Differences in Player Experiences of Need Satisfaction Across Four Games

Sonam Adinolf
Queensland University of Technology
sonam.adinolfdinnerstein@hdr.qut.edu.au

Selen Türkay
Queensland University of Technology
selen.turkay@qut.edu.au

ABSTRACT

This paper reports findings from an online survey where we collected qualitative and quantitative data from four different online collectible card game players (N = 1017) on their player experiences of autonomy, competence and sense of community. The goal was to investigate how player experiences may differ across games in the same game genre and to understand which game design features may be attributed to this difference. We found significant differences between player experiences of autonomy and competence need satisfaction across the games, and no differences for sense of community. Findings from qualitative data show that players compare their game experiences with previous experiences of physical card games (Magic the Gathering) as well as narrative worlds (e.g., Elder Scrolls). We provided examples of game mechanics from each game afforded by the digital medium and features that might be associated with these differences. This study highlights the need for careful consideration when making generalized statements about player experiences with a game genre based on studies with a single game.

Keywords

Player experiences, player need satisfaction, survey study, online collectible card games

INTRODUCTION

It is important to understand how player experiences (PX) differ across various game genres to make suggestions for game design (Ghuman and Griffiths 2012). Prior research showed evidence that player experiences do vary across game genres (Johnson, Nacke, and Wyeth 2015; Johnson et al. 2012). One study found a significant relationship between game genre and reported levels of immersion and flow (Johnson et al. 2012). Players reported experiencing the least amount of immersion and flow in sports, racing and fighting games, and the highest in action-adventure games. The authors reasoned that the structural differences across these genres (e.g., racing games have short rounds) were the main reasons for this. In another study, Johnson et al. found that First Person Shooter (FPS) games do not cultivate relatedness for players, and mastery was important for Multiplayer Online Battle Arena games (MOBAs) players (Johnson, Nacke, and Wyeth 2015). Authors provided insights into how MOBA players' motivations and PXs are different than those of other genres. In an another study, researchers found that players of FPS games tended to report more problematic behavior such as excessive play compared to role playing games (RPG) or action

adventures (Elliott et al. 2012). However, a similar study comparing the problematic behavior with a FPS Massive Online Game (MMO) and RPG MMO found no differences (Helgason and Steinarsson 2013). Authors proposed that the similarities between those two games, immersive persistent worlds with social interaction, may be the main reason for players' problematic behaviors. Recently, studies showed evidence that there is more nuance to understanding PX based on both player characteristics (e.g., expertise (Mora-Cantallops and Sicilia 2018)), and game features (Drachen et al. 2010; Turkay and Adinolf 2018). It is still rare for studies to examine differences across games in the same genre when drawing conclusions or make generalizations.

Some games may attract players with certain temperaments due to the theme, or the mechanics, or to specific game features (e.g., puzzles in FPSs (Drachen et al. 2010)). In their study with MMOs, Turkay and Adinolf found PX differed between City of Heroes/Villains (CoX) and World of Warcraft (WoW) (Turkay and Adinolf 2010). For instance, character customization was more important for CoX players' enjoyment than WoW players', possibly because of the different character creation tools. Studying games from the same genre with different themes, mechanics, and levels of tactical depth will produce more generalizable results and help us understand subtle variations in game design that influence PXs.

For this study, in the context of Online Collectible Card Games (OCCGs), we ask:

To what extent do players' experiences vary across different games in the same genre?

This work contributes to game research by identifying differences in player experiences of need satisfaction across four different games in the highly populated OCCG genre. Findings from this study extend prior work on PX and can help OCCG developers and game designers to improve their designs and address the needs of different player groups.

BACKGROUND

Extant research identified numerous player motivations and different PXs of video games. Richard Bartle suggested one of the earliest player typologies: killers, achievers, socializers and explorers in the context of Multi User Dungeons (Bartle 1996). Yee extended this typology to a ten-factor model nested under achievement, immersion and social motivations by surveying MMORPG players (Yee 2006). Since then multiple instruments were developed to measure player experiences and motivation (e.g., Game Experience Questionnaire (Poels, de Kort, and Ijsselsteijn 2007); Trojan Player Typology which was developed with MOBA players (Kahn et al. 2015). However, cross-game validation of these scales is scarce. Recent studies found that scales revealed different factors than those in the original scales (Turkay and Adinolf 2018; Law, Brühlmann, and Mekler 2018). Law and colleagues conducted a systematic review and validation of a widely used scale called Game Experience Questionnaire (GEQ) (ibid). Authors found no evidence for the originally postulated seven-factor structure of the scale. In another study, Turkay and Adinolf (ibid) conducted a principal component analysis to assess how 14 items of Trojan player typology scale would cluster. The original scale's six-factor structure was not found. Instead, they found four factors.

One exception is the approach measuring PXs and motivations based on basic needs satisfactions that uses the meta-motivation theory called Self-Determination Theory (SDT) (Deci and Ryan 2000). SDT represents a broad framework for the study of human motivation and personality within social contexts. According to this theory, there are three basic psychological needs that, when satisfied, enhance intrinsic motivation and lead to autonomous internalization of behaviors of initial extrinsic

origin. These psychological needs are the need for autonomy (volition and personal agency), competence (sense of efficacy), and relatedness (social connectedness). The player experiences of need satisfaction (PENS) survey (Ryan, Rigby, and Przybylski 2006) was developed for video games based on the tenets of SDT.

Online Collectible Card Games

Online collectible card games (OCCGs) are digital, networked contemporaries of collectible card games (CCGs) which combine card collection with strategic deck building and competitive gameplay (Adinolf and Turkay 2011). While all OCCGs are loosely based on core CCG mechanics, they have introduced different mechanics, taking advantage of the digital medium. Thus, we wanted to examine multiple games and study players from more than one OCCG to investigate potential differences between PXs that led them to choose a game in this genre. For this study, we chose four popular OCCGs: Hearthstone, Eternal, Faeria, and The Elder Scrolls: Legends.

Hearthstone (HS) was developed by Blizzard Inc., and released in March 2014 (Blizzard Inc. 2018). It is the oldest of the chosen games and the most populated one. As of November 2018, it had 100 million players. It is a turn-based game where players play cards of differing mana cost. Players choose a hero class to play (e.g. Mage, Rogue), and have a deck and built-in hero power. They start with 1 mana and gain 1 more each turn up to a maximum of 10. The object is to reduce the opponent to zero health. HS has five modes of play.

Eternal was developed by Dire Wolf Digital, and released in November 2016. The mechanics are more granular than those of HS; a player's mana generation is increased by cards they play, and there are also 5 colors of crystal that players accumulate to play most cards. In addition, there are spells and effects that can be played either during attacks or during the opponent's turn. The object is to reduce the opponent's health to zero. The opponent also has the option to block attacks which may give further sense of control during the game. Eternal has eight game modes.

Faeria was developed by Abrakam studios, and released in 2017. It is a hybrid between an OCCG and a tactical board game. Each player has a globe shaped base, from which they build hex shaped land tiles (see Figure 1). Cards from their hand can summon creatures to the players land hexes, with more powerful creatures requiring specific terrain types and numbers. Ultimately, the player wants to build and fight their way to the opponent's globe and destroy it. Faeria has four game modes.

Figure 1: A screenshot, showing the hex-map of Faeria, along with a card requiring two forests.

The Elder Scrolls: Legends (TESL) was developed in partnership with Bethesda Software and Dire Wolf Digital, and released in March 2017. Its theme is based on the long running Elder Scrolls RPG series. It shares similarities with HS (e.g, by default the player cannot play cards on their opponent's turn). There are several mechanical differences. The largest of these is that there are two "lanes" (see Figure 2), which the player must choose between when putting a creature on the board. As with the other games, the player wants to reduce their opponent to zero health. TESL has seven game modes.

Figure 2: A screenshot, showing the two lanes of TESL

Similarities among four OCCGs

Similarities among these OCCGs are the core mechanics that pervade many CCGs. These mechanics included: competition, life totals, mana generation, card draw, restricted communication, persistent and transient cards, and play modes. All the games are two player, and competitive. The main way to win in each game is to reduce the opponent to zero health. Mana or a variant is the main resource in all four games. It is generated each turn. Except in Faeria, it cannot be saved up from turn to turn. In all the games, players draw one card a turn by default. All four games do not allow players to chat to each other unless they are "friends". The only way to communicate is through emotes. Each of the games has different game modes, including casual, ranked, and solo.

Each game divides their cards up into different colors, or in the case of HS, classes. For all of them but HS, you may choose to play a single color, or a hybrid combination of two or more. The three games that allow this introduce tradeoffs in exchange for increased power and flexibility: in TESL, players building decks with more than two colors must make them larger, and thus more unreliable; Eternal has resource colors attached to mana cards, so diversifying too much runs a higher risk of cards being unplayable; The more powerful Faeria cards require terrain of specific types, once again leading to possible unplayable cards.

Differences among four OCCGs

The major differences between the games are in theme and complexity. Hearthstone's theme is based in the Warcraft universe, and TESL is based on the Elder Scrolls, and may capitalize on players' familiarity with those game worlds. Eternal and Faeria

themes don't tie in with a larger franchise. HS, TESL, and Faeria are all fantasy worlds. Eternal is a hybrid fantasy-Western theme. Other differences exist in the complexity and customizability of the games. Faeria and Eternal have added tactical and deck building depth, due to their multi-color resource systems. Both Eternal and TESL get a further boost of tactical depth from cards that can be played reactively. This not only gives players choices on their opponents' turn, but also require them to think about potential reactions by their opponents to their own actions. TESL's reactive mechanic is complex, and is discussed below. TESL and Faeria each have added strategic complexity, due to their location mechanics (two lanes for TESL, hex map spaces for Faeria). Eternal and Faeria provide more opportunities for customization. While communication is limited to emotes, Eternal and Faeria players can pre-select from a pool of emotes to choose what six things they can say during play. Also, both games allow players to choose from a wide range of avatar portraits.

TESL has one mechanic that has no real analogue in the other games. Players' life totals have "runes" at every multiple of 5. If a player is damaged to one of those thresholds, the rune breaks, and they draw a card. In addition, certain cards have the keyword "prophecy". These cards may be played immediately, at no cost. This combination of mechanics provides players with a real choice when presented with the opportunity to damage their opponent; they can damage them, breaking runes, giving them more resources (and potentially free plays from prophecy), or they can wait and try to deal larger amounts of damage in one major offensive. This often leads to players choosing not to chip away with tiny creatures, even though they could.

	Eternal	Faeria	HS	TESL
Gender				
Male	95.8	95.1	94.6	93.7
Female	2.0	4.9	4.4	5.1
Other	2.2	0	1.0	1.3
Age				
18-24	31.9	42.7	56.8	48.1
25-34	51.1	45.1	33.3	35.4
35-44	13.8	12.2	7.8	12.7
45+	3.1	0	2.2	3.8
Tenure (Months)				
Less than 7	26.3	23.2	4.0	30.4
7 - 12	24.9	28.0	3.0	21.5
13 - 24	44.9	41.5	16.9	38.0
More than 24	4.0	7.3	76.1	10.1
Hours (Per week)				
Less than 4	14.7	42.7	28.4	26.6
4-6	26.0	23.2	25.3	27.8
7-9	20.3	12.2	14.1	17.7
10-12	19.5	11.0	12.2	15.2
13-15	7.6	3.7	6.8	7.6
More than 15	11.6	7.2	13.2	5.1

Table 1: Summary of the Respondents' Characteristics (in Percentages)

METHODS

We surveyed players by posting a call for participation on related Facebook groups, official game forums and Reddit subgroups. Players of 18+ years old 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 final

dataset included responses from 1017 people who answered demographics questions Table 1 summarizes the characteristics of the sample. The majority of participants are male, are between 18 and 34 years old, and play about 6 hours per week. HS players have the youngest player demographic with 56.8% of the participants in the 18-24 age bracket.

We also collected data on participants' game expertise (e.g. number of months played, number of hours played per week). Eternal players play significantly more per week compared to other players (Welsh's F $(3,225.86)=8.2$, $p <.05$). We used the PENS survey with 5-point Likert scale items to gain insight into the PX of Competence and Autonomy. Relatedness satisfaction was measured using the sense of online community scale (Blanchard 2007) (Cronbach's alpha = .93). In an open ended question, we asked participants to report why they liked the OCCG they played. An inductive thematic analysis method at the semantic level was used to analyze the qualitative data (Braun and Clarke 2006).

FINDINGS

A series of One-way Analysis of Variance (ANOVA) was used to examine the differences across games on player experiences. The Levene's F tests showed homogeneity of variance assumptions were not met for autonomy and competence ($p <.001$). Thus, the Welch's F test was used for the subsequent analysis. We found a significant main effect of game on autonomy satisfaction, Welsh's F (3, 230.5) = 50.8, $p <.001$, $w^2 =.13$; competence satisfaction, Welsh's F (3, 226.6) = 33.62, $p <.001$, $w^2 =.09$; and sense of community, Welsh's F (3, 198.9) = 3.31, $p = .02$.

Post hoc comparisons, using the Games-Howell post hoc procedure, showed that TESL players had higher sense of autonomy compared to players of the other three games (see Table 2). HS had significantly lower scores for both autonomy and competence than the others. Eternal players had significantly higher competence scores than Faeria players (see Figures 3-5).

We found no significant differences in sense of community which is unsurprising; the games share roughly the same limited social design choices, far more than almost any other game genre.

	Eternal (n=354)			Faeria (n=82)			HS (n=502)			TESL (n=79)		
	M	*SD*	*Mdn*	*M*	*SD*	*Mdn*	*M*	*SD*	*Mdn*	*M*	*SD*	*Mdn*
Autonomy	3.8	0.8	3.5	3.8	0.6	3.5	3.3	0.8	2.8	4.1	0.6	3.8
Competence	3.8	0.7	3.4	3.5	0.7	3.0	3.3	0.8	2.8	3.8	0.6	3.4
Community	2.7	0.8	2.1	2.9	0.9	3.1	2.7	0.8	2.7	3.0	0.9	2.9

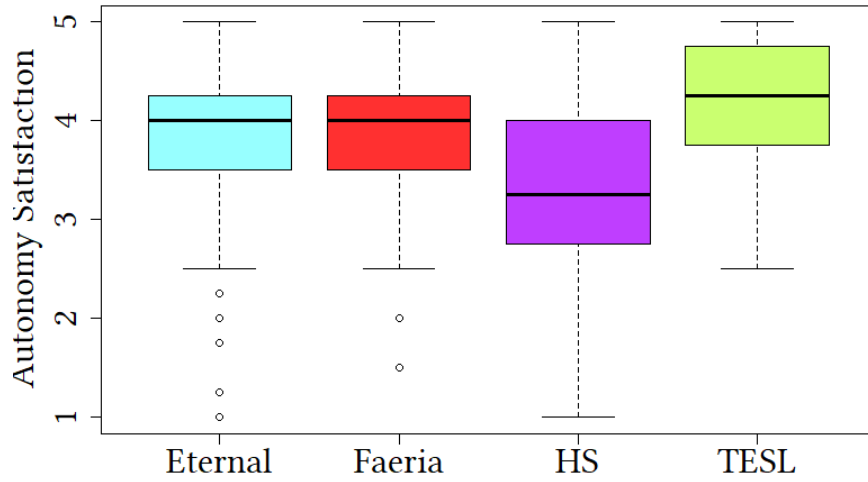**Table 2:** Descriptive Statistics of Player Needs Satisfaction across Games

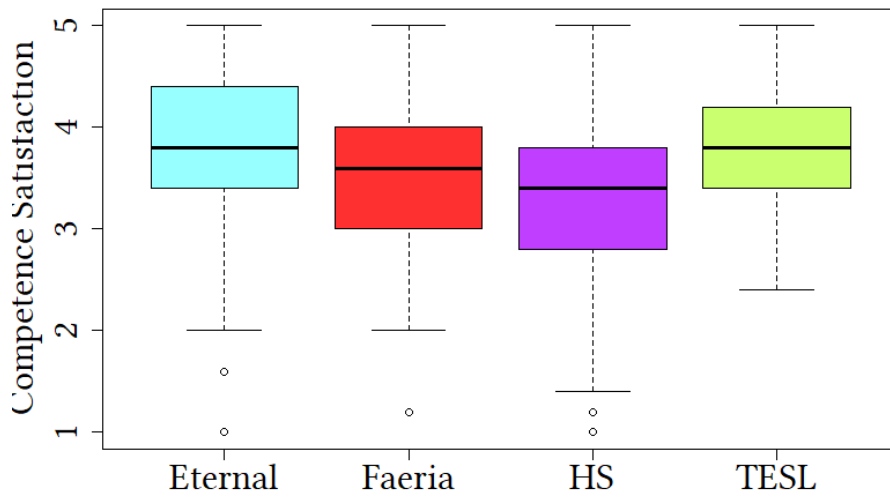**Figure 3:** A box plot of Autonomy Satisfaction, by Game

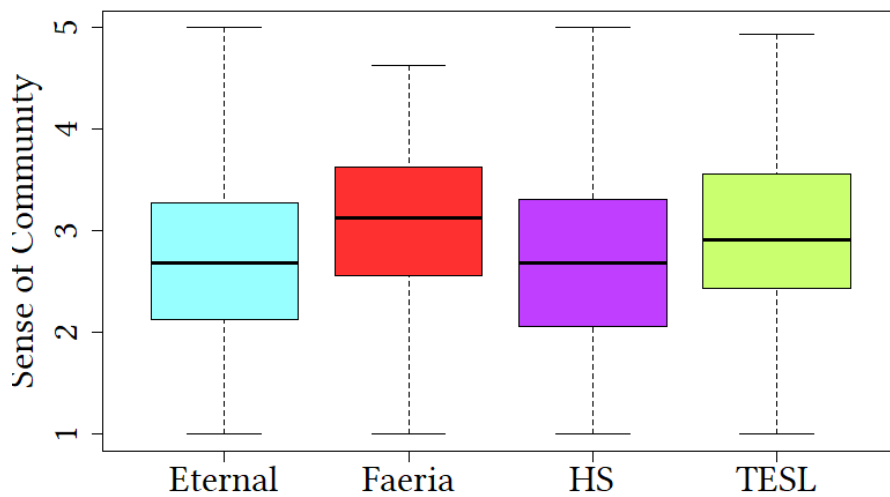**Figure 4:** A box plot of Competence Satisfaction, by Game

Figure 5: A box plot of Sense of Community, by Game

Qualitative findings

Qualitative data analysis revealed that there were both similarities and differences in why players liked the games. Players talked about enjoying competitive strategy, different game modes, deck design, and the digital aspect. Eternal players talked overwhelmingly about the complex mechanics that are similar to Magic the Gathering (MtG) CCG without the cost. They also enjoyed Eternal's diverse competitive play styles, and generosity of reward mechanisms. Both Faeria and TESL players talked about enjoying the combination of cards and strategic elements of the complex boards (lanes for TESL and hex board for Faeria). In addition, Faeria players enjoyed the game's aesthetics and TESL players liked the Elder Scrolls lore. The most common themes among HS players were actually regarding elements that detract from strategy, namely random chance (rng colloquially) and decks that defeat the opponent in a single turn (OTK colloquially). The players highlighted various design features in their open responses. Below is a selection of those features associated with autonomy and competence, along with example quotes from the qualitative data.

Players in TESL and Faeria praised board design. When talking about what they enjoyed about TESL, a Polish player said: "New mechanics like a board with two lanes and the rune breaking system..." Board design with two lanes in TESL may give players further sense of agency when acting. A Faeria player from USA commented that: "The interactions between the board and cards leading to interesting gameplay." In Faeria, the player plays on a hexagonal game board. Moving creatures in space may improve player autonomy more than dropping cards onto a stationary tableau does.

Players also enjoyed interactions of mechanics and card synergies. Both Faeria and Eternal create synergies and interactions among different cards which can affect players' sense of autonomy and competence. An Eternal player from USA stated, he liked "...the meaningful deck building decisions achieved through a high-powered cardpool and several viable layers of interaction."

Players talked about enjoying different game modes such as drafting, story and casual modes. A TESL player said he enjoys "playing casual matches with friends..." where an Eternal player from USA likes "Drafting a cohesive life-force burn deck that had some elegant synergies and watching it unfold."

Except HS players, participants talked about the reward mechanisms built into their game. Notably, Eternal players mentioned the "generosity" of the game positively affecting their experiences. An Eternal player from Germany said, he liked the game because it is "...generous, deep, [has] lots of play modes."

Players from all the games except Faeria spoke about the convenience of having a mobile client. While Faeria had a client for iOS, the size of the game board made it only playable on tablets.

Faeria players highlighted having a variety of choices, which might be indicative of autonomy satisfaction. A player from Argentina mentioned available options as a positive element. "...every turn gives you lots of options, other games are only about the cards you get, in Faeria you have to make decisions every turn. You never get a 'I can't do anything' moment."

Related to choice, strategy was a term that recurred for Faeria. A Hungarian Faeria player praised, "The deep strategical gameplay". Another player from the USA elaborated on the type of strategy, "The strategy of land building and resource usage." A Greek player connected Faeria with other genres that he had enjoyed offline, "It is a card game that has strong ties to strategic and tactics games that I like to play off-line".

Eternal players frequently mentioned strategy and complexity paired with ease of use. A Polish player liked, "how it's mobile-friendly while still being relatively deep". A player from the USA called it a "Strategic and convenient ccg". Respondents often compared the game with MtG. "It offers some of the complexity found in MtG without being as clunky as MTGO" said one Swedish player.

HS players talked about elements that made the game unpredictable, and less strategic. They also spoke about how quick and easy the game was. An Australian player said that he liked, "Its randomness. You can be losing one minute then winning the next. Also the games are fairly quick so I can just drop in and out quickly."

DISCUSSION AND CONCLUSION

We found significant differences between PXs of autonomy and competence need satisfaction across four games. Differences across games explained 13% of the variance in autonomy need satisfaction and 9% of the variance in competence need satisfaction. There were no statistically significant differences across games in players' sense of community. This lack of difference in sense of community is not surprising as all four games adopted similar restrictions on socialization, such as the lack of player chat during games unless players were "friends" with each other. A recent study found that these restrictions may stifle community building, and lead to emergent toxic behaviors that circumvent them (Türkay and Adinolf, 2019).

The most notable finding, for both autonomy and competence satisfactions, is that HS ranked significantly below the other games. This is surprising as HS has the larger player base across four games studied. As the qualitative findings pointed out, many players thought HS contained much randomness, and lack of meaningful interaction with the opponent. Since HS shares major design elements with the other games, we examine some of the novel elements that might have positively affected PXs in the other games. The following is not comprehensive, but rather a sampling of features and mechanics from TESL, Eternal, and Faeria.

TESL players reported the highest sense of autonomy. TESL has two lanes, each effectively an independent battlefield; every creature played has a decision associated. These additional decisions may lead to increased autonomy and competence. As one participant mentioned, it can give the feeling that the game "...can be played with infinite variety." Another mechanic TESL introduced is the thresholds attached to the player's life total. When the player takes damage passing a threshold, they draw a card. This may foster the feeling of the player as an autonomous entity in the battle, not a disembodied life total. A recommendation for design of future OCCGs could be to consider more ways to give players representation on the board.

Eternal players had the highest sense of competence, and high sense of autonomy. This game's attack mechanic differs from the other 3; the player has active decision making during their opponent's turn. They can block attacks and use cards during the opponent's turn. These features allow the player to shape their actions, satisfying autonomy. If those actions are seen to shape the course of the game, competence will be satisfied. A recommendation to designers is to consider allowing some form of player reaction.

Deck construction processes may affect competence satisfaction. Eternal features a large number of creatures with abilities which work well when played together to maximize bonuses. TESL implemented cards that could be played in response to taking damage. These add more decisions to both deck design and gameplay. Also, the player receives feedback, as they see bonuses enacted or free cards played. Faeria

has many cards which require specific terrain to be played. The player must choose whether to diversify their deck or concentrate on just one or two terrain types. A design recommendation stemming from these is that allowing flexibility in deck construction opens many opportunities for players to exercise competence.

Players' previous experiences with other games, both as games and as narrative worlds, may affect their PX with current games. As Sicart said, players "…come to a game experience with the cultural baggage of previous game experience" (Sicart 2009, 66). For TESL players, it was focused on the lore. These players frequently mentioned that they enjoyed the adaptation of lore they were familiar with, both into mechanics and aesthetics. Eternal players spoke about being familiar with MtG, and enjoying the similarity between the games, and depth of play. When designing or researching a game, we would be wise not to ignore players' experiences in previous games.

Limitations

This study had limitations. We attempted to sample as diverse a population as possible, posting the survey to a variety of public and semi-public spaces. As well as enlisting community leaders. Still, the data is self-reported and respondents are self-selected. If future research can partner with game companies to gather data in-game, the selection bias may be further reduced. Future research also should investigate the effects of design features in controlled experimental settings to test our hypotheses.

The Faeria and TESL groups had fewer participants than the other games, reflecting their smaller communities. A majority of participants were male. Thus, our findings may reflect primarily male players' experiences. Studies also showed that women may particularly be targeted by negative behaviors (Türkay and Adinolf 2019) which may make them hesitant to participate in online communities. Considering about quarter of Hearthstone players are female, future studies should find more targeted methods (e.g., recruitment through gaming sites dedicated to women in gaming) to engage with the female populations of these games.

Previous research showed evidence to anecdotal observations that there can be differences among PXs when playing different games from the same genre based on players expertise in gaming. Drechen and colleagues (ibid) found that hardcore gamers found one game with an added element of puzzle solving more interesting whereas most novice and intermediate gamers found those puzzles problematic. Thus, overall expertise with games or with the genre may impact why a player likes one game versus other. While we asked participants their tenure (how long they have been playing a game), we did not ask them their history with the CCG genre or their general gaming expertise.

Conclusion

Overall, this study contributes to game research by identifying differences in PXs across four OCCGs and investigating game features that may be associated with these differences. These differences further highlight that generalizations about players and their experiences gloss over the complexities of play. Digitization of CCGs enables designers to experiment with novel mechanics beyond physical card game mechanics. We provided examples of these mechanics in the context of four OCCGs examined in this study. By presenting comparison between games, this study identified areas that designers can experiment with in existing or forthcoming games.

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