Friending to Flame: How Social Features Affect Player Behaviors in an Online Collectible Card Game

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ABSTRACT

Online Collectible Card Games (OCCGs) are enormously popular worldwide. Previous studies found that the social aspects of physical CCGs are crucial for player engagement. However, we know little about the types of sociability that OCCGs afford. Nor to what extent they influence players' social experiences. This mixed method survey study focuses on a representative OCCG, Hearthstone [24] to 1) identify and define social design features and examine the extent to which players' use of these features predict their sense of community; 2) investigate participants' attitudes towards and experiences with the game community. The results show that players rarely use social features, and these features contribute differently to predicting players' sense of community. We also found emergent toxic behaviors, afforded by the social features. Findings can inform the best practices and principles in the design of OCCGs, and contribute to our understanding of players' perceptions of OCCG communities.

CCS CONCEPTS

• **Applied computing** → *Computer games.*

KEYWORDS

Player behaviors, social features, online collectible card games

1 INTRODUCTION

Online collectible card games (OCCGs) are digital, networked contemporaries of collectible card games (CCGs). While CCGs (e.g., Magic the Gathering (MtG) [39], Yu-Gi-Oh! [27]) are still very popular, OCCGs have reached millions of players worldwide, with approximate annual income of 1.6 billion dollars to major game companies behind those OCCGs [31].

Previous studies have shown evidence that people play CCGs because of the aspects of card collection, deck creation and community involvement [2, 25, 54]. While collection of cards is required to allow players to express themselves in their deck creation, Adinolf and Turkay's study found that community involvement was the strongest motivation for players [5]. The authors found that game mechanics enabled social interactions during gameplay which then facilitated the formation of the community of a multiplayer CCG called Vampire the Eternal Struggle [55]. Conversations around deck creation and strategies within the affinity space (e.g., online forums) of the game strengthened the ties in the international player community. In this way, the game persisted despite going out of print multiple times in a decade. Although impressive, this finding is unsurprising. Extant research has shown that social interaction is important for player experiences and that players often engage in video games for social motivations [1, 51, 63].

At first glance, popular OCCGs (e.g., Hearthstone [24], Eternal [62]) seem to have more impediments to socialization than many other online games. First, as cross platform lighter weight games, they often lack communication tools. Second, unlike real time online games and physical CCGs [55], OCCGs have far less depth of player interaction in the mechanics. With these traits, it is possible that OCCGs may fail to satisfy players' needs for social interaction, and the formation of communities might be harder. It is, however, considerably easier to generate new assets and features for OCCGs than many other game genres and make changes to address player needs. While some believed that OCCG genre was oversaturated in 2016 [8], there are still multiple big titles booming in the market. They also thrive among their competitor online game genres and take advantage of the affordances of digital platforms, which make them an interesting case to study.

A prior ethnographic study with MtG players found that individuals may have different motivations when playing online vs. offline [50]. The author found that the virtual environment limited players' ability to develop collaborative skills while at the same time it enabled them to practice and improve their gameplay more efficiently. In short, game mechanics needed to be supplemented with further social design features to become more social and realistic in the virtual setting. Both technology and online game design have advanced considerably in recent years. Further research is needed to understand the effects and affordances of social features of contemporary OCCGs on players' social experiences.

This study investigates to what extent social game design choices influence sense of community in the context of an OCCG. To do so, we 1) identify and define social design features of a popular OCCG, Hearthstone, and organize them into different categories of sociability (i.e., presence, communication, and interaction [40]); 2) conduct an online survey to answer the following research questions:

RQ1: How often do players use different social features of Hearthstone?

RQ1a: To what extent do social features predict players' sense of community in Hearthstone?

RQ2: What are the players' attitudes towards and experiences with the Hearthstone community?

Our work contributes to HCI and games research communities by identifying a set of social features of a representative popular OCCG, and empirically assessing their relative impact on players' sense of community and attitudes towards the game community. We believe that designers of OCCGs can use these features to strengthen belongingness in the community. Lastly, when examining player attitudes towards and experiences with OCCG community, we identified an emergent behavior of "friending to flame": where players friend their opponents after the game only to flame them and ruin their mood. This is a consequence of the design choice to eliminate direct verbal communication with strangers during gameplay; and exemplifies challenges of designing to prevent negativity in an online competitive game.

2 BACKGROUND

Social Affordances of Online Games

Online games offer unique opportunities for players to interact and form friendships, and strengthen existing social ties [48]. Crenshaw and Nardi [14] use the notion of social affordances developed by Bradner [9] when studying these opportunities. According to Bradner's definition, social affordance is the relationship between the properties of an object and the social characteristics of a given group that enable particular kinds of interaction among members of that

group (p.68) [9]. Crenshaw and Nardi highlighted several affordances in a Massively Multiplayer Online game (MMO), World of Warcraft (WoW) [23]. These included text-based chat channels, character animations or emotes that make avatars perform actions such as laughing, crying or dancing. Authors examined the effects of group finder feature, a feature that allows players to quickly form a group to complete in-game tasks, and cross-realm zones on players' social experiences. They concluded that while developers designed systems that prioritized efficiency (e.g., how quickly a player can find someone for a dungeon run), they often neglected players' social needs (e.g., after a group task was over, there was no more socialization). Other studies found that voice chat can improve trust building and community formation [60] and the early peer-to-peer communications increase players' commitment via group atmosphere in MMOs [15].

Prior research on Facebook social games categorized social features into different types of sociability (i.e., presence, communication and interaction) [12, 40]. Presence is defined as a psychological state where virtual social actors are experienced as actual social actors in both sensory and non-sensory ways [32]. Presence affects player engagement [16]; and knowledge of others may encourage players to socialize with them [40]. Online games achieve social presence using design features such as presenting information about co-player status, or showing others' avatars in the same game location. Building on their finding that many players are "alone together" in WoW, Ducheneaut et al. suggested that supporting direct interaction might be less important than designing for a sense of social presence. Communication affordances (e.g., text, voice) allow players to converse and exchange messages in various ways [12, 40], and can impact presence. Lastly, interaction features, building on the first two categories, provide means for player-to-player interactions. These range from competition or collaboration in gameplay to sending a player a friend requests or gifts [40]. Reciprocity, cultivated through gifting and helping behaviors, was found to be a key mechanism that supports relationship maintenance [61].

Sense of Community in Online Games

Social features can affect players' social connectedness with others [49]. Social connectedness, in turn, can impact player motivations and psychological wellbeing [45]. It is also associated with high performance [34, 44]. A large-scale study with over 3 million players found that players with stronger social relationships tend to have a higher performance. These players are also likely to play more often and longer, which may also to contribute to the development of communities and impact players' sense of community.

Sense of community (SOC), described as "spirit of belonging together" has been a topic of interest in games research

[19, 36, 37]. Sense of virtual community (SOVC) is based on the offline equivalent, SOC, in online settings. It is defined as the "members' feelings of membership, identity, belonging, and attachment to a group that interacts primarily through electronic communication" (p.827) [7]. SOVC in games is most often studied in the context of MMOs. This is mostly because MMOs inherently have social structures such as guilds, different servers, as well as collaborative game mechanics that lead to social experiences that may encourage players to form friendships and bond together [17, 37, 51]. Studies found that it is common for players to transition from in-game-only friends to real life (RL) friends [46] and/or continue their friendships in other games [13]. O'Connor et al. [37] encouraged researchers to examine the game features that affect the formation and the growth of communities.

Game companies also make deliberate design decisions to support communities (e.g., designing to deal with negative behaviors in games[4]). Toxicity is found to impact players' experiences, retention and player communities [6, 47]. Kou and colleagues [28, 29] studied a game community through the lenses of governance and prosocial behaviors in the Tribunal system of League of Legends, a Multiplayer Online Battle Arena game by Riot Games. The system was used to deal with toxic behaviors in the game through empowering players to be civic-minded to solve some of the most destructive issues in the game's online community. As of 2014, Riot Games moved from Tribunal to automation, which upset many gamers. Authors found that when Tribunal system was removed, many civic-minded players' participatory experiences and agency became limited and diminished.

Overall, social design decisions made by game companies can have tremendous impact on communities. They can help communities flourish or cause their demise. In the next section, we will review the social affordances of Hearthstone, the representative OCCG in our study.

Hearthstone

Hearthstone is one of the most popular OCCGs currently in operation. It was developed by Blizzard Inc. and released in March 2014 [24]. As of March 2017, it had 70 million players. Hearthstone has annual international tournaments with $1M prize money. Its theme is loosely based in the Warcraft universe, so the game may capitalize on players' familiarity with its game world. It is a two-player turn-based competitive game which functions on a power source "mana" to play cards of differing mana costs. Players start with 1 mana and gain 1 more each turn up to a maximum of 10.

Hearthstone also eschews the complexities of types of mana. The biggest simplification, though, is that a player cannot act during their opponent's turn. This makes the interaction design and user interface simple (see Figure 1), as players don't have to keep pausing to ask if their opponents

Figure 1: Hearthstone main game interface

Table 1: Social Features of Hearthstone

Social Affordance	Features
Presence	Scorekeeping
	Spectate
	Presence information
	Friend bonus
	Recent play
Communication	Invite requests
	Using emotes
	Synchronous chat (friends only)
	Request activity (e.g., daily quest)
Interaction	Competition
	Send gifts
	Receive gifts

want to interrupt. However, it reduces the strategic depth, and player interaction. Still, Hearthstone has implemented incentives to directly encourage rudimentary socialization, in the form of quests that we will detail later.

Social Affordances of Hearthstone

We identified and categorized the social features of Hearthstone following a similar method reported in prior studies that were conducted with social Facebook games [12, 40]. Two researchers played and examined the game with the goal of identifying the social features (e.g., game elements, game mechanics, affordances) that can provide opportunities for players to interact and communicate with each other, or give a sense of social presence. Table 1 provides a summary of these features. Next, we present examples of social features of Hearthstone in each category with brief explanations.

Presence: Spectating. Several games, mostly those are considered as esports, provide options to spectate players' online friends' games (e.g., Spectator Mode in League of Legends). Hearthstone gives explicit incentives to players to watch their friends' games through a daily quest called "Watch

and Learn" which asks players to watch their friend win in the Spectator Mode. They earn rewards if the friend wins the match. Although players can watch their friends play as much as they like, this quest is the only task that gives extrinsic reward to spectate others play in the game.

Presence: Scorekeeping. Scorekeeping in online game settings can be defined as comparing one's rank or level to other players' standing or their own prior standing. For some, it may be simply a challenge, i.e. "Can I reach legend rank?". For others, they may compare their standing to the people on their friends list to gauge their relative skill sets. In Hearthstone's ranked play system, players start with Rank 25 and have to work towards Rank 1, and then to Legendary. Players lose four ranks every month which can make it difficult for players to estimate their success in relation to other players.

Communication:Emotes. To curb the toxic behaviors in esports community, designers opted out of open text communication affordances for Hearthstone during matches with strangers [30]. Players can communicate using six different emotes while they play with stranger. These are: "Thanks", "Well-played", "Greetings", "Wow", "Oops", and "Threaten."

Communication: Recruitment of RL friends. Online games often encourage players to form relationships beyond random in-game interactions via "friending" mechanics. Players can friend people they played with or connect with their real-life friends by sending them a recruitment invite. In Hearthstone, players have to know their friends' username to friend them by using "Recruit A Friend" function. Upon accepting the request, both players get in-game rewards. These features help players to bridge and bond their social capital [51, 58], and may lead to improved performance, increased pro-social behavior, and engagement in the game [34].

Interaction: Sending gifts. In online games, sending and receiving gifts may encourage interaction among players, foster reciprocity, and give players a sense of belongingness to a larger group [61]. While trading cards is a core mechanism for CCGs, it is not for OCCGs. In Hearthstone, the only way someone to send a gift to their in-game friend is to pay for it with real money. Gold, the in-game currency, cannot be used to send gifts to other players.

Interaction: Challenging friends for a game. Competition is a major mechanism in video games to increase player motivation and positive player experiences (e.g., [20, 42, 57]). It is the main player experience in OCCGs. In Hearthstone, the only way for someone to play with a pre-determined person is to challenge them to a match. Otherwise, all other matches are random based on players' standing in the game. A daily social quests called "Friendly Feud" is designed primarily to

encourage players to interact with their friends by challenging them to a match. Each player receives 80 gold which is one of the best rewards for daily quests.

In previous studies, researchers suggested that it would be beneficial to empirically study to understand social features that contribute to social relationship of players [37, 40]. In this study, we examine the effects and affordances of the social features on players' sense of community. To do so, we conducted an online survey as explained in the next section.

3 METHODS
Participants and Data Collection
We surveyed Hearthstone players by posting a call for participation on related Facebook groups, official Hearthstone forum and Reddit subgroup. Players of 18+ years were invited to participate. A single AUD$100 Blizzard gift certificate was raffled among the respondents who had entered their email addresses at end of the survey. The survey was piloted online with twenty six players through a Facebook CCG group using snowball sampling. The main purpose of the pilot was to get feedback about whether the questionnaire items were meaningful in the context of an OCCG, particularly Hearthstone, and to ensure that there were no technical problems with the survey.

The final dataset included responses from 502 people who answered demographics questions. Table 2 summarizes the characteristics of the sample. The majority of participants are male who are between 18 and 34 years old. In terms of play behaviors, a majority of participants reported having played the game more than 2 years. Weekly play time is up to 6 hours for about half of the participants.

Data Collection Instruments
We developed a survey to investigate Hearthstone players' use of social features and the impact of the social affordances on Hearthstone players' SOVC as well as to collect information about their play habits and demographics.

Demographics and experience. We collected data on participants' demographics information (e.g. age, gender), game expertise (e.g. number of hours played per week), favored modes of the game (e.g., solo, ranked, casual), and asked with whom participants play the game. Prior studies showed that players have different experiences when playing with family, friends or strangers [43, 56](e.g., when playing with friends, the focus is on sociability and enjoyable leisure whereas playing with strangers give players most flexibility on choosing what and how they want to play) [18]. In Hearthstone some social features (e.g., synchronous chat) are only available to friends, which can chance the social dynamics and effect their SOVC.

Table 2: Summary of the Respondents' Characteristics

Gender	Female	22
	Male	475
	Other	5
Age	18-24	285
	25-34	167
	35-44	39
	45+	11
Tenure (months)	Less than 6	20
	7-12	15
	13-24	85
	More than 24	382
Hours (last week)	Up to 3	143
	4-6	127
	7-9	71
	10-12	61
	13-15	34
	More than 16	66

Table 3: Descriptive statistics on the frequency of using social features and playing with others

	Mean	SD
PRE:Spectate	2.74	1.29
PRE:Scorekeeping	2.74	1.27
COM:Use emotes	3.43	1.15
COM:Synchronous chat	3.04	1.19
INT:Challenge friends	2.97	1.11
INT: Recruit RL friends	2.36	1.13
INT: Send gifts	1.53	.81
Play with strangers	3.74	1.30
Play with RL friends	2.95	1.19
Play with online only friends	2.40	1.01

Social features of Hearthstone. These are the features that we explained earlier (see Table 1). We asked participants to estimate the frequency of using the given social features when they play Hearthstone. The items were on a 5-point Likert scale (1=Never; 5=Always). Frequency of engaging with social features of OCCGs had a reliability score of .68 which was acceptable in prior studies (e.g.,[26]).

Social quests. We asked participants to rate on a 5-point Likert scale (1=Not at all; 5=Extremely) how much they liked the social quests in Hearthstone (i.e., Watch and Learn, and Friendly Feud). We also asked them to explain why they liked these quests.

Sense of virtual community. We used SOVC measure developed by Blanchard [7]. Minor adjustments to the wording of the items were made to contextualize the measure to the Hearthstone community. For instance, "I recognize the names of most members in this group" was changed to "I can recognize the names of prominent members in the Hearthstone community." While this is open to interpretation, it reflects the large Hearthstone community better than the original item does. Based on the pilot study, we removed one item "Other members and I want the same thing from the Hearthstone community." Thus, the final measure included 16 items (Cronbach's alpha = .93).

Lastly, in an open-response question, we asked participants about their attitudes towards and experiences with the Hearthstone community. Considering that gaming communities have different characteristics with varying meaning

for players [35], we wanted to know player experiences with and attitudes towards the Hearthstone community. We did not prime them to focus on in-game or out-of-game social experiences. Instead, we were interested in learning about what comes to their mind when thinking about the game's community.

An inductive thematic analysis method at the semantic level was used to analyze the qualitative data [10]. According to Braun and Clarke [10], there is no hard and fast rule about what makes a theme. Participants' responses were usually 1-2 sentences long which allowed us to code all responses. We gleaned different types of attitudes (e.g., positive, negative) after reading the responses. Then, we re-read and coded each of 344 responses in themes, and created new ones as we saw the need using Nvivo qualitative analysis. Overall, we had three major themes: attitudes, game comparisons, social affordances of Hearthstone.

4 RESULTS

Frequency of Using Social Features

Participants reported the frequency they use the social features when they play Hearthstone on a 5-point Likert scale. Descriptive statistics (Table 3) show that participants rarely use social features. Emotes are the most utilized social feature reported by participants, which, on the Likert scale, falls close to 'sometimes'. The least frequent social activity is gifting.

Most of the time people play Hearthstone with strangers; sometimes with their real-life (RL) friends; and rarely with online only friends. In the light of these findings related to the social play habits, it makes sense that players do not use available social features. For example, when playing with strangers, synchronous chat is unavailable. The only social features they can use are emotes and scorekeeping (if only it is a Ranked match).

Table 4: Descriptive statistics on how much participants like the social quest

	Mean	SD
Watch and Learn (N=496)	3.61	1.37
Friendly Feud (N=499)	4.29	1.13

Social Quests of Hearthstone

We explained the available social quests in Hearthstone earlier in the paper. Table 4 shows that, on average, players like Friendly Feud, where players are encouraged to interact with their friends by challenging them to a match, more than Watch and Learn, where they are asked to watch their friends' matches until the friend wins. This is not surprising. Players still play the game in Friendly Feud whereas they passively watch in the other social quest, without any input. In an open-response question, we asked participants why they liked the social quests (N=493). They mostly talked about their experiences with Friendly Feud, where both parties get rewards, regardless of who wins. As expected, the main reasons are very pragmatic: participants like social quests because they have high rewards (45%), low effort (9%), and high rewards for low effort (18%). Indeed, these quests are some of the most profitable ones in the game. One participant stated that "I like them because they reward gold or card packs which help me catch up to other players." In addition to rewards, players talked about socialization as a reason to complete these quests (19.6%). Below are the subcategories to related to socialization.

Purposeful Socialization with Tangible Rewards. Social quests allows some players to keep and strengthen their social ties. One participant stated that "It allows me to stay in contact with other players and socialize with them." Another participant reported that these quests provided him with an opportunity to engage in further socializations and potentially make new friends:

"They provide a way to make new friends, like if none of your current friends are online you'll generally sent a request to a recent opponent and you never know how that might turn out. To a lesser extent however, they also give good rewards." - Male, plays 21+ hours a week.

Several participants also remarked that they liked being rewarded for socialization (8%). Below is a representative quote about social quests and rewards:

"I like playing with my friends. The reward is like extra bonus." - Male, plays 10-12 hours a week.

Casual Competition and an Excuse for Socialization. For some, sharing strategies is a way of socialization: "It has lots of fun and chatting... we give each other tips and strategies."

These quests can also be an excuse for players to play with their friends. "In general, my actions and decisions in the game are very reward oriented. Thanks to these quests, I get a chance to play with my friends." Another said, "Allows for more gold to save for the new expansion while getting an old friend to play Hearthstone against me again." - Male, plays 13-15 hours a week.

Playing against a friend can be also a motivation. One player remarked as, "...there is no feeling like a victory after defeating your friends."-Male, plays 21+ hours a week.

Some participants stated that they liked Friendly Feud because they did not have to be competitive and stick to meta game, which is the norm with Hearthstone: "...casual-don't have to stress over winning or playing the best meta decks-just play something fun and enjoy." Another stated that "it allows me to try out decks that are not in meta game, and still get rewarded." - Male, plays 21+ hours a week.

Overall, social quests afford purposeful socialization with rewards, allow for more relaxed gameplay where players can experiment with different deck building ideas, make them feel good about getting rewarded for an activity they already do where share tips and strategies, and, for some, encourage them to reach out to their friends with weak ties for a game.

How do Social Features of Hearthstone Predict SOVC?

We investigated the predictive power of social design features on players' sense of community using a multiple regression test. The results indicated that the given predictors explained 22% of the variance (R^2 = .22, $F_{(7, 416)}$=16.92, p<.001). Table 5 show that scorekeeping (e.g., comparing their ranks to their friends' ranks), spectating, sending gifts to their friends, and chatting while playing contributes most to predicting players' SOVC. Interestingly, two social features, challenging friends and recruiting, that allow people to interact did not contribute to the model significantly. This may be because those aspects are heavily de-emphasized by the game design.

Table 5: Descriptive statistics on the frequency of using social features and playing with others

	B	SEB	*B*
PRE:Spectate	.076	.04	.156*
PRE:Scorekeeping	.123	.034	.186**
COM:Use emotes	.036	.033	.050
COM:Synchronous chat	.110	.040	.156*
INT:Challenge friends	-.026	.040	-.035
INT: Recruit RL friends	.063	.037	.085
INT: Send gifts	.156	.050	.147*

*p<.05;**p<.001

Player Attitudes towards the Hearthstone Community

344 participants responded to the open-response question which asked about players' attitudes towards and experiences with the Hearthstone community. Overall, respondents seem to have polarized feelings and attitudes towards the community: some love it, some hate it, and, to a lesser degree, some have both feelings for different aspects. Below we present the findings on the types of positive and negative experiences participants had and the design aspects that might have caused those experiences.

Positive attitudes towards the Hearthstone community. Almost half of the respondents (45%), had positive attitudes towards the community, stating the helpful and intellectual characteristics of the players. 20% of these compared Hearthstone to the communities of other online, especially, team-based games. Here is a representative comment from a player who talked about the prosocial behaviors in the Hearthstone community: "Compared to other online game communities, they [Hearthstone community] show more sportsmanship and understanding. They answer questions in detail and with patience."- Male, plays 21+ hours a week.

Comments about the intellectual capacity of the community was salient in other players' experiences. Another player, after remarking on friendliness, added that the community was "...open to any creative ideas, and rewards. It is very innovative and intellectually stimulating."- Male, plays 10-12 hours a week. Another player commented that the community consisted of "Mostly nerds. Very intellectual and well educated players..."- Female, plays 21+ hours a week.

We found three main characteristics that may facilitate players' positive experiences with the game community.

1. Mature player base: About 17% of the participants think that young players are responsible for most toxic behavior in online games. They reported that the Hearthstone community has a higher number of older players compared to other esports games, and think that this helps reducing toxicity in the game. A representative comment is "Compared to many other games, players' average age is higher and the use of slang is much less..." Some players also think that the game is tailored toward older players because of the financial reasons "...after certain point I can say you need to spend money. This is why it keeps younger players away..." Some players even attribute the mutual respect among gamers to their age.

"Because of the more mature player group compared to other games, players respect each other a lot more and they like to help. Even though you can get angry because of the luck factor, I enjoy being part of the community."- Male, plays 4-6 hours a week.

2. Game mechanics: About 30% of the players talked about game mechanics when reporting their positive experiences

with the game. Some players put forward one-to-one competitive mechanics as the main reason the community is friendly. The representative quote is "Because it is not a team game, you don't suffer from the bad behavior of your teammates..." - Male, plays 13-15 hours a week.

Participants think that because the game requires strategy and deliberation, pure luck does not win games consistently, which may attract people who prefer games that make them think and strategize. A player also talked about the variety in available cards encouraged him to create new strategies: "Because of the diversity of the available cards, I need to develop a new strategy for each game." - Male, plays 4-6 hours a week.

3. Restricted chat: About 20% of the participants find restricted chat as a positive and the most salient design choice that reduces the frequency of toxic behavior in the game. In a representative quote, an Australian player states that the game community is "...generally better than most... largely due to default switched off chat."- Male, plays 1-3 hours a week.

Emergent toxic behaviors. Participants, 34%, also talked about different types of negativity they experienced in the Hearthstone community. Similar to those who recounted their positive experiences, players talked about both in-game and out-of-game incidents. They used the terms such as toxic behavior, bad manners (BM, a term used to describe intentionally obnoxious behavior within Hearthstone, and can be considered close to trash talk), over-reactivity and over-demanding. One participant described general player behavior as "trolling." Another player complained about a plethora of egocentric posts, "in our Facebook group, a lot of people post to show off which is not informative and annoying to me." Another subject of complaint was negative attitudes towards certain play styles: "They [players] are not friendly. Everyone likes a class. But, some exaggerate it and treat players who play other decks as stupid. It is not nice. I think there is huge toxicity."

Some players experienced conflicts in the community. One of the female players complained about negative behaviors especially towards woman in the community, while still noting that it is not as toxic as other games, which has been a common problem in the competitive game scene.

"...not as toxic as other games, but can still have some terrible people. Especially toward women, which is why I don't get to be as social as I like. I find a lot of them to be intelligent." - Female, plays 1-3 hours a week.

Another said that he found no "in between" people in the community, "...Either they are awesome and amazing and the exact kind of people I want to be playing with or they are the worst of the worst and telling me to go kill myself." - Male, plays 4-6 hours a week.

One particular emergent behavior was driven by the restricted chat function in the game. Players talked about a flaming behavior, where opponents send a friend request after their match. Their only intent is to curse and insult if the player accepts their friending request. Because of this, players reported rarely accepting a friend request from someone after winning a match because they think the player will be toxic. A Swedish player said "It can be quite toxic when I get a friend request from a stranger after a game they lost." - Male, plays 7-9 hours a week.

Participants reasoned that the competition might be the main reason for such behavior. A representative quote from a Turkish player highlighted the competitive aspect of the game as a reason for this flaming behavior:

"Because many players focus on winning and don't consider losing as an option so they lose their nerves. There is only limited number of people who friend you to actually have a conversation. Majority remove you from friendship after they swear at you." - Male, plays 4-6 hours a week.

Participants talked about different types of behavior that they labeled BMs. These included: abusing emotes to spam, humiliate, or behave passive-aggressively; wasting time on purpose; or taking unnecessary actions during matches. One player reported, "7 out of 10 players I play use spams emotes and does BM..." While for some players, BM may be considered as part of competitive gaming, as a way of bantering, a majority of the participants in this study do not like it.

Player experiences with affinity groups. Some participants (11%) talked about the Hearthstone community in Facebook groups or other affinity groups, and made comparisons between player behaviors in these groups and in the game, and talked about their mixed experiences. "...because there is no opportunities for communication during the game, except emotes, toxicity is not felt during gameplay, thus, does not elevate to the level of disturbance. But, you can see hundreds of aggressive behaviors in various online groups and forums."

Relatedly, a British player reported his experiences as an admin of a Facebook group, and concluded that the community is friendly despite occasional negative behaviors.

"I'm an admin of a Facebook group which has allowed me to see the group grow. I've seen salt at its highest but it is occasionally. Otherwise everyone is friendly and gets along. Everyone supports each other as a family." - Male, plays 13-15 hours a week.

Another player talked about potentially destructive behaviors of some members on a Facebook group, and still concluded that he likes broader game community despite those players.

"I have been trying to help people in this damn group (I know everything about the game. I have been playing it for 4 years) but those who knows nothing about HS keep commenting on every post as if they know something. But, when I think about worldwide HS community, I have lots of friends, and we help each other and have fun together..." - Male, plays 21+ hours a week.

Overall, almost half of the participants had positive experiences with the Hearthstone community. We also found that the limited chat function creates interesting dynamics in the game, potentially hindering socialization. Players use emotes both to communicate with each other playfully, but also to spam their opponents to annoy them. Because Hearthstone has strategic components, annoyance can interfere with player strategy. Inaccessible chat to general players removes potential verbal abuse in games, but may lead to behavior like friending to flame their opponents.

5 DISCUSSION

This section is structured around the research questions and associated recommendations.

Frequency of using different social features of Hearthstone

Our first research question investigated how frequently players use the social features and to what extent these features predict players' sense of community. Overall, players reported seldom use of the social features. The most frequently used social feature was emotes. This is expected as emotes help players communicate how they feel, and sometimes they are used as a strategy to intimidate or annoy other players. Participants, in response to the restricted chat, wanted more emote options, which would allow them to communicate more diversely. For instance, in another OCCG, Eternal [62], players have a range of options to choose from to create a set of emotes to use in-game. Providing players with such emotive choices can improve their enjoyment and autonomy [3, 52].

Predictive power of social features on sense of community in Hearthstone. When studying predictive power of these features, there was a different story. Among seven features, only four significantly contributed to explaining the variance in players' SOVC: scorekeeping, spectating, sending gifts, and synchronous chat. Spectating and scorekeeping are categorized as features that give players sense of social presence, which is a subjective experience that players feel the existence of others in the same platform. Spectating enable players to watch matches of people in their friends' list live and open the possibility that they can discuss strategies with them afterwards. Game designers and companies should consider providing tools for players to communicate with other spectators, annotate or take notes which can make watching matches more active. Real-time dashboard support developed by Charleer et al. is a good example of an effort

towards enhancing spectator experiences with further game data [11].

Scorekeeping is a practice where people compare their standing with others' in their community, and was the most significant predictor of sense of community in this study. This finding is in line with previous studies which found that leaderboards improve players' sense of belonging [38] and may also encourage people to socialize more [40]. In a competitive Hearthstone context, it may encourage friendly competition (e.g., "I want to beat my friend moving up on the ladder this month") or may lead to other social behaviors such as requesting mentorship from friend circles or using services like GamerSensei (https://www.gamersensei.com/). It is also likely that players engage in scorekeeping to satisfy their competence needs [45]. Thus, when their needs for competence is not satisfied, they may experience motivation loss and frustration [22]. Sending gifts may boost helping behavior and thus increase players' sense of community, and sense of relatedness. While it was a significant predictor of players' sense of community, it was the least practiced social activity in Hearthstone. It is possibly because players cannot use Gold, in game money, to purchase to gift items. Developers may consider other ways to incentivize players' sending gifts to each other. For example, some select items may be bought with either Gold or real money, or designing a quest whose reward will almost replace the money that players may spend on the gift. These actions can both satisfy players' sense of agency and relatedness by connecting people [45].

Despite rewards, recruitment of real life friends was rather low. Previous studies found playing with friends has benefits including a strong sense of social connectedness and enjoyment [43, 56]. When playing with friends, players focus on sociability and enjoyable leisure whereas playing with strangers gives players most flexibility on choosing what and how they want to play [18]. Hearthstone's main social features (e.g., synchronous chat) are only available to friends, which can enhance socialization and effect their SOVC. Developers can further encourage recruitment, including designing special quests or improving the rewards for recruitment. Considering many of the social features are available when playing with friends, having enough friends to play can improve the chances of using social affordance of these features. Expectedly, Hearthstone players, on average, play with strangers where they get matched by an algorithm based on their success in the game. We found that participants rarely play with online only friends, people that they met online and friended. This make sense as we found in the qualitative findings that players are hesitant to accept friendship requests. They don't want toxicity and have fear of friending to flame. Many reported having been exposed to such behavior, and becoming cautions about accepting friend requests from strangers. This shows a delicate relationship

between taking design-based measures to prevent toxicity and hindering socialization.

When it comes to social quests, participants prioritize them because of "less effort" and "more reward" followed by socialization. Among the two social quests, participants prefer Friendly Feud that requires them to be active participants and provides rewards to both players. Participants who like Watch and Learn like it more because they enjoy spectating their friends' games and sometimes learn strategies. This seems to be what game designers aim to do, yet the spectate quest has lower participation rate due to potentially more time commitment and passive stance. It is also possible that these quests don't go far enough in promoting social behavior. They encourage one-time interactions with already existing friends. Possible deeper social quests might include ones that encourage the player to make new friends, and play more with them: e.g. "Make a new friend and play 3 games with them." While many might end after the quest, planting extra seeds of social connections might bear fruit. Another possibility might be to make the quests more frequent: possibly give at least one social quest per week. That may encourage making more friends (to more reliably finish those quests), or strengthen existing relationships.

Players' attitudes towards and experiences with the Hearthstone community

The second research question deals with players' attitudes towards and experiences with the Hearthstone community. Participants reported conflicting adjectives when defining the community: inclusive, friendly, creative and helpful on one side; selfish, mean, crybaby and toxic on the other. Participants compared the Hearthstone community to other online competitive game communities, and remarked that the Hearthstone community is more mature, friendly, and less toxic than those communities. They indicated that game mechanics is one of the reasons. The deck design requires thinking and strategy. This is consistent with a prior study that found that CCG players are high on the scale for Need for Cognition, meaning that the players like thinking and strategizing [54].

Players think that the lack of general chat in the game helps to control toxic behavior that they experience in other online, mostly team-based, games. However, they also talked about bad manners and other emergent behaviors that circumvent the absence of text-chat. For instance, "friending to flame" behavior makes players cautious about accepting any friend request from strangers in the game. This behavior is a good manifestation of attribution theory to explain toxic player behavior: when a toxic player recognizes a poor performance, he looks for someone other than himself to blame. They need to communicate their frustration to their

opponents by flaming in any means possible: sending the opponent a temporary friend request to swear at them, and then removing the victim from friends list. As Williams state "...for better or worse, the systems of games incentivize ordinary people to make choices and behave in ways they otherwise wouldn't." (p.173) [59]. The alternative may be a system that exists in other competitive games, where players can flame directly. The question, which we don't have data to answer is: 'Does the reluctance to friend people due to "friending to flame" inhibit formation of friendship and community more than the standard chat systems which more readily permit flaming?'

Overall, it is not clear the extent to which silencing players reduces toxicity in the game. It is certain that muting players does not help with enabling socialization. Considering the importance of community and socialization for players' motivations and future play intentions [34, 41], developers need to devise methods to moderate text and voice communication, and encourage players to use other social features. For instance, Faeira OCCG has a Discord channel linked directly from game UI. Other potential design features include: profanity filters, buttons to report toxicity, or positive reinforcement where players can honor a friendly player. It would be beneficial to know whether these help with and encourage players' socialization and SOVC.

6 LIMITATIONS AND FUTURE RESEARCH

The concept of virtual game community in non-MMOs is not well-crafted. In MMOs, there are community frameworks created by developers (e.g., guilds and servers), game tasks (e.g., group quests, raids), and there are specifically designed places in the game world where players go to accomplish their task (e.g., Iron Forge city in WoW). These together help to give players a SOVC through shared goals and experiences. In the competitive context of OCCGs and due to lack of "place" in the game, it may be harder for players to conceptualize what the Hearthstone community means for them.

While this paper only focused on a single OCCG, player experiences may differ across games even in the same genre [53]. However, we predict that our results could be generalizable to other OCCGs because, to our knowledge, they use similar social features. For instance, following the lead of Hearthstone, other OCCGs also removed chat from their social features. Thus, we believe players' social experiences are comparable to other OCCGs.

This study suffers from a limitation of online survey studies: the data is self-reported and the respondents are self-selected. We aimed to deal with the self-selection bias by posting the survey in multiple channels (e.g., Facebook groups, Reddit, forums). While this might have increased the number of people who saw the call for the study, the responding

participants are most likely to be engaged with the game and eager to participate in activities related to it. Even though there is some variation of play behaviors, we acknowledge that our findings may reflect motivations, beliefs, and behaviors of active players. Future research should complement survey data with data from other sources (e.g., interviews, experiments, log usage data). It would be ideal to use objective data (e.g., log data) on the user statistics such as the number of friends one has, the percentage of the games they play with their friends, the frequency of using social features so on. However, this approach requires collaboration with game companies, which is challenging.

Furthermore, this study is correlational. Future studies may investigate the potential causal effect of different social features on player behaviors. However, we also note that our mixed method approach provided more evidence to complement the insights gained from correlations.

Even though our study casted a wide net to recruit participants, 95% of our sample were male. This is not surprising since there is evidence that OCCG players are predominantly male [31]. However, it makes it difficult to examine the relationship between gender and social features when understanding their impact on players' behaviors. Overall, our findings may reflect only male OCCG players' experiences and behaviors.

Lastly, we did not ask questions directly about players' social engagement outside of the game (e.g., streaming, posting on FB groups). These places (e.g., game forums) are considered as affinity spaces and provide multitude of ways for players to participate [21] and be part of a game community [33]. A unique, out-of-game, in-person socialization for Hearthstone is Fireside Gatherings, supported by the game's developers. Players can register to organize Fireside Gatherings, and invite others to attend via local posts. In these gatherings, players meet in person and play Hearthstone together. They usually earn a special card back or a cosmetic skin when they attend a gathering. Engaging in these social activities may further explain the variance in players' SOVC. Thus, future studies should ask about the frequency of different out-of-game socializations.

7 CONCLUSION

This study is the most comprehensive study with OCCG players to our knowledge that identified social features of a popular representative OCCG, Hearthstone, and investigated to what extent these are predictive of players' SOVC. Along with findings from qualitative data on players' experiences with the community, results from this study would give guidance to game designers who are planning to design the next OCCG for the market. However, we emphasize that due to our sample, our findings may primarily reflect male OCCG players' experiences and behaviors. Thus, we would

like to caution readers from making generalizations from our findings to all participants or all OGGCs. This study also has theoretical contributions because it expands on previous studies that identified social features in other types of games including social network games and MMOs. Furthermore, we uncovered different social behaviors such as friending to flame and emote spamming that were facilitated by the social affordances of Hearthstone. Potential toxic behaviors from strangers create barriers for players' socialization and community building. Future studies are needed to uncover whether communication restrictions can be circumvented with other types of social features to enable socialization while at the same time reducing the toxicity in the game.

REFERENCES

[1] B. Abedin. 2011. Investigating the Trend of Non-Task Social Interactions in Online Collaborative Learning Environments. In *2011 44th Hawaii International Conference on System Sciences*. 1–8. https://doi.org/10.1109/HICSS.2011.256 00008.

[2] Sonam Adinolf and Selen Turkay. 2011. Collection, creation and community: A discussion on collectible card games. In *Proceedings of the 7th International Conference on Games + Learning + Society Conference (GLS'11)*. ETC Press, Pittsburgh, PA, USA, 3–11.

[3] Sonam Adinolf and Selen Turkay. 2011. Controlling your game controls: interface and customization. In *Proceedings of the 7th international conference on Games+ Learning+ Society Conference*. ETC Press, 13–22.

[4] Sonam Adinolf and Selen Turkay. 2018. Toxic Behaviors in Esports Games: Player Perceptions and Coping Strategies. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts*. ACM, 365–372.

[5] Sonam Adinolf, Selen Turkay, and Devayani Tirthali. 2012. In Torpor, Not Dead: A Look at a Collectible Card Game That Sticks Around. In *In Proceedings of Games + Learning + Society 8.0*.

[6] Jeremy Blackburn and Haewoon Kwak. 2014. STFU NOOB!: predicting crowdsourced decisions on toxic behavior in online games. ACM Press, 877–888. https://doi.org/10.1145/2566486.2567987

[7] Anita L. Blanchard. 2007. Developing a Sense of Virtual Community Measure. *CyberPsychology & Behavior* 10, 6 (Dec. 2007), 827–830. https://doi.org/10.1089/cpb.2007.9946

[8] Alan Bradley. 2016. Is the digital CCG boom a bubble? Analysts weigh in. /view/news/277947/Is_the_digital_CCG_boom_a_bubble_Analysts_weigh_in.php

[9] Erin Bradner. 2001. Social Affordances of Computer-mediated Communication Technology: Understanding Adoption. In *CHI '01 Extended Abstracts on Human Factors in Computing Systems (CHI EA '01)*. ACM, New York, NY, USA, 67–68. https://doi.org/10.1145/634067.634111

[10] Virginia Braun and Victoria Clarke. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology* 3, 2 (Jan. 2006), 77–101. https://doi.org/10.1191/1478088706qp063oa

[11] Sven Charleer, Kathrin Gerling, Francisco GutiÃľrrez, Hans Cauwenbergh, Bram Luycx, and Katrien Verbert. 2018. Real-Time Dashboards to Support eSports Spectating. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play (CHI PLAY '18)*. ACM, New York, NY, USA, 59–71. https://doi.org/10.1145/3242671.3242680

[12] Mia Consalvo. 2011. Using your friends: Social mechanics in social games. In *Proceedings of the 6th International Conference on Foundations of Digital Games (FDG '11)*. ACM, New York, NY, USA, 188–195. https://doi.org/10.1145/2159365.2159391

[13] Nicole Crenshaw and Bonnie Nardi. 2014. What's in a name?: naming practices in online video games. ACM Press, 67–76. https://doi.org/10.1145/2658537.2658685

[14] Nicole Crenshaw and Bonnie Nardi. 2016. " It Was More Than Just the Game, It Was the Community": Social Affordances in Online Games. In *System Sciences (HICSS), 2016 49th Hawaii International Conference on*. IEEE, 3781–3790.

[15] Laura Dabbish, Robert Kraut, and Jordan Patton. 2012. Communication and Commitment in an Online Game Team. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '12)*. ACM, New York, NY, USA, 879–888. https://doi.org/10.1145/2207676.2208529

[16] Yvonne A. W. de Kort and Wijnand A. Ijsselsteijn. 2008. People, places, and play: Player experience in a socio-spatial context. *Comput. Entertain.* 6, 2 (July 2008), 18:1–18:11. https://doi.org/10.1145/1371216.1371221

[17] Nicolas Ducheneaut, Nicholas Yee, Eric Nickell, and Robert J. Moore. 2006. Alone together?: exploring the social dynamics of massively multiplayer online games. In *Proceedings of the SIGCHI conference on Human Factors in computing systems*. ACM, 407–416.

[18] Lina Eklund. 2015. Considering co-players: Implications for research and design. In *Foundations of Digital Games Conference 2015*.

[19] Elizabeth Gibbons. 2017. *Masculinity, Gaming, Friendship and Intimacy, and Sense Of Community: A Comparison of Men in Virtual and Offline Domains*. Ph.D. Texas Woman's University, United States – Texas. https://search.proquest.com/docview/1975405915/abstract/8D1953291BDD4020PQ/1

[20] R. P. Griffiths, M. S. Eastin, and V. Cicchirillo. 2016. Competitive Video Game Play: An Investigation of Identification and Competition. *Communication Research* 43, 4 (June 2016), 468–486. https://doi.org/10.1177/0093650214565895 00000.

[21] Dean Anthony Fabi Gui. 2018. Virtual Sense of Community in a World of Warcraft Storytelling Open Forum Thread. *Journal For Virtual Worlds Research* 11, 2 (2018), 19.

[22] Michael D. Hanus and Jesse Fox. 2015. Assessing the effects of gamification in the classroom: A longitudinal study on intrinsic motivation, social comparison, satisfaction, effort, and academic performance. *Computers & Education* 80 (Jan. 2015), 152–161. https://doi.org/10.1016/j.compedu.2014.08.019

[23] Blizzard Inc. 2004. World of Warcraft. https://worldofwarcraft.com/

[24] Blizzard Inc. 2018. Hearthstone. https://playhearthstone.com/en-us/

[25] Stefan J. Johansson. 2009. What makes online collectible card games fun to play?. In *DiGRA Conference*. http://www.digra.org/wp-content/uploads/digital-library/09287.37268.pdf

[26] Adam S. Kahn, Cuihua Shen, Li Lu, Rabindra A. Ratan, Sean Coary, Jinghui Hou, Jingbo Meng, Joseph Osborn, and Dmitri Williams. 2015. The Trojan Player Typology: A cross-genre, cross-cultural, behaviorally validated scale of video game play motivations. *Computers in Human Behavior* 49 (Aug. 2015), 354–361. https://doi.org/10.1016/j.chb.2015.03.018

[27] Konami. 2018. Yu-Gi-Oh! Trading Card Game. https://www.yugioh-card.com/en/

[28] Yubo Kou and Xinning Gui. 2017. When Code Governs Community. *Hawaii International Conference on System Sciences 2017 (HICSS-50)* (Jan. 2017). https://aisel.aisnet.org/hicss-50/dsm/games_and_gaming/7

[29] Yubo Kou, Magnus Johansson, and Harko Verhagen. 2017. Prosocial behavior in an online game community: an ethnographic study. ACM Press, 1–6. https://doi.org/10.1145/3102071.3102078

[30] Ben Kuchera. 2014. Blizzard silenced Hearthstone players, and it made the game amazing. https://www.polygon.com/2014/4/18/5625802/hearthstone-chat-Blizzard

[31] Tasos Lazarides. 2015. Collectible Card Games Are Becoming The Most Dominant Genre On Mobile, And 'Hearthstone' is Leading the Way. http://tiny.cc/i5e21y

[32] Kwan Min Lee. 2004. Presence, Explicated. *Communication Theory* 14, 1 (Feb. 2004), 27–50. https://doi.org/10.1111/j.1468-2885.2004.tb00302.x

[33] Vittorio Marone. 2015. From Discussion Forum to Discursive Studio: Learning and Creativity in Design-Oriented Affinity Spaces. *Games and Culture* 10, 1 (Jan. 2015), 81–105. https://doi.org/10.1177/1555412014557328

[34] Winter Mason and Aaron Clauset. 2013. Friends FTW! Friendship and Competition in Halo: Reach. In *Proceedings of the 2013 Conference on Computer Supported Cooperative Work (CSCW '13)*. ACM, New York, NY, USA, 375–386. https://doi.org/10.1145/2441776.2441820

[35] Frans Mayra. 2015. Exploring Gaming Communities. *The Video Game Debate: Unravelling the Physical, Social, and Psychological Effects of Video Games* (2015), 153–75.

[36] Benedikt Morschheuser, Marc Riar, Juho Hamari, and Alexander Maedche. 2017. How games induce cooperation? A study on the relationship between game features and we-intentions in an augmented reality game. *Computers in Human Behavior* 77, Supplement C (Dec. 2017), 169–183. https://doi.org/10.1016/j.chb.2017.08.026

[37] Erin L. O'Connor, Huon Longman, Katherine M. White, and Patricia L. Obst. 2015. Sense of community, social Identity and social support among players of Massively Multiplayer Online Games (MMOGs): A qualitative analysis. *J. Community Appl. Soc. Psychol.* 25, 6 (Nov. 2015), 459–473. https://doi.org/10.1002/casp.2224

[38] Siobhan O'Donovan, James Gain, and Patrick Marais. 2013. A case study in the gamification of a university-level games development course. ACM Press, 242. https://doi.org/10.1145/2513456.2513469

[39] Wizards of the Coast. [n. d.]. Magic: The Gathering. https://magic.wizards.com/en

[40] Janne Paavilainen, Kati Alha, and Hannu Korhonen. 2017. A review of social features in social network games. *Transactions of the Digital Games Research Association* 3, 2 (2017). http://todigra.org/index.php/todigra/article/view/71

[41] Kunwoo Park, Meeyoung Cha, Haewoon Kwak, and Kuan-Ta Chen. 2017. Achievement and Friends: Key Factors of Player Retention Vary Across Player Levels in Online Multiplayer Games. *WWW '17 Companion* (Feb. 2017). http://arxiv.org/abs/1702.08005 arXiv: 1702.08005.

[42] Wei Peng and Gary Hsieh. 2012. The influence of competition, cooperation, and player relationship in a motor performance centered computer game. *Computers in Human Behavior* 28, 6 (Nov. 2012), 2100–2106. https://doi.org/10.1016/j.chb.2012.06.014

[43] Ryan Perry, Anders Drachen, Allison Kearney, Simone Kriglstein, Lennart E. Nacke, Rafet Sifa, Guenter Wallner, and Daniel Johnson. 2018. Online-only friends, real-life friends or strangers? Differential associations with passion and social capital in video game play. *Computers in Human Behavior* 79 (2018), 202–210. https://doi.org/10.1016/j.chb.2017.10.032

[44] Johanna Pirker, Andre Rattinger, Anders Drachen, and Rafet Sifa. 2018. Analyzing player networks in Destiny. *Entertainment Computing* 25 (March 2018), 71–83. https://doi.org/10.1016/j.entcom.2017.12.001

[45] Andrew K. Przybylski, C. Scott Rigby, and Richard M. Ryan. 2010. A motivational model of video game engagement. *Review of General Psychology* 14, 2 (June 2010), 154–166. https://doi.org/10.1037/a0019440

[46] Diane J. Schiano, Bonnie Nardi, Thomas Debeauvais, Nicolas Ducheneaut, and Nicholas Yee. 2011. A new look at World of Warcraft's social landscape. In *Proceedings of Foundations of Digital Games Conference*. 174–179.

[47] Kenneth B. Shores, Yilin He, Kristina L. Swanenburg, Robert Kraut, and John Riedl. 2014. The identification of deviance and its impact on retention in a multiplayer game. In *CSCW '14*. ACM Press, 1356–1365. https://doi.org/10.1145/2531602.2531724

[48] Jeffrey G. Snodgrass, Michael G. Lacy, H. J. Francois Dengah, and Jesse Fagan. 2011. Enhancing one life rather than living two: Playing MMOs with offline friends. *Computers in Human Behavior* 27, 3 (2011), 1211–1222. https://doi.org/10.1016/j.chb.2011.01.001

[49] Constance A. Steinkuehler and Dmitri Williams. 2006. Where Everybody Knows Your (Screen) Name: Online Games as 'Third Places'. *Journal of Computer-Mediated Communication* 11, 4 (July 2006), 885–909. https://doi.org/10.1111/j.1083-6101.2006.00300.x

[50] Aaron Trammell. 2010. Magic: The Gathering in material and virtual space: An ethnographic approach toward understanding players who dislike online play. In *Proceedings of Meaningful Play Conference*. East Lansing, MI.

[51] Sabine Trepte, Leonard Reinecke, and Keno Juechems. 2012. The social side of gaming: How playing online computer games creates online and offline social support. *Computers in Human Behavior* 28, 3 (May 2012), 832–839. https://doi.org/10.1016/j.chb.2011.12.003

[52] Selen Turkay. 2015. Customization and Perceived Choice in an Extended MMO Study. In *Proceedings of Games + Learning + Society Conference 11*. Madison, WI, 7.

[53] Selen Turkay and Sonam Adinolf. 2018. Understanding Online Collectible Card Game players' motivations: A survey study with two games. In *Proceedings of the 30th Australian Conference on Computer-Human Interaction - OZCHI '18*. ACM Press, Melbourne, VIC, Australia, 501–505.

[54] Selen Turkay, Sonam Adinolf, and Devayani Tirthali. 2012. Collectible card games as learning tools. *Procedia - Social and Behavioral Sciences* 46 (2012), 3701–3705. https://doi.org/10.1016/j.sbspro.2012.06.130

[55] Selen Turkay, Sonam Adinolf, and Devayani Tirthali. 2013. "I'am sorry my friend, I love you, but I don't trust you": Social dynamics in a multiplayer collectible card game.. In *Proceedings of the Games + Learning + Society Conference: Vol. 3*. Madison, WI, USA.

[56] Kellie Vella, Daniel Johnson, and Leanne Hides. 2015. Playing alone, playing with others: differences in player experience and indicators of wellbeing. ACM Press, 3–12. https://doi.org/10.1145/2793107.2793118

[57] Peter Vorderer, Tilo Hartmann, and Christoph Klimmt. 2003. Explaining the enjoyment of playing video games: The role of competition. In *Proceedings of the Second International Conference on Entertainment Computing (ICEC '03)*. Carnegie Mellon University, Pittsburgh, PA, USA, 1–9. http://dl.acm.org/citation.cfm?id=958720.958735

[58] Dmitri Williams. 2006. On and off the 'Net: Scales for social capital in an online era. *Journal of computer-mediated communication* 11, 2 (2006), 593–628.

[59] Dmitri Williams. 2018. For Better or Worse: Game Structure and Mechanics Driving Social Interactions and Isolation. In *Video Game Influences on Aggression, Cognition, and Attention*, Christopher J. Ferguson (Ed.). Springer International Publishing, Cham, 173–183. https://doi.org/10.1007/978-3-319-95495-0_14

[60] Dmitri Williams, Scott Caplan, and Li Xiong. 2007. Can You Hear Me Now? The Impact of Voice in an Online Gaming Community. *Hum Commun Res* 33, 4 (Oct. 2007), 427–449. https://doi.org/10.1111/j.1468-2958.2007.00306.x

[61] Donghee Yvette Wohn, Cliff Lampe, Rick Wash, Nicole Ellison, and Jessica Vitak. 2011. The "S" in Social Network Games: Initiating, Maintaining, and Enhancing Relationships. IEEE, 1–10. https://doi.org/10.1109/HICSS.2011.400

[62] Dire Wolf. 2018. Eternal. https://www.direwolfdigital.com/eternal/

[63] Nick Yee. 2006. Motivations for Play in Online Games. *CyberPsychology & Behavior* 9, 6 (2006), 772–775. https://doi.org/10.1089/cpb.2006.9.772