

All about that Base: Differing Player Experiences in Video Game Genres and the Unique Case of MOBA Games

Daniel Johnson
Queensland University
of Technology
Brisbane, Australia
dm.johnson@qut.edu.au

Lennart E. Nacke
HCI Games Group
University of Ontario Institute
of Technology, Canada
lennart.nacke@acm.org

Peta Wyeth
Queensland University
of Technology
Brisbane, Australia
peta.wyeth@qut.edu.au

ABSTRACT

Video games provide unique interactive player experiences (PX) often categorised into different genres. Prior research has looked at different game genres, but rarely through a PX lens. Especially, PX in the emerging area of massive online battle arena (MOBA) games is not well understood by researchers in the field. We address this knowledge gap by presenting a PX study of different game genres, which we followed up with a second semi-structured interview study about PX in MOBA games. Among the results of our analyses are that games that are likely played with other players, such as MOBA games, stimulate less immersion and presence for players. Additionally, while challenge and frustration are significantly higher in this genre, players get a sense of satisfaction from teamwork, competition and mastery of complex gameplay interactions. Our study is the first to contribute a comprehensive insight into key motivators of MOBA players and how PX in this genre is different from other genres.

Author Keywords

Self-determination theory; games; player experience.

ACM Classification Keywords

H.5.m. Information interfaces and presentation; K.8.0 [Personal Computing]: General – Games.

INTRODUCTION

User experience is a primary driver for the use of technology. Many new technologies are now using games and game design principles not only to entertain users, but also to train and inform them. Video game genres provide a design lens through which developers can analyse gameplay preferences and player experiences (PX) [11, 17]. For example, game designers wanting to target a specific genre need to know what the players of that genre desire to experience.

However, we are still building essential knowledge of which genres facilitate which types of PX.

Game development is an area of rapid changes and new play styles and preferences emerge with increasing frequency. Understanding the relationship between PX and game genres not only allows us to understand existing genres better, but it can also show us what experiences are nurtured by currently popular and emerging genres. Single-player video games, as an example, are often considered a solitary activity that can cater to our needs for fantasy and narrative immersion. However, while game designers are successfully building highly engaging PX in competitive multiplayer games, especially in new genres, such as massive online battle arena (MOBA) games, the PX in these games, is less well understood from a theoretical research standpoint.

We present two studies in this paper. Our first study investigated PX factors in different video game genres and the implications of the various difference found between all genres are discussed. Notably, MOBA games emerged as lacking many of the components of PX that motivate players to engage with other genres of games. Given the immense popularity of MOBA games this finding intrigued us. Following our first study, we therefore wanted to investigate further what drives people to play MOBAs. For our second study, we carried out a semi-structured interview with six experienced MOBA players that helped us identify the centrality of competition, mastery and teamwork as components of the PX of MOBA games. As MOBAs grow in importance as the most played game genre in recent years, this study is the first to provide comprehensive insight into key motivators of MOBA players and to study what sets this genre apart from others regarding PX.

The implications of the understanding of the complexities of experiences in different game genres reaches beyond game research, because there are potential implications for wellbeing (both positive and negative) that are tied to PX [1,18,25]. By understanding the nature of PX in particular genres, we can better understand when and how video-games are likely to impact player wellbeing. Our findings can help game developers understand and enhance different PX aspects, which helps to improve their targeted experience greatly and will lead to more player satisfaction.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from Permissions@acm.org.

CHI 2015, April 18 - 23, 2015, Seoul, Republic of Korea
Copyright 2015 ACM 978-1-4503-3145-6/15/04 \$15.00
<http://dx.doi.org/10.1145/2702123.2702447>

RELATED WORK

Genre and Player Experience

Despite continued focus on videogame related research, relatively little is known about the manner in which PX varies across genres [11]. Elliot and colleagues [7] explored whether problem videogame playing varied as a function of genre. Problem play was defined as including: reporting playing longer than planned, negative feelings when not playing and avoiding other activities to play. Only a small portion of the studied sample was found to exhibit problematic playing. However, problematic behavior was found chiefly among players of first-person shooters, action-adventures, role-playing and gambling games. The authors highlighted the value of understanding the nature of play in genres for treating any resulting mental health issues.

Research examining the motivations for play and PX has found that, looking specifically at online games, players of FPS and RPG were more motivated by achievement, while RPG players were more motivated by immersion [11]. Looking at games played both online and offline, Johnson and colleagues found evidence of higher levels of presence and autonomy in strategy and role-playing games in comparison to shooting, sport and simulation games [16]. In a follow up study, they found that that sport, racing and fighting games were less likely to lead to flow while immersion was found to vary across all genres [17]. However, both studies are limited in terms of combining genres of games (as a result of small sample size) and hence being unable to identify how player experience differs between individual genres. Relatedly, this research largely pre-dates the existence and popularity of MOBA games and hence, no consideration was given to this genre.

Player Experience Assessment via Questionnaires

Past research has systematically reviewed studies exploring the concepts of game engagement and enjoyment [3,21]. Here we focus specifically on research that has developed and used questionnaires to measure PX. A number of questionnaires have been developed and validated to varying extents. Many of the scales developed have focused on the related constructs of engagement, immersion or absorption; for example, the Game Engagement Questionnaire [4], the Immersion Questionnaire [15] and the Videogame Experience Questionnaire [6]. Other questionnaires have focussed specifically on user enjoyment, for example, the Game Enjoyment Instrument [8], or on flow during play, for example the Adapted Dispositional Flow Scale [28].

Given the varied goals of the current study we sought measures designed to assess a broad selection of PX components. We employed the Player Experience of Need Satisfaction and the Game Experience Questionnaire on the basis that together they offered multiple subscales designed to assess differing components of PX and they had been widely used in previous research.

The Player Experience of Need Satisfaction Questionnaire Pryzbylski and colleagues [24,26] applied an established psychological theory of motivation—Self-Determination Theory (SDT)—to videogame player motivations. SDT is primarily concerned with the potential of social contexts to provide experiences that satisfy universal needs of people. SDT has been successfully applied in research on sports, education and leisure domains. Pryzbylski and colleagues explored how videogames fulfil or thwart psychological needs and thus promote or discourage sustained engagement and either positive or negative outcomes for players. Based on SDT and other relevant theories (e.g., Presence), these researchers developed the Player Experience of Need Satisfaction (PENS) measure (further detail in Measures section). The PENS has been used successfully in different settings and with many videogames [2,10,16].

The Game Experience Questionnaire

The Game Experience Questionnaire [12] is designed to provide a comprehensive evaluation of the gameplay experience. Unlike the PENS, the GEQ structure is not based around a specific theory. Rather, the GEQ is based on conceptual accounts of PX and focus-group explorations with a range of gamers (further detail in Measures section). Concerns have been raised regarding the GEQ's psychometric properties because the preliminary validation work (leading to the creation of the scale) has never been published [23]. Nevertheless, the GEQ has been applied in many game research studies including psychophysiological studies of PX [19,22], studies of social experiences of video gaming [9] and game design studies for unique user populations [20].

STUDY 1: ONLINE QUESTIONNAIRES

Based on the limited research exploring how PX varies across the full range of genres we undertook a questionnaire-based study to explore:

RQ1: How does PX differ between videogame genres?

Participants and Procedure

Five hundred and seventy-three participants (82% males) completed an online survey. Respondents' age ranged from 13–54 years of age (Mean [M] = 20.73, Standard Deviation [SD] = 5.1). Participants were recruited on the basis of their interest in videogames and most (82%) were university students. Six hundred and eighteen people began the survey but 45 cases were excluded from the analysis, because they did not respond to any of our outcome measures and only provided answers to the preliminary demographic items.

The survey asked respondents to report on their current videogame behaviour, both in general and with respect to their “current favourite game” (considering only games they had played in the last six months). In the present study, because participants were involved via an online survey completed at a time of their choosing, there was no way to control for the time since they had last played video games. To deal with this issue, a guided-recall process was used to prime respondents before they answered questions about their gaming experiences. This process involved asking

respondents to recall in detail what was happening in their current favourite game when they were most recently playing. Participants were asked to think of their “current favourite game” when responding to questions regarding their experience of playing videogames.

Measures

Participants were asked for the name and genre of their current favourite game. Participants’ nominated genre for their current favourite game was checked for consistency and in some cases changes were made¹.

The Player Experience of Need Satisfaction (PENS) [26] is a 21-item instrument assessed using a 7-point scale (from “do not agree” to “strongly agree”). The scale is designed with five subscales, which are: *presence/immersion* (the sense that one is within the game world), *relatedness* (a sense of connectedness with others), *competence* (feelings of effectance), *autonomy* (a sense of volition or willingness) and *intuitive controls* (the extent to which the controls are easily mastered and do not interfere with the sense of being in the game). As discussed above, the PENS has been used as theorized by the original authors in a variety of settings and found to perform well. On that basis the PENS was used in the current study as originally proposed by the scale authors. The individual scale reliabilities (Cronbach’s α) were as follows: Presence/Immersion =.87, Competence =.73, Intuitive Controls =.57, Relatedness =.70, and Autonomy =.68. There were significant positive correlations between all 5 subscales of the PENS. However, most were relatively low ($r \leq .35$). Higher correlations were found between autonomy and presence ($r = .41$), relatedness and presence ($r = .45$), and between competence and intuitive controls ($r = .48$).

The GEQ is a 33-item instrument assessed using a 5-point scale (from “not at all” to “extremely”) [12]. The scale is designed with seven subscales: *Positive Affect* (experiencing positive emotions during gameplay), *Negative Affect* (experiencing negative emotions during gameplay), *Frustration* (irritation from negative experiences of gameplay), *Flow* (holistic sensation of acting within the confines of the game), *Challenge* (feelings of being tested within the gameplay experience), *Immersion* (perception of being absorbed in the game environment), and *Competence* (perceived efficacy playing the game).

On the basis that the scale authors have published no formal studies assessing the GEQ structure, exploratory factor analysis was undertaken to examine the performance of the GEQ in the current sample. The full 33 items were subject to exploratory factor analysis via principal axis factoring,

¹ For example, Left 4 Dead was considered by the majority of participants—who nominated it as a current favourite game—as a first-person shooter and, therefore, it was recorded as such for a participant who nominated it as a survival horror game.

using oblique rotation. Initial analyses suggested the existence of 5 or 6 factors, but there were split loadings in both solutions, and the hypothesized scale structure did not clearly emerge. Items with no loading higher than .4, and items with loadings of higher than .3 on two or more factors, were dropped from the analysis. In total, seven items were dropped, and a final 6-factor solution (which explained 50.4% of the variance) was chosen as best reflecting the underlying structure. In contrast to the original factor structure, negative affect and tension/annoyance items were found to load on a single factor, which was renamed frustration. One further item was dropped on the basis that it lowered the associated scale reliability. The individual scale reliabilities (Cronbach’s α) were as follows: Competence=.78, Sensory and Imaginative Immersion=.72, Flow=.81, Frustration=.85, Challenge=.66 and Positive Affect=.84. There were significant correlations found between all the revised subscales of the GEQ. Most relationships were relatively low ($r \leq .35$). Higher correlations were found between flow and positive affect ($r = .39$), flow and immersion ($r = .41$), and flow and competence ($r = .54$). Given the obvious overlap between competence, as measured by the PENS and GEQ, only one measure was used in the current study. The PENS measure of competence was chosen because many studies have been published using the subscales as theorized by the original authors.

STUDY 1: RESULTS

To allow focus on individual genres while keeping cell size sufficient for statistical analysis, we limited our analysis to genres with a cell size over 30 (that is more than 30 participants nominated a current favourite game from that genre). This resulted in the following seven genres; Action-Adventure (AA, $n=68$), Action Role-Playing Game (ARPG, $n=80$), Massively Multiplayer Online Role-Playing Game (MMORPG, $n=50$), Real-Time Strategy (RTS, $n=32$), Role-Playing Game (RPG, $n=55$), First-Person Shooter (FPS, $n=143$), Multiplayer Online Battle Arena (MOBA, $n=33$).

Our primary research goal was to explore how PX differed across genres. Several of the outcome measures of interest were found to be non-normally distributed within genres. On that basis, analysis involving genre was undertaken using the Kruskal-Wallis test.

Genre and Player Experience

A series of Kruskal-Wallis tests were conducted with PX measures (subscales of the PENS and GEQ) as outcome measures and genre (AA, ARPG, MMORPG, RTS, RPG, FPS, MOBA) as the independent variable. All significant Kruskal-Wallis tests were followed up with Mann-Whitney U tests in order to identify which pairs of genres differed from one another. A Bonferroni correction was employed for all post-hoc Mann-Whitney U tests. Thus, all follow up results are reported with a .007 level of significance.

PENS Results

The mean values for each of the PENS subscales across genres are shown in Figure 1. No significant difference was

found for competence, but differences were found for all other PENS subscales (see Table 1 and Figure 2).

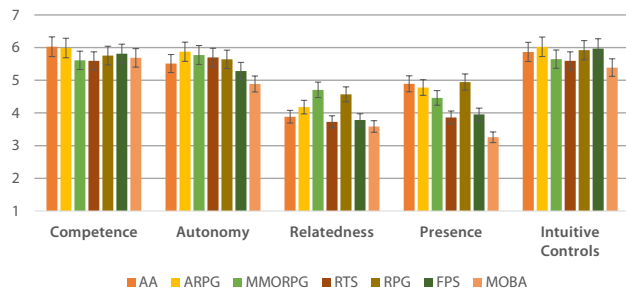


Figure 1. Mean scores on PENS subscales (5% error bars).

LESS	<	MORE	U	z	r
AUTONOMY					
MOBA	<	MMORPG	90.726	3.052	0.335
MOBA	<	ARPG	112.231	4.093	0.385
FPS	<	ARPG	80.931	4.368	0.293
RELATEDNESS					
MOBA	<	MMORPG	93.302	3.137	0.344
FPS	<	RPG	70.349	3.343	0.238
FPS	<	MMORPG	85.684	3.932	0.283
PRESENCE					
MOBA	<	MMORPG	128.238	4.293	0.471
MOBA	<	ARPG	160.126	5.812	0.547
MOBA	<	AA	172.294	6.098	0.607
MOBA	<	RPG	178.867	6.031	0.643
RTS	<	ARPG	100.775	3.618	0.342
RTS	<	AA	112.943	3.956	0.396
RTS	<	RPG	117.515	-3.969	0.426
FPS	<	ARPG	86.218	4.637	0.311
FPS	<	AA	98.386	5.015	0.345
FPS	<	RPG	102.959	4.873	0.345
INTUITIVE CONTROLS					
MOBA	<	ARPG	90.509	3.312	0.312

Table 1. Mann-Whitney U pairwise comparisons for PENS.

For *autonomy*, a significant difference between genres was found $H(6) = 30.205, p < .001$. Mann-Whitney tests were used to follow up all multivariate effects (see Table 1 and Figure 2). For *relatedness*, a significant difference between genres was found $H(6) = 26.338, p < .001$. For *presence*, a significant difference between genres was found $H(6) = 77.943, p < .001$. For *intuitive controls*, a significant difference between genres was found $H(6) = 16.384, p < .05$.

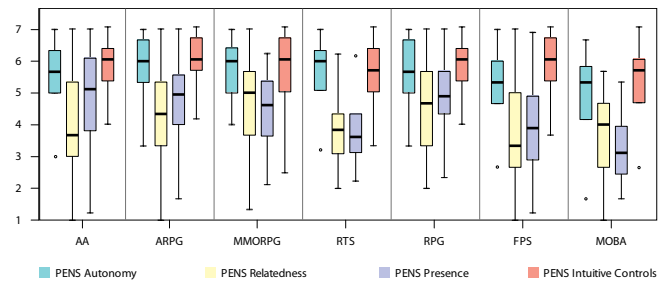


Figure 2. PENS Kruskal Wallis Test, Median Score Boxplots.

GEQ Results

The mean values for each of the GEQ subscales across genres are shown in Figure 3. No significant difference was found for flow, but differences were found between genres for all other GEQ subscales. Again, Mann-Whitney U tests were used to follow up all multivariate effects (see Table 2 and Figure 4).

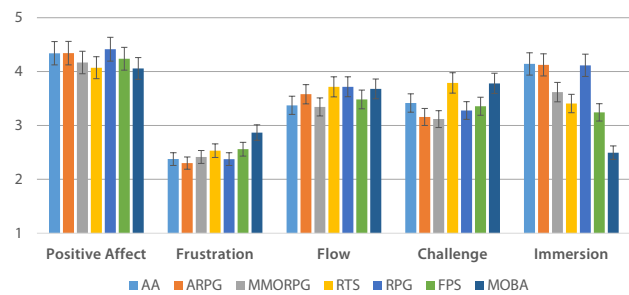


Figure 3. Mean Scores on GEQ subscales (5% errors bars).

For *positive affect*, a significant difference between genres was found $H(6) = 14.707, p < .05$. For *frustration*, a significant difference between genres was found $H(6) = 26.063, p < .001$. For *challenge*, a significant difference between genres was found $H(6) = 27.135, p < .001$. For *immersion*, a significant difference between genres was found $H(6) = 140.017, p < .001$.

POSITIVE AFFECT			U	z	r
MOBA	<	RPG	88.501	3.115	0.332
FRUSTRATION					
AA	<	MOBA	-92.164	-3.41	0.339
MMORPG	<	MOBA	97.922	-3.411	0.374
ARPG	<	MOBA	-113.345	-4.293	0.404
FPS	<	ARPG	-58.610	3.272	0.22
CHALLENGE					
MMORPG	<	MOBA	-98.781	-3.399	0.373
MMORPG	<	RTS	-105.303	-3.589	0.396
ARPG	<	MOBA	-93.681	-3.504	0.330
ARPG	<	RTS	100.203	-3.706	0.350
RPG	<	RTS	90.867	3.167	0.340
IMMERSION					
MOBA	<	FPS	91.132	3.623	0.273
MOBA	<	RTS	111.569	3.463	0.430
MOBA	<	MMORPG	140.792	4.825	0.530
MOBA	<	ARPG	222.484	8.289	0.780
MOBA	<	AA	222.756	8.108	0.807
MOBA	<	RPG	222.329	7.830	0.835
FPS	<	ARPG	131.352	7.213	0.483
FPS	<	AA	131.623	6.880	0.474

FPS	<	RPG	132.196	6.414	0.456
RTS	<	ARPG	110.915	4.086	0.386
RTS	<	AA	111.187	4.003	0.400
RTS	<	RPG	-111.760	-3.879	0.416
MMORPG	<	ARPG	81.692	3.483	0.306
MMORPG	<	AA	81.964	3.390	0.312
MMORPG	<	RPG	-82.537	-3.254	0.318

Table 2. Mann-Whitney U pairwise comparisons for GEQ.

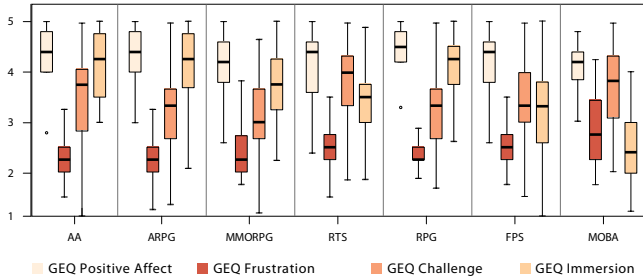


Figure 4. GEQ Kruskal Wallis Test, Median Score Boxplots.

STUDY 1: DISCUSSION OF FINDINGS

It is beyond scope in the current paper—and arguably somewhat meaningless—to attempt to interpret every difference in PX between pairs of genres. It makes greater sense to look at the broader pattern of findings across genres. We focus on patterns of results, where a particular genre shows a consistent difference with at least two other genres. A number of patterns emerge for individual genres from the results:

- AAs, RPGs and ARPGs foster immersion and presence
- ARPGs provide autonomy but are less frustrating and less challenging
- Games that are likely played with other players stimulate less immersion and presence for players
- MMORPGs are less challenging than other genres
- FPS games do not cultivate feelings of relatedness
- MOBAs offer less autonomy as well as more frustration and challenge
- Games seem to nurture experiences of flow and competence equally well

AAs, RPGs and ARPGs grant feelings of immersion and presence. Consistent with prior research [11,16,17], AA, ARPG and RPGs were found to offer more presence and immersion than many other genres of games. That these games offer greater presence and immersion is reasonably intuitive as they are generally genres of games that focus on a deep narrative, more fully developed characters and high quality visuals and sound.

ARPGs provide autonomy and relatedness but are less frustrating and less challenging. Once again, the finding with respect to presence and immersion is reasonably intuitive given the focus on narrative, characters and aesthetics. However, that ARPGs tend to result in greater autonomy is most likely due to different features of these games. Greater

autonomy in ARPGs is most likely a reflection of both the player’s ability to choose from any number of tasks or activities at any given moment during the game as well as freedom to decide how to develop their character. That players experience less frustration and challenge when playing ARPGs could reflect that such games have a more forgiving difficulty curve. Future ARPG games may benefit from inclusion of dynamic difficulty adjustment or level specific difficulty settings that facilitate players’ experience of greater challenge.

Games that are likely played with other players (MMORPG, RTS, FPS and MOBA) stimulate less immersion and presence for players. In contrast to AA, RPGs and ARPGs, the other four genres of games analysed (MMORPG, RTS, FPS and MOBA) were found to offer less presence and immersion (though in the case of MMORPGs this difference was only found for presence). The most obvious distinction between these two groups of games is that the latter commonly involve play with other people. It seems likely that play with others is less about becoming immersed in the game and more about social connection with others, teamwork and collaboration. In contrast, solo play seems likely to facilitate greater focus on narrative, in-game characters and aesthetic qualities and hence results in the experience of immersion and presence.

MMORPGs offer less challenge than other genres of games. It is not immediately apparent why this would be the case. This finding may reflect that MMORPGs commonly have a well-crafted difficulty curve, such that player ability is well-matched with the challenges offered by the game. However, given that flow is most likely where skill and challenge are well matched [5], this explanation would be further strengthened by evidence of an associated difference in flow compared to other genres, but no such differences were found. Alternatively, it may be that players more often play in teams against the game in MMORPGs and hence, there is less challenge as a function of being supported by one another. This supports the incorporation of steeper difficulty curves when playing in teams. Further research is needed to more fully understand this finding.

FPS games do not cultivate feelings of relatedness. In addition to less immersion and presence (as discussed above), FPS games were found to offer less relatedness than other genres. It is possible this reflects the fact that FPS games are commonly played in competitive multiplayer modes. Relatedness is less likely where the player is focused on competition with others. This suggests potential value in adding features that would foster relatedness in FPS games. This notion is supported by the success of the recently released game, *Destiny* (Bungie), in which a great deal of successful play relies on cooperation between players from which relatedness is likely to result. Alternatively, (in light of other evidence supporting the notion that relatedness can occur with in-game characters) this result may reflect that

the non-player characters in first-person shooters are commonly found by players to be less relatable.

MOBA games are streamlined, competitive games that encourage less autonomy and more frustration and challenge. Finally, in addition to less presence and immersion, MOBA games were found to offer less autonomy, more frustration and more challenge. The finding with respect to autonomy seems most likely to be a function of the fact that MOBA games involve fairly focused competition with others and a relatively narrow field of play in which decisions are made. Relatedly, the greater levels of frustration experienced may also be a function of the focused competition that occurs in MOBA games and the steep learning curve. With less focus on the immersive qualities of the game and greater focus on competing and cooperating with others, there is more potential for frustration with the performance of others. This interpretation is supported by players reporting greater challenge when playing MOBA games. The competitive nature of MOBA games seems likely to result in greater challenge and associated frustration for players.

Games seem to nurture experiences of flow and competence equally well. It is interesting to note the lack of differences found between any genres for competence and flow. This may be a function of the fact that participants were asked to respond with respect to their current favourite game. It may be that players experience a certain minimum level of competence and/or flow before a game is likely to become preferred. It might also be that a multi-dimensional measure of flow (such as the Long Flow State Scale [14]) would offer greater insight and fine-grained assessment of any existing differences than the uni-dimensional assessment of flow offered as part of the GEQ.

Looking at the pattern of results overall, the possibility of two general constellations of PX is raised. The first type of PX center's around the high levels of presence and immersion offered by AA, RPGs and ARPGs. Notably, these games tend to be played single-player. In contrast, the second type of PX seems to be more about challenge and play with others (with the possibility that the challenge experienced is directly related to playing with others).

Between genres, MOBA games stand out as offering the most distinct PX. More specifically, of the 42 univariate differences found between pairs of genres, 20 differences were found between MOBA games and other genres (in contrast, other genres appear in between 8 and 14 different pairs). Further, while other genres show a mixed of effects (both more and less of what would commonly be considered favourable components of PX). MOBA games consistently show less of these components. As discussed, in comparison to other genres they offer less presence, less immersion, less autonomy, more frustration and more challenge. Although a less pronounced pattern, there is also some evidence that they offer less intuitive controls, relatedness and positive affect. That players experience MOBA games as offering less intuitive controls may reflect that MOBA

games are relatively new and the control conventions have had less time to become “second nature” to players (in contrast, for example, the control convention of using W, A, S, D for movement in FPS games or the mouse to control the camera is well established). The experience of less relatedness and positive affect seems most likely to relate to the competitive play (and associated frustration and challenge) in MOBA games. MOBA games also require strategic thinking and full concentration, where positive affect may be less likely to occur during gameplay, but more likely after gameplay when the tension of a match is gone. The PENS relatedness measure might also not pick up on the relatedness within a MOBA team, but be more prone to the overall competition between the teams during a match. Overall, the results suggest that MOBA games lack most of the commonly occurring positive components of PX. The primary redeeming feature of MOBA games in terms of our study appears to be the challenge they offer. This result is particularly striking in light of the remarkable popularity of these games. While our results present a distinctly different profile of PX for MOBA games than other genres of games, it seems likely that the measures we employed do not fully capture the components of PX that attract people to play MOBA games.

UNDERSTANDING MOBA PLAYERS

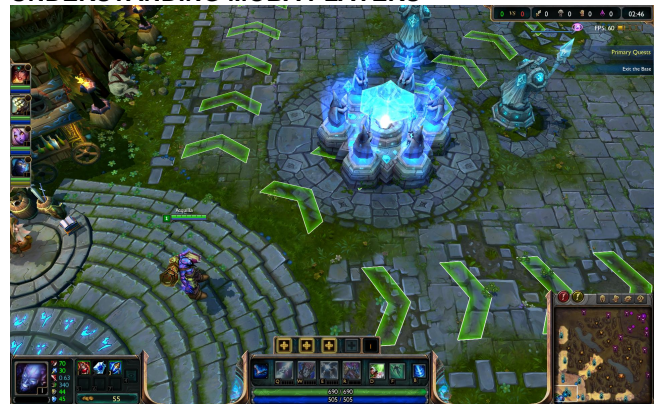


Figure 5. Screenshot from League of Legends

Ever since the release of League of Legends (LOL, Riot Games, see Figure 5), MOBA games have become the most played online games² since the surge of Massively Multi-player Online Games (MMOGs) that came with the release of World of Warcraft (Blizzard Games). The trend of MOBA games started with the Warcraft 3 modification; Defense of the Ancients (DOTA). Since this first release, MOBA games include the same map types and principles across games: two teams, typically with five players each, are distributed across three “lanes” (top, middle and bottom) that represent paths from one team’s camp to the oth-

² Players log 1.3 billion hours of gameplay in LOL: <http://www.forbes.com/sites/johngaudiosi/2012/07/11/riot-games-league-of-legends-officially-becomes-most-played-pc-game-in-the-world/>

er. Players have to invade each other's base by destroying various structures along the way and finally the main structure. Players fight along the three lanes together with regularly spawning creeps that serve to provide experience points and gold to level up the player's characters (a practice referred to as farming) and give them money for buying items from shops. A key feature of MOBA games is the massive selection of player avatars (Heroes) available (as well as the ability to buff or strengthen these heroes with complicated item combinations from a store). The availability of heroes allows for a huge number of team compositions that together with buff combinations from the store items provide many complex decisions for players.

Related MOBA Literature

Very little prior research has looked at PX within MOBA games. Iosup and colleagues [13] sought to identify the implicit social structures in MOBA games and other online games. Notably, they observed that in contrast to other types of online social networks that revolve around things like friendship, players of socially networked games were also motivated by their adversaries. They also determined that MOBA games differ from other genres in that teamwork was a key determinant of in-game success.

Further insight regarding the social aspects of MOBA play come from Shores and colleagues' research [27]. Although focused on the development of a toxicity index to better understand deviant play (for example sending offensive messages or intentionally helping the opposing team), their work extends to the impact of such behaviour on PX. Shores' [27] findings align with Iosup's [13] showing effective communication and teamwork are important factors for winning a match. Furthermore, the quality of the social interaction with other players is a key component of PX.

Shores and colleagues [27] were particularly interested in how deviance influenced both short-term (continuing to play in the current play session) and long-term (either permanently quitting or taking an extended break) retention. Perhaps most interestingly, they found regardless of deviance/toxicity, playing with friends predicted continuing play (both short and long term) for all levels of experience. Moreover, playing with friends was the only significant predictor of long-term retention for the most experienced players.

In light of our findings from study 1 (raising questions about the nature of PX in MOBA games) and the relative dearth of research in this area, we identified a second research question based on our initial results:

RQ2: What is the motivation for playing MOBA games and what is the PX during MOBA gameplay?

STUDY 2: INTERVIEWING MOBA PLAYERS

To explore RQ2, an interview study was conducted with experienced MOBA players who enjoy playing this genre.

Participants

Six people who play MOBA games were recruited for the study. All participants are students at [removed for blind review] and study game design/development at an undergraduate or postgraduate level. Table 3 summarizes the general characteristics of each study participant.

	P1	P2	P3	P4	P5	P6
Gender	M	M	F	M	M	M
Experience ^a	8	6	2	5	6	2
Weekly Play ^b	10-20	5-10	10-15	3-5	80-90	8-10
Most played ^c	LOL	DOTA	LOL	LOL	DOTA	LOL

Table 3. Characteristics of Interview Study Participants

^a in years; ^b in hours; ^c LOL = League of Legends, DOTA = Defense of the Ancients 2

Procedure

Each participant was interviewed individually, with each interview taking between 30 and 45 minutes. A semi-structured interview approach was taken with the interviewer drawing on pre-determined questions but following up points of interest as they arose during interviews with probing questions. The interview questions covered what players enjoy and don't enjoy about playing games in this genre and their best and worst experiences. They were asked to discuss PX attributes of MOBA games in comparison to those of other genres (e.g., level of challenge) and questions covered the social aspects of PX. Each participant was also asked what might encourage or discourage people from playing this genre of game, and to provide details of any other interesting aspects of the games that impact on PX. The interviewer recorded audio and took notes.

Analysis

Responses were analyzed by grouping comments together that reflected our interest in MOBA games with respect to PX qualities. We developed emerging themes that related to player enjoyment and motivation to play. Iteratively, the researchers involved in the project reviewed the data until clear themes emerged.

STUDY 2: RESULTS AND DISCUSSION

Overall, three prominent themes emerged from interviews.

Competition is highly valued

When discussing the reasons that they enjoyed playing MOBA games, all interview participants highlighted the value they placed on competition and a sense of achievement. The importance of competition was discussed in general terms by all participants, and a number of aspects related to competition—winning and performing well, killing and combat—emerged. General comments included “*I enjoy both competing with and against friends*” (P1), “*you get immersed in competitive mode ... there is a lot of planning like picking characters*” (P2), and “*I'm competitive in game play and research to improve*” (P5).

Winning and performing well were identified as important motivations; with participants describing these aspects of the game as pivotal to the experience and a determinant of how they'd feel after a MOBA game play session. For participants enjoyment stems from "*crushing another team*" (P1), "*the sense of victory*" (P5), "*getting success*" (P6) and "*winning is king*" (P3).

Given the importance placed on winning and performance it's not surprising that four of the six participants described the frustration they feel when they lose: "*it's frustrating when you're getting beaten and there's no way you can win*" (P5) and "*frustration comes from losing*" (P6). The description participant 1 provided of his worst ever MOBA game PX epitomizes the negatives associated with enjoyment being tied to performance and winning: "*There are some games where you're feeling like you going to win early on, and then you play for 70 minutes or more and then lose. It feels like a real waste of time*" (P1).

In the context of MOBA games, competition and winning are tied up with killing and combat. A team does not need to kill to win the game (e.g., winning in League of Legends comes from destroying the opposing faction's Nexus, a building which lies at the heart of their home base protected by defensive structures—one could argue the game is all about that base). However, players gain levels from killing the opposing team's heroes and weakening the opposing team helps with the decisive game objective. Interview participants highlighted this conflict as an important motivator: "*really good games are when you get lots of kills*" (P4), "*my best game was when I got a pentakill*" (P6), and "*I'm there to seek, destroy and win even if it makes others sad*" (P3).

Satisfaction stems from a sense of mastery

Mastery appears to be particularly important to MOBA players. When asked to compare the challenge of MOBA games to games within other genres, all participants highlighted the steep learning curve of games in this genre and the high level of difficulty experienced during game play: "*some are harder than anything you've ever played*" (P1), "*so much knowledge is required*" (P3), "*they're quite difficult because of the variety of skills required*" (P2) and "*it's skill heavy, and strategy is required as well*" (P4).

It seems that players of MOBA games receive great satisfaction from mastering the challenges presented by games in this genre. Participants discussed the importance of mastering the mechanics of the game especially because it is such a skill oriented game and with a high level of strategy required to perform well. Examples of the positive feelings that resulted from such experiences included: "*so much satisfaction in beating a higher ranked friend and outplaying him*" (P1), "*placing highly ... after my first ever game ... gave me bragging rights*" (P3), "*a huge thrill at achieving something that is nearly impossible*" (P6 referring to his penta-kill), and "*exceeding the number of kills ever in a game before*" (P2). Participant six summed up this feeling as the "*self-reward of succeeding*" (P6).

Teamwork is a key motivational driver

In line with previous research [13,27], teamwork generated some of the most interesting discussions with interview participants. The importance of teamwork to MOBA players can be categorized into three sub-themes: fun with friends, performing well as a team, and types of teamwork.

In terms of the first sub-theme (fun with friends), all participants indicated that, while they play MOBA games with both friends and strangers, consistent with previous research [27], they prefer to play with at least one friend on their team. From discussions with interviewees, social interaction with familiar people is a core aspect of the enjoyment of MOBA game play: "*playing with friends, talking to them*" (P1), "*it's fun to chat with other people [who] have a shared interest*" (P4), "*laughing with friends*" (P3) and "*it's about having fun with friends*" (P6).

With respect to the second sub-theme (performing well as a team), both positive (e.g., cohesion and unity) and negative (e.g., frustration) experiences were described. In general, the importance of team interactions from a competitive perspective emerged. Those interviewed discussed the importance of team cohesion and unity in MOBA game play: "*Within a team that I know, we generally conform to a meta-strategy*" (P2), and "*the sense of unity is what I love about the game*" (P3).

Participant reflections on teamwork were tightly interwoven with the importance of both competition and mastery. Participants discussed the need to constantly interact with team members, with a focus on what the team is doing and what to do next. Success is highly reliant on the performance of your teammates: "*teams need cohesion; Groups with cohesion will win even if some players [on the other team] are better*" (P5), "*the main draw is the competitive aspects of the game, especially when the team is integrated*" (P2), "*you can't do one [succeed] without the other [teamwork]*" (P5) and "*when you're doing well, everyone enjoys the game*" (P1).

While participants indicated that this level of teamwork is highly appealing, it is also clear that there is pressure involved and that tension within the game can lead to negative interactions: "*it's hard when you're having a good game yourself, but you have a really bad teammate and you lose*" (P4), "*you need to work as a team to succeed and sometimes people don't do that*" (P6), "*I hate it when my team is clearly winning and instead of pushing for the win your teammates mess around, racking up the kills for no reason. It's sore winning and not very sportsmanlike*" (P5), "*if things start to go poorly, someone makes a mistake, things can become negative*" (P1), and "*it can become a blame game—who is responsible for losing*" (P3).

The third sub-theme identified within teamwork (types of teamwork) related to the fact that MOBA players distinguished between more serious and more fun play within teams. Three of the interview participants explicitly distin-

guished the play they engage in with friends in contrast with the other ‘more serious’ PX: “*About half the time I have fun with friends. I’ll play a serious game by myself or with one or two friends with the same skill level*” (P2), “*If you’re playing with friends you don’t need to be in the game at all. I’ll have fun strategies with friends*” (P1), “*With friends we won’t be able to do a lot. We’ll muck around and I’ll teach them stuff. Online with strangers my behavior will be more formal*” (P2), and “*I play with friends to have fun and pass the time*” (P4).

An interesting aspect that emerged was that player’s may be more accepting of losing or performing poorly if they are playing with friends: “*I enjoy playing with friends and having fun losing*” (P1) and “*I generally prefer to play with friends even if they’re not very good*” (P4). However one participant (P5) did indicate that while he has a preference for playing with friends, he would prefer to play *against* those friends who weren’t very good to avoid issues that might arise if he got annoyed with their performance.

GENERAL DISCUSSION

With respect to RQ1, study 1 identified a number of differences in PX between genres. In particular, MOBA games emerged as providing a uniquely different PX than other genres in terms of showing less presence, less immersion, less autonomy, more frustration and more challenge (and in a less pronounced pattern less intuitive controls, relatedness and positive affect. In answer to RQ2, study 2 identified competition, mastery and teamwork as key motivators for MOBA play. Our findings raise the possibility of two broad constellations of player types; those more motivated by presence and immersion and those more motivated by challenge and the social aspects of play.

Our findings also identify some points of interest for game designers. In particular, consideration could be given to whether and how it might be possible to improve the PX in specific genres. For example, considering how FPS games might be designed to facilitate greater feelings of relatedness. More broadly, consideration might be given to whether lowered presence and immersion is inevitable in multiplayer games or whether such games can be designed in a way that more supports these kinds of experiences.

Our research has implications for potential positive and negative influences on player wellbeing. In light of research linking immersion in games to real world aggression [24], our findings that FPS, MMORPG, RTS and MOBA games offer relatively less immersion can be seen as somewhat encouraging in terms of the potential impacts of videogames on wellbeing. It may be that concerns around violent content or total time spent playing these genres may be less warranted because they are generally experienced as less immersive. With specific regard to MOBA games, it is possible that their ability to frustrate has a negative impact on player wellbeing. However, balancing this, experiences of mastery and enjoyment of teamwork in MOBA games are likely to have a positive impact on players.

Additionally, our findings suggest paths of further inquiry for the larger CHI community with an interest in building engagement in virtual environments for non-entertainment purposes. Designers in these contexts might consider that in MOBA games the enjoyment of teamwork and competition seems to be enough to strongly engage players, even in the context of frustration and a relative dearth of presence, immersion and autonomy. Thus, carefully crafted experiences of teamwork and competition may also prove an effective means of building engagement in non-entertainment virtual environments, particularly those where presence, immersion or autonomy may not be easy to facilitate.

Limitations and Future Work

The results of the current study, alongside some limitations with the methods used, provide pointers to a number of avenues for future work. The findings from study 1 are derived from a large-scale survey, which would be further supported by future work using a variety of methods. Experimental studies seeking to replicate these findings would remove issues related to relying on participant recall of their experiences of play. Longitudinal studies will allow for exploration of more long-term effects and likely also facilitate more fine-grained distinctions between influential variables. Additionally, in light of our findings from study 2, future survey studies exploring the PX of MOBA games should incorporate measures related to competition, teamwork and sense of mastery to allow further validation of the trends we identified. Our sample for interviews was relatively small and our participants were highly experienced with MOBA games. Future work exploring PX with a less experienced sample would also be informative. Our findings provide unique insight regarding the motivations for play of MOBA games, however, future research should explore the extent the motivations and PX components identified are present in other multiplayer games. Relatedly, future research should explore how different social play modes influence PX in particular genres (for example contrasting single-player, competitive and cooperative first-person shooter play). Finally, future work should be directed toward exploration of the connection between our PX findings and impacts on wellbeing.

CONCLUSION

Overall, this research provides additional insight regarding how PX differs between genres. This identifies potential useful avenues for future game design as well as implications for the impact of videogame play on wellbeing. Our findings also provide important initial understanding of the nature of the PX in MOBA games. While concerns exist about the amount of time people spend playing MOBA games, the current results suggest these concerns may be—at least partially—unwarranted, because players are experiencing a rewarding sense of challenge, competition and mastery as well as sense of connection with others.

ACKNOWLEDGMENTS

We thank all the participants for their time and the Young and Well Cooperative Research Centre for partially funding

this research. Lennart thanks NSERC, GRAND NCE and SSHRC (IMMERSe, 895-2011-1014) for funding support.

REFERENCES

1. Anderson, C., Shibuya, A., Ihori, N., et al. Violent Video Game Effects on Aggression, Empathy, and Prosocial Behavior in Eastern and Western Countries. *Psyc. Bull.* 136, 2 (2010), 151–173.
2. Birk, M. and Mandryk, R.L. Control your game-self: effects of controller type on enjoyment, motivation, and personality in game. *Proc. CHI '13*, 685–694.
3. Boyle, E., Connolly, T.M., Hainey, T., and Boyle, J.M. Engagement in digital entertainment games: A systematic review. *Comp. Hum. Beh.* 28, 3 (2011), 771–780.
4. Brockmyer, J.H., Fox, C.M., Curtiss, K.A., McBroom, E., Burkhart, K.M., and Pidruzny, J.N. The development of the Game Engagement Questionnaire: A measure of engagement in video game-playing. *Journal of Experimental Social Psychology* 45, 4 (2009), 624.
5. Csikszentmihalyi, M. *Flow: The Psychology of Optimal Experience*. Harper Perennial Modern Classics, 2008.
6. Dauphin, B. and Heller, G. Going to other worlds: the relationships between videogaming, psychological absorption, and daydreaming styles. *Cyberpsych, Behavior And Social Networking* 13, 2 (2010), 169–172.
7. Elliott, L., Golub, A., Ream, G., and Dunlap, E. Video game genre as a predictor of problem use. *Cyberpsych., behavior and social networking* 15, 3 (2012), 155–61.
8. Feng, X., Chan, S., Brzezinski, J., and Nair, C. Measuring enjoyment of computer game play. *AMCIS 2008 Proceedings*, (2008), 1–10.
9. Gajadhar, B., De Kort, Y., and Ijsselsteijn, W. Shared fun is doubled fun: Player enjoyment as a function of social setting. *Fun and Games*, (2008), 106–117.
10. Gerling, K., Miller, M., and Mandryk, R. Effects of balancing for physical abilities on player performance, experience and self-esteem in exergames. *Proc. CHI '14*, 2201–2210.
11. Ghuman, D. and Griffiths, M. A Cross-Genre Study of Online Gaming. *Int. Journal of CyberBehavior, Psychology and Learning* 2, 1 (2012), 13–29.
12. Ijsselsteijn, W.A., de Kort, Y.A.W., and Poels, K. The Game Experience Questionnaire: Development of a self-report measure to assess the psychological impact of digital games. *Manuscript in preparation*, (2013).
13. Iosup, A., van de Bovenkam, R., Jia, A., and Kuipers, F. Analyzing Implicit Social Networks in Multiplayer Online Games. *IEEE Int. Comp.*, 18, 3 (2014), 36–44.
14. Jackson, S. a, Martin, A.J., and Eklund, R.C. Long and short measures of flow: the construct validity of the FSS-2, DFS-2, and new brief counterparts. *Journal of Sport & Exercise Psych.*, 30, 5 (2008), 561–87.
15. Jennett, C., Cox, A.L., Cairns, P., et al. Measuring and defining the experience of immersion in games. *Int. Journal of Hum-Comp. Studies* 66, 9 (2008), 641–661.
16. Johnson, D. and Gardner, J. Personality, Motivation and Video Games. *Proc' OZCHI 2010*, 276–279.
17. Johnson, D., Wyeth, P., Sweetser, P., and Gardner, J. Personality, genre and videogame play experience. *Proc' FnG '12*, ACM Press (2012), 117–120.
18. Jones, C.M., Scholes, L., Johnson, D., and Katsikitis, M. Gaming Well: Existing links between videogames and flourishing mental health. *Frontiers in Psych.*, 5 (2014).
19. Kuikkaniemi, K. and Laitinen, T. The influence of implicit and explicit biofeedback in first-person shooter games. *Proc. CHI '10*, 859-868.
20. Al Mahmud, A., Mubin, O., Shahid, S., and Martens, J.-B. Designing and evaluating the tabletop game experience for senior citizens. *Proc. NordiCHI '08*, ACM Press, 403.
21. Mekler, E.D., Bopp, J.A., Tuch, A.N., and Opwis, K. A systematic review of quantitative studies on the enjoyment of digital entertainment games. *Proc. CHI '14*, (2014), 927–936.
22. Nacke, L.E., Grimshaw, M.N., and Lindley, C.A. More than a feeling: Measurement of sonic user experience and psychophysiology in a first-person shooter game. *Interacting with Computers* 22, 5 (2010), 336–343.
23. Norman, K.L. GEQ (Game Engagement/Experience Questionnaire): A Review of Two Papers. *Interacting with Computers* 25, 4 (2013), 278–283.
24. Przybylski, A.K., Rigby, C.S., and Ryan, R.M. A motivational model of video game engagement. *Review of General Psychology* 14, 2 (2010), 154–166.
25. Przybylski, A.K., Weinstein, N., Ryan, R.M., and Rigby, C.S. Having to versus wanting to play: background and consequences of harmonious versus obsessive engagement in video games. *CyberPsychology & Behavior* 12, 5 (2009), 485–492.
26. Ryan, R.M., Rigby, C.S., and Przybylski, A. The motivational pull of video games: a self-determination theory approach. *Motiv. & Emo.* 30, 4 (2006), 347–363.
27. Shores, K., Swanenburg, K.L., Kraut, R., and Riedl, J. The Identification of Deviance and its Impact on Retention in a Multiplayer Game. *Proc CSCW '14*, 1356–1365.
28. Wang, C.K.J., Liu, W.C., and Khoo, A. The psychometric properties of dispositional flow scale-2 in internet gaming. *Current Psych.: Research & Reviews* 28, 3 (2009), 194–201.