

Emotion Regulation in eSports Gaming: A Qualitative Study of League of Legends

YUBO KOU, Pennsylvania State University, USA

XINNING GUI, Pennsylvania State University, USA

Today eSports gaming is enjoying growing popularity in the world and much attention from various research areas, including CSCW. eSports gaming is a highly competitive environment commonly associated with negative emotions such as anxiety and stress. However, little attention has been paid to emotion regulation in eSports gaming. In this study, we empirically investigated how players experience emotion and regulate emotions in League of Legends, one of the largest eSports games today. We identify four emotive factors, as well as emotion regulation strategies that players deploy to manage the emotions of their selves, teammates, and opponents. We further report on how they use emotion regulation in emotional self-care and emotional leadership. Building upon this set of findings, we discuss how the competitive eSports gaming context conditions emotion regulation in League of Legends, foreground emotion regulation expertise in competitive gaming, and derive implications for designing emotion regulation technologies.

CCS Concepts: • **Human-centered computing** → **Collaborative and social computing** → Empirical studies in collaborative and social computing • **Human-centered computing** → **Human computer interaction (HCI)** → Empirical studies in HCI

KEYWORDS

Emotion; emotion regulation; eSports; competitive gaming; League of Legends; MOBA.

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1 INTRODUCTION

Competitive gaming has become of great interest to the CSCW community [5,23,84]. eSports, short for electronic sports, is “a form of sports where the primary aspects of the sport are facilitated by electronic systems; the input of players and teams as well as the output of the eSports system are mediated by human-computer interfaces” [33]. In practical terms, eSports gaming refers to the play and spectating of competitive video games [20,22,34]. In the rest of the paper, we use eSports gaming and competitive gaming interchangeably.

Authors’ addresses: Yubo Kou (yubokou@psu.edu) and Xinning Gui (xinninggui@psu.edu), College of Information Sciences and Technology, Pennsylvania State University, University Park, PA 16802

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eSports gaming is particularly known for inducing negative emotions such as sadness, frustration, and anger [8,74], endangering teamwork and social relations, causing burnout and depression even for professional players [37]. Emotion regulation has been found to enhance team performance [42,78,79]. Emotion regulation refers to “the process by which individuals influence which emotion they have, when they have them, and how they experience and express these emotions” [29]. Emotion regulation also includes how individuals regulate others’ emotions [31], such as how individuals regulate teammates’ emotions in team sport [79]. HCI and CSCW researchers have investigated emotion regulation in areas such as emotional expression (e.g., [14,25,35]), frustrating situations [36], mental health [40], and players’ physiological responses [63]. However, emotion regulation in eSports gaming has received limited attention.

In this research, we investigate how people regulate emotions in eSports gaming. The game we focus on is League of Legends (LoL), one of the most popular eSports games in the world. LoL is a team-based eSports game and a major eSports title. Previous research has reported how the highly competitive environment of LoL is associated with immense peer pressure [49], toxic behavior [51,54,73], and social support [21]. Building upon existing research, we turn our focus to the emotion regulation practice of LoL players. Informed by existing emotion regulation research [28,29,31], we decompose the research question into three sub-questions:

- 1) What emotive factors are there in League of Legends?
- 2) What emotion regulation strategies do players use in League of Legends?
- 3) How do players use emotion regulation in their competitive gameplay?

To answer these questions, we collected and analyzed data from the ‘r/leagueoflegends’ subreddit, one of the largest LoL-related forums. Through thematic analysis [12], we revealed four major emotive factors (achievement, teammate, game design, and social identity) that can trigger intense player emotions. We mapped emotion regulation strategies from the sport psychology literature to those used by LoL players. Additionally, we contextualized emotion regulation in LoL players’ competitive gameplay, focusing on how they utilize emotion regulation strategies to take care of their own emotional wellbeing (emotional self-care) as well as facilitate teamwork (emotional leadership). We discuss how the competitive gaming context conditions emotion and emotion regulation in League of Legends, and how digital technologies mediate emotion regulation. We argue that emotion regulation is an important form of expertise in eSports gaming. Lastly, we derive implications for designing emotion regulation technologies.

The research contributes to the literature by 1) providing empirical and conceptual insights into the role of emotion regulation in the eSports gaming context using the example of LoL; and 2) bridging CSCW research on team-based games with sport psychology research.

2 RELATED WORK

In this section, we start by reviewing the emotion and emotion regulation literature to describe necessary concepts. We then review previous research on emotion regulation in sport psychology, the most related area to our best knowledge. Lastly, we overview the literature on video game players’ emotional experiences.

2.1 Emotion and Emotion Regulation

Emotions are “adaptive behavioral and physiological response tendencies” [29], where an individual evaluates a situation and modulates their emotional responses. We use *negative*

emotion and *unpleasant emotion* interchangeably, and *positive emotion* and *pleasant emotion* interchangeably. People could become aware of their emotional states, and engage in regulatory efforts upon observing a sufficient discrepancy between their current and desired feelings [38,57]. The goal of emotion regulation could be a balance between *hedonic*, seeking to increase pleasant emotions such as happiness and elation, and *instrumental*, referring to pursuit of goals such as long-term benefits [77].

Gross listed five emotion regulation strategies [29]: 1) *situation selection* means to approach or avoid certain situations for emotion regulation (e.g., seeking a different route to avoid encountering a neighbor and having an embarrassing conversation); 2) *situation modification* refers to active effort to modify a situation (e.g., asking a neighbor to tone down their music); 3) *attentional deployment* means to shift attention (e.g., gazing at a less pleasant thing); 4) *cognitive change* denotes efforts to modify cognitive steps to recognize or modulate emotions (e.g., reframing a failure as a success); One particular form of cognitive change is *reappraisal*, meaning to reappraise a situation to alter its emotional impact; 5) *response modulation* means to directly influencing responding patterns (e.g., relaxing to decrease anxiety). Conscious *suppression* of emotion expression is also a form of response modulation.

Emotion regulation can be oriented towards self or others [30]. *Emotion self-regulation* means the individual regulates their own emotional experiences, while *interpersonal emotion regulation* refers to the act of regulating others' emotions. An example of interpersonal emotion regulation is that people might use humor to uplift others and enhance their relationships [82]. Since "the emotion process is inherently social and interpersonal" [24], emotion self-regulation may intersect with interpersonal emotion regulation in complex ways. For example, in support groups, one might share their emotions (self-regulation) to influence their audiences' emotions (interpersonal regulation). In addition, sometimes it could be difficult to distinguish the two orientations. For example, in a crisis situation, a leader could try to be calm (self-regulation) to handle the task at hand, or try to appear calm to make their followers relaxed (interpersonal regulation) [62].

2.2 Emotion Regulation in Team Sport

Competitive sports bring both positive and negative emotions [67], but the scholarship is primarily concerned with negative emotions such as anger, anxiety, and worry, and how they oftentimes engender poor performance and reduced engagement among relatively inexperienced athletes [7,32,52,65,75]. Thus, emotion regulation has become a fundamental component of applied sport psychology intervention [10,44]. Athletes learn and practice emotion regulation before, during, after competition, as well as through time of training and injury recovery [24,27,80]. For instance, the 1988 U.S. Olympic wrestlers used techniques such as breathing control and music to achieve a more optimal emotional state [26]. While physical sports have developed knowledge and procedures about emotion regulation, eSports still lags behind.

Jones [45] summarized eight core relational themes for sport-related emotions, including anger, anxiety, shame, guilt, hope, relief, happiness, and pride. Although people generally seek enjoyment in sport [72], some athletes believe that negative emotions such as anger and anxiety could help performance [56]. For example, an athlete could notice that they were anxious before a competition started but still won, which gradually led to the belief that anxiety had a positive effect over their performance. Therefore, negative emotions could be beneficial in sport [24].

Sport psychologists have paid much attention to emotion self-regulation, often building upon Gross' five emotion regulation strategies (e.g., [46,66]). When it comes to interpersonal emotion regulation in team sport, a few studies have demonstrated the effect of emotional contagion in which individuals influence others through the induction of emotions. For instance, Totterdell found that individuals' happiness was linked to their teammates' collective happy moods [81]. Tamminen and Crocker reported how athletes could consider social and contextual factors such as social norms and team roles when performing self-regulation and interpersonal regulation [79].

Collectively, sport psychologists have stressed the need to identify the emotions experienced as well as the emotion regulation strategies used by athletes. This study expands on this body of literature to pay attention to emotion regulation in eSports gaming.

2.4 Emotions in Video Gaming

Emotional experience is an important reason that people play games [3,9,41,60]. Prior work has demonstrated the complex role that emotions play in player experience, that even negative emotions such as frustration and sadness could bring benefits [1,9,43].

Games research has also acknowledged the social nature of emotions [18]. Lazzaro noted that players enjoyed a variety of emotions from competition, teamwork, and socializing opportunities [60]. Players could obtain emotional support even in highly competitive games [21]. In long-term teams like guilds in World of Warcraft, team leaders can manage the emotional highs and lows in raiding for the sake of team performance [4].

However, little research has paid attention to emotion regulation in eSports games like LoL, with a few exceptions that focus on general player experiences of LoL but unanimously point to how poor performance of self or teammates leads to negative emotions such as anger and frustration [39,48,50,68,83]. To our best knowledge, there is no systematic investigation of emotion regulation in LoL. This study aims at filling this gap.

3 BACKGROUND: LEAGUE OF LEGENDS AS AN ESPORTS GAME

League of Legends (LoL) is a Multiplayer Online Battle Arena (MOBA) video game developed by Riot Games (Riot for short in the rest of the paper). Released in October 2009, LoL is one of the largest games with 8 million peak concurrent players across the globe [70]. 44 million peak concurrent viewers watched its eSports tournament finals on November 10, 2019 [64].

The main gameplay mode in LoL is a match between two five-player teams, the blue and red teams. Two teams compete on the map called "Summoner's Rift." Figure 1 shows the beginning of a match. A match usually lasts 20-40 minutes. At the beginning, the two teams appear in their bases at the opposite ends of the map. Each base will send out minions for the enemy base through three lanes, namely top, middle, and bottom. The minions will encounter and fight in the middle of each lane. To win a match, one team must destroy another's base.

In each match, the player starts with a weak character at Level 1 (max is Level 18). The character gets stronger by gaining experience points to level up, and obtaining gold to purchase in-game equipment 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.

LoL uses a ranking system and a matchmaking system to efficiently generate fair matches for its millions of players. The ranking system assesses a player's skill and generates a corresponding rank. It has several leagues (i.e., Iron, Bronze, Silver, Gold, Platinum, Diamond,

Master, Grandmaster, and Challenger), ranging from the least skilled to the most skilled. Each of the first six leagues (from Iron to Diamond) is further divided into four divisions from 1 to 4. And each division has 100 league points. The matchmaking system arranges matches for the pool of available players based on their ranks.

Ranking practices are central to LoL players' highly competitive eSports culture, as players rely on ranks to manage progression and inform collaboration [49]. Professional players are usually at the very top of the ladder (from Master to Challenger), and achieving a high rank is an essential condition for LoL players to become a professional.

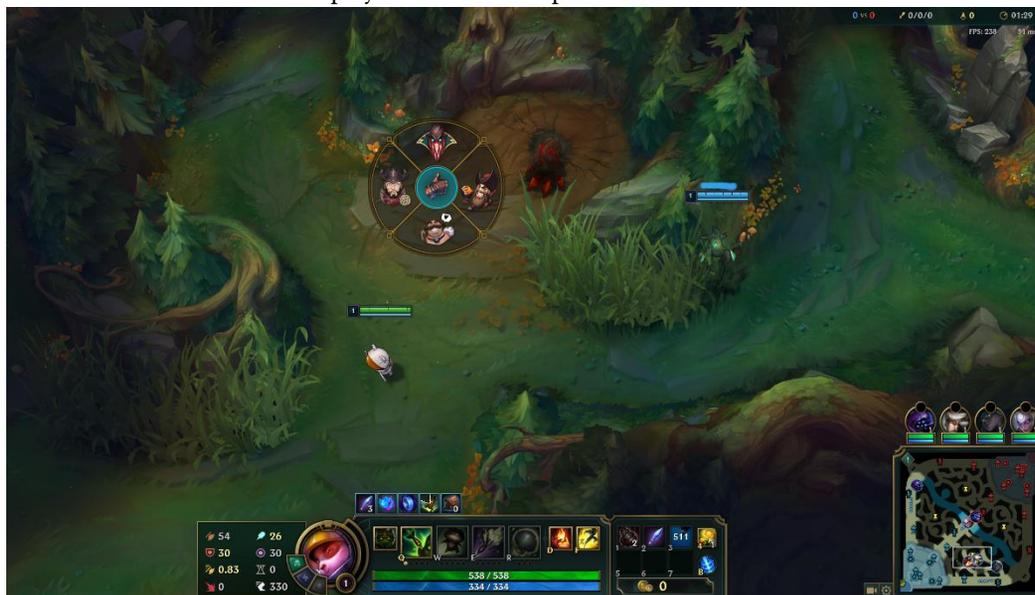


Figure 1. Screenshot of League of Legends.

LoL affords a variety of ways for players to express their emotions. For example, they could type in the chat functions to express their emotions. They could also use emote, a type of sticker floating on their in-game characters. In the middle of Figure 1, there is a wheel of five emotes that the player could choose one from.

4 METHODS

In this paper, we use qualitative methods to generate findings pertaining to our three research questions. Specifically, we collected emotional experiences shared in the 'r/leagueoflegends' subreddit, a large LoL player community, and employed qualitative analysis to discover meaningful patterns. Members of the research team are all familiar with LoL. The first author is an experienced LoL player who has played the game's ranked mode for several years.

4.1 Data Collection

In the CSCW community, researchers have already utilized specific subreddits for research (e.g., [2,71]). In this paper, we decided to use the 'r/leagueoflegends' subreddit because it is currently the largest online forum where LoL players gather, and even Riot uses it as a channel to communicate with the community. The researchers also frequently browsed content in the subreddit because of their own interest and engagement in the game. Players' online discussions could contain rich experiences that players share in a naturalistic manner, while interview and

survey might become a temporally bounded setting that constrains what players could recount. Therefore, we deem the collection of online data valuable as a first endeavor to explore players' emotion and emotion regulation experiences. Since Riot regularly introduces fundamental changes to gameplay at the end of each competitive season to keep the game content fresh and novel, game content could be a confounding variable impacting player emotions in different seasons. Therefore, the research team decided to focus only on player discussions that happened in Season 9 (January 23 – November 19, 2019), the one closest to the time of this study.

We took an iterative search strategy to identify relevant threads from the subreddit. We utilized Reddit's API to collect threads, including posts and their comments, from the subreddit. The APIs allowed us to search posts containing specific keywords. Thus, we first needed an initial set of search keywords, which we could use to identify potentially relevant threads. As currently there is not an existing vocabulary of emotions in the LoL community reported in the literature, two researchers from the research team generated the initial keyword set by combining emotions suggested by the sport psychology literature (e.g., [45,79]), emotional words mentioned by previous studies on LoL (e.g., [50,68,83]), as well as emotions and emotive factors the research team identified in their own initial reading of 50 threads. Our initial keyword set was {anger, anxiety, shame, guilt, hope, relief, happiness, pride, tilt (severe frustration that negatively impacts the person's capacity to carry out the optimal performance), feeling, emotion, mad, burn out, depress, share, stress, rage, embarrass, exciting, pleasure, frustrate, mentality, sadness, fun, enjoy, win, and lose}. When creating this keyword set, our goal was to include not only emotions, but also specific factors that easily induce emotions such as winning and losing. Our rationale was to tolerate false positives at this stage, with the goal of being as comprehensive as possible.

The two researchers repeatedly retrieved sets of threads based on the search keywords and their variants. For each set, the two researchers read each thread to determine its relevance. Threads that are not about explicit emotional expression were removed. An example is when a player wrote "happy birthday" to an in-game character. They read relevant threads individually and mark down initial observations of emotion and emotion regulation, and looked for additional keywords that LoL players often used when talking about emotions and emotion regulation. These additional keywords (chill, disturb, disrupt, glad, community, sharing, awkward, teemo, yasuo, draven, gg ez (good game easy), steal, gank, ks (kill steal), yolo, Tyler¹) were iteratively added to keyword set and used for further searching of threads. The two researchers continued this process until they deemed that they have reached saturation [11], at which point no new information was found in the data collection process.

Through the data collection process, all the threads including posts and comments, as well as their metadata such as timestamp and upvotes were stored in the relational databases of MySQL. Upon the completion of data collection, the dataset contained 431 posts as well as their associated 35,221 comments.

4.2 Data Analysis

Below, we list our data analysis approaches for each research question. All the data analyses were led by the same two researchers who conducted data collection.

1) What emotive factors are there in League of Legends?

¹ Tyler1, a popular streamer, was once banned by Riot, and has elicited strong emotional reactions from the subreddit.

In this question, we sought to understand factors that would trigger players' emotional experiences. Since there was no prior research on this topic, we used inductive thematic analysis [12]. The two researchers each read the dataset and generated a list of initial codes individually. They then discussed their lists of initial codes, resolving disagreements while consolidating similar ideas. During this stage they frequently went back to the data to concretize the codes. Upon generating a list of codes that both researchers agreed upon, they held several discussions to generate higher level concepts by articulating their semantic and conceptual similarities and differences. We completed the analysis process upon arriving at a satisfactory thematic map with overarching themes and satisfying the standards of internal homogeneity and external heterogeneity.

2) What emotion regulation strategies do players use in League of Legends?

We drew from Gross's five emotion regulation strategies (see subsection 2.1) [29] as a priori codes to analyze emotion regulation strategies players apply on their selves, teammates, and opponents. The separation of these three populations came from the researchers' understanding of the literature and initial readings of the dataset. For each population, we conducted a deductive thematic analysis [12]. Each researcher read the dataset to assign the five strategies to ideas where players expressed about what they did to manage their emotions. However, we also allowed new codes to emerge where data did not fit into the a priori codes. Upon generating the initial lists of codes, the two researchers met to discuss agreements and resolve disagreements while comparing their lists. After this process, the two researchers held discussions to associate ideas and construct higher-level themes, and eventually generate a thematic map, using both inductive and deductive thinking.

3) How do players use emotion regulation in their competitive gameplay?

For this question, we used the labeled dataset from the former analysis where we already located all the data records of emotion regulation. We then used inductive thematic analysis [12] to analyze how players deploy emotion regulation strategies in relation to their competitive gameplay. In this research question, our goal was to understand emotion regulation in the particular eSports gaming context of League of Legends. We repeated connecting emotion regulation activities to the contexts where those activities were situated. We also inductively aggregate contexts we had located till we reached a sound thematic map. Our final overarching themes are emotional self-care and emotional leadership.

4.3 Ethics Statement

The study was approved by the IRB board at our university prior to the data collection and analysis processes and deemed to contain no more than minimal risk to people. The data have been stored securely in our password-protected computers and only accessible to the research team.

The research team also acknowledges that the IRB approval might not keep up in full with the current ethical recognitions and standards within the HCI community [69]. While recognizing various concerns of using the so-called publicly available data such as the lack of informed consent and community-level harm, Fiesler suggested that these issues be framed within "the broader context of the benefits of scientific discovery" [19]. The implications are that the researchers themselves shall be sensitive and reflective in terms of how they interact with the data and what they use the data for. In this particular research, concrete measures were carried out, such as the removal of personally identifiable information such as user account names, as well as the rephrase of quotes to reduce their searchability. In addition, the

researchers on the team held discussions to deliberate the (possible) harms and potential benefits of this research. We reasoned that 1) a nuanced report of the range of emotions LoL players have experienced would help depict a fuller image of the LoL community to the outsiders, especially when the LoL community is often cited for having a toxic culture [61]; 2) the outcomes of this research hold important implications for how technologies could be designed and policies could be made for the wellbeing of eSports players especially professional players, given that lots of measures and policies with similar goals have already been implemented in physical sports; 3) the scientific discoveries of this research could advance our existing understandings of emotion and emotion regulation in eSports gaming and virtual teams more broadly.

4.4 Limitations

In this study, we only collected data containing explicit emotional expressions where players clearly stated their emotions or emotional states. Our analysis could not account for implicit emotional expressions which are prevalent but also difficult to recognize and code in a reliably way through manual coding. Future research on emotion regulations in eSports gaming could consider computational linguistic approaches which could help reveal different patterns of emotion and emotion regulation.

Compared to common empirical methods such as interview and survey that rely on recollection, online data has the advantage of documenting players' natural expressions of their emotional experiences and related thoughts. However, interview and survey are beneficial to go in depth about the interconnections between emotive situations, decisions, emotions, and actions about one player. For instance, a player having a rough day might be easier to be frustrated in game. Our online data might miss such nuances. Thus, future work could use diverse data sources to verify our findings.

5 FINDINGS

A wide range of factors trigger LoL players' emotional responses, with some similar to physical sports, while others uniquely conditioned in competitive gameplay. Players' emotion regulation strategies largely resemble the categories of physical sports, with one exception. Their emotion regulation strategies revolve around emotional self-care and emotional leadership.

5.1 What emotive factors are there in League of Legends?

We identified four primary emotive factors that would elicit player emotions. They are achievement, teammate, game design, and social identity. These factors are not mutually exclusive and can work together to induce player emotions. This set of findings resonates with previous game literature on how video games can evoke or affect our emotions [3,41]. Its contribution lies mostly in reporting emotive factors in the eSports context of LoL.

5.1.1 Achievement-related situations

Achievement-related situations are moments where players anticipate whether they would reach or fail to reach certain achievements. Here the notion of achievement resonates with the categorization by Yee [86] to include players' in-game advancement such as their progress and accumulation, mechanics such as numbers and optimization, as well as competition such as challenging others and provocation. An achievement could be making an impressive move in

game, winning a match, or reaching a desired rank. Personal performances lower than expectation could trigger negative emotions such as frustration and anger. Here is an example:

I noticed that almost every game I played the worst. This made me really angry and sad, and I wanted to quit. Also I was playing a friend, so I felt really bad for holding them back.

Meanwhile, players could experience positive emotions such as happiness and pride when they made an excellent play in game. Many players made short videos of these moments and shared them on the subreddit while stating their pleasant emotions.

Players also associate emotions with short-term achievements or unfulfillments. For instance, a player wrote:

I have been playing alone for the whole day and lost many games. It is really frustrating to know that I have lost all the hard work and grind.

Like the player described, one match could have high stakes: it takes considerable time and energy, and for each loss a player needs to have an additional win to keep the same rank, and even more matches if the player wants to advance. Therefore, even playing a single match could be anxiety-inducing. A player wrote that “*I have moments of anxiety while queueing up for solo/duo in ranked mode.*” Queueing up here means to clicking the ready button and waiting for a match to be arranged.

5.1.2 Teammate-related situations

Teammate-related situations are moments where teammates’ in-game performance or behavior trigger emotions. Players wrote about how their teammates’ poor performances caused frustrations. Here is an example:

The jungle role tilts me so much. It is so frustrating when my teammates don’t help me even when I’m being invaded.

In this quote, jungle is one of the five roles. Tilt in LoL generally refers to severe frustration that negatively impacts the person’s capacity to carry out the optimal performance. The player expressed their frustration when teammates did not meet their expectation to help them. Another player described how anger could initiate a vicious cycle when vented against teammates:

I get flamed by teammates, I usually could not control myself. I have to type back. I know it is sad but I can get really tilted. This usually leads to a back-and-forth which makes the atmosphere even worse.

As the player described, intrateam conflicts like interpersonal insults often engender negative emotions among players. But players could also obtain positive emotions as they interact with their teammates. A player wrote:

I really enjoy playing with chill teammates. The game could be even bigger if players just tried to enjoy the game.

“Chill” describes an easygoing attitude not easily tilted or offended by in-game situations. In this quote, the player described how they could derive pleasant emotions from playing with such teammates.

5.1.3 Game design-related situations

Game design-related situations concern the mechanisms or content of the eSports game. Compared to physical sports, eSports games like LoL change at a much faster rate in terms of its rules, optimal strategies and tactics, and interactions. LoL for example has nearly 20 major patches in a regular season. The arrivals of new patches usually trigger emotional responses where players respond based on how the patches would affect their own gameplay. For

instance, players could be happy or sad when an in-game character is strengthened or weakened:

I am glad that Nunu is finally nerfed... They finally took care of this champion.

Nerf refers to weakening an in-game character, while buff refers to strengthening. The player perceived the character Nunu as strong and unbalanced. Thus, the player expressed a pleasant emotion upon learning that balance was restored on the character.

Players also share emotional responses when perceiving fairness issues in game design. LoL has multiple complex systems that seek to generate “fair matches” for millions of players in an efficient way; but these systems are nontransparent and sometimes confusing to players. Therefore, players’ perceptions of unfair matches could easily trigger negative emotions like frustration and tilt. Here is an example:

It is unfair. It is fine if my opponents are stronger than me. Nothing is tilting about that... But it is really tilting when I am clearly much better than my opponents, but my teammates are at much lower ranks. This is especially frustrating when it happens in my promotional matches.

The player described a situation where his teammates’ ranks were significantly lower than his opponents and concluded that this was an unfair match. Unfairness in game design, to the player, rendered them powerless.

5.1.4 Social identity-related situations

Social identity-related situations are moments where players experience emotions as they identify or disassociate with a community or a group based on their membership. For instance, players could experience positive emotions when they identified as an LoL player. Below is an example:

My jaw dropped when Riot teased the MMORPG (short for massively multiplayer online role play game). They gave everything the community wanted and more... Never been more proud to be a part of the League community. They really outdid themselves this time. Many, many thanks to all the Rioters!

The player referred to the 10-year anniversary celebration on October 15, 2019 where Riot announced multiple new lines of products in development such as MMORPG, card game, and anime. They expressed excitement and pride as they identified with the game and the community more.

5.2 What emotion regulation strategies do players use in League of Legends?

When players seek to manage their own emotions, they use all the five strategies (situation selection, situation modification, attentional deployment, cognitive change, and response modulation), plus a new one called social interaction. In teammate emotion regulation, two types of emotion regulation strategies are used: situation modification and attentional deployment. This is mostly because other three strategies, including situation selection, cognitive change, and response modulation, are focused on individual cognitive processes. Therefore, they do not easily apply to the team scenario where one seeks to affect their teammates. In opponent emotion regulation, we only found one type of emotion regulation that is situation modification. This is because all the communication and actions by one player can be considered to alter the situation of opponent(s). The emphasis is on altering situation, not specific goals of affecting opponents’ attention or cognitive process.

5.2.1 Emotion Self-Regulation: Situation Selection

Situation selection is in alignment with Gross' definition that the person approaches or avoids certain situations for emotion regulation. If players anticipate that certain situations would incur negative emotions, they can proactively avoid them. "Taking a break" is among the most frequent strategies mentioned by players. Here is an instance:

When you're tilted, just don't play. Watch videos, listen to music, go out for a walk... Just take a break... So many players keep playing when they are tilted and they just keep losing the game... Trust me, don't play the game when you are angry.

The player identified that playing game itself could be an emotional situation. Therefore, the player's suggestion was to avoid this situation to manage negative emotions.

5.2.2 Emotion Self-Regulation: Situation Modification

Situation modification refers to the active modification of elements in a given situation. Different from the strategy of situation selection, in situation modification players do not seek to completely reject an ongoing situation or enact an entirely new situation.

Players stressed the preparation of peripheral elements in their gaming situation. An instance is:

I took a few steps to help alleviate my anxiety... I'd wrap myself in a blanket to keep warm and relax, put on some soothing music...

In addition, LoL affords various technological ways of modifying situations. Lots of players mentioned how they maintained emotions upon encountering undesired teammates. A player wrote:

If my teammates or opponents say aggressive things or flame anyone or boast, I just mute them completely, including pings, emotes, and text. I then report them at the end of the match. Sometimes I feel like I'm playing with bots after muting them, but I am having fun.

LoL supports players to choose between two chat channels: Team Chat that only displays team communication, as well as All Chat that shows all the teammates' and opponents' messages. The "mute" function allows players to no longer see any verbal or nonverbal communication from any single player, the whole opponent team, or all the players in a match. In the above quote, severing verbal and nonverbal communication with others became a way for emotion regulation.

5.2.3 Emotion Self-Regulation: Attentional Deployment

Attentional deployment is to shift focus onto a different goal or aspect of the game. Some players find that focusing too much on achievements could cause negative emotions. For example, a player suggested:

Set a goal every match. Every match I give myself small goals such as outfarming my opponents or ambushing an enemy. These little goals help me feel better, even if we don't win the match.

The player actively shifted their focus from the outcome of a match (win or loss) to smaller and more accessible goals. In this way, the player could manage to overcome negative emotions associated with losing a match, by identifying smaller achievements.

The strategy of shifting focus onto smaller achievements was commonly used when players anticipated a loss during a match. A player explained:

I just let go of the fear of losing, and focus on playing... Even if I'm losing, I can tell that I'm getting better. Making improvements means a lot to me.

In the situation of a losing match, the player refocused on how they could improve their gaming skills, and subsequently adjusted their emotion. Such strategy is to shift focus from external factors such as match outcome and teammates to internal factors like individual skill.

5.2.4 Emotion Self-Regulation: Cognitive Change

Cognitive change involves assigning new meanings through reinterpretations, which differs from attentional deployment that is to focus on a different aspect of a situation. When performing cognitive change, players usually reflected upon their initial internal reactions to a situation. One common strategy is to reevaluate the role of the game in everyday life. For instance, a player noted:

Take a couple deep breaths and realize it's just a game.

“it’s just a game” is a common way to lower one’s expectation and evaluation of LoL upon anticipating negative emotions. This is to reframe the situation as less important than currently experienced so as to mitigate negative emotions.

Players could also assign new meanings to their teammates for emotion regulation. For instance, one player said:

If someone is flaming, it is because they are horrible persons. It is not because of you. So don't take it personally.

In this quote, the player talked about how to overcome negative emotions of encountering toxic teammates. The strategy was to reframe the frustrating situation as teammates being horrible. In so doing, the player would not need to feel bad for themselves.

5.2.5 Emotion Self-Regulation: Response Modulation

Response modulation is to directly manage how one responds, such as how one expresses their emotions. It is common for players to lower the intensity of their negative emotions by taking a break. Here is an example:

Intense games are highly enjoyable. They could be stressful and exhausting. I'd take a break for at least 15 minutes.

Players additionally described how they regulated their emotional expression. Here are two instances:

If you are mad, don't type angry stuff... Those will make you even angrier... Hide your tilt.

I might type something but would erase it before actually hitting the enter key and sending it. I only use the chat to communicate about the match or to be nice.

The players discussed how to avoid using the communication channel for negative emotional expression. This is for emotion self-regulation. However, we discussed earlier that negative emotional expression from teammates could trigger negative emotions. Therefore, the player was also engaging in interpersonal emotion regulation by not adding negative emotion in team chat.

5.2.6 Emotion Self-Regulation: Social Interaction

We additionally pointed to social interaction as a type of emotion regulation strategy that has not been discussed by the sport psychology research. This describes how LoL players turn to other people in the LoL community for emotional support. Different from physical sports, LoL players enjoy a large community of people sharing similar interests and experiences and can use digital platforms to readily offer emotional support. Players highlighted how friends could help emotion regulation. A player wrote:

Friends don't care if you do well or badly, as long as you are having fun with them. Just laugh it off and do your thing... We are your friends, and we don't care if you suck...

In the above quote, the player talked about how friends could help engender pleasant emotions. Players additionally discussed how friends in game could be a source of emotional support:

My friends helped me a lot when I was super frustrated from a losing streak. We just chatted in discord and even went to play another video game title to relax.

Players also acknowledged the value of the LoL community in helping them manage emotions.

5.2.7 Teammate Emotion Regulation: Situation Modification

Situation modification is the most common category of strategies we observed in teammate emotion regulation. For example, players talked about warming up the teamwork atmosphere as a strategy to set a positive tone when five strangers were arranged together and first met for a match. A player wrote:

I recently began every ranked match by saying "Hey team, good luck have fun, we got this! :)" I hope this will help keep my teammates' mood up and play better.

The player believed in the benefits of using friendly messages at the beginning of a match. The friendly messages were new elements actively added into situations that could discourage negative emotions while bring up positive ones.

Players also mentioned using encouraging words to engender positive emotions in team communication. An example is:

I typed "gj" or sent out an emote whenever my teammates got a kill or an objective. This is effortless but could encourage them.

Emote is a sticker that players could display above their character for a short period, visible to both teammates and opponents. The player talked about how they modified the situation by adding in their positive response to their teammates' small achievement in game.

Lastly, a few mentioned apologizing, to claim responsibility for a mistake and thus appease the potential anger of their teammates. A player explained:

Apologizing costs nothing but eases a lot of tension within the team. It's the worst if you deny and argue with your teammates, and all of you ended up tilted... Just apologize and it makes everything easier.

Apologizing was to alter a potentially negative situation by modifying how one is perceived by other teammates. Like in-person situations, apologizing could ease interpersonal tensions.

5.2.8 Teammate Emotion Regulation: Attentional Deployment

Players resort to attentional deployment if their teammates are experiencing negative emotions not productive for teamwork. For example, they stressed the importance of supporting teammates when a teammate is experiencing unpleasant situations. For instance, a player wrote:

Our top was harassed by the jungler because the top was behind in cs and died a few times. The top was apparently tilted. I told the top he was doing fine... and that he should mute the jungler and chill and play... We eventually won the game.

Top and jungler are the player's two teammates. The player observed that the top teammate was experiencing negative emotions and possibly did not focus on playing the game. Thus, the player verbally supported the top player to shift attention to their own gameplay.

5.2.9 Opponent Emotion Regulation: Situation Modification

When players attempt to regulate their opponents' emotions, they mostly seek to inflict negative emotions and hinder their performances. These attempts are conscious moves that are intended to be felt by the opponents. Thus, the attempts could be broadly viewed as modifying the situations of their opponents, where players serve as influential elements of these situations. Functionally speaking, the actual strategies we found are aimed at disrupting opponents'

attentions and cognitive thinking and inciting negative emotional expressions. For example, a player talked about taunting as a strategy:

Whenever I made a successful move and caused losses on the opponent team, such as stealing their objective, invading, or killing an opponent, I will spam an emote. This is tilting.

The player wrote about how they would capitalize on the opponents' negative experiences by taunting them. In so doing, the player expected to trigger the opponent team's negative emotions. Non-verbal communication techniques like emote here played a mediational role in such interpersonal emotion regulation.

Players additionally noted how certain gameplay strategy could be emotive too. An example is:

If I'm laning against a Yasuo with bad stats, I'd ask my jungler to camp him and kill him repeatedly. This often ends up in the Yasuo flaming at his own teammates.

Yasuo is a character in game. The player talked about how they would intentionally create frustrating situations for the Yasuo player, in order to inflict negative emotions on the player and even fuel conflicts within the opponent team.

5.3 How do players use emotion regulation in their competitive gameplay?

Players use emotion regulation in two primary ways: emotional self-care and emotional leadership. The first endeavor is carried out inwards to take care of players' own emotional wellbeing, while the second is to actively influence their teammates' emotional state, for the sake of winning competition in League of Legends.

5.3.1 Emotional Self-Care

Emotional self-care manifests as players' conscious efforts in identifying and coping with emotional challenges in the game. They recognize that competitive gameplay in LoL entails multiple emotive factors at work, and that their emotions must be monitored and managed in a methodical way. Players generally pride the effective control of emotions. Here are two examples:

You don't let a game decide your emotional state.

Normal people won't be upset at their teammates not doing well. Only emotionally immature players decide to be negative and rage in chat.

A common theme among these two quotes is the cautious and somewhat contemptuous attitude towards LoL as a game. In this context, a game framed as merely an object or a tool for humans to use; and an inanimate object should never be able to impact a person's emotion, unless the person is "emotionally immature." Such sentiment is common in our dataset when players responded to questions about emotion regulation in LoL. It suggests players' strong desire to sort out the relationship between their emotions and the game.

Meanwhile, players acknowledge the competitive aspect of LoL gameplay. One player noted:

We encounter countless occasions of competition in our life. We must learn to control the stress and anxiety that come with it. The first occasion is oftentimes the academia.

In the above quote, the player acknowledged how the competition embedded in LoL offers a chance for players' emotional development against competition.

Emotional self-care involves reconstructing the meaning of playing LoL in terms of its significance and relation to other life priorities. Meaning reconstruction could be viewed as a meta-level cognitive change emotion regulation strategy. Many players admitted being highly emotional prior to their adoption of meaning reconstruction. Here is an example:

I used to get very angry when I played too much League. My mood remained bad for hours even after finishing the game, and this worried my friends. Then I realized that playing League is not my life priority. Or at least it is not that important. Now I'd just close the client and do something else with my life.

The player's self-description of their past echoes previous research that among inexperienced athletes, intense competition is often associated with negative emotions such as anger and stress [32]. In a similar vein, the player described how they transitioned from being inexperienced with handling competition-induced emotions to being experienced. A key moment, as the player noted, was to reconstruct the meaning of playing LoL in their life — deprioritizing it was to regard it as less consequential than other activities in their life. Such act of meaning reconstruction is considered a primary way of coping with stress [58], and the emotion regulation strategy of *cognitive change*. It is how players reconsider the significance of playing LoL in relation to their personal life. Subsequently, the player could deploy the strategy of *situation selection* by closing the game client and avoid future emotional disruption.

Meaning reconstruction also happens at a smaller scale, in relation to an ongoing match where players are experiencing emotive situations. A player wrote:

Support main here... If my AD starts to be really annoying... and nothing I say or do could calm him down, I will mute him and focus on enjoying the game in other ways, like starting to roam or helping other teammates.

The player described their way of assigning new meanings to what they ought to do in an ongoing match, or more specifically the strategy of *attentional deployment*. Although Support and AD, two roles in a team, are supposed to stay together, the player actively sought alternative ways of playing the game. By setting new goals and actions in game, the player was able to remain unaffected by the AD player. In addition, the above two examples showed that meaning construction could be done preemptively to eliminate sources of negative emotions or reactively to reduce the impacts of negative emotions.

However, many players acknowledged that meaning reconstruction during intense gameplay is a difficult task. One player noted:

I try my best to play with no emotions. Tilt means I will play poorly or be mad at my teammates. But it is very hard because in the end I still want to win and am emotionally involved.

Here the player highlighted the challenging part of cognitive process reigning over emotions. Even as players are fully aware of the downsides of negative emotions and their goal to be emotionless, meaning construction in a fleeting moment still proves difficult. Players are constantly wrestling with the tension between their negative emotions that come with intense competition and their goal of containing negative emotions.

Therefore, emotional self-care is seen as a constant learning process instead of a one-time effort. A player explained:

We have to make efforts to think about what is the best course of action to avoid being tilted which leads to taking bad moves and blaming teammates. We need to keep thinking and challenging our own instinctual tilt-related thoughts.

Recognizing that emotions are “instinctual” demonstrated how the player drew a distinction between how one thinks and how one feels. Emotional self-care entails constant introspection where players examine their own thoughts and make corresponding changes.

While emotional self-regulation focuses on concrete acts that could regulate emotions in a specific moment, emotional self-care concerns a holistic trajectory where players make efforts to cultivate their emotional wellbeing. Therefore, there is not a final state to reach when players

engage emotional self-care. Rather, emotional self-care is a constant practice that players need to carry out.

5.3.2 Emotional Leadership

Emotional leadership describes conscious efforts that players make to influence their teammates in light of emotions. Emotional leadership manifests as active interpersonal actions to mitigate emotional challenges or facilitate positive emotions within a team. Emotions are perceived as critical to teamwork in LoL. Importantly, emotional leadership is a choice that certain players consciously make to manage their teams' emotions. For instance, a player explained:

Everything could go downhill if someone on your team is tilted starts to rage. Suddenly no one wants to work together anymore... You have to care about your teammates' emotions because League is a team game.

The player described an undesirable situation of teamwork being harmed by negative emotions and highlighted the importance of attending to teammates' emotions. In a similar vein, another player added:

It's like once I press play, I'm suddenly responsible for the emotional stability of the rest of my team.

Vigilant players are emotionally active in the interpersonal context of LoL. They are usually proactive in emotional communication prior to actual gameplay. A player said:

Don't stay silent when you are selecting champions. You can start talking to your teammates. You can say funny or even stupid things to lighten their moods... if everyone thinks you are weird, you are successful at breaking the ice! Then both you and your teammates will enter the game feeling pretty good.

The player advised against silence in team communication and advocated a proactive role in shaping the collective emotions of the team. The strategy the player promoted is a *situation modification* one, denoting an active effort to modify the emotive situation. This was echoed by many other players on the forum. Another example is:

Keeping your teammates in a good mood helps you win way more than a lot of things. I won't prop someone up if they're losing hard, but It's important to realize how much of a boost in morale it is for your team to get objectives and such.

Proactive emotional communication is mostly preparatory prior to the actual gameplay. Emotional leadership also takes effects upon emotive situations, including both positive and negative ones. Players emphasized compliment as beneficial even in positive moments. A player explained:

I never type unless I'm asking for swap of picks or "cheering" my team when they do something good. Players like to get recognized for a good play or good solo kill throwing out a nice or some shit will only boost ur team being positive.

If emotional communication in positive moments appear accessory, then emotional communication in adverse situations takes a pivotal role. Adverse situations include both gameplay-related failures and frustrations as well as negative team emotions. Here are two examples for gameplay-related failures and frustrations:

As a matter of fact, when people died very early, I encouraged them and say dumb shit like "shake off that death we'll get em back" and stuff like that. I've actually noticed a lot more comeback wins since I started with the positive banter.

Instead of flaming the person who's doing poorly, give him/her some tips, encourage him/her to not give up and play his/her best despite a bad start.

Facing adverse situations, players sought to lend emotional support and spread positivity through emotional communication (e.g., “positive banter” and “encourage”). The player noticed the actual effects of their emotional communication.

Emotional communication also matters when players themselves are the cause of adverse situations. A player admitted:

Don't need to apologize excessively. Just type "shit mb" will probably do and make your teammates much less tilted. They won't be angry at someone who genuinely apologizes and just tries their best to win the game.

Negative team emotions, where the whole team is experiencing negative emotions, are among the most challenging situations in League of Legends. In these situations, emotional leadership becomes most evident where certain players could stand up and lead their team. A player wrote:

When winning, I try to not talk or do the bare minimum. When losing, I try to encourage everyone to change the objective of the game from "winning" to "pissing them off one last time". This alleviated the tension in most cases and sometimes I've even seen my team come back from the ashes.

The player in this example demonstrated how emotional leadership rose to an impactful role when necessary, to take care of the negative team emotions. The actual emotion regulation strategy that the player brought up is *attentional deployment*. The actual work the player needed to do involved overcoming their own negative emotions, identifying plausible strategies, and articulating them in team communication. In a similar manner, another player described a match where they were able to lead:

I just finished a game, where a guy lost his shit and left the game, because he was mad, triggered, spammed ff, etc. Guess what? WE WON THE GAME 4v5. The game was odd, because we had some spicy picks, and some situations were wacky, mostly in decision making. But i just asked my teammates to follow my lead, and we won.

Emotional leadership also entails strategically impacting opponent teams' emotions. In fierce competition, competing teams could strive to bring down the opponent team's morale. Inter-team emotional communication is used to induce negative emotions within the opponent team. A player explained:

I think of it more of a mental battle. Team with more mental frustration usually implodes.

Thus, experienced players can capitalize on their knowledge about team emotions and cause frustrations within their opponents, similar to teasing and taunting in physical sports like basketball or soccer. Another player highlighted how they usually performed this strategy:

As a form of psychological warfare on the opponent, I'd trash talk the opponent before the match. Like, I could tease the opponent if he has a low win rate on his champion.

In doing so, the player employed the situation modification strategy, to bring in emotive factors into the situation of the opponent player.

6 DISCUSSION

We reported emotion regulation (ER) in the competitive gaming context of League of Legends, detailing players' concrete ER strategies and situating ER in competitive gameplay. The emotive factors are triggers of players' emotional experiences. Cognition and emotion are related but distinct mental processes [59]. Emotions can occur beneath the consciousness level (cognitive process), so it is not always easy for a player to identify and articulate their experienced emotions. The awareness of emotions allows one to utilize ER strategies.

We pointed to commonalities and differences between LoL players' ER strategies and those in physical sports [56]. Mostly, LoL players' ER strategies include not only the five key strategies proposed by Gross [30], but also social interaction. Different from athletes who usually belong to a small group of people with similar interest, LoL players enjoy emotional support from a much broader community with shared interests and similar emotional experiences. The five ER strategies are defined by psychologists based on the five distinct mental stages of emotional development, from a situation triggering emotion to an emotional expression. However, we found that the actual ER actions that players perform could be a mix of several ER strategies. For example, upon encountering a toxic player, a player could try mute the toxic teammate (situation modification) and focus on a new in-game goal (attentional deployment). The mixes of ER strategies are best understood in terms of their orientations: self or others. When one utilizes their cognitive efforts inwards, they take care of their own emotions (emotional self-care). When one utilizes their cognitive efforts outwards, they seek to manage other people's emotions (emotional leadership). Based on these findings, we discuss a situated understanding of emotion regulation, how digital technologies mediate emotion regulation in LoL, as well as how emotion regulation constitutes an important expertise in eSports gaming.

6.1 A Situated Understanding of Emotion Regulation

We started the paper from a psychological interpretation of ER, drawing from rich sport psychology literature on athletes' ER strategies (e.g., [32,52]). Yet the empirical evidence has amounted to a situated understanding of ER. We consider ER as practice, drawing from the practice lens [53]. ER practices are socially situated in the context of LoL — players perform ER not in a vacuum, but in networks of people and technologies. A wide range of human and non-human actors could be emotive. For instance, our findings showed players' emotional reactions to their teammates' performances, the game platform's content, as well as the community.

Sport psychologists have discussed whether to study emotion and emotion regulation together or separately in physical sport [66]. Our research suggests that emotion and emotion regulation are intricately connected at multiple cognitive, physiological, and affective levels. Disentangling and delineating each's realm would be conceptually and methodologically challenging. First, when study participants report their emotional experiences in either interview or online data, they are already employing emotion regulation strategies (response modulation). Second, Emotion and emotion regulation are closely intertwined. For instance, one player's negative emotion could spread to a teammate; A second teammate might try ER strategies, which could either worsen the negative emotion and subsequently frustrate the second teammate, or mitigate the situation and restore the team emotion.

Emotion and emotion regulation do not necessarily have negative connotations. Isbister already argued that games do not lead to emotionally numb and antisocial gamers and can evoke strong, positive emotions [41]. We similarly reject the simplistic assumption that competitive gaming makes players angry who become more likely to inflict violence, online and offline. Rather, we see regulation as a neutral verb, meaning to exert agency and conscious efforts to manage emotions. First, negative emotions can have benefits. For example, we showed how players acknowledge the learning opportunity yielded by competition as they exercise emotional self-care. Second, emotional support, a form of emotion regulation, seeks to promote positive emotions or reduce negative emotions among others. This is why players devised social interaction for emotion self-regulation. Third, negative emotions can be beneficial in building

teamwork. Several players mentioned that they would step in and play a leadership role only when their teams experienced negative emotions. Similar phenomena were also reported in physical sports [24].

Different from previous CSCW research that has focused primarily on long-term teams such as guilds in World of Warcraft [4,6], our study is about the socio-emotional dimension of temporary teams. Temporary teams are rich in both social interactions [47] and emotional interactions. Our findings included how players developed emotions from their interactions with the game, expressed emotions through their social interactions, and sought to manage emotions in social interactions.

Additionally, we showed that the temporary team setting yields unique emotional challenges to players. On the one hand, they encounter and struggle to manage negative emotions such as anxiety and frustration induced by the lack of common ground with strangers. On the other hand, players might need to carry out extra emotional work to manage their teammates' and opponents' emotions. Compared to emotional leadership in long-term teams [4], emotional leadership in temporary teams is emergent because there are no designated leaders, and has unreliable effect because players can attempt but cannot reliably predict strangers' reactions.

6.2 Technology-Mediated Emotion Regulation

Extending previous research exploring emotions evoked by games [3,9,41], we argue that eSports gaming technologies offer categorically richer emotional experiences than physical sports: People can experience emotions related to socializing, teamwork, coordination, and communication, similar to physical sports. In addition, game design as an emotive factor in our findings could also evoke player emotions that is rare in physical sports that have consistent rules. In addition, we showed that the massive player community allows players to share positive emotions, such as LoL players sharing positive emotional experiences on the subreddit. The player community also offers emotional support to players who experience negative emotions, as demonstrated by our findings.

The team-based competitive setting of eSports gaming gives rise to deliberate ER actions upon teammates and opponents that are implausible in physical sports. In physical sports, the physical proximity allows players to easily sense or observe their opponents' emotions or their opponent team's emotion regulation activities [55]. In LoL, emotional expressions are technologically mediated, and players can make conscious choices about whether to reveal emotions to others. Our findings showed that players preferred to use Team Chat to resolve intrateam conflicts, as using All Chat would expose such information to the opponents. On the other hand, they use All Chat and Emote to evoke negative emotions on their teammates. The term used by one player, "psychological warfare," highlights the value of emotion-related information in the intense competition of LoL. This goes both ways: on the one hand, players desire more information about their opponents' emotions; on the other hand, they try to conceal their own emotions to the opponents.

The communication channels in LoL support the core mechanism of ER — leveraging cognitive processes to reign over emotions. Players rely on those communication channels to carry out ER work. Our findings showed numerous instances where players used text-based chats or emotes for emotional expression with their teammates and opponents. They must control their own negative emotions (if any) and verbalize reasonable and convincing points that can persuade emotionally affected teammates, to create a "positive atmosphere" [47]. All these efforts require players' cognitive processes in analyzing and framing the situation and

creating a narrative that is acceptable to emotionally affected teammates. Our findings included instances where a player wanted to redirect the attention of their emotionally affected teammate.

However, existing design support for emotion regulation is limited. LoL offers limited ways for players to either share their positive emotions or control their negative emotions. At the individual level, many players' ER practices revolve around disengagement, similar to how players cope with streakiness in LoL [50]. Our study showed that when they experienced stress and burnout related to the competitiveness of the game, they disengaged from the game, frequently by taking a break. When they encountered a toxic teammate/opponent/team, they disengaged from communicating with them.

At the team level, ER relies on emergent emotional leadership. The current technological solution of letting players to completely cut off communication may have ramifications (i.e., the mute option). Consequently, current design solution to this emotional challenge is at the expense of sociality. Technologies for opponent emotion regulation present another conundrum: On the one hand, the game design of LoL needs to do more to support ER and especially positive emotions. On the other hand, any ER technologies such as emote could be strategized by players to induce or exacerbate negative emotions among their opponents. A balance between these two ends remains challenging.

6.3 Emotion Regulation Expertise in eSports Gaming

Previous game research has found two forms of expertise in LoL: 1) Mechanics that denotes how players physically interact with game mechanics such as maneuvering keyboard and mouse together; and 2) Metagame that denotes general knowledge about in-game strategies, game updates, and teamwork [16]. Our study points to emotion regulation as a third form of expertise that has been understudied. Our findings have already showed the importance that players have attached to emotion regulation. Because intense competition is associated with intense emotional experiences which in turn affects player performance, players have the need to acquire more skills and knowledge in regulate emotions in the eSports gaming context. Many of the player quotes mentioned how they ought to learn ways to regulate their emotions.

ER expertise's emphasis on emotion differs from mechanics' focus on physicality and metagame's focus on cognition. But ER expertise is also linked to players' mechanics and metagame expertise. First, emotions are associated with player mechanics. Sport psychologists already demonstrated that athletes' emotions are correlated with their performances [44]. This is also echoed in our findings, such as player discussions of tilt. Second, as cognitive processes take control of emotions, players' accumulated knowledge about emotion and ER could become new forms of metagame expertise. For example, if a majority of players agreed that it is important to initiate early, positive communication, such action would become part of the metagame knowledge.

Like physical sports where inexperienced athletes struggle to regulate their emotions [75], LoL players also need to cope with negative emotions caused by in-game failures and frustrations. Different from prior work that stressed how game design can evoke player emotions [41], our work showed that players are not passive consumers of emotional content, and possess agency in recognizing their own emotions and developing expertise in ER. ER expertise is learnable. Our findings showed how LoL players gradually acquire ER expertise through their engagement in ER practices, so that they become better at recognizing the emotions that they are experiencing, as well as recognizing and managing the emotions their

teammates are experiencing. Gamers' learning of mechanics and metagame involves locating learning resources such as online guidelines and tutorials and a community [16,17]. This also holds true for learning ER expertise. For instance, LoL players visit online venues such as the `/r/leagueoflegends` subreddit to share emotional experiences and seek ER suggestions.

6.4 Design Implications for Emotion Regulation Technologies

LoL players make use of both verbal and nonverbal communication channels to perform situation modification. This suggests rich design opportunities for supporting ER. In a technological context, there are various ways people might be able to communicate with each other. Even simple action could be used to communicate a message to other people. Therefore, it is first important to be mindful of the emotional consequences of interaction and action. Second, in line with channel expansion theory [13], diverse communication channels could be designed to allow rich emotional communication. For instance, visual forms of communication such as emoji, emoticon, and meme have already become prevalent on social media [76,85]. These strategies could be considered in the eSports gaming or virtual team contexts.

Digital platforms like LoL could also consider ways of fostering newcomer socialization, especially in terms of emotion regulation. For instance, specialized social venues could be designed to allow players to share emotional experiences, seek emotional support, and learn emotion regulation skills. Currently LoL players could also come to the subreddit, a third-party online community, to seek such help.

We also resonate with Costa et al.'s suggestion that technologies could help people reflect about their emotional experiences by providing feedback [15]. Right now, the game client does not detect or document player emotions. The designers could consider mechanisms that could detect emotional languages used by players, and provide in-time interventions.

Lastly, we consider distributed emotion regulation. We found many interpersonal ER strategies, but almost all of them were initiated and managed by players individually instead of collectively. For instance, players mentioned how they themselves needed to exert efforts to calm other teammate(s). This points to opportunities of considering what are the ways of enabling distributed emotion regulation, where technology could help two or more players could work together to manage emotions. A first step is to reframe the interpersonal ER strategies we discovered in collaborative terms. For example, a collaborative way of warming up the communication atmosphere is to design humorous messages at the beginning of a match to uplift the team emotion and possibly engage the team in chatting before the match becomes intense. A collaborative way of verbalizing strategic goal is to provide strategic suggestions at critical moments in a match to facilitate a team to refocus.

7 CONCLUSION

Drawing from the sport psychology research on emotion regulation while considering the unique context of eSports gaming, we reported LoL players' rich emotional experiences and emotion regulation practices in the eSports gaming context. eSports gaming engenders intense competition and subsequently intense emotional experiences. We call for a situated understanding of emotional regulation that differs from the traditional psychological interpretation.

Much more research should be done to understand eSports game players' emotions and emotional wellbeing. For instance, technical approaches such as computational linguistics could be employed to understand the linguistic patterns of emotional expressions in the subreddit, as

well as how those linguistic patterns are related to our findings. The situations and emotion regulation strategies in LoL could be examined in other eSports games such as DOTA 2 and CS: GO to cross-compare findings and yield more generalizable results. Novel technologies such as wearable devices with sensors could be used to detect eSports players' physiological responses and correlate them with their emotional responses, or to facilitate their reflections on their emotional experiences. Large scale, longitudinal studies could be deployed to understand eSports game players' emotional developments, identifying general patterns of community emotions.

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