Toxic Behaviors in Team-Based Competitive Gaming

The Case of League of Legends

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ABSTRACT

Toxic behaviors in online gaming such as flaming and harassment have been gaining attention from the research community, yet little consensus has formed about what constitutes toxic behavior. Game developers usually maintain a classification system of toxic behaviors, which oftentimes fails to reflect the dynamic and developing forms of toxicity. In this paper, we consider toxic behavior as situated action, and seek to establish a taxonomy of toxic behaviors from a player perspective in League of Legends, currently one of the largest Esports games in the world. Our findings include five primary types of toxic behaviors, as well as five contextual factors that could lead to toxic behavior. In doing so, we provide a holistic, detailed account of toxic behavior in a team-based competitive gaming context, highlight the role of player perspective in explaining toxic behavior, and extend existing scholarly discussions on toxicity and moderation.

CCS CONCEPTS

• **Human-centered computing ~ Human computer interaction (HCI)**; •Human-centered computing ~ Collaborative and social computing ~ Empirical studies in collaborative and social computing

KEYWORDS

League of legends; Multiplayer-online battle arena; Esports; toxic behavior; trolling; grief; flame; moderation; platform governance.

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1 Introduction

Toxic behaviors such as flaming and harassment are prevalent in online games, and are generally seen as detrimental to player experience (PX) and community wellbeing. However, researchers disagree upon the definition and scope of toxic behavior (e.g., [18,22,43]). To make it worse, researchers have also used many related and/or overlapping concepts like deviant behavior [62], anti-social behavior [11,40], disruptive behavior [39], griefing [26,27], cyberbullying [63], trolling [21], abusive language [17], and mischief [4]. To begin, we use toxic behavior as an umbrella term to denote player behaviors at others' expense, but will revisit this definition later after discussing our findings.

Existing toxicity research has two general strands: First, an extensive body of literature has focused on delineating a specific type of toxic behaviors, such as cheating [19,70] and cyberbullying [43,52]; Second, a line of research has sought to present a holistic account of toxic behaviors (i.e., establishing taxonomies) [2,22]. This paper belongs to the second strand, but differs from previous studies in taking a situated-action perspective [64]. In other words, epistemologically we pay attention to the connections between toxic behaviors and the particular gaming context they are situated in.

Specifically speaking, this study is grounded in the context of team-based competitive gaming, where players must work with several strangers as a team in a relatively short period to compete against another team. Such gaming context is featured in many Esports game genres such as first-person shooter games like Team Fortress 2 and multiplayer online battle arena (MOBA) games such as League of Legends (LoL) and DOTA 2. MOBA's unique blend of competition, cooperation, and sociality in its team-based competitive gaming context has become an emerging research area for game researchers [55], and is associated with distinctive PX patterns such as high frustration and challenge [34,36], and mood management [69].

In this study, we sought to achieve the research goal by analyzing players' online expressions about toxic behavior in the '/r/leagueoflegends' subreddit, one of the largest LoL online forums. Through thematic analysis [13], we identified five primary types of toxic behaviors (communicative aggression, cheating, hostage holding, mediocritizing, and sabotaging), as well as five contextual factors that help induce toxic behavior (competitiveness, in-team conflict, perceived loss, powerlessness,

and toxic behavior). Building upon these findings, we reflect on how toxic behaviors are entrenched in the existing settings of team-based competitive gaming with intense competition and limited sociality. We also discuss design implications for managing toxic behaviors.

Our contributions to the literature include: 1) a holistic, detailed account of toxic behaviors in LoL which forms a basis for future research on specific types of toxic behaviors as well as suitable moderation approaches; 2) a deeper understanding of toxic behaviors in team-based competitive gaming which invites broader discussions of toxicity within the competitive gaming contexts; and 3) a methodological exploration of the value of player online expressions in researching player experiences with toxic behaviors, which also engages conversations with existing approaches (e.g., [2,22]) that rely upon interview and survey.

2 BACKGROUND

League of Legends (LoL), developed by Riot Games (or Riot for brevity) and released in October 2009, is one of the most popular Esports games today with 8 million peak concurrent players in the world [59]. Its Esports tournament finals on November 10, 2019 attracted 44 million peak concurrent viewers [48].

LoL's main gameplay is a match between two five-player teams, the blue and red teams, competing against each other on the map called "Summoner's Rift" (Figure 1). A match typically lasts 20-40 minutes. The blue team appears at the bottom-left corner of the map, and the red team the upper-right corner. Each team's base will have waves of minions to spawn and attack the other through three lanes: top, middle, and bottom. The opposite minions will meet and fight in each of the three lanes. The three lanes are noticeable on the mini map at the bottom-right corner. The winning condition is that one team destroys another's base. In each match, a player starts with a weak character at Level 1 (max is Level 18). The character gets stronger by 1) gaining experience points to level up, and 2) gaining gold by killing non-player characters (NPC) or opponent players. Figure 1 shows the beginning of a match where three players on the blue team are waiting to kill an NPC that will spawn soon.

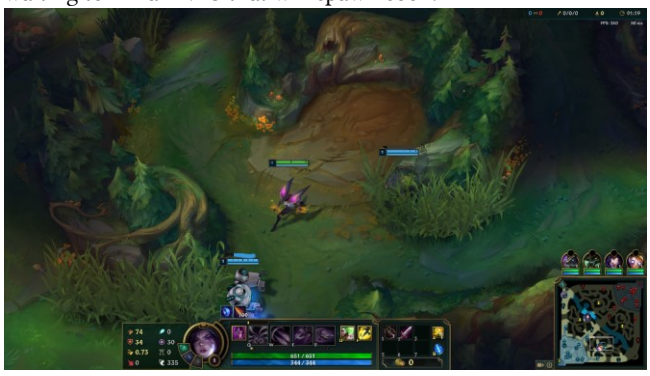

Figure 1. Screenshot of League of Legends.

LoL seeks to efficiently generate fair matches for its millions of players through two intertwined systems: *the ranking system* and *the matchmaking system*. The ranking system measures a player's skill and generates a ranking accordingly for the player. The ranking system has several leagues (i.e., Iron, Bronze, Silver, Gold, Platinum, Diamond, Master, Grandmaster, and Challenger), ranging from the least skilled to the most skilled. Professional players typically play at the Master level or above. The matchmaking system arranges "fair matches" for the pool of available players based on their rankings [58].

LoL currently maintains a moderation system that collects reports from players, and automatically adjudicates and issues punishments to convicted players. The LoL player can use the report function after a match against any other player (see Figure 2).

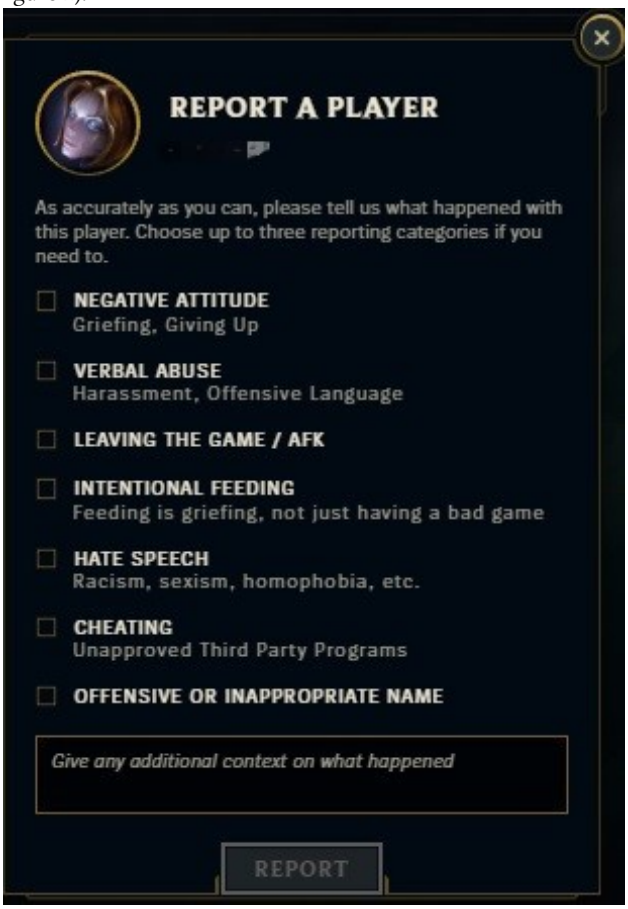

Figure 2. Report Function in League of Legends.

The report function asks the player to choose up to three from seven types of toxic behaviors (negative attitude, verbal abuse, leaving the game/AFK, intentional feeding, hate speech, cheating, and offensive or inappropriate name) to describe the toxicity they have just experienced. The player could choose to leave comments in the block. In the rest of the paper, we call these seven types as official categories. This official classification has remained unchanged for multiple years. A 2014 study already reported that LoL players found these official categories to be ambiguous and difficult to apply [41].

3 RELATED WORK

3.1 Toxic Behavior as Situated Action

Situated action refers to the idea that human actors are not isolated from, but reflecting on the contexts where the actions are performed in [64]. The notion is well accepted within human-computer interaction (HCI) [14] and resonates with the third wave HCI [31] that foregrounds the understanding of interaction in its context.

Toxic behavior can be analyzed from the situated action lens. Toxic behavior is often situated in the interplay between rules and norms on a particular digital platform. Rules on digital platforms are formal or even legal statements or guides made by authorities for conduct and action [57]. Typical instances of rules include end user license agreements, codes of conduct, and classification of toxic behavior [10]. Sometimes rules define types of toxic behaviors. For instance, Chesney et al.'s study of Second Life found all the types of toxic behaviors delineated by the official rules [18]. But rules are usually slow to change and could not reflect online population's dynamic practices and interactions. Therefore, officially supplied taxonomy of toxic behavior is often considered limited and reductive [23]. Norm refers to "a standard of appropriate behavior for actors with a given identity" [25]. Norms are usually contested and emergent and constitute part of a particular culture [32,66]. Therefore, norms govern the way a particular community understands what acceptable or problematic behavior is, and could range from universal to specific depending on the scales of online communities [15]. One type of behavior could be acceptable in one group, but toxic in another [60].

Norms and rules sometimes are at odds when the values of the community clash with the values of the platform they reside. An example is how Reddit users protest against the platform management's decision of firing their employee Victoria Taylor without notice [50]. Norms could be articulated as rules through participatory governance mechanisms. For example, Forte et al. described how Wikipedia editors utilized internal discussion to articulate policies for different levels of projects, essentially articulating their understandings of what makes qualified edits or vandalism into Wikipedia rules [28].

Toxic behavior can also be associated with the functions and affordances of a digital platform. Massanari's study of the cases of #Gamergate and The Fappening on Reddit [49] showed that the technical configurations of Reddit such as its karma point system and ease of user account creation helped the growth of "toxic technocultures."

3.2 Toxic Behaviors Situated in their Gaming Contexts

From the situated action lens, previous literature about toxic behaviors could be synthesized in light of the specific gaming contexts. In the 1990s multi-user dungeon (MUDs) were popular virtual, playful environments, and mostly text-based. In 1996, Bartle famously categorized players into four types based on their interest in two dimensions (i.e., acting vs interacting, and players vs. world) [6]. To him, the 'killer' type is most similar to the toxic type of players in deriving greater joy from causing more massive distress on others, such as offensive languages. Keep in mind that this was an early study on toxicity and the then context (e.g., the largely text-based, communicative environment and relatively small player population) allowed limited varieties of toxicity.

Researchers' interest in toxicity in online gaming has boomed in parallel with the rise of massively multiplayer online games (MMOGs). Many researchers have found parallels between MMOGs and MUDs when it comes to toxicity in text-based communication (e.g., [2,47,67]). For example, Lin and Sun's 2005 study of two MMOGs, Lineage and Ragnarok Online, in Taiwan, found that cursing others was the most frequent toxic behavior [47], resonating with Bartle's killer type players. Thacker and Griffiths's survey of 125 gamers found racism and sexism as a way of flaming, as well as faking and intentional fallacy through communication [67]. Mattinen and Macey explored online verbal abuse in DOTA 2 [51], a MOBA game similar to LoL.

But MMOGs are decidedly distinct from MUDs in numerous ways such as the graphic interface and commercialization (e.g., [5,7]). Certain categories of toxic behaviors are enabled by the gameplay mechanisms of MMOG context, such as robbing equipment or killing others' pets [47], killing teammates in first-person shooter games [67], camping the corpses of other players [2], ganking [2], scamming [2], and area control [2]. Players who are familiar with the game mechanisms could also engage in cheating to gain unfair advantages in game [19].

Particularly, massively multiplayer online role-playing games (MMORPGs) are persistent virtual worlds and offer players a great degree of freedom and creativity in inventing and creating toxic behaviors pertaining to specific social interactions. For instance, Foo's four-category taxonomy of grief play activities (i.e., harassment, scamming, power imposition, and greed play) all concern the social aspect of player interactions [26]. Ladanyi and Doyle-Portillo's development of the grief play scale for MMORPGs also considers exclusive MMORPG features such as 'ninja loot' and 'greedy in group' [44].

Consciousness and intentionality also play a role in toxic behavior. Lin and Sun reported that some toxic players are well-known and self-aware, while others commit occasional toxic behaviors, which mostly occur in newcomers who do not understand community norms [47]. Rubin and Camm's 2013 study of griefing varieties also consider the intentionality of disrupt to be an important dimension of cause to be toxic [61].

In recent years, a few researchers have stressed the Esports dimension of certain video games, seeking to situate toxic behaviors in the Esports/highly competitive gaming context. Notably, Irwin and Naweed drew from sports philosophy [1] to discuss what constitutes unsportsmanlike behavior in Counter Strike: Global Offense (CS: GO) [33]. Adinolf and Türkay's interview study with players from a university Esports club [3] reported that their participants experienced forms of toxicity including mostly flaming and trolling, and sometimes racism and sexism. In addition, they noted that toxicity could be experienced in selves, others, and the community at large.

The highly competitive gaming setting also seems to lead to a close relationship between negative emotions and toxicity. A qualitative study found that emotions such as tilting could trigger toxicity [68]. LoL players' use of play statistics could induce frustration which in turn leads to toxicity [36].

3.3 Toxic Behaviors in League of Legends

Plenty of studies have focused on toxicity in LoL. A majority of them (e.g., [9,20,40,42,54]) paid attention to text-based communication in such forms as verbal abuse, harassment, and flaming. For instance, Kou and Nardi discussed flaming within U.S. and Chinese LoL players [40]. Neto and Becker identified toxic topics in player chat [54]. Kwak and Blackburn reported linguistic patterns of toxic languages in LoL [42].

A few scholars have paid attention to the unique game features associated with toxicity. For instance, Shores et al. used a peer review score (i.e., upvotes and downvotes from fellow players) to evaluate toxicity, and discussed toxic behaviors in relation to match length, player role, and number of friends on a team [62]. Kwak et al. evaluated the associations between Riot-supplied taxonomy of toxic behaviors and game features such as match length and server region [43].

Collectively, these studies have started to explore toxicity in LoL. However, relatively little attention has been paid to how LoL players themselves determine what constitutes toxic behavior in the game. In other words, how are toxic behaviors situated in the unique competitive gaming context of LoL?

4 METHODS

In this paper, we used the 'r/leagueoflegends' subreddit as our study site to collect player discourses pertaining to toxicity. The subreddit has been one of the largest online forums for LoL, and Riot even closed its official forums in March 2020 due to their decreasing popularity [30]. The researchers frequently browsed subreddit because of their own interest and engagement in the game.

We took an iterative search strategy to identify relevant threads from the subreddit. We accessed Reddit's API to collect threads, including both posts and their associated comments. The API allowed us to search posts containing specific keywords. We used an initial set of search keywords as {toxic, antisocial, deviant, disruptive, grief, troll} as well as their variants such as 'toxicity' and 'toxic behavior.' Beginning from January 21, 2020, the research team repeatedly retrieved sets of threads based on the search keywords and their variants. For each set, the two researchers screened each thread to determine its relevance. Threads not about toxic behavior were removed. The researchers marked down initial observations of experiences with toxicity and looked for additional keywords that LoL players often used when talking about toxic behavior. For each new keyword the researchers continued the screening process, until they deemed that they have reached saturation [12], at which point no new information was found in the data collection process. The data collection process lasted until January 28, 2020. The final keyword set was {toxic, antisocial, deviant, disruptive, grief, troll, tilt, int, off-meta, flame, afk, hostage, ping, climb, abuse, frustrate, offensive, surrender, quit, rage, hate, threat, racism, sexism, homophobia, xenophobia}. At the end of data collection, all the threads including posts and comments, as well as their metadata like timestamp and upvotes were stored in a local MySQL database. The final dataset included 476 posts and their 40,133 comments.

Our data analysis aimed at addressing the research goal of situating toxic behaviors in the competitive gaming context of LoL. Specifically, at the analytical level we paid attention to what types of toxic behavior were mentioned by LoL players, as well as how these toxic behaviors took place. To answer these two closely related questions, we used inductive thematic analysis [13]. The two researchers each read the dataset and generated a list of initial codes, in terms of the types of toxic behavior as well as its contexts. For instance, if a comment mentioned how a player flamed their teammates because of their teammates' mistake, then the researchers coded the flaming behavior as a type of toxic behavior, as teammates' mistake as the context. The researchers then compared their lists of initial codes, resolving disagreements while consolidating similar ideas. During this stage they frequently went back and forth between their codes and the raw data.

Upon consolidating all the codes, they held rounds of discussions to refine and link the codes to generate higher-level concepts, until they have reached a coherent thematic map meeting the standards of internal homogeneity and external heterogeneity [13].

The study was approved by the university's IRB office prior to data collection. The research team also considered and discussed the ethics of using online available data. They concluded that the study posed no more than minimal risk to players in the community, while could yield important insights into understanding toxic behavior as well as how to design to manage toxic behavior, a major challenge facing many platforms today. All the data was paraphrased before being used as quotes in the findings section to reduce its searchability.

5 Types of Toxic Behaviors

We identified five primary types of toxic behaviors, including communicative aggression, cheating, hostage holding, mediocritizing, and sabotaging.

5.1 Communicative aggression

Communicative aggression happens in various communication channels in LoL and is comparable to communicative aggression commonly seen on social media. The content communicated through these channels is perceived as offensive to the receivers. This category includes three (out of seven) official categories: verbal abuse, hate speech, and offensive or inappropriate name.

The most frequent type of communicative aggression is *flaming*. Flaming refers to sending hostile or insulting messages. An example provided by a player is "People in this rank are trash. Do you guys actually have a brain?" In the previous subsection, we also showed plenty of examples of flaming. We also categorized hate speech such as racist, sexist, and homophobic remarks as flaming.

A second type is *report threatening*, meaning that the toxic player brings up the post-game report function to threaten or coerce others. The victims might fear being reported and receiving penalties such as account suspension. A player wrote:

As a new player I often face hate and threats of being reported. How am I supposed to get better if my teammates just hate me? I want to delete this game.

In the above instance, the player was perceived to lower the team's chance to win, thus the player's teammates started to harass them by threatening to report.

A third type is offensive naming, where players use offensive words in their in-game nicknames. A player commented:

Some nicknames are very racist and very insulting. I'd report them.

Lastly, aggression could also be expressed through non-verbal communication features such as in-game signals and pings. Pings are "alerts that are easy to activate and provide auditory and visual cues for teammates" [45]. Toxic players have appropriated ping for toxic purposes. A player described how they was harassed by pings:

When Jax and I were playing against a Lee Sin, he outplayed us and killed Jax. It was my fault that I didn't auto attack Lee Sin… Then Jax spammed pinging danger over me nonstop until I was killed by Lee Sin too. That was disturbing.

Jax and Lee Sin are LoL champions. In the above example, the player described the toxic consequences of "spammed pinging" from their teammate Jax. Jax used a massive number of pings to disturb the player, which the player found toxic.

5.2 Cheating

Cheating refers to gaining an unfair advantage [19]. LoL players find cheating to be toxic because it disrupts a sense of fairness that is key to competition. Specifically, players talked about three ways of cheating: *scripting*, *smurfing*, and *rank boosting*.

Scripting is to use scripts to automate and optimize in-game actions, which is forbidden by Riot's rules. A player commented:

Stuff like dodge/reaction scripts can give you a huge advantage. Xerath is best for scripting because it makes sure you land all his skill shots.

As the player described, scripting gave players an unfair advantage by greatly enhancing the efficiency of their in-game actions.

Smurfing is the action of highly skilled players playing on a newly created account. Smurfing is difficult to detect, but creates unfair matches where non-smurf players have significantly decreased impact on the match result, ruining their competitive experience and engendering a sense of powerlessness and frustration. A player stated:

Smurfing ruins the game… I once played against a masters top laner, and it is extremely demoralizing… Every single decision I make just leads to another death.

The player explained the destructiveness of smurfing in their gaming experience, and the powerlessness they felt. Relatedly, many players voiced complaints about popular streamers using smurfing accounts to tease lower-ranked players or perform power leveling.

Rank boosting is a paid service where highly skilled players played on the customer's account to climb to a requested rank. Rank boosting is forbidden by Riot, but is perceived to be fairly common in LoL. A player wrote:

I played with this guy who wanted a solo lane because he was boosting someone else's rank. I looked him up, and he did has impressive stats in his previous games… I reported him later since it is bad for the game.

Our cheating category extends the official cheating category to include not only use of unapproved third-party programs, but also use of other non-technical resources to induce an unfair situation.

5.3 Hostage holding

Hostage holding describes a behavior to purposefully keep others stay in an unpleasant situation. This has not been covered in the official toxic taxonomy. Hostage holding can be carried out through gameplay to prevent the game from ending or game features such as the surrender vote. The most common case is that toxic players make surrender impossible, in comparison to the negative attitude category where toxic players want to surrender too early in game. An instance is:

The thing I hate most is that you have toxic players who refuse to surrender… Then I'm wasting time for no reason.

In the above example, the player found refusing to surrender toxic, because the players took actions at the player's expense (time). Considering both negative attitude and hostage holding in terms of the surrender function, perceived toxicity is a subjective experience. It is possible that players who agree to or refuse to surrender consider the other side toxic.

Hostage holding might also happen when players experience prolonged, unwinnable matches. For instance, another player stated:

It is super frustrating when people hold their teammates hostage in a game… For instance, smurfs on the winning side refuse to end the game for their own amusement (e.g., getting more kills from less skilled opponents), and prolong the game by hours.

In this case, smurfs prolonging a match violate the player's expectation of match length. The player find no fun in game but has to spend time in it. The smurfs derive entertainment from their deeds at the expense of the losing side.

5.4 Mediocritizing

Mediocritizing refers to gameplay actions that do not maximize the winning chance but the players still favor a win. LoL's highly competitive norms encourages scrutiny of any act that does not represent a player's serious effort. And mediocritizing helps creates a situation of perceive loss, which could trigger more toxicity. For instance, a player talked about how trying new champion in ranked mode is toxic:

It is unacceptable to play a champion for the first time in ranked. If people want to experiment or try new things, they can go to the normal mode, instead of ruining four other people's game… It is pretty hard to carry a teammate who has no understanding of the role or the champion.

As the player explained, trying new champion or new role in LoL lowers the winning chance, and is thus considered toxic.

Another mediocritizing behavior is off-meta play. "meta" refers to the mainstream way of playing that the LoL community generally agrees upon, such as how to pick champions for a specific role, what items to buy for a specific champion, and in-game individual or teamwork strategies. Off-meta play is player behavior that does not align with the meta, and is often considered toxic. A player explained:

When I had a good day and decided to play some league, I met off-meta picks like Karma jungle… I don't think this is going to work, and teammates are going to flame you… please go back to the meta and stop intentionally causing your team to lose.

Karma is a champion played at the roles of support and occasionally at the middle or top lanes. The player expressed frustrations with Karma jungle because it lowers their chance to win. The logic of perceiving off-meta play as toxic also applies to players who want to try new items on a champion. An instance is:

A player went mid with AD (attack damage) Rammus. He went against a mage and claimed that his build works. He ended up feeding the opponent mage a lot and started to flame the rest of the team.

Rammus is a champion that commonly assumes the jungle role instead of middle, and AD items do not work with its skillset.

5.4.1 Negative Attitude

Negative attitude is an official category including griefing and giving up. However, griefing and giving up are decidedly different when it comes to players' interest in winning. Griefing is to deliberately disrupt others with the intention to lose, but negative attitude's literal sense is a feeling or manner that is not constructive to teamwork, which aligns well with mediocritizing. Thus, we consider negative attitude a subtype in mediocritizing. Players' negative attitudes are rooted in their own frustration but take effect in their team interactions. Mostly such negativity manifests in utterances or actions to give up. For example, a player wrote:

Teammates giving up are the worst… Some players have the mentality of a 5-year-old. It is still early in the game, we are just slightly behind, and they type "ff 15."

"Ff" is the command for initiating a surrender vote, and 15 minutes is the earliest to do so. Thus, the utterance of "ff 15" usually carries a dispiriting sentiment in team communication. It frustrates people and is often considered toxic.

Negative attitude could also manifest as in-game action. An instance is:

People spamming surrender whenever they don't do well. These people should be reported and punished.

The surrender vote is only allowed to be initiated every three minutes by game design. But the repeated enactment of surrender vote could still be considered disruptive to teamwork if the majority of the team (four players) have set their minds on persisting in game. LoL players usually tolerate the first few surrender votes, but not repeated ones. In the above context, spamming surrender expresses a negative attitude and is toxic.

5.5 Sabotaging

Sabotaging is to play poorly with the intention to lose the game. It covers the official categories of leaving the game/AFK, intentional feeding, and partially negative attitude (i.e., griefing). It includes two subtypes: blatant and surreptitious sabotaging.

5.5.1 Blatant sabotaging

Blatant sabotaging denotes conspicuous, conscious ways of decreasing or eliminating team's chance to win. Under this category are acts that players purposefully carry out to ruin others' experiences. Below are several subcategories:

Purposeful inaction is to take no action when expected to. Concrete purposeful inaction behaviors include AFK, and quitting the game early. A player marked:

Some toxic players rage quit after dying a few times.

Leaking information is to undermine teamwork that is otherwise unknown to the opponent team. With accurate information about the opponent team, a team could make effective countermeasures and gaining advantages. A player complained:

My top laner died several times in a row and became so tilted that he decided to tell the enemy team where he was so that they could kill him… We reported him after the game.

Lastly, *intentional feeding* is a major type of blatant sabotaging, meaning to intentionally get killed by the opponent team. Intentionally feeding is an official category by Riot and is abbreviated as "inting" within the LoL community. Players commonly considered intentional feeding identifiable by the count of deaths. A player noted:

I understand if someone is 0/7 (0 kills and 7 deaths) at 20 minutes, but someone has intentionally fed so much and had roughly 30 deaths in a match. Pretty clear they just ran it down upon respawn.

"Run it down" is slang describing players mindlessly moving into the enemy team and getting killed. The player drew a clear boundary between 7 deaths and 30 deaths in terms of how to determine toxicity, that the latter situation could only happen when a player is intentionally feeding.

Intentional feeding is often coupled with other types of toxic behaviors. An instance is:

The guy got the jungler role, proceeded to pick an off-meta champion, told us that "I'm going to feed," and spammed the N-word in game… He then went to every lane and ran it down over and over.

In this example, the player committed intentional feeding. But prior to that, the player already took a mediocritizing strategy by "picking an off-meta champion" and carried out communicative aggression against their teammates.

5.5.2 Surreptitious sabotaging

Surreptitious sabotaging denotes situations where players intentionally carry out poor performance but pretend to be trying so that they are not perceived as toxic. A common

example under this type is perceived as "soft inting." A player explained:

Soft inting (intentionally feeding) is to intentionally throw by getting ganked, ignoring team fights, or deliberately missing abilities... It can ruin the game, but you cannot say it's intentional feeding, because it looks like poor performance.

According to the player, surreptitious sabotaging is similar to poor performance, with the only difference being the intent. However, it is difficult if not entirely impossible to detect a toxic intent, because the suspect behaviors could appear as "poor performance." Therefore, the quote made a clear distinction between soft inting and intentionally feeding.

Another player added that surreptitious sabotaging is to bypass the moderation system:

I'll be honest. In my last game my team flamed me so I soft inted. I didn't go AFK because I'd be punished... When I started to int, I just typed that sorry I'm lagging or sorry I tried my best, these kinds of nonsense. We eventually lost the game.

This is a type of surreptitious sabotaging because the player's actions are pretentious, and the goal is to harm the teamwork.

6 Contextualizing Toxic Behaviors

The five primary contextual factors included competitiveness, in-team conflict, perceived loss, powerlessness, and toxic behavior. Toxic behavior was found to be a contextual factor that could breed more toxicity in game. In addition, multiple contextual factors could be at work to induce toxicity.

6.1 Competitiveness

Competitiveness refers to the intense competition as inherent to the team-based competitive gaming context. Players attribute toxicity to the competitiveness of LoL. For instance, a player wrote that:

LoL makes me very competitive and I easily rage at my teammates. This never happens to me in real life.

The intense competition of LoL fosters the prestige of high ranks, something desired by many LoL players. A player explained:

LoL is competitive and addictive. Many spend a lot of time playing to get better and rank up and expect the optimal performances from everyone... Some people seem friendly at the beginning, but become quite toxic if you don't do well in game.

The quote stressed how toxicity emerges within the competitive process: Some players are not toxic at the beginning, but become so in the heat of the moment. They experience frustrations when their teammates do not meet their rather high expectations, and frustrations lead to toxicity.

At the community level, the intense competition also means aspiring players should go through the "grinding" process, playing many matches to climb up in the ranked system. Grinding is a gaming term meaning that players do repetitive tasks to unlock certain achievements. Here is an example:

League breeds toxicity in many ways. First, a match is much longer than other games like Rocket league. You will have to spend nearly 45 minutes from queueing up for a match to finishing it...if you have incompetent teammates, then you are stuck with them for this long, which is extremely frustrating... In addition, climbing up a division, even if your win rate is 100%, will cost you at least 5 hours.

The player estimated the time cost of grinding in LoL, and suggested how such time cost is associated with frustration and subsequently toxicity.

In the highly competitive gaming culture of LoL, players aspire to higher ranks and use ranks to mediate their social interactions [38]. It is unsurprising to observe how player ranks also helped induce toxicity. One player wrote:

Some players love calling Bronze players monkeys or apes...

Bronze is the second lowest league in the ranked system, and is often stigmatized as low achievement or even failure. Thus, some players are inclined to use communicative aggression when referring to players with this rank and the like.

6.2 In-team conflict

In-team conflicts are interpersonal disagreements over individual choice as well as team goal. Such conflicts and their resolution often rely upon players' proactive efforts [35]. Disagreements could escalate into verbal arguments and even toxic behaviors. Specifically, we found three types of in-team conflicts. The first type is *failed coordination*, involving team members disagreeing over team strategy. An example is:

I feel frustrated as a jungler: I already helped two lanes to secure kills, and the third lane started to flame me for not ganking.

Gank means to help teammates to ambush their opponents. The player, as a jungler, could prioritize which lane out of the three to dedicate time to help, based on their understanding of the ongoing match. The third player, however, disagreed with the jungler as to which lane to focus.

The second type is *teammate critique*, where player(s) criticized another over their decision. Here is an example:

I became toxic when people told me how to play the game... I started to talk shit when someone pinged my first basic item in game.

The player disliked suggestions from their teammates, and admitted that they would become toxic because of teammate critique.

The third type is *resource conflict*, where toxicity occurred over the allocation of resources. An example is:

I got flamed by the ADC (attack damage carry) every time I got a kill as Zyra support.

Zyra is an LoL champion and the ADC and support work together in the bottom lane in the early half of a match. Ideally, the support should help the ADC to grow stronger by obtaining as many resources as possible such as gold, experience points, and kills. Getting a kill means the kill of an opponent is credited to a player, because the player does the killing blow to eliminate the opponent. However, it is common and acceptable for the support to get kills in the fleeting moment of attacking opponents. The above quote depicted how ADC players who are sensitive to getting every resource could grow aggressive towards their teammates because of unexpected resource allocation.

6.3 Perceived loss

Perceived loss refers to the situation where players perceive a loss or a greater chance to lose in an ongoing match. There are three conditions that might make players think this way.

First, *encountering new players* in game could trigger toxicity, because their inexperience could lower the winning chance. A player wrote:

My friend and I just started trying ranked. We got into a match and told our team that we were new to ranked so we would play extra carefully. However, when my friend died to the opponent ADC once, immediately one of our teammates said we suck, we are feeding, and wanted to report us after the match.

Second, *underperformance* of either self or teammate could also give rise to frustration and subsequently toxicity. A player wrote about how some players could become toxic upon encountering a minor frustration:

Some players just AFK (away from keyboard) if they die first within the first five minutes or if they think the match is unwinnable at 15 minutes.

AFK is considered toxic in LoL as the AFK player's four teammates have to fight a 4 vs. 5 match with a much lower chance to win. In the above quote, some players could easily experience frustration even if their underperformance has not shown consequences.

Third, in *a losing match* where the losing side is already disadvantaged, team members might become aggressive towards people they believed to be the cause of the perceived loss. A player wrote:

If I play jungler and get invaded multiple times, it will become very hard to play from behind. Then whatever I try, my teammates just flame me in chat.

In the above quote, the player talked about the experience of being blamed and flamed for the loss of a match.

6.4 Powerlessness

Powerlessness describes how experiences of loss of control might engender toxic behavior. These are situations where they experience enormous frustrations because of little control over their ongoing matches. The sense of powerlessness is often felt in situations of hostage holding or smurfing. An instance is:

The worst scenario is when two toxic players flame and refuse to surrender, and the rest three players are stuck with them… So I just AFK and sit in base.

LoL allows its players to surrender after 15 minutes, effectively ending the ongoing match. However, the surrender will only be granted with five out of five votes between 15 and 20 minutes, or four out of five after 20 minutes. With two vetoes, the rest three players are unable to end the match, and thus essentially being held as hostage in the match. The player's countermeasure is AFK, which is itself a form of toxic behavior.

Playing with or against smurfs also triggers the sense of powerlessness. A player explained:

It becomes increasingly common to have a smurf in your game. Smurfs are easy to spot… just look at their average cs per minute which is way beyond players at my skill level. If the smurf is on my team, winning is not more fun. Smurfing also invokes a lot of flame towards the unlucky player who lanes against the smurf, since people would assume the player is feeding.

The above quote indicated the recognizability of smurfs in LoL, through observing said players' past gameplay data. Smurfing reduces the competitive experience of all the rest players on both sides, and in turn breeds toxicity.

6.5 Toxic behavior

Lastly, toxic behavior itself could become a trigger of more toxic behaviors. In other words, toxicity breeds toxicity. For instance, a player observed:

I used to duo with a friend and encountered more AFKs and trolls than when I played alone. The reason was that he flamed our teammates quite often, and they were tilted… If you are toxic, your teammates are more likely to be toxic as well.

Tilt refers to a declining mental state that easily leads to poor performance in game. The player highlighted how toxic behavior is contagious in an interpersonal context.

Another player observed:

Some players will just go AFK if you ping them too much to question their play.

In the above example, the player described how communicative aggression through ping could induce the toxic type of sabotaging.

In another example, a player described how toxicity became contagious:

At first, it's just one player who was just afk split pushing, not joining team fights… then the rest of the team all started to play on their own and no longer communicate.

This example shows how sabotaging propagates within a team, putting the teamwork at a disadvantage.

7 DISCUSSION

In this study, we analyzed toxic behavior as situated action. Epistemologically we view toxic behaviors as contextual and interrelated. Methodologically we traced the links between toxic behavior and its context by analyzing players' experiences with toxicity. Our study found five types of toxic behaviors in LoL, as well as five contextual factors that could trigger toxic behavior. Our toxic taxonomy differs from the official toxic classification and results from a systematic approach to represents the current toxic landscape in the LoL community. Extending previously established toxic taxonomies in MMOGs [26,44], our analysis foregrounds the team-based Sports gaming context in understanding and interlinking these findings.

7.1 Situated Toxicity in Team-based Competitive Gaming

At the beginning of the paper, toxic behavior was defined broadly as behaviors performed at others' expense. After analyzing nuanced player experiences from the situated action lens, we found that focusing only on individuals' behaviors misses the broader context including not only game features and social dynamics but also the highly competitive gaming culture.

Toxicity is highly situated, dynamic, and mediated by player perception and interpretation. The four out of five contextual factors we reported are not inherently toxic, but can trigger toxicity as players exchange remarks and sequence actions. Perceived toxic types like cheating and mediocritizing are based on players' subjective judgments in particular contexts and may not easily be substantiated. Therefore, toxic behaviors should be understood as process, which is a *situated sequence of player emotions or actions at either the individual or the collective level that put teamwork at a disadvantage.*

Echoing previous discussions of the complex interplay between rules and norms [41,65,66], our findings showed that the rules, represented by the seven official categories, do not capture the extensive range of toxic behaviors as experienced by LoL players. In comparison to the official taxonomy, ours represents players' latest and situated understanding of toxic behavior, is produced in a systematic way, refines and realigns several official categories (e.g., both verbal abuse and inappropriate name were categorized as communicative aggression), and identifies new types (such as hostage holding) and new subtypes (such as aggressive pings). Our taxonomy thus better represents players' current norms, or players' normative expectations of player behavior.

Norms in Esports games like LoL prioritize competition and achievement as central values [29,38]. In addition, interpersonal communication is used mostly for instrumental purposes such as signaling information and enhancing teamwork [35]. Appropriateness of player behavior comes mostly as a less central consideration in LoL. Thus, it is unsurprising that previous studies found that a few Esports players normalize toxic behavior [3]. Evidence from our study additionally suggests that such normalization happens not because players accept toxic behavior, but because players find the prevalence of toxicity as an inevitable byproduct of competitive gaming. For instance, our findings showed how players admitted that the competitiveness caused them to flame their teammates.

The gap between the relatively static rules and the dynamic norms translates into a paradox that the rule-based moderation system does not capture emergent types of toxic behaviors. Players are aware of such discrepancy and have developed behaviors that are toxic and can game the moderation system. For instance, toxic behaviors such as surreptitious sabotaging were reported to go unrecognized under the current moderation scheme. Particularly, players make toxic use of gameplay features such as ping and surrender, echoing previous research on how toxic behaviors are situated in the technological features of Reddit [49].

Toxicity is constructed as players compare their individual interpretations of a behavior against their understandings of norms. While previous research has pointed to the ambiguous boundaries of toxic behavior [47], we highlight that toxic behavior is also subjective and situational. A pertinent case is the use of surrender. Players who want to surrender may consider those vetoers as toxic, and vice versa. Relatedly, players highlight the role of intentionality in determining toxicity, similar to what some game scholars have argued [47,61]. However, players have no reliable way to pin down the intentionality behind certain behaviors. Instead, players must narrate intentionality out of their own interpretation or imagination to justify their accusation of toxicity. For example, players may directly call someone with a few deaths "intentional feeding," while experienced players, toxic or not, become skilled at concealing their intent or faking their intent.

7.2 Toxic Dynamics in LoL and Beyond

Although this study is focused on the toxic dynamics in LoL, its findings about the way toxicity is associated with specific social dynamics or game features are generative for toxicity and moderation research to beyond LoL or MOBA. Toxic behavior is oftentimes a dynamic social process, rather than an isolated event. Among the shared experiences of toxicity in our findings, only a few toxic behaviors start from the very beginning when people first meet; Instead, an overwhelming majority of toxicity happens with certain causes and progressively gets worse. A frequent scenario is that when a team is losing, certain teammates become frustrated and start to act aggressively towards their teammates.

The toxic taxonomy proposed in this study highlights several dimensions of toxicity worth consideration in future research: 1) Toxic players may have different levels of desire to win, ranging for striving for a win (and thus commit communicative aggression against underperforming teammates) to wanting to lose (sabotaging). 2) Toxicity could be carried out with or without intention. Some players might start to flame their teammates because of their intense frustration in game, and do not recognize their deeds as toxic. 3) Toxicity could be explicit or implicit, as demonstrated in the findings about blatant and surreptitious sabotaging. In light of these dimensions, it is no longer sufficient to analyze toxicity in terms of rule and rulebreaking.

Certain toxic types such as surreptitious sabotaging are not simply about bypassing rules and rule enforcement, but involve impression management. Impression management happens in online social interactions where people deliberately manage their own images in front of their audiences, such as streamers managing disclosure of private information [46]. In this study, toxic players consider their audiences, including not only the rest of the players in the match but also the moderation system, when they commit toxic behaviors. Toxicity thus becomes performative as players seek to manipulate how others perceive them, such as undermining teamwork but pretending to be just doing badly.

The emotional underpinning of toxicity should be considered in future toxicity research. Our findings pointed to the ubiquitous presence of negative emotional experiences in the context of toxicity. For example, competitiveness, in-team conflict, perceived loss, and powerlessness could directly induce negative emotions such as anxiety and stress. extending previous findings about the connection between negative emotions and toxicity [16,68], our study details how toxic behavior could either be triggered by negative emotions (e.g., a player being angered by a loss and starting to flame their teammates) or lead

to negative emotional experiences (e.g., experiencing frustration and sadness and because of teammates' harassment).

Game features can and will be appropriated for toxic purposes. We showed that LoL's ping system could be abused for the purpose of harassment. The surrender system could be manipulated to hold teammates hostage. Players can appropriate game features for novel toxic behaviors. Oftentimes, old toxic classifications fail to include such toxicity, and game developers only take actions reactively, rather than proactively. For example, smurfing and rank boosting are disruptive to ordinary players' ranked experiences but have not been taken into serious consideration of toxicity. For another example, although the player community has complained about toxicity in champion select lobby for many years, it was not until June 2020 that Riot finally rolled out a report function in champion select lobby [53].

7.3 Enablers of Toxicity

Several enablers in LoL's highly competitive gaming context are inter-related and co-create a hotbed of toxicity: First, the intense competition can trigger negative emotional experiences such as frustration and feeling of powerlessness. This echoes Kou and Gui's research that characterizes LoL as an emotionally charged environment and describes LoL players' emotion regulation efforts [37]. Second, negative emotions, such as tilting and frustration, can lower players' performance and cause them to attribute disadvantaged situations to their teammates. Many of our findings showed how players put the blame on their teammates, which only escalated into flaming and other types of toxic behaviors later. Third, toxic behavior is detrimental to teamwork. Echoing previous work [16], we found that victims of toxic behavior experience negative emotions, become less engaged in the game, and often respond with more and severer toxicity.

To make it worse, the ineffective and oftentimes counterproductive interpersonal communication leads to the lack of common ground, which can incur conflicts and disruption [56]. The communication channels are mostly for exchanging information about the ongoing competition, but much more contextual information that is critical to successful virtual teamwork is left out, such as information about players' background, expertise, expectation for the ongoing match, etc. Ping can be effective communication tools [45], but its brief form is vulnerable to both abuse and misinterpretation. For instance, the act of sending multiple pings could be perceived as spamming and toxic.

The weak sociality in the LoL community also contributes to the growth of toxicity. Different from MMORPGs with persistent worlds and long-term organizations that are key to progression [24], ranked mode in LoL lets players to play alone to climb in the ranked system. Previous research already pointed to the weak sociality of MOBA games by showing that LoL players make friends based on their ranks in game [38], and MOBA players face challenges making friends with strangers they meet in game, and instead value playing with pre-existing friends [69]. Consequently, players treat their teammates based on their ranks and performances as well as their contributions to teamwork [36,38]. In other words, players often instrumentalize their teammates, seeing people as a means to an end. They burst with toxic behaviors when their "instruments" fail to perform as expected.

It appears that toxicity has become an organic component within the highly competitive gaming culture of LoL intertwined with multiple essential characteristics of the context, such as the several contextual factors identified in this study, the fundamentally social and emotional nature of toxicity, and the blurry boundaries between toxic and nontoxic behaviors. This is not to legitimize toxicity, but to reckon these relations and their role in sustaining toxicity. Moderation, in turn, will have to account for these relations in terms of conceptual framework, classification, goal, and approach. For instance, if toxicity is not to be eradicated, then moderation needs to consider how to handle toxic behaviors of different severities in a just way. Punished users should not be simply demonized and their voices deserve to be heard as well.

7.4 Design Implications

By presenting a situated action analysis of toxicity, our work provides the following design implications for managing toxic behavior in team-based competitive gaming. First, the rule-norm gap creates challenges for moderation systems to account for toxicity as experienced by players, and for players to learn norms. An outdated or ambiguous toxic classification could fall short in comprehensiveness and accuracy, creating difficulties for people to use its associated moderation system [41]. Thus, game designers should regularly update their rules and moderation mechanisms to better align with player norms. For instance, analyzing player discussions of toxicity like this study or via computational techniques like topic modeling is a promising approach. However, extra cautions are necessary to resolve contradictions, such as the opposite opinions regarding the surrender option.

Second, most toxicity occurs as an emergent process, and players who are initially benign progressively become toxic. Riot's current approach only punishes players who have made repeated or severe offenses, while experienced players have already devised ways to bypass the moderation system. Therefore, designers need to consider carefully different types of players who have committed toxic behavior. For instance, for players who perform surreptitious sabotaging, new category should be developed to drive player attention for reporting them, and moderation systems could be leveraged to better analyze those reports in order to detect toxicity. For another example, game designers should consider whether smurfing should be categorized as toxic behavior.

Third, intense competition is commonly associated with negative emotions in our data. Players utilize online forums like the subreddit to share their negative emotions and seek support or explanation. This is especially beneficial for beginners who are learning community norms. Self-disclosure on social media allows people to seek social and emotional support [8]. Game designers could also consider incorporate social functions in the

game client, allowing players to share negative experiences with each other and seek support.

Fourth, we suggest that designers consider ways to enhance the sociality of competitive games. Although competitive games prioritize competition, they do not seem to stress enough the social experience of players such as friendship and community building. Game clients could incorporate more social functions. More playful modes could also be developed that entail less competition and prioritize cooperation and collaborative exploration.

7.5 Limitations

The work relies upon forum threads generated by LoL players in the '/r/leagueoflegends' subreddit. The subreddit has been one of the largest LoL online forums and occasionally used by Riot for announcements and community engagement. Online discussions could contain rich experiences that people share in a naturalistic manner and have already been used widely among HCI researchers. However, the data does not account for the whole LoL player population (e.g., players who do not make posts or do not visit the subreddit). Future work could consider cross-validate findings from this study with other data sources, such as online discussions from other online venues and interview and survey.

8 CONCLUSION

In this paper, we reported on a qualitative study of toxic behaviors in a team-based competitive gaming context. We analyzed toxic behavior as situated action, elaborating on the interrelatedness between toxic behaviors and their complex gaming contexts. We consider toxic behaviors as emergent processes and explore contextual elements that could help inhibit the happening of toxic behaviors and the becoming of toxic players. The social and emotional underpinnings of toxicity call into question the simplistic view that others toxicity, viewing it as intrinsically different from the "good" majority of players. We need to start to reckon toxicity as an entangled component in a community/culture and consider much nuanced perspectives and solutions for the ultimate goal of promoting community development and wellbeing.

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