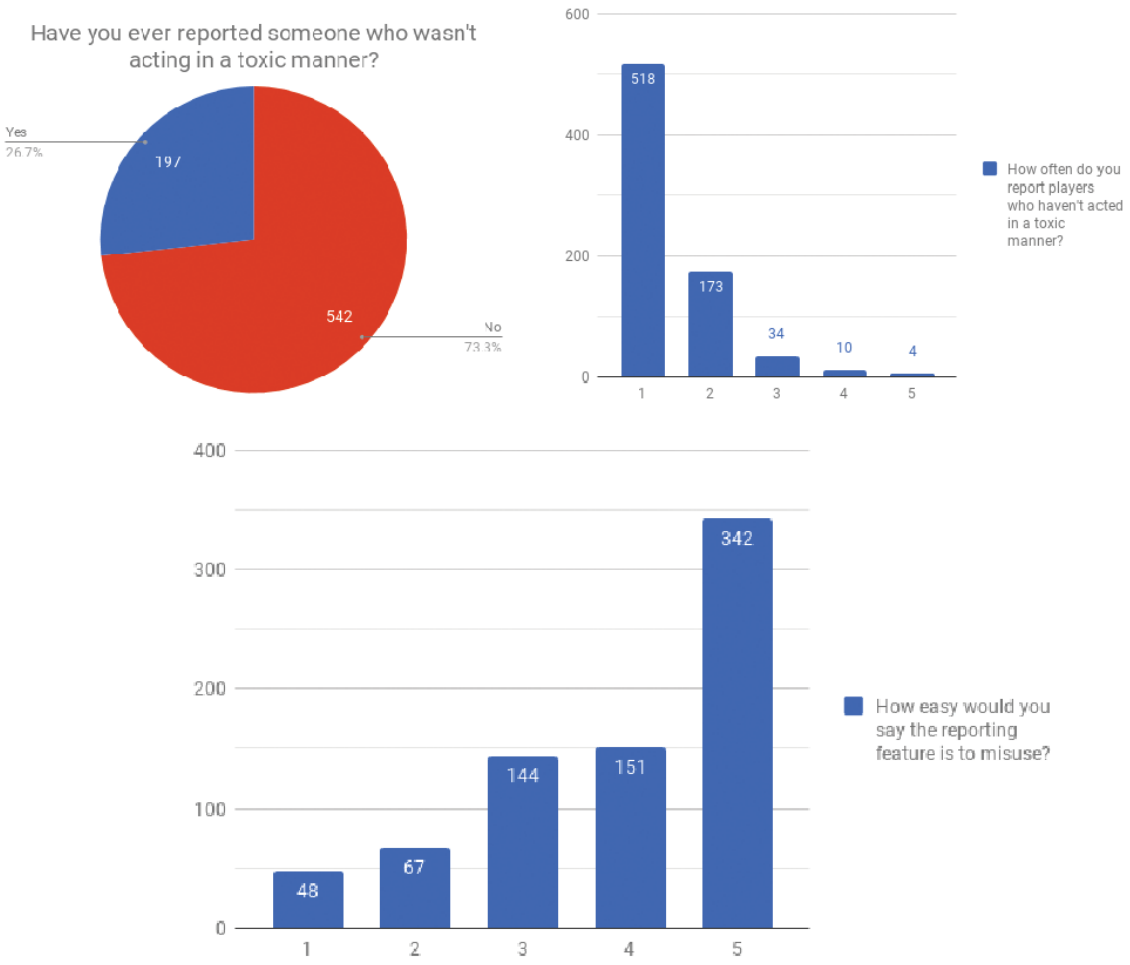

Figure 28. Results for questions regarding unwarranted reporting and misuse of the reporting tools. (1 = Never/Very hard, 5 = Every match/Very easy)

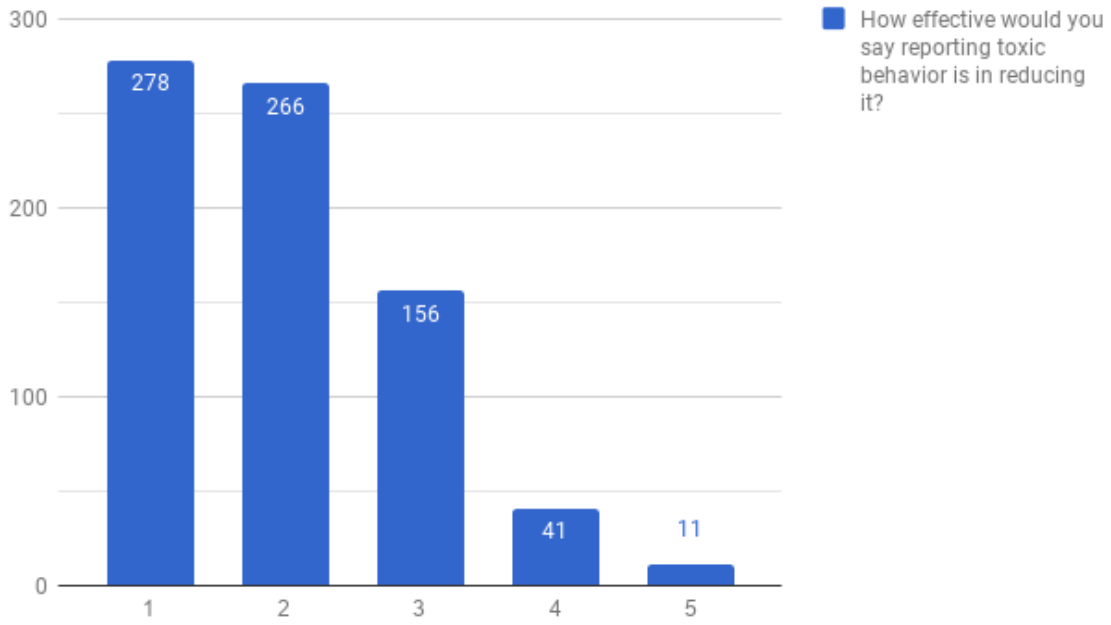

Figure 29. How effective reporting toxic behavior is seen in reducing it. (1 = Not effective at all, 5 = Very effective)

5.3 Silence and block tools

Usage of the mute/silence and block tools was reported to be quite high, with 94.5% of all participants stating they have silenced another player and 80.6% stating they have blocked another player. Manually silencing a toxic player is seen as somewhat effective, as on a scale from 1 (Not effective at all) to 5 (Very effective), most participants selected 4. Blocking was rated slightly more effective than simply silencing another player with 26.6% reporting it to be 5 (i.e., very effective). See Figure 30 for breakdown on data regarding silencing and blocking toxic players.

5.4 Tool feedback

47.7% (359) of all participants have received feedback that their reports have been acted upon. Participants who had received feedback on their reports being acted upon felt that the feedback was at least somewhat lacking in information, as on a scale from 1 (Not informative) to 5 (Very informative) 31,5% of participants who had received such feedback selected

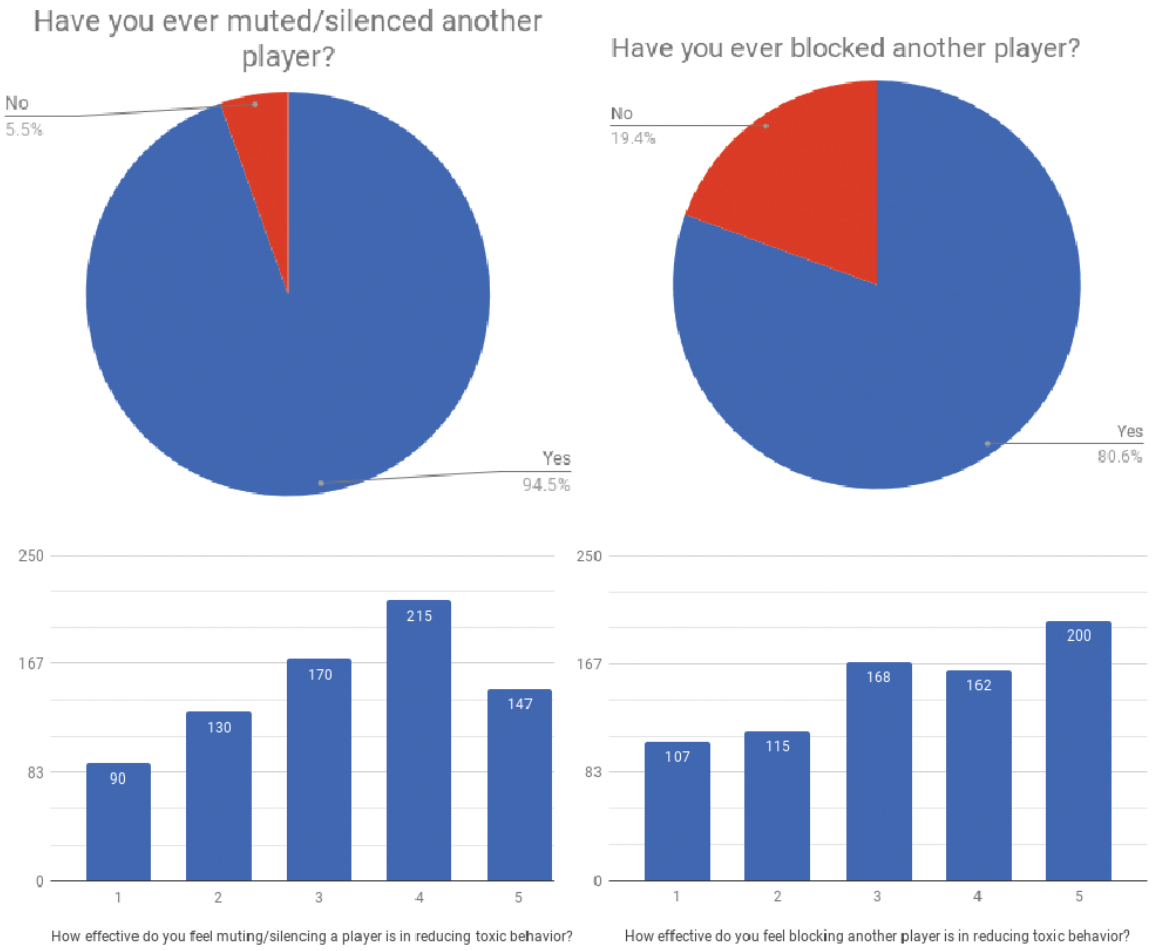

Figure 30. Breakdown on usage of silencing and blocking tools and their perceived effectiveness. (1 = Not effective at all, 5 = Very effective)

1, and 29,8% selected 2 (refer to Figure 31). On the other hand, 24.3% of all participants have received feedback that punitive measures taken against them, and the information they received was also regarded as below average by the majority with 28.4% selecting 1 and 21.9% selecting 2 (refer to Figure 32).

5.5 Punishments

Three different main punishments found in almost every competitive game were included in the questionnaire for comparison purposes. Participants were asked to rate the effectiveness of each punishment on a scale from 1 (Not effective at all) to 5 (Very effective), and to

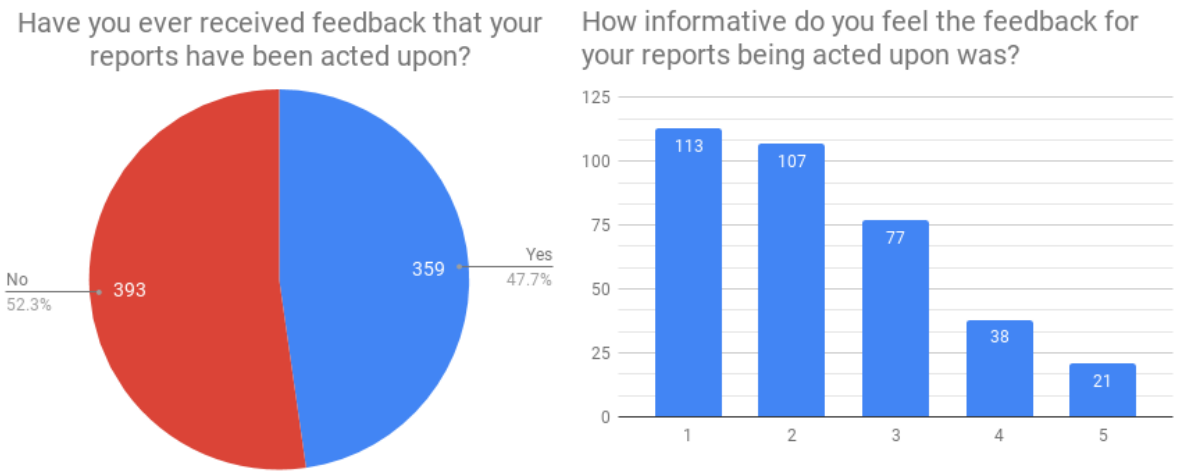

Figure 31. How many participants had received feedback on their punishments being acted upon and how informative these participants felt the feedback to be. (1 = Not informative, 5 = Very informative)

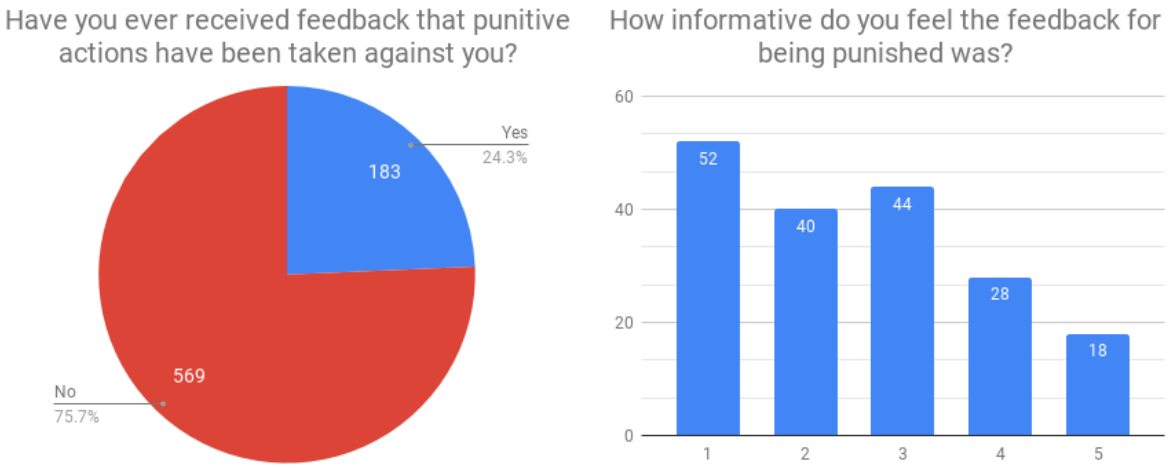

Figure 32. How many participants had received feedback on being punished and how informative these participants felt the feedback to be. (1 = Not informative, 5 = Very informative)

state whether or not the punishment in question was a good punishment. For effectiveness, participants were guided to think if the punishment in question was a good way of reducing toxic behavior. For whether or not a punishment was regarded as a "good punishment", participants were asked to think if the punishment in question achieves its goal of reducing

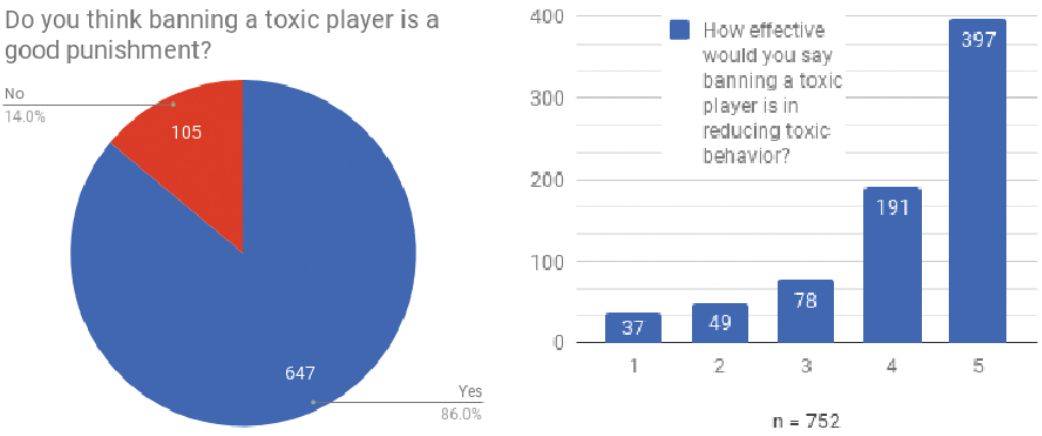

Figure 33. Results for whether or not banning is a good punishment, and its perceived effectiveness. (1 = Not effective at all, 5 = Very effective)

toxic behavior and if it helps the community to be less toxic overall.

Banning toxic players was seen as the most effective way of reducing toxic behavior with the majority of participants (397, 52.8%) answering "Very effective", and a mean score of 4.146. Banning was also regarded as a good punishment by the majority with 86% of participants with (see Figure 33). Suspending came in as the second most effective punishment with 39.7% of participants selecting "Very effective" and a mean score of 3.738. Suspending was regarded as a good punishment by 77.9% of participants (see Figure 34). Silencing was regarded as the third most effective punishment with only 14.4% selecting "Very effective" and a mean score of 3.154. Nevertheless, silencing was seen as a good punishment by 62.1% of participants (see Figure 35).

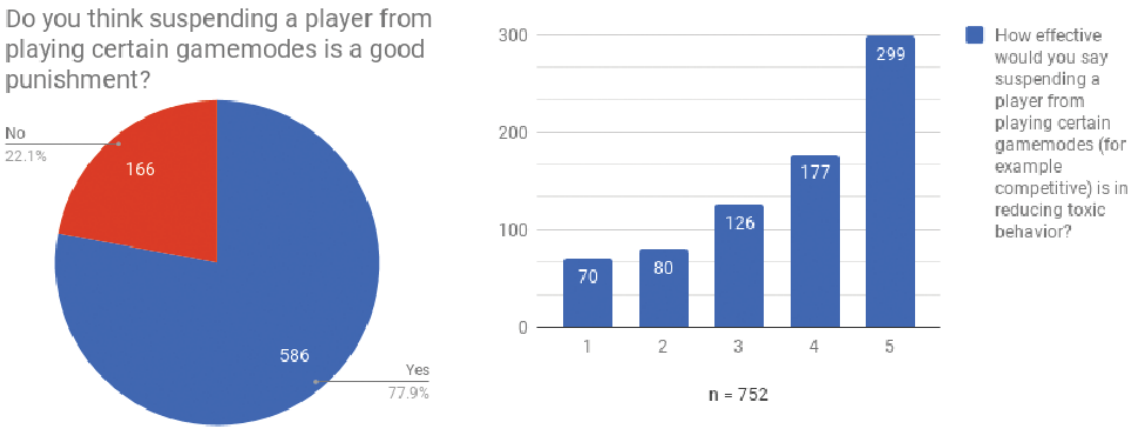

Figure 34. Results for whether or not suspending a player is a good punishment, and its perceived effectiveness. (1 = Not effective at all, 5 = Very effective)

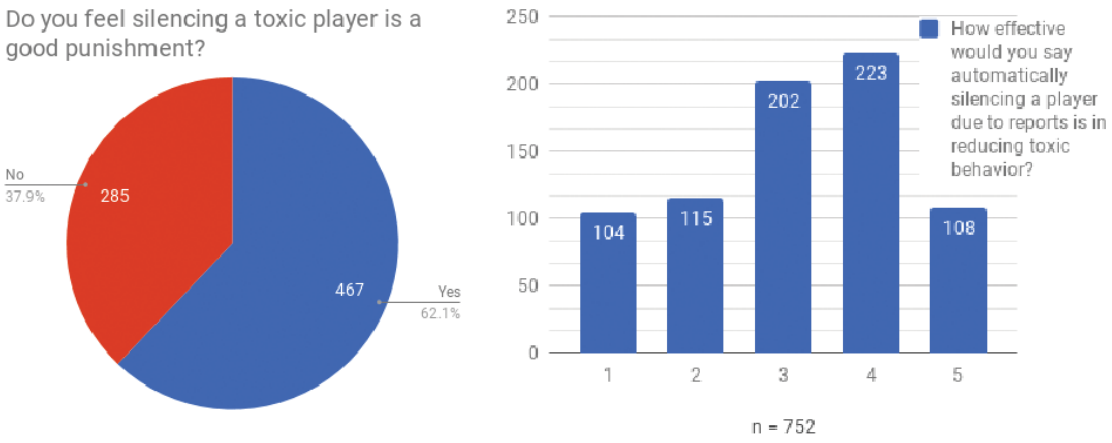

Figure 35. Results for whether or not automatic silencing is a good punishment, and its perceived effectiveness. (1 = Not effective at all, 5 = Very effective)

6 Discussion

The questionnaire accumulated results from 756 participants, out of which 752 results were chosen to be analyzed further. The reason why four participants were dropped was because of the game they chose: either the game wasn't a competitive game that fits in the focus of the study, or the game simply didn't exist. Moreover, due to the participants being mostly male (refer to Figure 16), effectively analyzing differences between genders wasn't viable.

Each section in this chapter focuses on analyzing a corresponding section in the questionnaire, starting from Section 6.1 focusing on the questionnaire's first section of questions on general toxicity. Section 6.2 analyzes the results regarding the questions on reporting tool usage, while Section 6.3 focuses on the results regarding the silence and block tools. In Section 6.4 the data regarding the punishments is analyzed, and Section 6.5 delves into the data regarding the feedback players receive from the tools.

6.1 Toxicity in general

Overall, toxicity seems to be a reocurring thing in competitive gaming regardless of the game, as only a handful of participants stated they never encounter toxic behavior during their play regardless of whether or not the game is Pay-to-Play or Free-to-Play (refer to Figure 19 and Figure 20). Toxic behavior has caused almost half of the participants to leave at least a single match, even when the game might penalize them for doing so, and some have even completely stopped playing the game due to toxic behavior (refer to Figure 23), supporting the findings of Davis (2002). For some, encountering toxic behavior seems to have become the norm while playing competitive games:

> *"Every situation is different and abuse is different for everyone I have become very used to it."*

> *"I've grown accustomed to it. In any environment where people are playing against one another in a competitive setting, toxicity and BMing [bad mannering] always follows."*

"Sadly, I believe toxicity will never go away. People are shit and the internet gives them a powerful weapon to act like assholes without facing any consequences. I switched to mainly PvE [Player versus Environment] games a few years ago, and I can say at at least the atmosphere is a little better, though. PvP brings the absolute worst of people."

The participants were almost exactly split between whether or not the tools available are enough to deal with toxicity in the immediate situation (refer to Figure 21 and Figure 22). When simply using the tools isn't enough, some players resort to dealing with toxicity in other ways such as defensive methods also defined by Felps, Mitchell, and Byington (2006):

"When with toxic players I like to be very positive in various ways. Sometimes it makes the toxic player stop, sometimes it just helps other players ignore it, and sometimes it does nothing at all."

"While it's not usually really toxic discutions, i used to end up arguing with players way too often in the middle of an ongoing game, a way i use to combat that is to vent my anger in private chat with my party friends when i have those"

The vague nature of toxicity also raised its head:

"Define Toxic? Some people say merely saying a curse word is toxic. Some define toxic as an attitude, like "playing to win" or "playing for fun" which are both diametrically opposed. Some see toxicity as performing behaviors that are maladaptive, but mechanically supported by a game, and others do not."

"Personally I think its important to distinguish between players feeding in the sense of toxicity and players just feeding because they are bad"

"'Toxic' is a vague term which can describe any behavior you want. Using vague terminology doesn't really address issues very well. Players who are 'toxic' have infinite ways to skirt the line, so no set of rules will ever solve toxicity, though a few base line rules are reasonable. It's not the responsibility of game companies to fix personality flaws in other people. We must also under-

stand the line between someone acting 'toxic' and others being too sensitive."

Some participants also felt that toxicity is part of the online environment, and, for example, talking down on the enemy team is something that comes with the competitive element, or that toxicity in itself is an overblown concept:

"Toxic behavior is a part of the video gaming experience and should not be demonized and punished. Shit-talking is completely normal and should not be discouraged."

"It is unfortunate, but it needs to be made clear that these games are competitive. Players routinely demonstrate that they do not know how to play or are interesting in improving and the developing parties do not encourage players to play better, as non-ranked is considered 'casual'. That said, people regularly say they are 'playing for fun' and do not attempt to play well or learn from mistakes made in matches, that 'X isn't ranked', and therefore make clear that they are intentionally feeding by not attempting to play the game in any sort of skillful manner. Further, developing parties do not make any meaningful attempt to improve MMR [Match Making Ratio] and this truism has been demonstrated across games. Between developing parties not improving MMR and clearly communicating that anything non-ranked is 'casual', which encourages players to not try to win, and players actively saying that they aren't trying to play well, the entire enterprise can't help but be decidedly toxic. It's a hard truth."

"If anybody is frail enough to quit a game when somebody on a video game over the internet yells at them, they shouldn't be on the internet period. Toxicity is over defined, and overexaggerated, the means to suppress it are so easy and so accessable that anybody who "suffers" from it is either allowing it to happen for attention or stupid."

How effective would you say reporting toxic behavior is in reducing it?		
	Pay-to-Play	Free-to-Play
Not effective at all	42.23%	27.90%
2	33.40%	38.77%
3	18.70%	24.28%
4	4.41%	7.25%
Very effective	1.26%	1.81%
	100.00%	**100.00%**
n =	**476**	**276**

Figure 36. How effective reporting is seen in reducing toxic behavior.

6.2 Reporting features

Almost all participants had used the reporting features found in their game (refer to Figure 24), and found it easy to use (refer to Figures 25). This isn't very surprising, as most of the reporting tools are designed to be easily reachable and easy to use, usually requiring no more than 3 presses of a button from start to finish to send a report.

Even though participants state they actively report other players (refer to Figure 27), reporting isn't seen quite as effective in reducing toxic behavior (refer to Figure 29), perhaps due to the cumulative nature of the reporting tools where a toxic user must be reported many times over the course of multiple games to receive penalties or the feedback users receive (or don't receive) when reporting other players. Overall, the effectiveness of reporting is seen as quite ineffective by the majority also when the results are divided into P2P and F2P games (refer to Figure 36). Even though text descriptions on reports have been seen useful for the reviewers looking at the reports (Blackburn and Kwak 2014), players seem to tend to leave the description box empty most of the time. Out of all the participants, around 29,8% state they never leave a text description on their reports (refer to Figure 27).

Some attention has to be given to the overwhelming majority of participants being players of Rainbow 6, as the game lacks reporting categories and doesn't allow players to type out descriptions while reporting other players. Depending on how participants answered the questionnaire (i.e., whether or not they were answering with Rainbow 6 in mind), this can have considerable effects on the results. For example, looking at Figure 22, we can see

that players of Rainbow 6 are the only group where the majority is dissatisfied with the currently available tools, whereas every other game garnered results with the majority stating the current tools are enough (of course take into note the low participant rates on some of the games). This could also speak towards the tools found in Rainbow 6, a competitive game with tens of thousands of concurrent players, being perceived as ineffective or lacking in some aspects.

Hence, some of the questions should also be looked at without answers from the players who chose Rainbow 6 for the sake of clarity. When Rainbow 6 results are omitted from other answers, the available categories seem to be adequate for the majority of participants (refer to Figure 37). Leaving text descriptions also becomes more common, as on a scale of 1 (Never) to 5 (Every time), "Every time" was the most chosen option (refer to Figure 38).

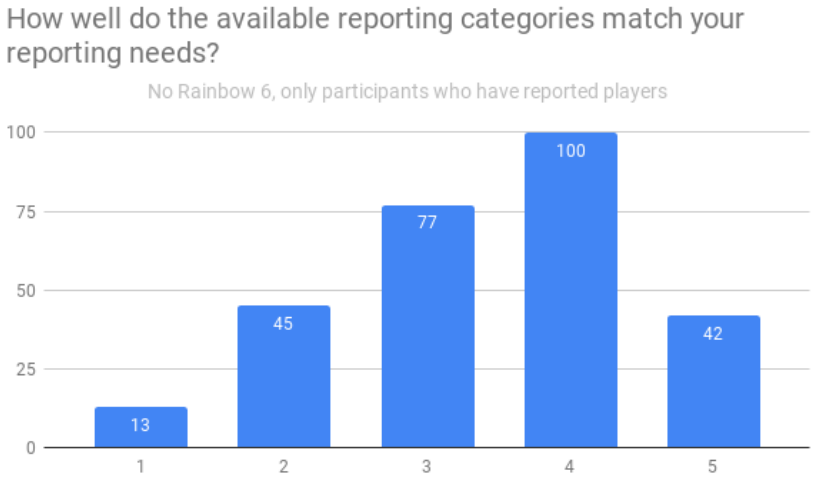

Figure 37. The available reporting categories matching reporting needs. Answers from users who chose Rainbow 6 are omitted. (1 = Not well at all, 5 = Very well.)

26.7% (197) of participants who have used the reporting tool state they have at some point reported a player who didn't deserve it. Among these participants, the majority (144, 73.1%) state that on a scale from 1 (Never) to 5 (Every match) they do send unwarranted reports, albeit quite rarely (see Figure 39).

The misuse of the reporting tool to send unwarranted reports is also seen as a very easy thing to do (refer to Figure 28). This could be due to the ease of use of the reporting tools, the

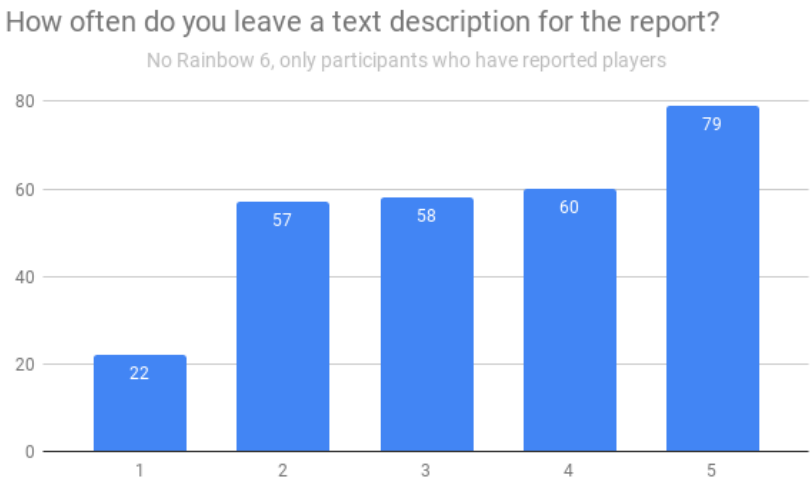

Figure 38. How often players leave a text description for their reports. Answers from users who chose Rainbow 6 are omitted. (1 = Never, 5 = Every time.)

vague and hard to (automatically) recognize nature of toxic behavior and the overall belief that most of the report systems are automated to some extent, handing out punishments after a certain number of reports have been met (refer to Section 3.1, Automated surveillance), making unwarranted reports a problem if the automated systems aren't intelligent enough to counter false reporting.

Some participants felt that reporting a toxic player doesn't help at all:

> *"If you're going to offer me an option to report a player for toxic behavior I expect that report to be reviewed but nothing ever happens and it's as if it's more of a stress button than anything else."*

> *"The report tool is almost useless and seems like it never works."*

> *"The report function seemingly does nothing, players can team kill, kill the hostage and use abusive language with apparently no recourse. I know use both the in-game report function as well as the Playstation report & block. I really shouldn't have to use three different tools in the hope that something happens."*

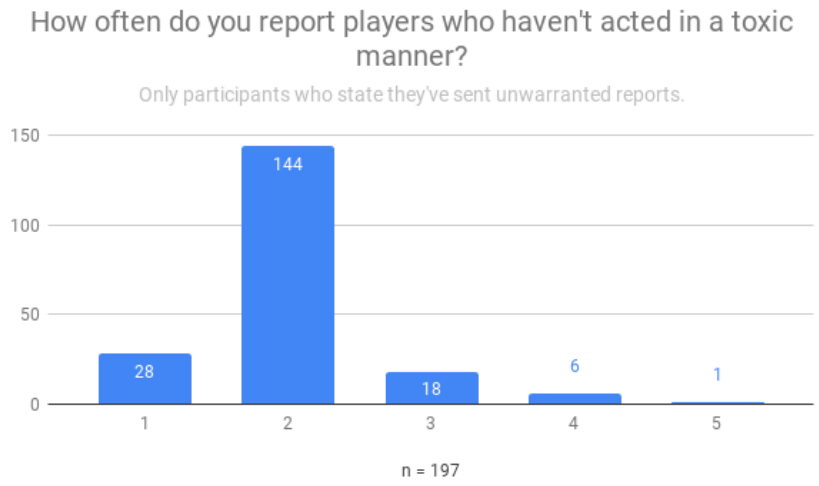

Figure 39. How often participants who have at least once sent an unwarranted report misuse the reporting tool to report players who don't deserve to be reported. (1 = Never, 5 = Every match)

Others stated that the report features lack in some aspects, such as the available categories, or the perceived force of reporting a player:

> *"I'd really like it if some games added a reporting feature for racism/sexism/ homophobia/etc. I know there are already other features for toxic chat, but I feel like there needs to be a bigger focus on different kinds of slurs. Someone can say "shut up dumbass" and be suspended for toxicity, but if someone says "Shut up and make me a sandwich (sexism)" or "you stupid n*gger (racism)" or "suck my d**k f*ggot (homophobia)" there should be some kind of extra repercussions, because this is much worse than calling someone dumb."*

> *"Make reports something to be feared on both sides. I don't want to hear people jokingly say "Go ahead, report me, they won't do anything." I want them to cower at the thought of them being assholes, and I want people that falsely report to feel the same way. Make it a button that people fear the pressing of. Make it the nuke button of gaming. All fear it, and its use is only for the most serious of things."*

Concerns were also raised towards the easiness of misuse of the reporting tools:

> *"They are very easy to abuse, for example, some times a player will get reported just beacause they are the easiest to blame for the loss even though they didn't feed or throw the match and did not harass anyone"*

> *"– – I think that implementing effective tools against toxicity is a hard thing to do because it can easily be used for the wrong, if there's a party of 3-4 players and I queued alone, they can "gang-up" and all report me for, feeding for example, even if I didn't fed in that game, or even worse, toxicity itself, and that's harder to prove. This is something that happened to me before, in post match lobbies, I ask people to report someone cause they were toxic, but then sometimes I get reported instead..."*

> *"More games need to use this report button but it needs to be less accessible to toxic players due to the fact that they themselves can easily misuse this button"*

6.3 Silence and Block tools

Both of the most often available tools, silencing and blocking, were deemed to be useful in fighting toxicity in the immediate situation. Overall, they seem to act as a working line of defense against harassment, but lack the power to stop a player from exhibiting toxic behavior in other ways.

Feedback towards these two tools in particular was scarce and mostly focused on the functionality of these tools in Rainbow Six:

> *"I believe that silencing isn't so effective, or muting because in a game like Rainbow Six Siege people try to win, even if that means cooperating with a toxic teammate."*

> *"Rainbow Six has a function to turn off the chat, but you can't turn off the enemy chat without turning off all chat. It would be great to mute certain enemy*

players in the enemy team and still be able to communicate with my own team."

Some participants felt that muting was the only tool they needed, as simply ostracising the toxic individual can be enough to deal with the situation:

> *"After growing spines? greater allowance of users muting "Toxic" people over the molycoddling of users with autobans would be a greater good in my opinion, as it kills the oxygen to the fire over pour gasoline onto the flames as banning and punishing people does. It dares them to do more push the boundries and etc etc."*

> *"I have found that muting the toxic person immediately after they start insulting and stuff to be the easiest and best way to deal with toxicity in the moment."*

Even though silencing and blocking a toxic player are both seen as effective tools, they seem to be limited to blocking a single type of harrassive behavior. Yet in the immediate situation, this can be enough to guarantee a single toxicity-free match. Possibly because silencing and blocking another player are an option that is up to the player to use, they aren't seen as an intrusive element in the team oriented environment of competitive gaming.

6.4 Punishments

Punishments are an interesting area to discuss considering it is practically the simplest way game companies can try to rid their game of toxic behavior. All punishments listed in the questionnaire were seen as "good" punishments by the majority of participants (refer to Figures 33, 34 and 35), yet some concerns were raised in the free form feedback found at the end of the survey.

Looking at the results of the questionnaire, the simplest way of getting rid of toxic behavior, banning a toxic player, seems to be the go-to option for the majority of the participants (refer to Figure 33). Banning is, after all, the simplest form of getting rid of toxic behavior by getting rid of the offending player by not allowing them to enter the game at all, which should effectively stop the banned player from exhibiting toxic behavior completely.

How effective would you say banning a toxic player is in reducing toxic behavior?	Pay-to-Play	Free-to-Play
Not effective at all	5.25%	4.35%
2	4.62%	9.78%
3	9.03%	12.68%
4	24.37%	27.17%
Very effective	56.72%	46.01%
	100.00%	**100.00%**
n =	**476**	**276**

Figure 40. Is banning an effective punishment in reducing toxic behavior? Results divided into P2P and F2P games.

If we look at results divided between P2P and F2P games (see Figure 40), banning is regarded as an effective way of reducing toxic behavior regardless of the payment requirements for playing a game. Participants who chose Pay-to-Play games as their currently most played games seem to have a slightly higher trust in banning than participants who chose a Free-to-Play game. This could be because bypassing a ban in Free-to-Play games is easier due to the fact that creating a new account doesn't require a monetary investment.

Why banning is seen as being so effective could be because permanently banning a player effectively renders the player's account unusable, along with any unlocked or bought ingame content it might have, hence making players lose ingame items bought with real money or progress they might have accumulated by playing for tens, hundreds or even thousands of hours. Even if the player is banned for only a short time, it will still stop them from playing the game, which in itself can reduce toxic behavior. The fear of losing all account-related progress can be seen in the feedback written by participants:

> *"If a player gets banned/silenced, they wasted their money on a game they can't play anymore (I spent over 200 dollars on smite and if I got banned, I won't ever want to play smite anymore) – –"*

However, feedback from multiple participants raise concerns towards the effectiveness of banning due to how easy it is to setup a new account:

"Toxic players won't think about their actions as a result of a ban, but rather the ban itself. Banning is completely pointless, but fortunately, we already have tools such as muting to combat morons."

"I would like to say that if a person is banned it is quite easy and cheap to buy or rent fake accounts and the algorithm should be able to detect these accounts."

"I didn't mark banning and suspension higher because players that are banned often have alternate accounts that allow them to immediately continue playing and being toxic if they choose."

"even if the player is completely banned from playing the game it is not difficult to set up a new account. especially those who stream and make money from views as they can easily repurchase the game and continue being toxic. also the many free weekends allow players to start new accounts for the sole purpose of being toxic or hacking."

"Being that Smite is a free game, trolls and toxic accounts are neverending since someone can just make another account when their previous ones were banned, I don't know how that can be solved."

"I solely play Siege pretty much, so smurf accounts [an alternate account to portray self as a lower level player] are everywhere. If you get banned on one account, you can just get another one. – –"

Some suggestions also arose regarding the problem with circumventing bans through new accounts:

"Due to banned players in overwatch simply using an alt account and continuing their toxicity I would suggest MAC address bans in deserving cases"

"Maybe IP addresses can be banned if the toxicity levels are extremely above average?"

"– – I want to see IP bans not player bans, IP bans could be more effective. And add a warning system for these players that they could get banned"

Hence, banning seems to be regarded as an effective way of reducing toxic behavior by the players in both Pay-to-Play and Free-to-Play games, yet bypassing a ban just by creating a new account seems to be a problem many participants brought up. Perhaps a major offender could be banned and their access to the game blocked by other means.

Suspending a player from certain gamemodes was also seen as an effective way of reducing toxicity (refer to Figure 34), albeit this only effects said certain gamemodes, as the player can still continue affecting the community in a toxic manner in unblocked gamemodes. Suspensions also received the least open feedback out of all the punishments, and most concerns were raised on how the offender is free to move on to other gamemodes after getting suspended:

"Suspensions of increasing value – – along with the ability to fight an unwarranted suspension on yourself would be nice."

"I feel that suspending toxic players from certain game modes would not work as they can just go on others. I think that if a toxic player is just being that way to get a reaction. Therefore I don't think it matters what game mode they are playing as long as they get a reaction from someone."

"– – suspending from games modes just move toxic gameplay to another game mode – –"

Silencing was regarded as a good punishment by the smallest number of participants and received overall lower scores in effectiveness when compared to suspension and banning (refer to Figure 35). This seems to be due to the teamwork-oriented gameplay in competitive games, where forcing a silence on a teammate can have a deteriorating effect on teamplay. Participants who commented on silencing as a punishment said the following:

"Silencing players is detrimental to team play. Silencing a player punishes their teammates, thus bans should be implemented instead."

"I think that automatically silencing toxic players is bad in team based games because it could be a disadvantage to the toxic players teammates."

"I believe that silencing isn't so effective, or muting because in a game like Rainbow Six Siege people try to win, even if that means cooperating with a toxic teammate."

"Banning coms can be helpful for ending toxicity but cripple chances of winning in team based games"

Concerns were also raised on how silencing, as an automatic punishment or when administered manually, doesn't necessarily stop the player from acting in other toxic ways such as feeding or going AFK, which might also explain why it's seen as the least effective punishment:

"The tools just don't feel effective, silencing doesn't stop a player from acting/playing in a toxic manner."

In lieu of punishments, some participants gave feedback on how good behavior should be rewarded instead (or along with) punishing bad behavior:

"I would like a system which rewards good behavior instead of punishing bad"

"I think games should try to increase non toxic behavior for rewarding good behavior. In addition they should punish the toxic players but In a way that doesn't make them more toxic. Maybe with decreased rewards or limited chat options"

"We should be rewarding good players more than we punish the toxic ones. We have all been toxic at some time, but maybe an incentive might work better. We tried the stick, now lets try the carrot."

		Have you ever received feedback that your reports have been acted upon?		
		No	Yes	Grand Total
How effective would you say reporting toxic behavior is in reducing it?	Not effective at all	47.84%	25.07%	36.97%
	2	33.84%	37.05%	35.37%
	3	14.76%	27.30%	20.74%
	4	2.29%	8.91%	5.45%
	Very effective	1.27%	1.67%	1.46%
Grand Total		**393**	**359**	**752**

Figure 41. How effective reporting is, as perceived by players who have and who haven't received feedback from the report system.

6.5 Feedback

The feedback received from the tools can alter the perception of their effectiveness, as simply pressing a report button to report a toxic player usually doesn't instantly lead to any kind of reprecussions for the toxic player. As Davis (2002) and Lin (2013) stated, feedback received from the punishment system plays a critical part in reforming toxic users.

Almost half (47.7%) of all participants had received feedback of some sort that their reports have been acted upon, yet the overall consensus seems to be that the informativeness of said feedback is below average (refer to Figure 31). Usually the received feedback only states that a report sent by the player who received the feedback has been acted upon (such as in Figures 12 and 13) without any identifying information on the penalized player.

Comments received from the participants of the questionnaire would also suggest that feedback towards the other direction, the users who did the reporting, feels lacking:

> *"I realy need more feedback from the system, if somebody got punished when i reported him."*

> *"More feedback on a player I've reported in terms if they have been punished, this will give me a better perspective on how effective the report system is."*

"– – Also, feedback on what actions were taken against players would be help other than 'someone you reported at some point has had something happen to them'"

Players who had received feedback on their reports being acted upon perceived reporting effectiveness to be slightly higher than players who haven't received any feedback. In Figure 41 we can see that players who had received feedback from the system have a slightly more positive view on the effectiveness of reporting in reducing toxic behaviour, albeit the overall consensus still points towards participants feeling that reporting is quite ineffective. From this data we could decipher that the perceived effectiveness of reporting does increase somewhat when feedback on reports is received by the players even when the information contained in said feedback is vague.

Around one fifth of all participants had received feedback that they've received a punishment for toxic behavior (refer to Figure 32). The information on said feedback was seen quite non-informative overall, but less so than the information on reports being acted upon. The questionnaire didn't include follow-up questions on whether or not players felt the punishments were accurate or warranted nor whether or not the feedback helped them reform as per Davis (2002) and Lin (2013).

7 Conclusion

This chapter concludes the thesis. Section 7.1 answers the research questions in light of the collected and analyzed data. Section 7.2 suggests ideas for future studies on the field of competitive gaming and toxic behavior.

7.1 Concluding thoughts and answering research questions

Toxicity is seen on a regular basis, regardless of whether or not the games require a payment to play or not. As per Davis (2002), players encountering toxicity might leave the toxic match or stop playing the game altogether. Whether or not the tools are enough to deal with toxicity in the immediate situation seems to be a split decision between the participants with a very minor majority (51.3%) stating that the current tools aren't enough. Hence, before resorting to using the tools (or perhaps even after), players might use other means to try and defuse toxic situations, such as positive encouragement, or trying to shut down the toxic player by arguing back (also known as "defensive reactions" as per Felps, Mitchell, and Byington (2006)). As prior studies have shown (Davis 2002; Foo and Koivisto 2004; Suler 2004; Kirman, Lineham, and Lawson 2012; Shores et al. 2014; Kwak, Blackburn, and Han 2015), toxicity remains to be a vague subject, as participants raise concerns on where the line is between someone acting in a toxic manner and someone else being too sensitive.

Participants state they use the available **reporting tools** to report toxic behavior on a regular basis with the majority stating they do so every time they encounter toxicity. When available, the categories offered by the reporting tools seem to be enough to pinpoint the exact type of toxic behavior exhibited. When possible, the majority also tries to leave a text description in their reports. Even so, reporting isn't seen as an effective way of reducing toxic behavior, perhaps due to the fact that simply reporting a toxic player doesn't usually instantly lead to that player being punished, as the report system could require a considerable number of reports (and due to this, time) before any action is taken.

Around one fifth of all participants stated they have at least once sent an **unwarranted report** towards a non-toxic player, yet state they rarely if ever do so. Unwarranted reporting and

misusing the report systems is seen as a problem, possibly due to the easiness of reporting a player and the fact that an automated report system isn't necessarily able to identify toxic behavior due to its many possible forms and vague nature. Considering that report systems might indeed need a considerable number of reports, simply getting reported once or twice during the span of multiple matches shouldn't cause an unwarranted punishment.

When players need to deal with harrassive toxic behavior in the immediate situation, the silence and block tools come to use. As per (Davis 2002), ostracism can be a powerful counter towards toxic behavior in online settings. Even though these tools are aimed towards reducing harrassive toxic behavior, the majority of all participants had used both of these tools and found them to be quite effective in reducing toxicity.

To answer the first research question, **"In the players' opinion, how effective are the tools in reducing toxic behavior?"**, participants seem to feel that the tools available for reducing harrassment through communication channels (silencing, blocking) are effective, as players are able to deal with harrassive toxic behavior in the immediate situation by silencing/blocking the toxic player, effectively reducing the toxicity in the present. On the other hand tools, such as reporting, meant to counter persistent or other more vague types of toxicity are not perceived quite as effective, perhaps due to the time or number of reports it takes for the reporting system to warrant action, or the amount and informativeness of feedback players receive after using the report tool. Participants who had received feedback on their reports warranting action felt that the report tools are slightly more effective than those who had never seen feedback.

The listed **punishments** (banning, suspension, silencing) were all seen as effective in culling out toxic behavior from competitive games and no punishment was regarded as completely bad by the participants. Punishments are not without problems, however, as bans and suspensions can be bypassed by creating a new account or simply moving to another gamemode, and forcing a silence on a player in a competitive, teamwork-based environment can cause detrimental effects on teamplay. Hopes for rewarding good behavior instead of only punishing bad behavior were voiced, and luckily such systems can already be seen in some competitive games, such as League of Legends, Defense of the Ancients 2 and Overwatch.

To answer the second research question, **"Are the punishments given to toxic players seen as an adequate way of reducing toxic behavior?"**: it seems that the listed punishments are seen as adequate ways of reducing toxic behavior, but are not without problems and are far from perfect, as there are ways to easily circumvent received punishments.

During the writing of this thesis, some steps towards a lesser toxic environment were taken in different competitive games, such as Blizzard implementing a positive reinforcement tool in Overwatch, and in the gaming industry overall (for example, the forming of The Fair Play Alliance, Grayson 2018). While these changes didn't make it into this study, game companies continue to fight back toxicity by implementing new features and fighting back toxicity in different ways. Some time might still have to pass for the actual effect these changes have on toxic behavior to be seen.

7.2 Future research

Possible future research on the field of competitive gaming and toxic behavior could focus more on particular tools (such as newer, game specific tools), their functionalities and how they're used. As this thesis primarily focused on gathering quantifiable data and barely scratched the surface on qualitative measures, a focus on more qualitative methods in studying the available tools and their effectiveness might be ideal.

Studies focusing on the perceived effectiveness between different games' tools would also be interesting, as multiple free form comments collected during this study tended to point out flaws in certain games and their tools. Game specific matchmaking techniques, their pros and cons and their effect on toxicity might also be a fascinating area of research due to the teamwork oriented nature of competitive games.

Correlation between toxicity and the quality or actual effectiveness of the tools and the sent feedback could also be an interesting area of research, as a tool that doesn't seem to do anything might not be seen as a thing to be afraid of by the toxic players, in turn possibly increasing the overall toxicity of the game. Moreover, as this study focused on competitive games of particular type (MOBAs and competitive shooters), studies could be conducted between different game types (such as PvE and PvP games) to figure out what exactly could

be the main cause of toxicity in online video gaming, how prevalent it is and how it is dealt with in different online environments.

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