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Dec 11th, 12:00 AM

The Dark Side of E-sports: The Role of Player Emotions and Cyberbullying in MOBA

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Short Paper

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Abstract

Within the context of Multiplayer Online Battle Arena video games (MOBAs), Cyberbullying Behavior (CB) has become a complex and yet unsolved socio-technological challenge. While significant work has been done recently, there is a lack of studies in relation to the role of players' emotions and CB as well as a lack of theory-guided approaches for curbing CB in MOBAs. In this work, we developed a holistic framework for understanding the relationship between player emotions (achievement, challenge, and loss) and their CB in different phases (early game, mid game, and late game) of MOBAs. For this, we used a qualitative approach comprising 1,048,575 chat logs and interviews with 21 MOBA players. The preliminary results indicate that different emotions arise at different phases of MOBA games that give rise to cyberbullying behavior in the players.

Keywords: Cyberbullying; E-sports; MOBA; Qualitative Study

Introduction

Electronic sports (e-sports) have become a significant aspect of people's lives in the past decade with over 532 million players worldwide (Huang & Bruda, 2018). Among the various titles and types of esports, Multiplayer Online Battle Arena (MOBA) games such as League of Legends (LOL) and Defense of the Ancients 2 (DOTA2) have become very popular among young people due to the competition and the unique characteristics of these games (Bonny & Castaneda, 2022). Further, with the lockdowns and social distancing associated with the COVID-19 pandemic shifted much of their daily activities to online, making online gaming even more prominent for entertainment and leisure (Ingersoll, 2020). A digital media trends survey carried out by Deloitte in 2020 revealed that one-third of U.S. consumers subscribed to a video gaming service, utilized a cloud gaming service, or watched e-sports or a virtual sporting event for the first time during the pandemic (Arkenberg, 2020).

With the rise in popularity of online gaming, the cases of cyberbullying (CB) have emerged as a significant concern (Bonny & Castaneda, 2022). Since MOBA players are able to communicate with their teammates to plan out their game strategies using various channels such as voice and text chats, players have frequently misused these channels to transmit harmful 'toxic' messages (Traas, 2017) to bully other players. For example, if a player is underperforming, they may be subjected to flaming or negative comments (toxic behavior) from other players that can escalate into CB. According to Ingersoll (2020), 68% of online

multiplayer gamers experienced severe abuse, including threats of physical harm, stalking, and sustained harassment.

Researchers have identified that the very nature of the online game and player emotions contribute to this growing problem of CB (Kulovitz & Mabry, 2012). Further, the presence of teammates and their urge, motivation and intention to win can influence players to exhibit toxic behavior (Kwak & Blackburn, 2014). The perceived anonymity of online communication removes inhibitions and (Patton et al., 2013) releases individuals from the normative and social constraints of behavior, which naturally leads to hostility and aggressiveness in the online gaming platforms (Kordyaka et al., 2020; Kwak & Blackburn, 2014; Moore et al., 2012). Moreover, research has shown that players who engage in cyberbullying often do so to cope with negative emotions or to gain a sense of power or control (Kowalski et al., 2014). For example, a player who is feeling frustrated with their own gameplay may engage in being hostile towards another player to feel that they are not in the wrong. Likewise, a person on the winning team can act in a negative manner to the other team after winning the game to exhibit a sense of superiority. Various emotions can increase the likelihood of players engaging in toxic behaviors like cyberbullying towards others.

Until recently, the studies of emotions in CB research were still nascent (Kou & Gui, 2020). Only a few IS researchers have considered the role of emotions and emotion-related factors such as frustration (Kwak and Blackburn 2014), anxiety, stress (Kou & Gui, 2020), and fear (Gualdo et al., 2015) in relation to CB in online gaming platforms. Furthermore, there is a lack of studies that discuss how players experience different emotions during the different timing phases of MOBAs (early-game, mid-game, late-game) which ultimately compel these players to exhibit CB such as communication aggression accordingly. Therefore, there is a need for game developers to understand that the emotions of players play a critical part as to why players exhibit negative behavior and need to develop means to discourage players from exhibiting such behavior.

Given the lack of research in this area, we incorporate the framework of emotions developed by Beaudry and Pinsonneault (2010) to establish the existence of the player emotions and understand how positive and negative emotions influence players to exhibit cyberbullying behavior in the different timing phases of MOBAs. In light of this context, we ask the research question*: "How do players' positive and negative emotions evoke cyberbullying in the key phases of a MOBA game?"* Here, the emphasis is placed on 3 aspects: (i) capturing both negative and positive emotions, not only focusing on the negative emotions, (ii) how the emotions give rise to cyberbullying behavior, and (iii) assigning emotions to the phases of the game, segmented into early-game, mid-game, and late-game.

In order to address this, we propose a conceptual framework, which explains what emotions are felt by players in the different phases (early-game, mid-game, and late-game) of MOBAs and how these emotions give rise to cyberbullying. The proposed MOBA CB-emotions framework was developed using an analysis of 1,048,575 chat lines from 48,183 MOBA matches, complemented by exploratory open-ended interviews with 21 MOBA players. The remainder of the paper is structured as follows. First, the theoretical background is introduced which is then followed by the research methodology. The framework development is presented thereafter along with our findings and the discussion. The paper concludes with the implications of the study, the limitations of the study, and future research directions.

Theoretical Foundation

Multiplayer Online Battle Arenas (MOBA)

Multiplayer Online Battle Arena (MOBA) games are *"team-based online games where players strategize to secure the base of the opposing team and defeat them using virtual heroes"* (Bonny and Castaneda 2022, p.158). Further, these are free-to-play games where players are given free access to the whole game and therefore, have the potential to reach a wide audience (Kordyaka, 2018). MOBAs have a very highly competitive player base and are dependent on strategy, operation, and teamwork (Kordyaka, 2018). Since these games are very competitive in nature, MOBA game developers such as Riot Games, Inc. (developer of LOL) and Valve Corporation (developer of DOTA2) hold annual gaming competitions on a big stage encouraging teams to participate and win, with big prize pools that sometimes exceed 20 million US dollars that are often crowdfunded. In the year 2021, the price pool of DOTA's big stage competition, called 'The International' had a prize pool of 40 million US dollars, with the winning team receiving 18 million US dollars, and each player receiving around 3 million US dollars (Valve, 2021). These games are typically

divided into three timeframes as (1) the early game which is somewhere in between the start of the match till around the 15-minute mark, (2) the midgame is where players try to achieve objectives and (3) the late game is where the players try to take control of the game and finish. In MOBAs, players are able to control a single hero/ champion in one of two teams which consists of 5 players for each team, with a total of 10 players for one match. MOBA players have the choice of playing different categories of matches such as competitive or non-competitive matches that do or do not impact their player rankings respectively. The objective of the game is to earn resources, level up the selected champion/ hero, and destroy the other team's defenses, ultimately capturing their base. While MOBA is a subset of online games they have unique and distinct characteristics which differentiate them from other online games (Kordyaka, 2018).

Cyberbullying in MOBA

Although MOBA platforms are popular among people; it is also a space where cyberbullying (commonly alluded to as" toxic behavior" inside the gaming community) can occur. Cyberbullying is *"bullying through e-mail, instant messaging, in a chat room, on a website, or through digital messages or images sent to a cell phone"* (Kowalski & Limber, 2007, p. 1). The combination of the design elements of team competition, the nature of the game and multiplayer exchange, are some of the key factors that gives rise to CB in MOBA (Kordyaka et al., 2020). In the context of esports, communication aggression such as *flaming*, which is sending negative or offensive messages to the players (both teams) is one of the biggest ways in which CB is exhibited by players. Apart from communication aggression, some other ways in which CB takes place in online gaming platforms include 1) cheating (gaining an unfair advantage by illegal means), 2) hostage holding (intentionally making the gameplay unpleasant for all players), 3) mediocritizing (actions that do not maximize chances of winning), 4) sabotaging (playing poorly with the intention of losing the game), 5) game patch bug abuse, 6) griefing (intentional harassment of players) (Kordyaka et al., 2020; Kou, 2020).

According to ADL (2020), an online game survey, CB is a significant problem in MOBA, with players being targeted through various means, including voice chats (48%), text chats (39%), and in-game play actions (23%). Approximately 70% of individuals who played online multiplayer games were subjected to offensive language, while 60% of players were intentionally provoked through trolling to elicit negative reactions. In addition, 52% of online game players experienced harassment based on their race/ethnicity, religion, ability status, gender, or sexual orientation (Ingersoll, 2020). According to a different study, 38% of players skipped multiplayer games because of the stress caused by cyberbullying, 54% stopped playing because they saw someone else online engaging in the same behavior, and over 63% agreed or strongly agreed that cyberbullying could be a serious problem within the online videogame community (Ingersoll, 2020).

Player Emotions

Emotions are a *"mental state of readiness for action that promotes behavioral activation and helps prioritize and organize behaviors"* (Beaudry & Pinsonneault, 2010, p. 690). As such emotions influence an individual's behaviors (Beaudry & Pinsonneault, 2010). Players can have both positive and negative emotions while playing MOBA, which influences their behaviors, performance, and overall experience of the game (Traas, 2017). Research has shown that having emotions such as excitement, frustration, anger, and anxiety are some of the reasons for them to exhibit CB and it can have a significant impact on players' gameplay (Kou & Gui, 2020; Traas, 2017). Moreover, Kowalski et al., (2014) show that players who engage in cyberbullying often do so to cope with negative emotions such as frustration, and anxiety or to gain a sense of power or control.

Recently, Kou and Gui (2020) conducted an empirical study on the experience and regulation of emotions among players in League of Legends, one of the most popular e-sports games. Their findings identified four emotive factors and various emotion regulation strategies used by players to manage their own emotions, as well as those of their teammates and opponents. Other research has established that e-sport players experience emotion, social interaction, and collaborative play, thus it seems likely that the potential reasons for CB may be present in e-sports (Kulovitz & Mabry, 2012). Moreover, players' emotional states can be influenced by factors such as the game's design, the social context of the game, and their own individual characteristics (Tamborini et al., 2011). However, few studies have investigated the relationship between the player emotions and their CB in MOBAs, and the lack of theoretical frameworks, leading researchers to call for more holistic frameworks incorporating player emotions in cyberbullying behavior (Kordyaka et al., 2020; Kou & Gui, 2020).

Framework of Emotions

The Framework of Emotions proposed by Beaudry and Pinsonneault (2010) is a model that attempts to explain how emotions can influence individuals' interactions with technology (i.e., IT use). The framework classifies emotions into two broad dimensions: positive and negative affect, arranged into four quadrants. Therein, positive emotions can be found in the group of 'achievement' and 'challenge'. Achievement emotions include sub-emotions such as happiness, satisfaction, pleasure, relief, and enjoyment while challenge emotions include sub-emotions such as excitement, hope, anticipation, arousal, playfulness, and flow. Negative emotions can be found in the group of 'deterrence' and 'loss'. Emotions such as anxiety, fear, worry, and distress can be found under the deterrence emotions while emotions such as anger, dissatisfaction, disappointment, annoyance, frustration, and disgust can be found under loss emotions (Beaudry & Pinsonneault, 2010). Rather than centering on the adoption of information technology (IT), we employ Beaudry and Pinsonneault's (2010) Framework of Emotions to explore the role of player emotions in their cyberbullying in MOBAs.

Establishing the Research Model

The literature review establishes the relationship between CB and player emotions. The below Figure 1 depicts the a-priori research model (MOBA CB-emotions Framework) which was developed using existing academic literature, and an analysis of 1,048,575 chat lines. The model is inspired by the broader theoretical notions of the Theory of Mind. The 'Theory of mind' is the ability of individuals to attribute mental states to themselves and others in order to explain and predict behavior (Premack & Woodruff, 1978). In our a-priori model, we have taken achievement, challenge, and loss as the group of emotions which gives rise to CB. Further, we have identified deterrence emotions to be a discouraging factor for exhibiting CB behavior which implies a moderator relationship in our model. Deterrence involves discouraging specific behaviors by portraying them as unattractive and reducing their likelihood through the instillation of fear of penalties or repercussions (Zilincik & Duyvesteyn, 2021). E-sports organizations and platforms often implement a combination of deterrence measures (e.g., reporting systems, penalties), positive reinforcement (e.g., rewards for sportsmanlike behavior), and community-building efforts (e.g., codes of conduct, education) to create a more inclusive and respectful gaming environment (Kwak & Blackburn, 2014). Therefore, players who engage in such behavior may fear the consequences, such as temporary or permanent bans, loss of ranking, or damage to their reputation. This fear of punishment can deter some players from exhibiting CB behavior. Hence these deterrence emotions serve as inhibitory mechanisms, reducing the likelihood of cyberbullying actions.

Figure 1. MOBA CB-emotions Framework (A-Priori Model)
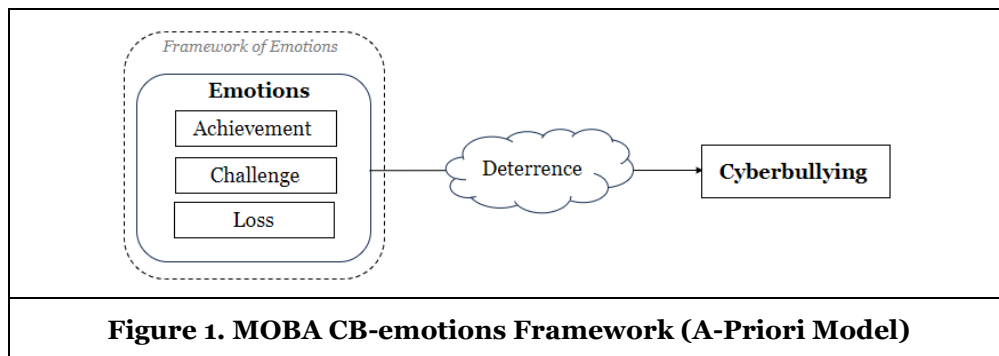
Research Methodology and Data

The combined exploratory and explanatory approach has been suggested for research, especially for studies wanting to extend the current knowledge to new contexts (Sedera et al., 2016). This paper follows a qualitative approach to report the initial findings of the exploratory text analysis (using chat messages) supplemented by short explanatory interviews with the MOBA players. The overall methodological approach in this study consists of two steps: first, the proposition discerned from the extant mainstream literature is subjected to deductive examination; and second, an inductive approach is adopted *"to discover concepts and hypotheses not accounted for in the original formulation"* (Patton 2002, p.494).

Exploratory Chat Analysis: For the chat analysis, we downloaded chats from the game "DOTA2" which was publicly available from Kaggle.com (Romov, 2018). Kaggle is an online platform that is owned by Google LLC and is known for hosting machine learning competitions, providing datasets for data science projects, and offering a collaborative environment for data scientists and many researchers (Xu et al., 2022; Yang et al. 2018). The dataset contains 1,048,575 chat lines taken from 48,183 matches and consists of both positive and negative opinions or sentimental words. For our paper, we only used chats written in English. These chat transcripts provided us with an overview of CB displayed by players along with the general discussions that had taken place among the players within the games. We first identified 63 'toxic' words/segments in relation to the groups of achievement, challenge, and loss emotions. For instance, words like " report", "end", "pathetic", and "useless" were mapped to the emotion category "Loss". While we have lost the verbal connotations during the analysis of chat records, we have grouped the words under the emotion categories by using emotion lexicons, existing literature, and authors' institution. We then ran a keyword search and identified a total of 152,436 toxic words in relation to all three emotion categories that appeared in the dataset.

Explanatory Interviews: We conducted 21 interviews with MOBA players to confirm the preliminary findings of the chat analysis and assist with the development of the research model which was presented in this research-in-progress paper (Figure 2). A purposeful sampling method (Trieu et al., 2021) was used to recruit 21 experienced MOBA players (16 males and 5 females) from regions such as Southeast Asia, Europe, and Oceania using the researcher's professional and social networks. All participants were above the age of eighteen and had an average playing time of 10,000 hours ranging from a maximum of 25,000 hours to a minimum of 6,000 hours. The interviews were unstructured and used a semi-structured question protocol which mainly focused on the players' experience in MOBA games. This also included how and what emotions they feel during the different phases of the game and the form in which they express their emotions inside the game platforms. The interview data were then transcribed, coded, and grouped according to the pre-defined themes identified in the MOBA CB-emotions Framework. Following the deductive method, statements in the interview transcripts were decomposed, extracting contiguous phrases, without modification. These codes were then mapped into the three theoretical paradigms of the MOBA CB-emotions Framework (Figure 1). The coding was conducted by two independent researchers. The two researchers selected a set of sample codes from each transcript and mapped them until the intercoder reliability was more than 75% as stipulated by (Krippendorff, 2018).

Preliminary Study Initial Findings

The following section provides a descriptive analysis of the players' emotions and their relationships in line with the objectives established for this study. The first two columns highlighted the findings from our preliminary chat analysis. Afterward, the rest of the columns exhibit the significant emotions expressed by participants in each of the three quadrants of Beaudry and Pinsonneault's (2010) Framework of Emotions. Below table 1, presents the preliminary findings of this research.

Emotions	% chats	Sub-emotion	% Inter views	Quotes from interviewees
Achievement	20.87% (n= 31,812) *E.g. 'Ez game" "Uninstal" "RIP"*	Happiness	9.52%	"Overwhelming of positive emotions after winning a hard game makes me superior." (P# 3) "When you win the game; I say something like an easy game, because I feel like I have earned the right to say it." (P# 6)
		Satisfaction	42.86%	
		Pleasure	14.29%	
		Relief	4.67%	
		Enjoyment	21.57%	
Challenge	24.50% (n= 37,349) *E.g. "Scared?" "Baited" "Rekt"*	Excitement	33.33%	"Psychological warfare, to reduce other team's moral, or destroy their game plans etc." (P# 4) "I play online games to get away from real world issues, so I play the game in the hope of winning." (P# 8)
		Hope	0%	
		Anticipation	4.76%	
		Arousal	19.05%	
		Playfulness	38.1%	
		Flow	0%	

Loss	54.36% (n= 83275) *E.g. "Report" "End" "WTF"*	Anger	28.57%	"I get pissed off when my teammates are not performing properly." (P# 6) "I get angry when players do not perform their role in the game." (P# 13) "Losing a game after having played it for 9 years makes me disappointed." (P# 5)
		Dissatisfaction	0%	
		Disappointment	14.29%	
		Annoyed	4.76%	
		Frustration	47.6%	
		Disgust	0%	

Our initial findings revealed that player emotions arise at different timing phases (early-game, mid-game, late-game) of MOBA games that lead to cyberbullying behavior in players. Our key takeaways include:

1) Satisfaction (42.86%), playfulness (38.1%), and frustration (47.6%) were found to be the most common emotions that cause cyberbullying behavior in MOBA. And among all emotions frustration was found to be the biggest cause for cyberbullying in MOBA. 2) It was also revealed that some players experience frustration once they stop feeling excitement during the game, mainly when they feel that they might lose the game. Therefore, it can be derived that frustration and excitement are mutually exclusive emotions. Further, we found frustration can be turned into anger in the later stages of the game which in turn can lead to disappointment. Also, some players expressed that excitement can be turned into achievement emotions in the event that they win the game. 3) We found that there were five sub-emotions that arose in the late-game phase which is typically after the game passes the 40-minute mark. Also, we found two sub-emotions that arose in the early-game phase which is typically from the start of the game till the 15-minute mark. 4) In conclusion, it was revealed that seven of the sub emotions arose during the start and end of the game which ultimately gives rise to cyberbullying behavior among MOBA players.

We have mapped these emotions pertaining to the different gaming phases and are illustrated in below figure 2 and the following section discusses the results in detail under each category of emotions that gives rise to CB in MOBA.

Figure 2. Research Model
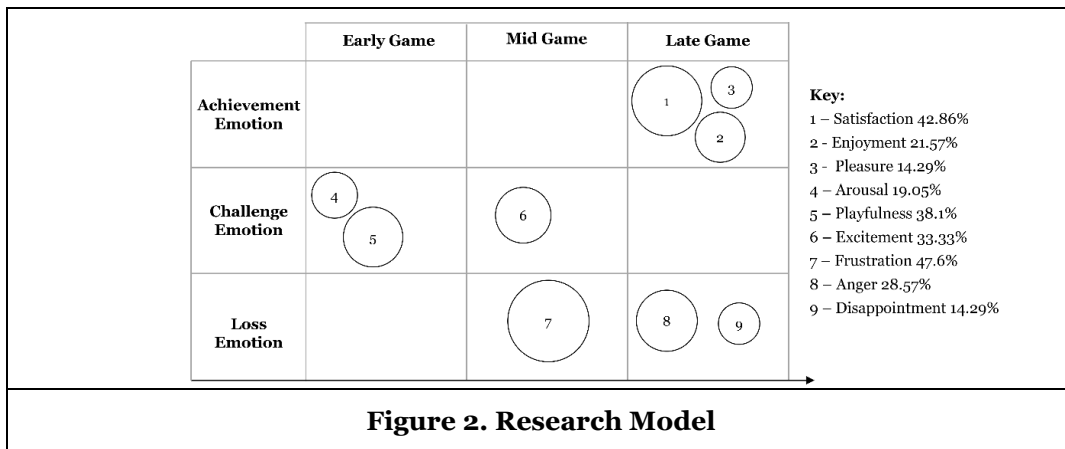
Achievement Emotions

Beaudry and Pinsonneault (2010) have classified achievement emotions as positive type emotions that are considered to have 'low activation' since they indicate a sense of satisfaction with a situation that does not necessitate any further action. While previous research has emphasized that negative emotions such as frustration, anger, and anxiety can lead players to display CB, this study has revealed that some players exhibit CB when they are experiencing positive emotions such as satisfaction, enjoyment, and pleasure.

We identified that these achievement emotions mainly arise during the late game phase, especially when players feel that they are winning the match or after they have won the match. Players experience positive emotions such as satisfaction, happiness, enjoyment, and pride when they feel that they have played a good game. About 43% of participants reported that they may exhibit CB due to the feeling of *satisfaction* when they make an excellent play or win the game. Many players share something on the chat channels to show their achievement emotions to demonstrate their superiority. These messages sometimes can be hurtful to

the other teams. Participant #6 stated that *"when you win the game; I say something like an easy game, because I feel like I have earned the right to say it"*. Also, participant #3 wrote: *"...overwhelming of positive emotions after winning a hard game makes me to post in the chat to show my superiority..." Satisfaction* was the most frequently mentioned achievement emotion and is the holistic sensation that an individual feels when they have had an excellent play.

Beyond satisfaction, a considerable number of players have mentioned that they are involved with CB due to other types of achievement emotions such as *enjoyment* (21.57%) and *pleasure* (14.29%). For example, Participant #10 stated that *"since this is a game, everyone has anger and willingness to win. After winning it's an enjoyment"*. They simply send toxic messages to rivals due to their enjoyment after winning the game. Also, another player mentioned that they send toxic messages *"to get out of stress due to the pleasure of winning the game"* (Participant # 21).

Challenge Emotions

Challenge emotions from this class are triggered by the appraisal of an event as being an opportunity likely to result in positive consequences and over which individuals feel they have some control (Beaudry & Pinsonneault, 2010). According to the researchers, Folkman and Lazarus (1985) an appraisal of challenge might evoke excitement, eagerness, playfulness, arousal, and flow.

We identified that 'challenge' emotions mainly arise at the early and mid-game phases since players are entering the match in the hope of securing a win. *Playfulness* was the key challenge emotion highlighted in the study with 38.1% of participants expressing that they might act in a negative manner due to playfulness. *Playfulness* coupled with the *enthusiasm* and *eagerness* to win the game have led some of these players to exhibit CB in the gameplay. One player stated that *"Getting fun, when I get a chance..."* (Participant #4). Other than that, some players express CB with the anticipation of just winning the game *"I troll a lot to win a game and its fun"* (Participant #13). We found that *playfulness* is a major reason for players to exhibit CB and mainly arises in the early game phase.

Excitement was the other 'challenge' emotion highlighted in the study with 33.33% of participants expressing that they felt a sense of '*excitement*' in the mid-game phase. Players who are excited and enthusiastic about winning their games may express cyberbullying behavior. *"We send toxic messages due to psychological warfare, to reduce the other team's moral, or destroy their game plans, etc."* (Participant #14). *Arousal* was another 'challenge' emotion with 19.05% expressing that they exhibit CB to get some sort of reaction from the opposing team. Further, some participants mentioned that they act in such a manner to reduce the confidence of the opposing team and jumble up the gameplay *"...to reduce other team's morale or destroy their game plans"* (Participant #4).

Loss Emotions

Emotions such as anger, dissatisfaction, frustration, and disgust are likely to be experienced by players when they are about to lose a match. Loss emotions are different from achievement emotions since players experience intense feelings of dissatisfaction. Loss emotions can cause individuals to express negative opinions openly and vent about the things they are not happy about (Trieu et al., 2021).

Frustration was the key 'loss' emotion emphasized in our study with 47.6% of participants describing issues pertaining to frustration. For example, one of the players highlighted that *"getting frustrated by not getting the expected outcome and wasting my time and effort putting into the game made me send hateful messages to the rivals"* (Player# 4). Another participant also confirmed that *"I dedicated over 1 hour of my time, and if I am not getting anything out of the game, it makes me frustrated which leads to toxic behaviors"* (Participant #5). These disgruntled players maliciously use chat channels to send toxic messages as a result of loss emotions like *frustration.* Also, the desire to achieve goals and to advance to a higher level of play causes the player to be frustrated if he or she thinks that other players are causing the delay. Participant #2 wrote about how their teammates' poor performances caused frustrations leading to CB. *"I get super frustrated when I get teammates who aren't at the same level as me leading to toxic behavior."* This could be done with malicious intent or due to a knee-jerk reaction, but that can negatively impact the other player's capacity to carry out the optimal performance.

We also found *anger* to be the next most highlighted emotion with 28.57% of players expressing that they get angry during the play. One player commented, *"I get angry at my teammates when they are not*

performing properly". The next most highlighted loss emotion was *disappointment* with 14.29% of the players expressing that they feel disappointed after losing the game. Player #P10 mentioned that *"Losing a game after playing it for nine years makes me feel disappointed"*. In summary, we understood that 'loss' emotions can take place in both mid and late-game phases where players are ready to take objectives and go forward and frustration is the key highlighted loss emotion among MOBA players influencing their CB.

Conclusion and Future Research Directions

Our study was conducted to establish the existence of player emotions and investigate how these emotions drive players to exhibit cyberbullying behavior in MOBAs. Our initial findings from this study show the existence of these emotions and suggest that not only negative emotions, but also positive emotions can compel players to exhibit cyberbullying behaviors. We also found that these emotions occur in different time phases in MOBAs, and sometimes arise in more than one phase of the game. It was revealed that satisfaction was the leading sub-emotion of 'achievement' that causes players to exhibit CB and arises during the late game. Further, playfulness was the leading sub-emotion of 'challenge' which drives players to show bullying behavior. Whereas frustration was the most highlighted sub-emotion from 'loss' and was the most prominent emotion from all with more than 45% of the players expressing that they are influenced to express negative behavior due to frustration.

While our current research has allowed us to establish the existence of these emotions and their potential causal relationship with cyberbullying (CB) behavior, we acknowledge that our study's primary focus has been on the initial exploration of these connections. It is crucial to recognize that our findings represent an important starting point, but they also reveal a limitation of our study, the need for further confirmation and validation. In our ongoing research agenda, we plan to conduct a confirmatory survey. This future study will offer a more robust assessment of the emotions' causal relationship with CB, including deterrence's moderating role, enhancing the reliability and breadth of our insights into this complex dynamic. We also aim to dive deeper into contextual variables such as time period, nature of the game and also identify whether demographic factors such as age and gender cause CB in MOBA to deepen our understanding in this phenomenon. This would allow for a more comprehensive understanding of the complex dynamics between player emotions and their cyberbullying, offering both in-depth insights from qualitative analysis and statistically significant results from quantitative analysis. By doing so, we aim to contribute more comprehensively to the field and provide a stronger foundation for the development of effective strategies for combatting cyberbullying in e-sports. In discussing limitations, we acknowledge the fact that analyzing only text-based chat transcripts will not provide a holistic view of cyberbullying behavior in MOBAs. And also, analyzing chat records, we have lost the verbal connotation. Furthermore, since MOBA games' distinct characteristics set them apart from other gaming genres, it limits the generalizability of our study findings to other online game types.

This study therefore benefits theory in two ways. Firstly, it extends past research on cyberbullying in the context of MOBA by providing a better understanding of how emotions drive players to exhibit CB in MOBA. Secondly, our research shows cyberbullying is most common in the early and late game phases, suggesting game developers can focus on implementing targeted interventions during those times to regulate and mitigate cyberbullying. For instance, implementing emotion detection algorithms can analyze text-based chat messages, voice chat, or in-game interactions to identify signs of emotional distress or negative emotions or potential cyberbullying actions, whereby an automated system can temporarily restrict a player's ability to send messages or interact in chat to prevent further harm while the situation is reviewed. On the other hand, understanding these emotions can empower e-sport players to self-regulate their behavior and contribute to a more respectful and inclusive gaming environment. This in turn enhances the overall gaming experience for themselves and their fellow players.

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