

You Are Tilted!: Leveraging Tabletop Gaming to Manage Tilt and Strengthen Team Dynamics in Esports

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Tilt, characterized by heightened frustration, is a prevalent issue in esports, significantly impacting team dynamics and player well-being. Traditional Human-Computer Interaction (HCI) solutions often focus on individual strategies, overlooking the team-based nature of esports. This study introduces “TILTED”, a tabletop game co-designed with youth esports players, aimed at fostering open communication and empathy to collectively manage tilt. Findings from four user testing sessions with collegiate esports teams reveal that team-based interventions like “TILTED” can enhance team cohesion and provide effective strategies for emotional regulation. The game facilitates understanding and empathy among teammates for managing emotions and maintaining a positive team atmosphere. Our research underscores the importance of resetting strategies and Shared Mental Models in helping to mitigate tilt and offers design implications for future team-based interventions to enhance team dynamics and tilt management strategies as a team.

CCS Concepts: • **Human-centered computing** → **User studies**.

Additional Key Words and Phrases: Esports, Mental Health, Tilt, Team-based Intervention, Team Dynamics, Tabletop Game, Youth Players

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1 Introduction

Humans are naturally social and thrive on interacting and cooperating with others. Our social interactions, from family connections to professional networks, highlight the importance of group activities. However, bringing together people with different personalities, backgrounds, and beliefs can be challenging and may lead to misunderstandings and conflicts [34]. These challenges mainly arise from a lack of mutual understanding, which can disrupt group harmony and negatively impact both individual mental health and the overall well-being of the group [39, 48]. Conflicts within a group can cause stress, burnout, aggression, and even lead to members leaving the group [26].

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These issues of team dynamics, inter-personal conflicts, and mental health are particularly pronounced in the realm of esports (electronic sports). Esports as competitive video gaming (often in teams) requires cognitive effort and focus over a long period of time [25]. These difficulties often lead esports players to become emotionally sensitive and experience high levels of mental stress [25, 43]. The shift towards team-based formats in games necessitates effective communication and collaboration [51], yet the nature of online gaming introduces barriers to forming strong interpersonal connections. Games like *League of Legends* or *Counter-Strike: Global Offensive (CS:GO)* often see teams formed with little prior acquaintance among members, leading to a lack of rapport and increased internal tension [50]. Furthermore, the reliance on non-face-to-face communication methods in esports can exacerbate misunderstandings and promote negative interactions such as insults or blame, contributing to a deteriorating team atmosphere [29].

In addition, esports, being conducted in the digital realm, faces unique challenges in emotional regulation compared to other sports. One of these challenges is the phenomenon of "tilt", a distinct vulnerability within esports, characterized by players being triggered by a person or event in the game. This generates frustration and other negative emotions, ultimately impacting overall gameplay negatively [3, 57]. Instances of tilt often stem from interactions with one's own teammates rather than opponents [57]. Therefore, it is important to view tilt in esports not merely as an individual issue but as a collective team concern, highlighting its impact on internal team dynamics.

In response to mental health and tilt challenges, the Human-Computer Interaction (HCI) community has actively implemented various strategies aimed at identifying and managing tilt, including reporting systems, bans, and self-assessment tools [2, 54, 57]. Despite these efforts, the ongoing incidents of tilt and the emergence of new victims, referring to players who continue to suffer from the psychological impacts of tilt, highlight the limitations of current strategies. Critics have underscored the shortcomings of relying on a designed system approach to address the broad spectrum of toxic behaviors [2], the tendency towards individual-centric interventions rather than team-based solutions [54], and an emphasis on mitigation rather than prevention [56]. These criticisms call for a shift towards a more holistic and team-oriented approach in addressing mental health challenges within gaming environments.

To tackle these challenges, we developed "TILTED", a tabletop game designed specifically to focus on strengthening the internal cohesion of team members. This approach aims to enhance understanding and empathy among esports players around the issues of tilt and group dynamics. The initiative was spurred by the rapid emergence of esports teams in colleges, universities, and high schools, recognizing the need to support youth players in developing stronger team cohesion and emotional resilience. The "TILTED" game is a team-oriented tabletop card game designed for groups of 4-6 players. Our design combines gameplay elements that encourage participants to explore and share various situations that can induce tilt, along with a diverse array of coping strategies, all within a framework of open communication. The game design process involved eight months of co-design sessions [58] with youth esports players as design partners. This collaborative approach enabled them to design the game together and helped us understand tilt through natural exploration. Following the creation of the game, we conducted four rounds of user testing with collegiate esports teams. In this study, we aim to answer the following research questions based on the data from the four user testing rounds:

- (1) *How does open communication, facilitated by team-based interventions like the "TILTED" game, enhance team cohesion?*
- (2) *What effective tilt management strategies are employed during team-based interventions, such as the "TILTED" game?*

(3) *What design opportunities and challenges arise in team-based interventions aimed at fostering positive team dynamics and managing tilt in esports teams?*

Our study contributes to the understanding and management of tilt in esports, particularly from a team perspective. We provide practical artifacts, empirical findings, and theoretical insights that address the current gaps in design solutions for tilt-related issues. Our work aims to not only address this gap but also contribute in shifting the perspective of considering tilt as an individual problem to recognizing it as a collective challenge within esports teams. Practically, we focus on creating a healthier gaming environment for youth players by emphasizing team-based interventions and fostering positive relationships. This helps build a more supportive and resilient esports community. Empirically, we found that team-based interventions like “TILTED” can help to improve team cohesion and help team members manage their emotions better. The game promotes understanding and empathy among teammates, which is key to maintaining a positive team atmosphere. Theoretically, we connect our findings to the Shared Mental Models framework [5]. This framework highlights the importance of shared understanding and teamwork in managing tilt. Overall, our study shows how team-based interventions can transform the management of tilt in esports, promoting a more positive and cohesive gaming experience.

2 Related Work

2.1 Mental Health Issues in Esports

Esports is a highly competitive domain where individuals frequently engage in extended periods of gameplay, often spending 12 to 14 hours daily in front of computer screens [24]. This intense engagement requires mental exertion, which can place considerable strain on players, increasing their risk of experiencing mental health issues. Such vulnerabilities arise not solely from the exhaustive hours but are also exacerbated by the high-pressure conditions inherent in competitive gaming environments.

One of the prominent psychological challenges faced by esports players is the phenomenon of “Tilt”, a term adopted from poker that describes a state of emotional frustration or confusion [54]. Tilt can detrimentally affect gameplay, leading to performance deterioration [57]. Unlike general toxicity, which is characterized by a broad spectrum of negative behaviors, tilt is specifically associated with intense emotional reactions such as frustration and anger, usually incited by in-game events [57]. This distinction underscores the importance of recognizing tilt as a complex psychological state rather than a mere behavioral issue.

The phenomenon of tilt is particularly pronounced in esports, exacerbated by its online setting which lacks face-to-face interaction and relies heavily on virtual communication that can often provoke negative emotional responses [29]. Moreover, the esports community has a complex relationship with tilt, as it is somewhat accepted as part of the gaming culture, especially among friends. According to Lee [31], there exists a nuanced tolerance for tilt across both casual and professional gaming circles, underlining the need for a better understanding and management of this issue. Nonetheless, this acceptance of tilt and other antisocial behaviors can be a detriment to the community overall and set a negative example for young people entering the esports space.

The emotional consequences of tilt, including increased stress, anxiety, low self-esteem, and the potential for severe depression, are especially concerning for individuals with low psychological well-being [57]. Combined with other issues in the online gaming space, including extremism and discrimination, it is crucial to provide youth gamers and esports enthusiasts with the tools they need to de-escalate conflicts and build healthier team dynamics. Our work explores how esports players think about and engage with the complexity of tilt, as well as introduces a co-designed game for team building and understanding.

2.2 Tilt-related Interventions in Human-Computer Interaction

In the realm of HCI, addressing the phenomenon of tilt in gaming environments has led to the development of a variety of interventions aimed at mitigating negative behaviors among players. Traditional strategies have spanned punitive measures such as bans and muting [2, 54], to supportive interventions like self-assessment tools [53]. Despite these efforts, these interventions often target symptoms rather than the root causes of tilt. By focusing on individual behaviors rather than team dynamics, we argue that current strategies are predominantly reactive rather than proactive and preventive.

Critically, the systemic approaches commonly employed in HCI to address toxicity, while effective at a broad level, have difficulties adequately addressing the subtleties of tilt, which are deeply emotional and situational [27]. This highlights a gap in current strategies, underscoring the need for more personalized interventions capable of navigating the emotional complexities of gaming environments. Additionally, the emphasis on post-experience measures rather than proactive strategies further accentuates this oversight, emphasizing the need for interventions that engage players in managing their emotional responses before issues escalate [56].

Moreover, the focus of existing interventions predominantly caters to individual players, overlooking the critical role of team dynamics in multiplayer games. For instance, Turkay et al. [54] introduced the most common systems players utilize are muting and blocking as they provide an immediate fix to toxic behaviors. However, these methods not only reduce the effectiveness of strategies but also miss the opportunity to leverage team cohesion as a means of mitigating tilt. The individual-centric nature of these interventions fails to consider the collective experience of gaming, where teamwork and effective communication are key to success [29].

Recognizing these limitations, there is a compelling need for the development of team-based, nuanced interventions within the HCI domain. Such approaches should actively address the emotional and social dimensions of tilt, aiming to foster a culture of open communication and mutual support among team members. This, in turn, would enhance the overall resilience of esports teams to the challenges posed by competitive gaming environments.

2.3 Tilt as Team Perspective for Youth

Viewing tilt from a team perspective, especially within the youth demographic, is increasingly critical as esports gain traction in educational contexts. The engagement of young individuals in esports, evidenced by Reitman et al. [45]'s survey that discovered eleven formal esports leagues in the U.S. with 6,448 high school teams, underlines the swift integration of esports into educational frameworks. Such developments underscore the necessity for fostering positive team dynamics and addressing the emotional hurdles faced by young competitors within team settings.

Esports, inherently team-oriented, requires effective teamwork for success. This collaboration is essential not just for achieving victories but also for mitigating negative experiences such as tilt. Research by Wu et al. [57] with 95 high school esports players reveals that tilt is more often linked to internal team conflicts than to competition with opposing teams, leading to issues like anxiety and reduced self-esteem. Similarly, research has shown that toxicity tends to be more widespread among teammates [36, 40, 49] with the majority of stressors originating from teammate interactions [44]. These findings suggest the need for targeted interventions to enhance team cohesion and address the internal dynamics that contribute to tilt, affirming the critical role of collective action and unity in esports teams for both competitive success and the mental well-being of young athletes.

Building on this perspective, Cho et al. [10] delve into the social well-being aspect of managing tilt in esports, illustrating the role of effective communication and relationship-building in enhancing

team cohesion in youth esports communities. This approach underlines the need for a supportive and collaborative gaming experience. We advocate for the adoption of social interventions and strategies aimed at improving team dynamics and the overall well-being of players within the esports environment. Furthermore, our work seeks to design a team-based intervention specifically tailored for real-world application among esports players.

2.4 The Needs for Team-Based Intervention and Open Communication

In recent years, the role of communication and teamwork in esports success has gained increasing recognition, sparking a wave of research into social strategies for enhancing team dynamics. Scholars like Hamari and Keronen [21] have underscored the value of social interaction in fostering team cohesion, while Freeman and Wohn [17] have explored how social support systems within teams can offer emotional and esteem support, vital for a positive gaming experience. Musick et al. [39] further highlighted the role of Shared Mental Models in improving team performance, cohesion, and communication.

Building on this foundation, the concept of Shared Mental Models has emerged as a key framework for understanding and enhancing team dynamics. The Shared Mental Models framework fosters a mutual understanding of goals, expectations, and strategies, which are crucial for team cohesion and efficiency [5, 33]. This shared framework supports promoting teamwork skills, adaptability, and coordination [5–7]. The Shared Mental Models framework encompasses five primary components [33]: Team Attitude, Team Dynamics, Team Environment, Team Knowledge, and Team Skills.

Despite these theoretical advancements, practical applications in esports remain limited. Poulus et al. [44] highlighted the significant stressors experienced by competitive esports athletes, underscoring the mental and emotional challenges that affect team dynamics. Similarly, Himmelstein et al. [23] emphasized the importance of mental skills among competitive *League of Legends* players, pointing to the necessity of interventions that enhance mental resilience and communication within teams. Furthermore, Poulus et al. [44] identified key determinants of success in elite esports athletes, arguing for team-based interventions to create environments conducive to success.

To bridge the gap between theoretical insights and practical applications, we can draw on strategies from outside the esports realm. For example, leadership development through tabletop role-playing games [30] and development of well-being cards for youth [41] demonstrate how games can promote open communication and build trust, suggesting their utility as team-based interventions to help mitigate tilt. Effective communication bolsters collaboration and may reduce the risk of tilt. Lee [31] has emphasized the importance of developing interventions to enhance players' emotional regulation, trust, and communication skills. Kou and Gui [28] highlight the importance of both verbal and nonverbal communication in esports for emotional regulation, revealing how players can calm their teammates. This underscores the potential for collaborative emotional management strategies, where technology could support players in jointly regulating emotions and improving team dynamics.

In conclusion, integrating Shared Mental Models with practical interventions such as structured games and targeted communication strategies holds promise for enhancing team dynamics in esports. By fostering mutual understanding and resilience among players, these approaches can help to effectively mitigate tilt and improve overall team performance [48]. In our research, we actively engaged esports players in the design and implementation of a game aimed at addressing tilt through team-based interventions, leveraging tabletop game mechanics to boost open communication and manage tilt strategies within a team context.

3 Game Design Process

We conducted a total of 21 co-design sessions over eight months, all held online [15, 32] due to the COVID-19 pandemic (August 2020 to March 2021). Sessions were conducted under the University of Washington’s Institutional Review Board approval. Figure 1 demonstrates an overview of each of the 21 co-design sessions. Using an inductive approach [13], we first explored esports players’ mental health (Part I: Sessions 1.1 - 1.8), then narrowed the focus to the issue of “tilt” and sought to provide solutions for esports players experiencing it (Part II: 2.1 - 2.2). Building on ideas generated during these co-design sessions, we designed a tabletop game called “TILTED”. These co-design sessions (Part II: Sessions 2.3 - 2.8 and Part III: Sessions 3.1 - 3.5) allowed players to directly contribute to the game’s development, ensuring that it reflected their real-world experiences and challenges. Additionally, co-design empowers players by elevating them from users to co-designers [58], fostering ownership and helping the game to resonate with their needs. This democratic collaborative approach allowed youth esports players to integrate their own coping strategies into the game in a supportive environment with various stakeholders [58].

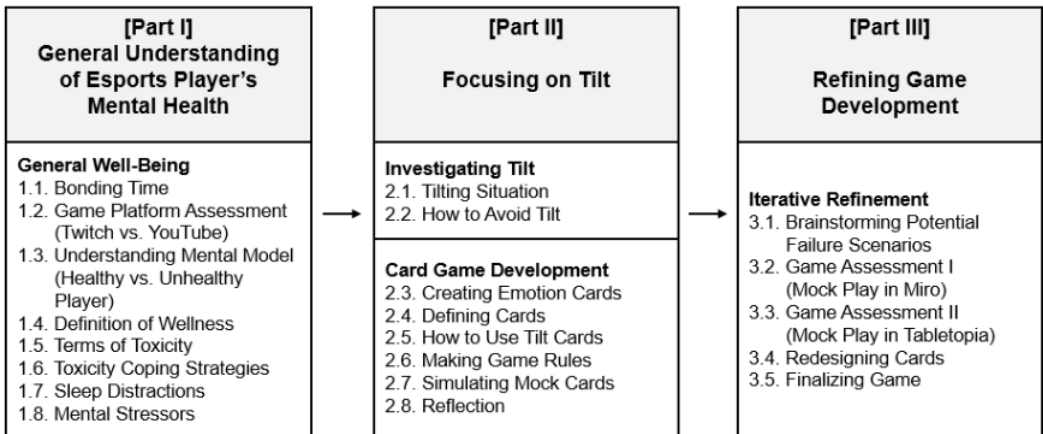


Fig. 1. Overview of Each Co-Design Process

Note: More detailed methodological insights and implications will be presented in a separate paper.

To design the “TILTED” tabletop card game, we collaborated with the youth scholastic esports community of the Network of Academic and Scholastic Esports Federations (NASEF) and the youth library program of the Seattle Public Library (SPL). With their assistance, we recruited five different types of stakeholders who participated in a total of 32 participants: 15 youth players (ages 14-15), seven collegiate coaches (ages 21-26), three esports program coordinators, two youth program librarians, and five researchers. Some youth players and coaches were part of the same program and had played together before, while others were new to the program. The research started after obtaining consent from parents and youth players. The Seattle Public Library and Connected Camps compensated youth players and coaches for a larger project that they had previously worked on. Our research project was a part of the larger context. Overall attendance is seen in Table 1. Participation was counted if an individual attended at least one session. Detailed attendance records are provided in Appendix A.

Table 1. Participants in Different Sections

	Youth Players	Collegiate Coaches	Program Coordinators	Youth Program Librarians	Researchers	Total
Part I. Mental health	13	6	2	3	5	29
Part II. Tilt	15	7	1	3	5	31
Part III. Refinement	0	6	1	2	5	14

3.1 Part I: General Understanding of Esports Player’s Mental Health

In this phase (Part I: Sessions 1.1 - 1.8), we focused on problem setting by exploring issues related to the mental health of esports players through co-design sessions. We aimed to understand their mental models, starting with identifying characteristics of healthy and unhealthy players and examining unhealthy and/or toxic behaviors in the context of gaming. During our research on unhealthy/toxic behavior situations, we discovered that tilt is a significant stressor experienced by many esports players, affecting the gaming experience. Please refer to Figure 2 for an example of coping strategies for toxicity. Based on these findings, we narrowed the scope of our research from general mental health to the more specific issue of tilt.

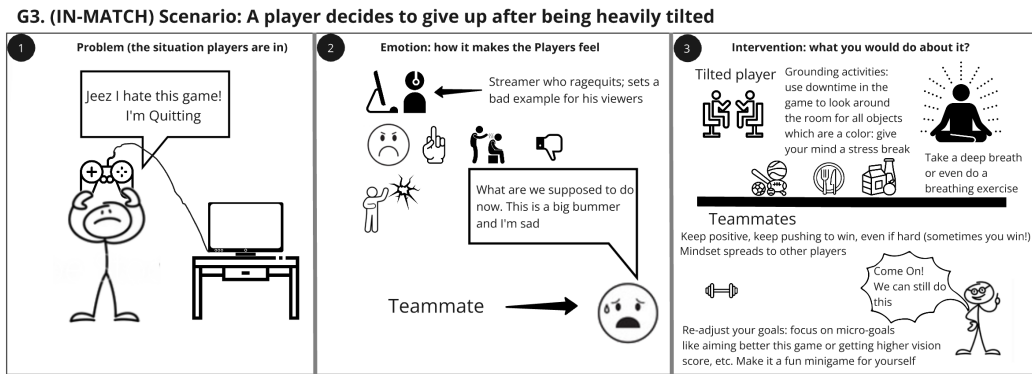


Fig. 2. Example of comic book storyboard about toxicity coping strategies

3.2 Part II. Focusing on Tilt

In this phase (Part II: Sessions 2.1 - 2.8), we focused on tilt as a primary issue, researching the situations in which tilt becomes a problem and how to address it. In session 2.1, “Tilting Situations,” we identified tilt as a contagious factor affecting both the individual and their teammates (see Figure 3 for more information). Additionally, we found that players typically try to deal with tilt individually or ignore it. We explored two directions for coping strategies: (1) emotional regulation and (2) team-based intervention.

After researching various interventions, we selected tabletop card games to facilitate social interactions and foster unity through shared experiences. The collaborative nature of tabletop gaming mirrors the cooperative aspects of esports, promoting teamwork [31] and collective problem-solving [14]. Additionally, tabletop card games are adaptable for emotional therapy and mental health interventions [1, 20], encouraging engagement and communication. This flexibility makes

tabletop games a strategic tool for supporting the mental well-being of youth esports players within a team.

Based on the insights gained through the co-design sessions, we developed a set of cards representing various situations, coping strategies, and factors that provoke players, exemplifying when and how players can help their teammates. We finalized the initial “TILTED” card prototype in Part II: Sessions 2.3 - 2.8.

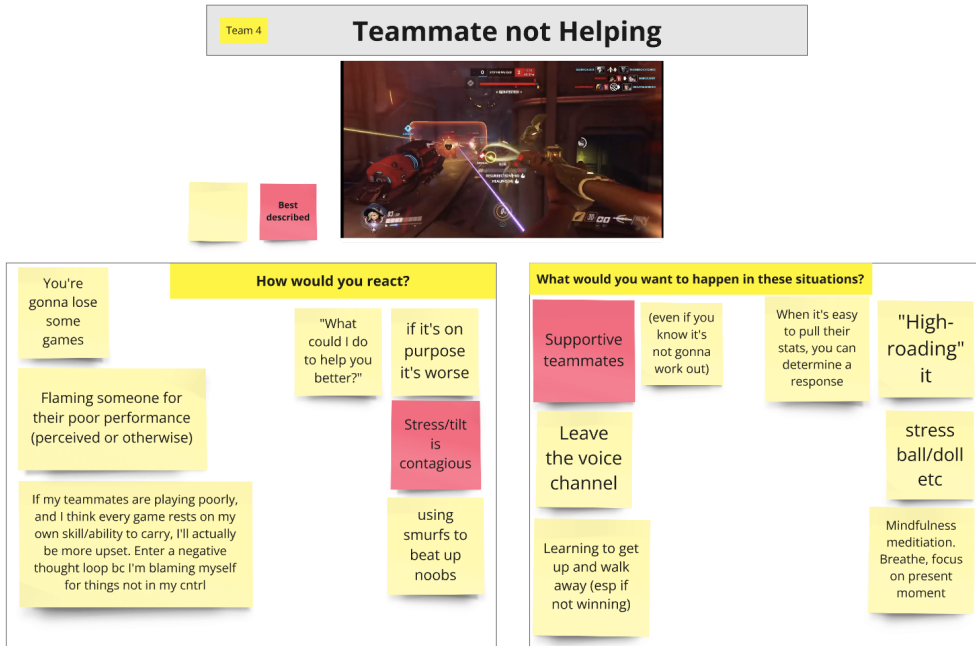


Fig. 3. An example of co-design activity for “Tilting Situations”

3.3 Part III. Refining Game Development

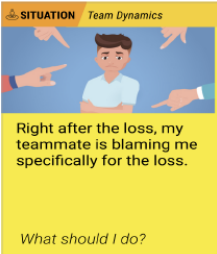

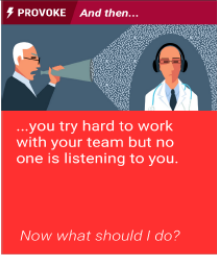
In this phase (Part III: Sessions 3.1 - 3.5), we invited coaches, coordinators, librarians, researchers, and one professional designer to refine the game based on ideas suggested by the youth esports players. We focused on three main considerations: (1) increasing engagement, (2) simplifying the game and improving the game flow, and (3) addressing accessibility issues. We clarified the purposes of the situation, heal, and provoke cards, and eliminated cards with similar nuances. Additionally, we recognized that the cards’ information might not sufficiently promote discussion, so we added more explicit details to help players gain a deeper understanding of the cards. For instance, we included additional facts beyond the Heal card’s content or suggested appropriate next actions on each card. Please refer to Table 2 for more information on the cards.

4 Introduction of “TILTED” Tabletop Game

4.1 Game Elements

Through co-design sessions and iterative refinement processes, we finalized the game elements. The goal of “TILTED” is to strengthen team cohesion and emotional resilience by fostering open communication and mutual support in managing tilt. The game’s architecture is built upon three distinct card types: Situations, Heal, and Provoke, each serving a specific function and equipped

Table 2. Game cards in the “TILTED” tabletop game

Card	Definition	Category	Function	Example
Situation	The Situation cards depict various scenarios that could potentially lead to tilt in real-world gaming situations.	<ul style="list-style-type: none"> • Teammate problems • Team dynamics • Communication problems • Intentional throwing • Mindset problems • Gameplay mistake • Game outcomes • Skill imbalance 	<p><i>“What should I do?”</i></p> <p>Situation cards serve as an indication of any suspicious tilt situations that may arise.</p>	 <p>Right after the loss, my teammate is blaming me specifically for the loss.</p> <p>What should I do?</p>
Heal	The Heal cards offer coping strategies for players experiencing tilt, presenting options for emotional management and stress alleviation.	<ul style="list-style-type: none"> • Affirmation • Communication • Social support • Disengage • Mental activity • Escape • Physical activity 	<p><i>“Did you know?”</i></p> <p>Heal cards demonstrate interventions that can help reduce stress or avoid tilting situations.</p>	 <p>Remind teammates of past success.</p> <p>Did you know? “The muscle memories associated with success are built from recalling small successes in the past.”</p>
Provoke	The Provoke cards add unpredictability and complexity by escalating narratives and introducing new challenges when played with Situation cards.	<ul style="list-style-type: none"> • And then... 	<p><i>“Now what should I do?”</i></p> <p>Provoke cards act to add onto the situation, allowing people to re-evaluate heal cards in more complex situations.</p>	 <p>...you try hard to work with your team but no one is listening to you.</p> <p>Now what should I do?</p>

with explicit instructions to facilitate an immersive and impactful gaming experience. The Situation cards present scenarios that may lead to tilt, Heal cards offer coping strategies to manage these situations, and Provoke cards add complexity, prompting players to re-evaluate their approaches under more challenging conditions. Please refer to Table 2 for card examples.

4.2 Gameplay

At its core, “TILTED” is an interactive game designed for 4-6 players that focuses on understanding others’ perspectives and articulating one’s own coping strategies through open communication. The game encourages players to practice emotional regulation, stress management, and team dynamics within competitive settings. Initially, we designed only a physical version of the game. However, due to the COVID-19 pandemic, we decided to also develop a digital version. Figure 4 presents screenshots of both the physical and digital versions of the “TILTED” gameplay. The gameplay process is as follows:

- (1) **Starting the Game:** Each participant starts with 5 Heal cards and 2 Provoke cards.
- (2) **Situation Card Selection:** An assigned judge selects a Situation card to challenge the other players among three Situation cards.

- (3) **Heal Card Selection:** The other players put down an appropriate Heal card that they think could help the judge in the situation they selected.
- (4) **Explaining the Reasons:** Each player explains why they think the card they chose represents the healing method the judge would use in the given situation.
- (5) **Judge’s Decision:** After listening to all the players, the judge selects the best Heal card. If the judge is still undecided, they can call a “tie” and use a Provoke card to make the situation more complex. This pushes players to reconsider their strategies under tougher conditions.
- (6) **Scoring:** The player whose Heal card is ultimately selected by the judge collects all the Situation and Provoke cards (if any are used) from that round. The game consists of two turns, and the player who accumulates the most Situation and Provoke cards by the end of the game wins.

The expected outcome of “TILTED” is to promote empathetic team building while exploring various coping strategies to manage tilt within the team environment. Through gameplay, players develop a deeper understanding of team dynamics and effective communication, which are essential for success in competitive esports settings.



Fig. 4. Screenshot of “TILTED” gameplay (right: physical version; left: digital version)

5 Methods

5.1 Overview of User Testing

The current study aims to investigate and explore the effectiveness of the “TILTED” tabletop game, developed through multiple co-design sessions as described above. To this end, we conducted four user testing sessions (August 2021 - December 2021) with collegiate esports teams to gather data on the game’s impact. The results of these user testing sessions are examined from two main perspectives. Firstly, we explore how “TILTED” affects team building among esports players from the standpoint of team-based intervention, and the role it plays in managing tilt. Secondly, from a design perspective, we aim to identify which design features contributed to fostering positive team dynamics and mitigating tilt, based on insights gained through user testing.

The study protocol was approved by the institutional review board at the University of Washington. Participants were compensated with a \$20 Amazon gift card for their involvement in the study.

5.2 Participants for User Testing

In this user testing, a total of 17 collegiate amateur esports players participated, all males aged between 19 to 29 years. Please refer to Table 3 for participants’ demographics. We initially opened

our recruitment for user testing to individuals with esports gaming experience through various online and offline channels. However, most of the participants applied through game-related registered student organizations (RSOs) at the University of Washington. Although we did not set gender or age restrictions, our recruitment resulted in only male volunteers. This outcome highlights the predominance of male players in the esports environment [46, 59]. Future research in esports should aim for more balanced gender representation by oversampling female and non-binary players.

Given the focus of our game on team-building, we also investigated how well the players knew each other, referred to as “familiarity.” Within Team T1, Participant 1 (P1) reported that “two individuals were in the same classes and attended similar events together.” Consequently, these individuals did not play the game together but were somewhat familiar with each other. After the first user testing session, we recognized that the core value of team building could not be achieved well if the participants were not familiar with each other. Therefore, we prioritized recruiting additional participants from teams who had played closely together; the participants from Team T2, T3, and T4 were selected from collegiate esports teams who had played together for at least one year. Please refer to Table 3 for team information.

Lastly, regarding the age of participants, we note the discrepancy in age groups between the co-design sessions and the user testing. The co-design sessions involved participants as young as 14-15 years, while the user testing involved collegiate players aged 19-29 years. While they may be perceived as being in different developmental stages, adolescents and young adults typically comprise the demographic for esports players [22]. Early collegiate players, although older, are still closely connected to the youth demographic as they often transition directly from high school and are significant consumers of esports [52]. Therefore, this demographic covers a common range of esports populations, which may help to understand team dynamics and the impact of game-based interventions within a competitive context.

Table 3. Demographics of Participants

User Testing	Team Pseudonym	ID	Age	Gender	Ethnicity	Familiarity
In-person (T1)	Strike	P1	29	Male	Middle Eastern	2 People
		P2	23	Male	Asian	None
		P3	19	Male	White/Asian	1 Person
		P4	19	Male	Asian	None
		P5	20	Male	White	1 Person
Online (T2)	Wizards	P6	25	Male	White	All
		P7	26	Male	White	All
		P8	21	Male	White	All
		P9	20	Male	White	All
Online (T3)	Ninja	P10	20	Male	Asian	All
		P11	20	Male	White	All
		P12	20	Male	Asian	All
		P13	21	Male	Asian	All
Online (T4)	Sun	P14	20	Male	Asian	All
		P15	20	Male	White	All
		P16	20	Male	White/Asian	All
		P17	20	Male	Asian	All

5.3 Research Procedure

In total, four user testing sessions were conducted from August 2021 - December 2021. Due to the COVID-19 restrictions during the study timeline, the format was adjusted to include one in-person session and three online sessions. The overall process involved 50 minutes of “TILTED” gameplay, followed by a 10-minute online survey, and then a 15-minute debriefing session, totaling approximately one hour and 15 minutes for each user testing session. More details on the survey can be found in Appendix B, and information on the debriefing is provided in Appendix C.

5.3.1 *Gameplay*

Each session began with a brief explanation of the game and a practice round to acquaint participants with the gameplay mechanics. Following this, teams played approximately two rounds without researcher intervention. While the in-person session utilized physical cards, online sessions were facilitated through Steam’s Tabletop Simulator¹, offering a virtual interactive experience.

Gameplay and debriefing sessions were recorded to capture both verbal (e.g., conversation, laughter) and non-verbal interactions (e.g., body language, gestures). In-person tests were filmed with a digital camcorder, while online sessions were recorded via Zoom. Two researchers also observed gameplay, documenting observations in field notes.

5.3.2 *Survey*

We conducted a short survey upon the completion of gameplay. This allowed us to gather feedback and insights into the game’s impact and user experience. The survey consisted of eight multiple-choice and ten open-ended questions. The survey questions were developed by five researchers involved in the initial co-design sessions. The multiple-choice questions, based on a 5-point Likert scale, evaluated the gameplay experience, realism of scenarios, and effectiveness of tilt management strategies (e.g., Heal cards). The open-ended questions provided participants with the opportunity to express a wider range of perspectives, including questions such as “What aspects of the game did you find appealing?”, “What aspects did you find less appealing?”, “What do you believe was the objective of this game?”, and “What are your personal strategies or experiences in dealing with tilt?”. Due to the small sample size, we focused on providing deeper analysis of the open-ended responses rather than quantitative analysis, recognizing the limited generalizability [11]. Please refer to Appendix B for the questionnaire.

5.3.3 *Group Debriefing*

After the survey concluded, we conducted a debriefing session to delve deeper into team members’ experiences with the game and their thoughts on tilt. The debriefing was conducted as a group discussion by the game facilitator. The purpose of this debriefing was twofold: to ascertain the implications learned through the game and to validate what team members felt or learned about one another.

During the debriefing, researchers asked questions to encourage reflection and discussion on team dynamics, tilt, and communication strategies. Some of the questions included: “Did you learn something new about your team players?”, “Does the game help your teammates better understand each other?”, “Do you think this game will help increase communication around teamwork, tilt, or strategies for when you get tilted? Why or why not?”, “Do you think this game was effective in raising awareness of tilt?”, and “Did this game help you realize situations where you may have been tilted and did not know?”. Please refer to Appendix C for the debriefing questions.

¹Tabletop Simulator in Steam https://store.steampowered.com/app/286160/Tabletop_Simulator/

5.4 Data Analysis

We conducted an inductive qualitative analysis using thematic analysis on video recordings, field notes, and survey responses [9, 13]. Our process involved three main stages: open coding, thematic analysis, and the application of themes to Shared Mental Models.

First, two researchers independently coded the data [37] for themes such as game experience, social interaction, relationship dynamics, and design improvements. The codes were then compared and refined to ensure reliability, with a third researcher assisting in resolving any conflicts following a consensus model [42]. To ensure inter-reliability, we collectively examined the codes and initial themes, regularly meeting to cross-verify data sources [35]. In cases of coding conflicts, an unbiased third researcher acted as an arbitrator. This approach ensured robust and well-founded final coding decisions, facilitating a consistent and reliable analysis.

Following the open coding phase, we had several group meetings in which the authors of this paper discussed and conducted multiple rounds of coding, diverging, revising, and synthesizing the coding [35]. During these meetings, we refined our themes and organized them into categories related to the influence on team cohesion and game design elements for team building. Please refer to Table 4 for the final codebook.

Finally, we applied these refined themes to the Shared Mental Models (SMM) framework to understand how our findings fit within this existing theoretical context. Through several discussions with the researchers, we matched our final codes to five primary components of SMM framework [33]: Team Knowledge, Team Attitude, Team Skills, Team Dynamics, and Team Environment. This process helped us connect our empirical data with theoretical constructs, providing a deeper and more structured analysis of the influence on team cohesion and game design elements for team building.

Regarding the quantitative survey data, although derived from a small sample size, the results (e.g., realism, usefulness, effectiveness, helpfulness) are detailed in Appendix D for reference.

6 Findings

Our findings are organized in the following way: First, we present themes in the data connected to RQ1 around team cohesion. Second, we highlight themes around tilt management as they pertain to RQ2. Finally, we discuss findings surrounding the design of team-based interventions to address RQ3.

6.1 RQ1. How Does Open Communication, Facilitated by Team-Based Interventions Like the “TILTED” Game, Enhance Team Cohesion?

6.1.1 Understanding Teammates: ‘Ah-Ha’ Moments

Our analysis suggests that “TILTED” served as a jumping-off point for generating insights and encouraging discussion, leading to what we term ‘Ah-Ha’ moments. These moments allowed opportunities for team members to share and discuss approaches to managing stress and challenges with other team members. A notable instance from a user testing session involved participant P13 (T3), who chose the Heal card ‘pet your animal’ as a stress-relief strategy. P12 (T3) responded to P13’s choice during the debrief after the game saying:

“I think one of the interesting cards played was by P13 (T3) like ‘pet your animal.’ I did not know about that before and never ever thought of that. So, I think that was a good strategy, and now it’s good to know.” (P12, T3)

This choice by P13 was a surprising moment for P12. Even though they have played games together for a few years, P12 did not have the opportunity to talk about P13’s coping strategy for tilting.

Table 4. Final Codebook

Name	Frequency	Description
Influences on Team Cohesion		
'Ah-Ha' Moment	3	Revelations during gameplay that uncover new facets of team members' personalities and strategies, enhancing mutual respect.
Collaborative Success	8	Achievements in the game that require a collective effort, reinforcing the value of teamwork in overcoming challenges.
Empathy Development	5	Gameplay experiences that foster understanding and support among teammates that will help reduce tilt through emotional connection.
Open Communication	7	The facilitation of honest and clear dialogue by the game for addressing frustrations and preventing tilt.
Positive Mindset	15	Encouragement of resilience and an optimistic attitude in facing game challenges, crucial for tilt prevention.
Shared Humor	5	Game-induced laughter that relieves stress and unites the team which serves as a buffer against tilt.
Strategic Conversations	7	Game-driven discussions that focus on tilt coping strategies, aligning team efforts and reducing conflict.
Team Reflection	3	In-game opportunities for teams to evaluate their dynamics and strategies, promoting learning and tilt management.
Game Design Elements for Team Building		
Challenge Components	9	Elements of the game that introduce challenges or obstacles, stimulating teamwork and strategic problem-solving.
Enhancement Ideas	12	Suggestions from participants on how to refine the game's design to better facilitate team building.
Enjoyable Elements	5	Features of the game that were especially enjoyable or successful in promoting team cohesion.

Note: codes organized alphabetically for clarity and ease of reference.

Additionally, the impact of the game extended beyond strategy sharing to influence players' perspectives on team support. P13 (T3) reflected on the game's unexpected role in reshaping their views, stating, "*It was surprising to me how it (the card) reframed my thinking and strategies...especially focusing on supporting teammates, even in moments they might be struggling with negativity.*" These reflections underscore the "TILTED"'s effectiveness in not only facilitating strategic exchanges but also in nurturing an environment where mutual support thrives, thereby strengthening team cohesion and understanding.

6.1.2 Cultivating Optimism through Shared Humor

The game sessions have received positive feedback for their contribution to creating a supportive and positive team environment, with players highlighting the game's positive impact on team dynamics and atmosphere. A vital component of the game's success is attributed to the humor and jokes naturally emerging from its mechanics and gameplay, without resorting to mocking team members. This shared laughter serves as a tool for uniting team members, supporting team cohesion and fostering an inclusive atmosphere. During gameplay, moments of humor become apparent, as illustrated by an exchange where P16 (T4) decided to use a "Provoke" card, eliciting laughter from the team and leading to a series of playful interactions:

P16: "I'm going to be honest guys, I didn't like any of these, so I'm going to try the Provoke card, OK?"

All: (Laughing)

P14: "Oh, nice, nice. Let's do it. Should I put it on top?"

P15: "Yes, put it on top."

P16: "You respond with another Heal (card). OK, OK. So then, what happened is that my teammates gave me feedback in a condescending tone of voice, right? (Laughing) So, what should I do next, guys?"

P14: "I'll kick it off." P15: "Hold on. (Laughing) This is not the best one. OK. Oh, how about a joke to lighten the mood? (Laughing) What is green and has wheels? Grass. I lied about the wheels."

All: (Laughing)

Furthermore, reflecting on the game, P13 (T3) appreciated the unique approach to team dynamics and the opportunity to see how team members respond to different situations: "It was fun. This is a really interesting way of looking at situations and seeing how my team members respond. I thought that was a cool take." P10 (T3) also highlighted the value of maintaining a positive mindset, pointing out the game's potential as a team-building tool: "Having a positive mindset is beneficial while playing this game. It might also serve as an icebreaker within the team." These perspectives show the "TILTED"'s impact in not only enhancing team cohesion but also in promoting a culture of optimism through shared humor.

6.1.3 Fostering Camaraderie Through Collaborative Problem-Solving

We designed the game to encourage a shift from individualistic problem-solving to a collaborative approach, emphasizing team cohesion and collective strategy. Players in the user tests found that this transition highlighted the game's ability to foster an environment conducive to reflection, emphasizing the importance of teamwork for achieving successful outcomes. P7 (T2) reflected on the game's impact, noting, "It offered an additional layer of insight into my teammates, allowing us to exchange strategies and support each other in new ways". This sentiment captures the essence of the game's role in strengthening team bonds and facilitating a deeper connection among team members. Through playing "TILTED", teams experienced enhanced rapport, leading to an open exchange of strategies and support. The game promoted a culture of collaboration, sparking meaningful conversations about the significance of camaraderie and a unified effort. The discussions and interactions within the game illuminated the role of efficient coping strategies and the value of teamwork in improving the group's dynamics. A participant highlighted the transformative potential of the game, stating, "Its uniqueness could significantly boost camaraderie and cohesion, making it an invaluable team-building tool for larger teams" (P1, T1). This feedback shows that the game can support fostering a sense of unity and mutual support which will be helpful for team cohesion.

Summary of 6.1 findings

Our study explored how “TILTED” enhances team cohesion through open communication and collaborative problem-solving, facilitating ‘Ah-Ha’ moments where players shared stress-management strategies and deepened mutual understanding. The game promoted optimism and humor, creating a positive team environment and fostering camaraderie and teamwork, with participants noting its impact on team dynamics and its potential as a valuable team-building tool.

6.2 RQ2. What Effective Tilt Management Strategies Are Employed During Team-Based Interventions, Such as the “TILTED” Game?

6.2.1 Resetting Strategies for Emotional Regulation

Our investigation into tilt management strategies within the context of the “TILTED” game has highlighted the essential role of ‘resetting’ for emotional regulation in the competitive realm of esports. This technique involves a deliberate shift in one’s emotional state towards regaining balance and cultivating a more constructive mindset. As articulated by P4 (T1), resetting is about transitioning oneself “into a better state of mind.” This approach was notably prevalent among participants, evidenced by the frequent invocation of “reset” across discussions, particularly through the strategic use of “Heal” cards to mitigate moments of intense frustration, with the term appearing 43 times across all sessions. P2 (T1) captured the essence of this strategy, noting, “If you continue to play, you might lose even more because you’re so focused and so tilted. So it’s good to have a quick reset.” Beyond mental recalibration, resetting strategies also encompass pivoting and physical withdrawal from the game. Pivoting, as explained by P17 (T4), involves making strategic changes in response to challenging situations, encouraging teams to explore alternative approaches: “Maybe you need a, you know, pivot off this current strategy. Kind of think of something new. Think of how you’re going to approach the game differently as a team.” Similarly, the importance of physically stepping away is highlighted as a coping strategy for resetting, with P12 (T3) advocating for a break from gameplay to allow for emotional and mental recovery.

The variety of strategies discussed by participants highlights the multifaceted nature of managing tilt, combining both individual and team-wide approaches. P7 (T2) suggested taking a moment for everyone to reflect and realign their strategy: “Let’s take a step back and figure out how we can put our brains together to find some common ground on a plan on how we should play out the rest of the game.” Additionally, the role of mental resets and the need for positive reinforcement are emphasized by P16 (T4), who stresses the value of motivational support: “Sometimes you need like a mental reset and you need someone to give you a build-up, you know, make you think in positive ways.” These insights not only showcase the varied, effective strategies for managing tilt but also underscore the “TILTED” game’s effectiveness in fostering a deeper understanding and application of these techniques. P12 (T3)’s advice to adopt a ‘zero-zero’ mindset, regardless of the scoreboard, is a great example of the psychological resilience promoted through gameplay, encouraging persistence and confidence in the face of challenges.

6.2.2 Empathy Development: “You Are Not Alone”

The investigation of tilt management strategies within “TILTED” puts focus on the role of empathy in navigating and mitigating tilt in team environments. Empathy is significant for understanding and supporting teammates during moments of stress or challenge, creating a foundation for effective emotional regulation [12, 16]. P17 made the following insight: “I said as teammates if they need support, ask your teammates for help. Obviously, if your team’s losing badly, you’re probably not the only one tilted...talking about how you’re feeling tilted or what’s going on, what’s annoying you, and bringing it as a team together rather than an individual problem...I think it is a good idea to talk with your team and [see] how they’re feeling” (P17, T4), underscoring the significance of shared

experiences and open communication in alleviating the effects of tilt. This collective approach to dealing with challenges not only aids in diffusing tension but also strengthens the team by fostering a supportive dynamic.

Furthermore, the game encourages players to vocalize their personal coping strategies, enriching the team's collective strategies for managing tilt. *"I agree it's really helpful understanding personally how certain people want to be handled when they are tilted. In that way, it's beneficial,"* (P14, T4) highlighted the importance of tailoring support to individual needs within the team context. P16 reflected on the value of engaging in meaningful conversations: *"It's like a good team bonding time for people to understand each other better,"* which goes beyond simple team bonding to specifically address tilt management. P9 (T2) suggested to encourage team members to contribute their insights, *"If you ask us for our input. We would help you honestly... it'd be more of a team collaboration than an individual collaboration,"* which showcases empathy as a central element in formulating a cohesive and effective approach to tilt. Through "TILTED", teams not only have the opportunity to improve their dynamics but also develop a deeper understanding of tilt management, positioning empathy as a key component in the strategy to overcome the challenges of competitive play.

Summary of 6.2 findings

Our study highlighted effective strategies for managing frustration and stress during team-based activities with "TILTED". Key strategies included resetting for emotional regulation by taking mental breaks and changing strategies, and fostering empathy by encouraging players to share personal coping strategies and support each other. Ultimately, it helps enhance team cohesion and resilience.

6.3 RQ3. What Design Opportunities and Challenges Arise in Team-Based Interventions Aimed at Fostering Positive Team Dynamics and Managing Tilt in Esports Teams?

6.3.1 Utilizing Hypothetical Scenarios for Enhanced Real-World Communication

Our study demonstrates that the game improves players' ability to handle challenging situations by bridging in-game dynamics and real-life interactions. Participants highlighted the game's role in uncovering scenarios where enhanced dialogue and teamwork are unexpectedly vital. P12 (T3) particularly noted the game's real-world applicability, stating, *"You know, guys, this could help me in real life too,"* suggesting that the hypothetical situations used in the game prompt useful conversations about communication strategies. Moreover, the game's focus on understanding individual responses to tilt was helpful for fostering empathy and personal insight within teams. P14 (T4) emphasized the importance of recognizing how teammates prefer to be supported during stressful moments, stating, *"It's really helpful for understanding personally how certain people want to be handled when they are tilted."* This insight, coupled with opportunities to explore each other's coping strategies, was valuable. P17 (T4) also noted: *"[The "TILTED" Game] lets players get to know one another better."* — which illustrates the game's ability to support team cohesion and interpersonal relations. These findings suggest that "TILTED" can help players practice and improve communication outside of immediate real-world pressures and thus, help create a foundation for meaningful discussions that enhance team dynamics.

6.3.2 Providing Space for Customization

In debrief sessions, players highlighted the need for customizable gameplay to align closely with their team's unique needs, moving away from generic "Tilt Coping Strategies" towards a focus on sharing beneficial strategies specific to their teams. P16 (T4) pointed out the game's generic nature for experienced esports players, stating, *"...a lot of these situations you've already come to master... So if that's the case, it doesn't feel like this game would be able to provide you with any new knowledge."*

Additionally, the restriction to five healing cards was seen as limiting by participants like P17 (T4), who explained it constrained their ability to express themselves or adapt their responses to specific situations, suggesting, “*only having five healing cards...is kind of limiting what you can say.*” To enhance the game’s relevance and adaptability, players proposed design improvements, including a wider variety of healing cards and the introduction of custom cards to allow for personalized strategies and responses. P16 (T4) advocated for more diverse healing cards and the potential for creativity with custom cards, saying, “*I think if there were more like different types of healing cards...will be really beneficial...maybe you could have custom cards...then you come up with pretty creative responses.*” These suggestions aim to increase player engagement and promote a more direct connection between the game’s coping strategies and the players’ real-life strategies, suggesting that tailored gameplay could offer a more effective platform for strategy development and team discussion.

6.3.3 The Role of Game Objectives

During our study, multiple participants expressed a desire for a gaming intervention that would prioritize cooperative objectives over competitive ones. For example, P17 (T4) stated that the absence of a collaborative team objective led to a perception of the team as individuals rather than a cohesive unit. As P17 (T4) noted: “*In this game, you don’t really have that unified objective of what it is that you’re trying to do together. So because of that, you don’t really think of the team as a team together, you think of them as individuals.*” This reiterates the need for game-based interventions to consider game mechanics that promote collaborative engagement and shared decision-making in order to foster a sense of shared identity and purpose during the game. Furthermore, P17 (T4) expressed a similar sentiment about feeling detached from their teammates noting, “*...in essence, this game has winners and losers. For instance, I felt somewhat isolated, like I didn’t truly understand my teammates. It’s as if I was distanced from the group...*” This feedback further highlights the need for a shift in the game’s focus towards fostering a collaborative environment, for instance, by creating a team goal.

Summary of 6.3 findings

Our study explored design opportunities and challenges in team-based interventions like the “TILTED” game, highlighting its role in improving communication and empathy by bridging in-game dynamics with real-life interactions. Participants suggested customizable gameplay and cooperative objectives to better align with team needs and enhance team cohesion.

7 Discussion

The themes we identified are contextualized through a comparison to the concept of Shared Mental Models [5], presented in Figure 5. Based on this comparison, we propose a set of design suggestions for team and game-based interventions for tilt management.

7.1 Exploring the Impact of “TILTED” Through Shared Mental Models

7.1.1 Team Attitudes

Team attitudes, embodying the collective identity and atmosphere of the group, are shaped by the interactions among team members. As defined, team attitudes encompass shared values, beliefs, and motivations within the team [33]. Such attitudes may influence the development of team resilience, which is the inherent ability to recover from setbacks—an essential quality for persisting through and overcoming challenges [38]. In the high-pressure environment of esports, fostering positive team attitudes plays a role in building resilience, serving as a foundational element for mental strength and sustaining team morale over time [38].

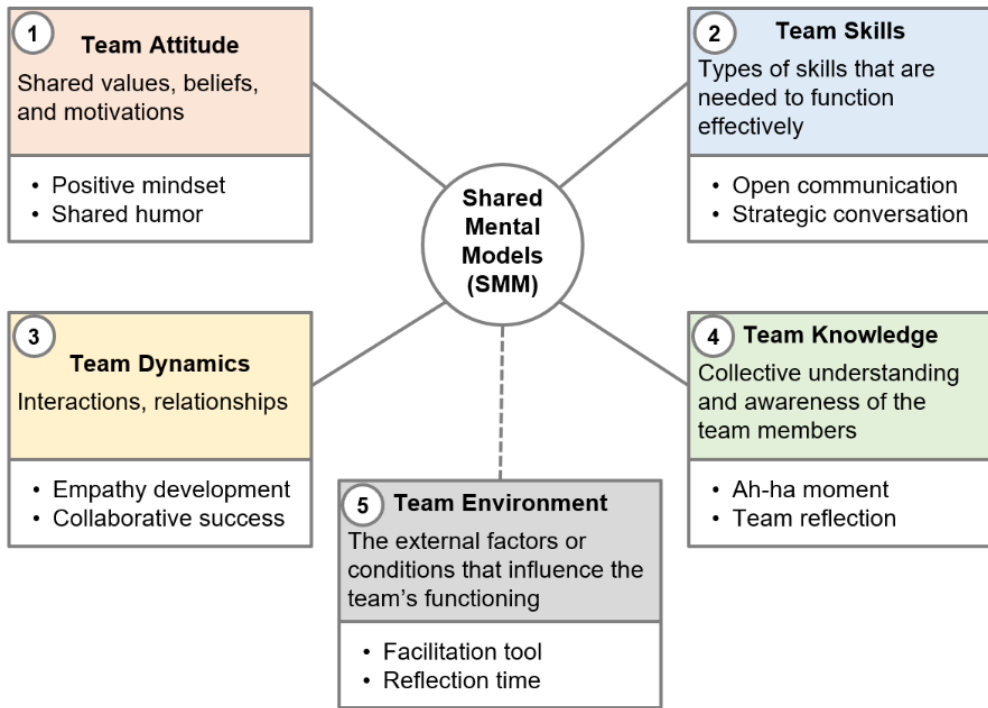


Fig. 5. Shared Mental Models framework adopted from Lee et al. [33]

From this perspective, humor emerged in our findings as a standout theme, acting as a mediator in positively influencing team attitudes [47]. Humor, especially when it resonates within the team’s inner circle, not only helps alleviate the spread of negative emotions associated with tilt but also enhances the cohesion among team members. For instance, strategies to elevate humor include establishing shared secrets or collectively targeting an object for lighthearted ridicule. Our observations revealed the use of “provoke cards” in the game, which facilitated bonding through shared criticism or simple jokes about the game’s difficulty level. Whenever jokes were shared among the team—jokes that might not necessarily be amusing to outsiders—we observed team members engaging in laughter and strengthening their bonds. Consequently, we argue our findings demonstrate that such humor played a role in positively and brightly uplifting the team’s atmosphere.

7.1.2 Team Skills

Effective communication acts as a vital link among teammates, enabling a deeper understanding and cohesive pursuit of shared goals [4, 33]. Thus, the way teams communicate can influence the successful transmission of these shared goals. However, communication can be a double-edged sword; it can boost collaboration and success or, if poorly managed, cause division and negativity. Highlighting the importance of adept communication, Lee [31] recommends interventions aimed at boosting players’ emotional regulation and communication skills to better navigate team dynamics and lessen the effects of tilt.

Another effective strategy that may affect team skills is the “resetting strategy.” This approach involves team members taking a deliberate pause to reduce mental stress and maintain team mental health. The findings from our user testing showed that when teams used the resetting strategy,

they communicated and supported each other better. By using this strategy, teams could manage communication effectively, allowing members to step back, reset mentally, and then re-engage with the game more positively. This approach aligns with the findings of Wu et al. [57], which suggest that emotional rest can prevent tilt from affecting later stages of the game or spreading to others. Our study demonstrated that by sharing and implementing these strategies, teams could maintain a positive environment and prevent tilt through open communication.

7.1.3 Team Dynamics

Team dynamics are considered a blend of the dynamic processes of team coordination and cohesion [33]. Carron and Hausenblas [8] define team dynamics as “a dynamic process which is reflected in the tendency for a team to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of members’ affective needs”. Hence, this encompasses the development of relationships through diverse interactions and rapport with team members. Specifically, the establishment of these relationships relies on mutual trust, which plays an important role in supporting team members during stressful or challenging situations, as is often the case in sports [38].

In our “TILTED” gameplay, the timeframe was too limited for the formation of mutual trust; instead, we observed an increase in empathy among players, mirroring findings related to empathy in online interactions [16]. Consequently, while we could not directly measure the invisible bond of mutual trust in gameplay situations, the presence of empathy and camaraderie indirectly indicated the “TILTED” game’s positive impact on team cohesion.

7.1.4 Team Knowledge

The “TILTED” tabletop game helped facilitate the sharing of information. The game encouraged players to delve into discussions and share experiences related to coping with tilt, a phenomenon often encountered in esports but seldom addressed directly within team settings. Surprisingly, even though many teams have a lot of experience in esports, our user testing revealed a notable gap in their collective knowledge regarding managing tilt effectively. This gap highlighted the importance of addressing such issues explicitly to enhance team dynamics and resilience.

Furthermore, the game’s design incorporated elements that extended beyond in-game strategies, linking gameplay to real-world scenarios and applicability [55]. For example, the inclusion of various “Heal cards” provided strategies for coping with tilt, drawing on real-life situations, and enabling players to connect these strategies with their personal experiences outside the game. This integration of personal and collective experiences facilitated the formation of shared knowledge within teams. A notable instance of this phenomenon was the ‘Ah-Ha’ moment which occurred when a team member shared a personal coping strategy of petting an animal. In this example, we provided an opportunity for team members to share information about tilt that they were previously unaware of, and to better understand their teammates through “TILTED” gameplay.

7.1.5 Team Environment

Our study highlighted the importance of using a facilitation tool and having reflection time (i.e., debriefing). Although these elements were not explicitly coded in our analysis, they were well-represented in fostering a positive team environment. To encourage conversation among team members, it was necessary to have a tool that connects them. In this regard, “TILTED” served as a catalyst for starting conversations about tilt among team members. It helped generate empathy and ultimately produced shared team knowledge. This aligns with the argument that the collaborative nature of tabletop gaming mirrors the cooperative aspects of esports, promoting teamwork [31]. Additionally, reflection time was used to provide positive feedback for each member’s contribution, helping to create a supportive and positive team environment. According to Voulgari et al. [55],

reflection time connects the knowledge gained from the game experience to real-world situations. Therefore, during this time, team members not only reflect on their own coping strategies for tilt but also share feedback and build collective team resilience.

7.2 Design Implications

We explored the elements that contribute to a cohesive team through the Shared Mental Models. To enhance these Shared Mental Models, it is necessary to identify the relevant design implications. Therefore, in this discussion, we aim to interpret the design elements identified during user testing and propose future directions for these design implications. Our focus will be on understanding how these elements impact “TILTED” as a team-based intervention and how they can be refined for improved game functionality and engagement.

7.2.1 Psychological Safety in “TILTED” Tabletop Game.

The findings suggest that incorporating hypothetical situations in the “TILTED” situation cards can contribute to establishing psychological safety among players. By facilitating open communication [4] about hypothetical situations in the game, these cards serve as tools for fostering a safe environment where players may feel more comfortable sharing and addressing their vulnerabilities related to tilt. Granic et al. [19] addressed psychological safety as a key advantage of the game in its virtual setting, offering players the opportunity to engage repeatedly without the fear of real-world consequences. Essentially, realizing the absence of tangible consequences from game outcomes encourages more open communication and honesty among players.

Implication for Design. Future iterations of “TILTED”, or similar games aimed at team building and tilt management, should prioritize the creation of game elements that encourage psychological safety. This means adding game elements that allow players to express their feelings openly without fear of being made fun of and encouraging honest discussions about personal experiences and emotions. While psychological safety is valuable, it is also necessary to balance the competitive parts of the game with opportunities for emotional expression. This balance will help create a more supportive and cohesive team environment.

7.2.2 No One-Size-Fits-All Interventions for Tilt.

The diversity in how players experience and respond to tilt emphasizes the need for a tailored approach in game design. Co-design sessions have highlighted the potential for a more personalized gaming experience, enabling players to adapt or choose game elements that align closely with their team’s unique needs and dynamics. This method acknowledges that different players and teams experience tilt in various ways. Frommel et al. [18] emphasize the difficulty of addressing the subjective nature of toxicity, which arises from various emotional factors. Therefore, applying a one-size-fits-all solution to the complex issue of tilt can be impractical or limited in its effectiveness. In comparison, our team-based intervention, “TILTED”, can be adapted to fit the specific characteristics of a team’s environment. Additionally, customizable card games can enhance traditional tilt intervention methods, such as reporting and banning [54].

Implication for Design. Future game designs should consider coping strategies that allow for customization or adaptation of the game to fit the unique characteristics of each team or player group. This could involve modular game elements that can be adjusted or selected based on pre-game assessments of team dynamics or preferences. Additionally, providing a platform for feedback and suggestions from players can guide ongoing refinements, ensuring that the game remains responsive to the diverse ways teams experience and manage tilt.

7.2.3 Importance of Shared Objectives.

Participants expressed they wanted more collaborative game actions or game goals. This highlights the potential importance of collaboration rather than competitive elements in managing tilt. Shared objectives, like collective goals or resources managed together, can act as central points for teams to unite around, promoting a sense of togetherness and common purpose. This approach may help to soften the negative impacts of competition that frequently contribute to tilt.

Implication for Design. In designing future team-based games for managing tilt, it may be advantageous to incorporate shared objects and goals that necessitate cooperation and collective strategy. This method not only assists in managing tilt but also strengthens the formation of Shared Mental Models among team members. By prioritizing collaboration over competition, such games can serve as effective instruments for fostering team cohesion, improving communication, and formulating approaches to handle stress and conflict.

In conclusion, the design implications drawn from the use of the “TILTED” tabletop game to manage tilt emphasize the need for psychological safety, customization in approach, and the promotion of collaboration through game design. Each of these areas offers a pathway to not only enhance the gaming experience but also to leverage games as a medium for developing effective team dynamics and resilience.

8 Limitations and Future Work

This study highlighted three key directions for future research and enhancement. Firstly, we observed a lack of diversity in our participant group, especially the testing groups which were exclusively male. This highlights the importance of adopting more inclusive recruitment strategies in future studies to ensure a gender-diverse participant pool.

Secondly, the “TILTED” game may have limitations related to participants’ communication abilities. As the core mechanism of this game is communication, individuals with higher persuasive abilities may be more motivated to engage in the game. Future research should investigate whether and how players’ communication abilities affect team cohesion, potentially revealing important dynamics that could influence the effectiveness of the game.

Thirdly, our research did not directly evaluate team performance in tilting situations after interacting with the “TILTED” game. Therefore, future research could conduct pre- and post-assessments of team performance and measure the game’s impact in real-world settings.

9 Conclusion

In this study, we explored the phenomenon of tilt in esports through user testing of a team-based intervention, “TILTED”, aimed at fostering open team communication. Our findings indicated that such interventions may facilitate ‘Ah-Ha’ moments, shared humor, and collaborative problem-solving among team members. Our results also highlighted the importance of allowing teams to build strategies for resetting and building empathy. Additionally, we applied our findings to the concept of Shared Mental Models, suggesting that creating strong team cohesion can help collectively navigate tilt. Lastly, we propose three design implications for future team-based interventions for managing tilt: 1) design for psychological safety, 2) support customization of both situations and coping strategies to fit group needs and dynamics, and 3) design shared objectives to foster shared meaning.

In conclusion, our research suggests that implementing a team-based intervention for tilt management in esports holds promise in assisting players in articulating their needs and cultivating a collective approach to emotional regulation. Improved internal team dynamics can enhance

resilience against tilt-related challenges from external teams. We propose that nurturing not only individual mental models but also Shared Mental Models through open communication can facilitate teams in honing the skills of emotional regulation necessary to navigate the psychological rigors of competition, enhancing both player well-being and team cohesion.

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A Attendance of Participants

Role	Name (Pseudonym)	Age	Gender	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	3.1	3.2	3.3	3.4	3.5
Youth players	Alex	15	M																					
	David	14	M																					
	Kevin	15	M																					
	Andy	15	M																					
	Gary	15	M																					
	Thomas	15	M																					
	Andrew	15	M																					
	Kai	15	F																					
	Oscar	15	M																					
	Adam	14	M																					
	Natalie	15	M																					
	Nolan	15	M																					
	James	14	M																					
	Michael	14	M																					
Aaron	14	M																						
Youth Coaches	Cathy	26	F																					
	Grant	26	M																					
	Brian	22	M																					
	Derek	21	M																					
	Emma	24	F																					
	Chris	24	M																					
	Amy	21	F																					
Youth program coordinator	Chloe	Adult	M																					
	Jacob	Adult	M																					
Youth program librarians	Javier	Adult	M																					
	Leo	Adult	M																					
	Tim	Adult	M																					
Researcher	Julia	Adult	F																					
	Justin	Adult	M																					
	Jack	Adult	M																					
	Evan	Adult	M																					
	Amber	Adult	F																					

B Survey of Gameplay Experience

Thank you for participating in our research. Please fill out the short survey to let us know about your gameplay experience. This will help improve the design of the card game.

Q1. How was the gameplay experience?

- (1) Not Satisfied
- (2) Slightly Satisfied
- (3) Neutral
- (4) Satisfied
- (5) Very Satisfied

Q2. What did you like about the game?

Q3. What did you NOT like about the game?

Q4. Were there any parts of the game that were confusing or challenging? If so, what were they?

Q5. Do you have any suggestions to improve the game?

Q6. What do you think the goal of this game was?

Q7. Would you recommend this game to other Esports players?

- (1) Yes
- (2) No

Q8. Why would you recommend this game?

Q9. Why would you NOT recommend this game?

Q10. What did you think of the debrief discussion?

- (1) Not useful
- (2) Slightly useful
- (3) Neutral
- (4) useful
- (5) Very useful

Q11. Were the debrief questions helpful for understanding your teammates?

- (1) Not helpful
- (2) Slightly helpful
- (3) Neutral
- (4) helpful
- (5) Very helpful

Q12. Did the questions help you reflect on your own experience of getting tilted (i.e., players' emotions negatively affecting the gameplay)?

- (1) Yes
- (2) No

Q13. Did the conversations and discussion help you understand new strategies you can use when you get tilted?

- (1) Yes
- (2) No

Q14. If yes, what strategies did you discover through the gameplay?

Q15. How realistic are these game scenarios?

- (1) Not realistic
- (2) Slightly realistic
- (3) Neutral
- (4) realistic
- (5) Very realistic

Q16. Do you think the strategies to manage tilt in the game (i.e., Heal cards) are effective?

- (1) Not effective
- (2) Slightly effective
- (3) Neutral
- (4) effective
- (5) Very effective

Q17. Are there any scenarios (i.e., Situation cards) or strategies for dealing with tilt (i.e., Heal cards) that we should add?

Q18. How do you deal with tilt? (personal strategy/experience)

Q19. Which version of the game did you play?

- (1) Digital version
- (2) Physical version

Q20. Which session did you participate in?

Q21. How many of the players in your session did you already know (e.g., acquaintance/friend/family)?

Q22. What is your age?

Q23. What is your gender?

- (1) Male
- (2) Female
- (3) Non-binary
- (4) Prefer not to say
- (5) Describe in your own words (___)

Q24. Choose one or more races that you consider yourself to be:

- (1) White
- (2) Black or African American
- (3) American Indian or Alaska Native
- (4) Asian
- (5) Native Hawaiian or Pacific Islander
- (6) Prefer not to say
- (7) Describe in your own words (___)

Q25. Are you Spanish, Hispanic, or Latino?

- (1) Yes
- (2) No
- (3) Prefer not to say

C Debrief Questions

- How was your gameplay experience?
- What do you do (if any) when you get tilted while playing games?
- Can you think of any instances where you were able to recover well from getting tilted? Or instances when you weren't able to?
- Did this game help you realize situations you may have been tilted and did not know?
- Would you use these interventions for yourself in real life? Did anyone learn about new interventions?
- Did you learn something new about your team players? Does the game help your teammates better understand each other?
- Do you think this game will help increase communication around teamwork, tilt, or strategies for when you get tilted? Why or why not?
- Do you think this game was effective in raising awareness of tilt and toxicity?

D Survey Data Summary

D.1 Do you think the strategies to manage tilt in the game (i.e., Heal cards) are effective? - Effectiveness

Effectiveness	Count	Percentage
Not Effective at All	1	5.88%
Not Very Effective	2	11.76%
Neutral	3	17.65%
Somewhat Effective	9	52.94%
Very Effective	2	11.76%
Total	17	100%

Table 5. Effectiveness of Strategies to Manage Tilt

D.2 How realistic are these game scenarios? - Realism of scenarios

Realism of Scenarios	Count	Percentage
Not Realistic at All	1	5.88%
Not Very Realistic	0	0.00%
Neutral	1	17.65%
Somewhat Realistic	7	52.94%
Very Realistic	8	11.76%
Total	17	100%

Table 6. Realism of Game Scenarios

D.3 What did you think of the debrief discussion? - Usefulness

Usefulness	Count	Percentage
Not Useful at All	1	5.88%
Not Very Useful	0	0.00%
Neutral	6	17.65%
Somewhat Useful	7	52.94%
Very Useful	3	11.76%
Total	17	100%

Table 7. Usefulness of Debrief Discussion

D.4 Were the debrief questions helpful for understanding your teammates? - Helpfulness

Helpfulness	Count	Percentage
Not Helpful at All	1	5.88%
Not Very Helpful	2	11.76%
Neutral	4	17.65%
Somewhat Helpful	8	52.94%
Very Helpful	3	11.76%
Total	17	100%

Table 8. Helpfulness of Debrief Questions

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