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The Social Context of Video Game Play: Challenges and Strategies

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ABSTRACT

People who play video games do so in a range of social contexts: alone, with people they know and don't know, in cooperative and competitive settings. However, little is known about what people enjoy or dislike about these contexts of play, or how to best design games to support player preferences. Using open-ended responses from an online survey (N = 326) and a series of interviews (N = 16) this study shows that the solitary context offers immersive, relaxing, autonomous play, as well as the avoidance of unwanted social interactions. Social play, however, provides competence-enhancing experiences (via competition or teamwork or both) via interactions with others. What was disliked about these contexts indicates where design improvements to both the solitary and social play experiences can be made.

Author Keywords

Design; electronic/digital/video games; interview; survey; social context; interaction

ACM Classification Keywords

K.8.0; J.4

INTRODUCTION

The ability of video games to facilitate both social and solitary play partially explains the popularity of this form of entertainment: there appears to be something for everyone. As such it offers a space in which to learn how individuals manage their needs via entertainment technology and how design can enhance this. Relatedly, while social interaction has become a key focus since the upsurge in social media use and user-generated content, solitary engagement with games is still reportedly more common than social play [1]. By understanding the social context of play to be inclusive of solitary play, it is possible to gain a more complete picture of how people manage their engagement with interactive content. Relatedly, understanding what frames the decision to play in a particular context is of benefit, both

to those who want greater player satisfaction and hence, greater player retention; as well as those designing interactive systems that allow for both solitary and social interaction with content.

The aims of the current study are two-fold: to develop a better understanding of how the social context of play impacts on the player experience; and to show how this can be improved upon through context-aware design. To do so, a mixed methods study using open-ended survey responses (likes and dislikes), was conducted to investigate the player experience across different social contexts of play, while interviews provided additional insight.

The paper starts with an overview of the impact of social context of play on the player experience. It then presents the method and results of a mixed method study using survey open-ended response and interview data, before concluding with an overview of how the findings may inform future game design and other interactive technology.

Context and Theory

Players' engagement with games establishes that context is a place of doing, or 'forms of engagement' [2]. As such, exploring the social context of play entails understanding the player experience as an activity, subject to negotiation and change. As such it is likely to operate as a spectrum, in which solitary play is rarely completely solitary and social play varies in terms of the degree of connection with others [3]. However, in order to interrogate the responses from a large dataset, this framework was reduced in the current study to a set of simple contrasts: play alone or with others, who people play with, and how people play with others.

Additionally, while it is theoretically advantageous to engage with qualitative data without any point of reference that might 'force' data into a particular shape, this can also be highly impractical when prior knowledge of the subject is a given. As such, this study utilises informed grounded theory, which amongst other recommendations suggests the need for theoretical pluralism [4]. Both Self-Determination Theory (SDT) [5], as well as Uses & Gratifications theory (U&G) [6], rest on the notion of the player as an agent actively seeking out desirable experiences, shaping the way that they engage with content, and other players. However, while U&G derives its satisfactions from specific media, SDT posits that the experiences of autonomy, competence and relatedness provide intrinsic motivation for any activity that provides them [5]. As such SDT offers a theory of

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human motivation, while U&G is responsive to a given media. Holding both theories in mind offers advantages to a grounded study of the social context of play, by providing an initial lens through which to read the data that is both responsive and directed.

Related Work: Social Context and the Player Experience

Who People Play With

Play either alone or with others has been found to influence the player experience. Experimental research has found that social play, relative to play against a computer, elicits greater presence, engagement, sense of threat, challenge, and physiological arousal [7]. The finding for presence is supported by other experimental research finding that greater immersion (or the ‘illusion of non-mediation’ [8]) is felt when play is perceived as being with a human as opposed to play with or against a computer-controlled character [9] or against the game [10]. This contrasts with survey findings, however, which find that game genres that tend to be played socially are lower in presence and immersion than other genres [11], and that solitary play is higher in presence than social play [12]. Whether greater immersion is felt in solitary or social play may be clarified by the use of mixed methods, as in the current study.

In terms of the kind of relationships players have, there is evidence that video game play is used to forge new and valued friendships with others [13] and reinforce existing social ties [14], while player familiarity, social and physical proximity can lead to offline social support [15]. Playing against a friend also elicits greater spatial presence, engagement and physiological arousal compared to playing against a stranger [7]. Relatedly, play against a friend, has been shown to be more fun than play against a stranger or computer [16]. Additionally, playing with friends cooperatively is shown to lead to improved team and individual performance, due to greater assistance given and less betrayal [17]. However, these studies don’t explain why players might still prefer to play with strangers, which focusing on the likes and dislikes of playing in both contexts may inform.

How People Play With Others

How players interact with each other also impacts the player experience, such that cooperative play with/against a computer-controlled character produced greater presence than competitive play [9], while cooperative play with humans led to increased post-play cooperative behaviour relative to competitive play [18]. Conversely, experiences of competence are greater when play is competitive, relative to non-competitive play [19]. Uniquely, this experiment contrasted competitive to non-competitive play - where pairs of co-located players were told their scores would be compared (competitive) or not (non-competitive).

In contrast, team-against-team play combines both competitive and cooperative elements. A survey of various game genres determined that the MOBA genre (multiplayer

online battle arena - team against team play), was higher in challenge and frustration compared to other genres, and lower in autonomy, immersion and presence [11]. As the authors explain, this is likely due to the greater weight given to competitive and cooperative behaviours. This in turn would put greater pressure on members to perform to a high standard and expect the same from others. Along with the disinhibiting effect of online interactions [20], this may explain the prevalence of toxic behaviours in competitive multiplayer games [21]. While player toxicity is still subject to debate, it is largely defined as inclusive of bullying, abuse, cheating, and other behaviours designed to upset fair play [21, 22]. Whether these behaviours are greater in particular contexts may be illuminated by the current study.

METHOD

This study set out to learn what inducements and disincentives exist for individuals to play video games in different social contexts. These contexts are broken down into two broad categories: ‘who’ people play with (known others, strangers, or no-one/solitary play) and ‘how’ people play with others (cooperatively, competitively, or mixed cooperative and competitive play – hereafter referred to as ‘mixed play’).

To get a sense of the reason why people would most often play in a particular context we collected open-ended survey responses, and coded the themes that arose from the data. The distributions of the codes across different social contexts were then examined. To follow up on interesting patterns of results, and to provide insight into generated codes, we conducted in-person interviews. In order to engage with the data, informed grounded theory was employed [4], which makes allowances for prior knowledge of other pertinent theory. As such, Self-Determination Theory [5], and to a lesser degree Uses and Gratifications Theory [6] frame the initial engagement.

Recruitment and Procedure

Survey

Participants were asked to complete an online survey. They were required to have an interest in playing commercially available games, played electronically on any device, and be aged 12 and above. Data collection ran from September 2013 to February 2014 after ethical approval was gained from a university ethics board. The sample was recruited from the general public via advertisements in gaming forums, online social media, as well as a university games course and an email list of participants from prior studies who had agreed to be contacted for future research. Snowball sampling techniques were used [23]. At the completion of the survey participants could enter a draw to win one of two \$100 gift vouchers. Participants were first asked to indicate if they ‘most often’ played video games ‘online with people you know, online with people you don’t know, offline with people you know, on your own’ (‘who’ they played with). They were then asked: ‘Please tell us what you like/dislike about playing video games [insert

‘who’ response].’ Participants who played with others were then asked to indicate whether they most often played video games competitively, cooperatively, or a mix of both (‘how’ they played with others), and then to report what they liked and disliked about playing video games in that social context.

Interviews

Face-to-face interviews were undertaken throughout February 2014 with sixteen participants. The same ethical and recruitment procedures were followed as were undertaken for the survey. The interviews took place either via Skype or in the same physical location. Interviews were audio-recorded and transcribed. Participants were each compensated for their time with AU\$20. Participants were asked about their preferences for different social contexts of play and to talk about what they liked and didn’t like about all the social contexts of play they had experienced.

Participant Information

A sample of 326 participants aged 12 to 56 (M=27.97, SD=7.85; male=260, female=63, unstated gender=3) provided responses to the first section (‘who’ they played with). Descriptive statistics are provided in Table 1. Eleven participants did not proceed from the questions of ‘who’ (N=146) to the questions of ‘how’ (N=135; attrition of 7.5%). Initial responses regarding who people played with (e.g. online with people you know, etc.) were combined to form the contexts of play with either known others, strangers, or solitary play. Table 2 cross-tabulates the final count of the ‘who’ and ‘how’ of social play.

The interviews with 16 participants aged 12 to 48 (M=30, SD=10.42; male=8, female=8) ranged from 26 to 83 minutes in length. These were transcribed and responses that corresponded to the likes and dislikes of different forms of social and solitary play were sectioned out.

Analytic Strategy

Survey

Respondents could provide as concise or detailed a response to the questions regarding their likes and dislikes as they preferred, however each distinct idea was coded only once. Distinct concepts generated separate codes, for example: ‘*I can play at my own pace and am not beholden to someone else’s availability (or my own)*’ was coded as

Social Context	N	Freq. %	Age Mean (S.D.)	% of Gender in each Context	
				Males	Females
Known	87	26.7	28.1 (8.3)	80.5	18.4
Strangers	59	18.1	28.3 (7.1)	89.8	10.2
Solitary	180	55.2	27.8 (7.9)	76.1	22.8
Competitive	18	13.3	28.5 (7.9)	88.9	11.1
Cooperative	32	23.7	26.8 (8.7)	68.8	31.3
Mixed	85	63.0	28.6 (7.5)	87.1	11.8

Table 1. Descriptives of different social contexts of play

autonomy, while *‘It’s fun, it takes my mind off stressful thoughts, sometimes it emerges (sic) me in a different world, and sometimes I can feel a sense of accomplishment if we finish something difficult-ish together’* was coded as fun, escapism, immersion, and teamwork.

The coding scheme was developed through an iterative process. Specifically, the first author read responses repeatedly until a first draft of a coding scheme was developed. Discussion with the second author led to the refinement of the coding scheme and 10% of the sample was randomly selected and coded by both raters independently. Inter-rater reliability was tested using the Cohen’s Kappa test and each code was expected to yield a $K > .7$. Failing this, another round of refinement followed. The coding scheme was finalised after four iterations. Codes that occurred for less than 5% of the entire sample were discarded. The remaining sample was coded in full by the first author following the final version of the coding scheme. Each category (‘who’ or ‘how’) was then analysed to determine the distribution (%) of each code in a given context. This formed the core analysis.

Interviews

Transcribed responses were collated with all identifiers removed. The coding scheme was applied to the interview data using the same process to test reliability as was used on the survey data. Example responses that provided insight into players’ decision-making, as coded in the survey, are provided in the relevant sections. This formed the complementary analysis.

RESULTS

The entire set of codes reached an average Kappa of .88 for both the survey and interview data (see supplementary materials for complete set of Kappas and coding scheme).

Both survey and interview responses are italicised, however only interview responses are appended with the age and gender of the respondent. All written responses are quoted as they were written (sic.). All percentage values refer to the percentage of participants who mentioned a code within a single category (who they played with or how they played with others). For example, when participants who played alone were asked what they liked about ‘*who*’ they played with, 27% of the responses they gave indicated ‘autonomy’. As the study allowed for multiple-response the total % in a given context will not equal 100%. A contrast of the distribution of the codes across different contexts is provided in Figures 1-4.

Play that is...	Play with...		TOTAL
	Known others	Strangers	
Competitive	9	9	18
Cooperative	25	7	32
Mixed	49	36	85
TOTAL	83	52	135

Table 2. Count contrasting the social contexts of play

Who People Play With - Likes

Players in all contexts enjoyed experiences of competence/challenge, but it was mentioned with greatest frequency in play with strangers, then play with known others and least of all in solitary play. The experiences of logistical advantage and autonomy were enjoyed in both solitary play and play with strangers. Teamwork was mentioned as an enjoyable experience for both play with known others and strangers. Immersion, relaxation, avoidance of other's toxicity, no performance pressure, and escapism were all mentioned exclusively in regard to solitary play. Relatedness and fun were unique enjoyments of play with known others, while meeting new people was unique to play with strangers. See Figure 1.

Solitary Play – Likes

The solitary context provided the experience of autonomy, articulated as being in control of the experience, and often linked to a freedom from social and performance pressures. For example, *'I can play at my own pace and don't feel pressured by others to perform well. Also, I like to take time figuring out puzzles on my own'*. This is also described in some of the interview data:

'There's no pressure from other people to perform ... you can have a terrible day and play bad games and nobody will judge you.' (20 year-old female)

Single-player games were also described as providing an immersive experience, partially due to the higher-quality narrative experience, e.g. *'usually a deeper story'*, but also because it lacked the distraction of social interaction, e.g. *'I can get into the story more because when other people are playing they tend to play out of character and the focus is on socializing rather than the game story'*, and:

'If you play with people, it means you sort of know that is

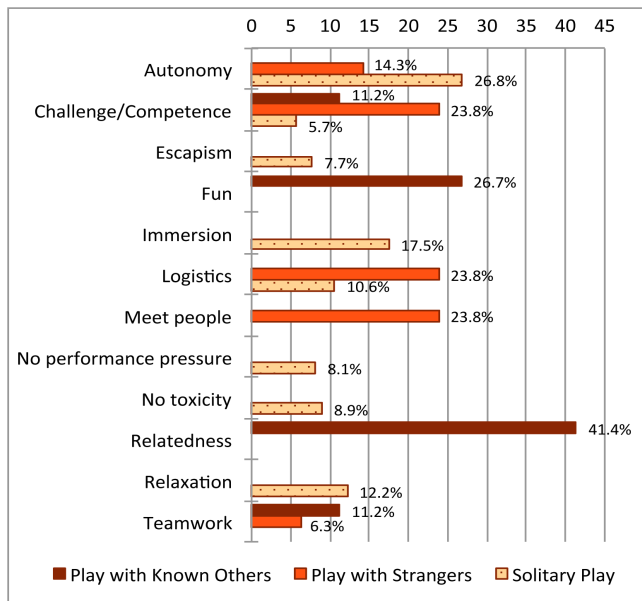


Figure 1 'Who' people play with - Likes

not real, so it's not as, I think, immersive as [when] you're playing by yourself and people in the game are play-characters. They play inside their role more than people who are real.' (33 year-old male)

The experience of relaxation was also mentioned in conjunction with immersive gameplay. For example, *'Single-player games tend to have more in-depth story, and generally feel immersive to me. Also, it's a nice way to get some alone time after spending all day surrounded by people'* (coded as immersion and relaxation), describes the use of gameplay to recuperate from everyday stresses.

Solitary gameplay was also the preferred context of play for individuals who found multiplayer difficult given their lack of access to fast internet, or enjoyed the convenience of being able to play whenever they wished without having to coordinate with others (logistics). It also provided a way to avoid unpleasant social interactions, e.g. *'Don't get abused by randoms. Don't have to compete with hardcore powergamers'* (coded as no toxicity and no performance pressure), reinforces the preference for relaxing gameplay.

Survey respondents also referred to escapism in relation to relaxation, e.g. *'I find it relaxing, and an effective form of escapism from real world stresses'*. Relatedly, the experience of competence was mentioned in conjunction with 'no performance pressure', e.g. *'I am challenged to solve puzzles and am not intimidated by other players and their higher ability to play the same game'*, or in general terms, e.g. *'working towards a personal goal'*.

Playing With Known Others - Likes

References to relatedness, e.g. *'Good way to bond, have some fun, easier to organize than board games or outdoors stuff'* (coded: relatedness, fun and logistics), show games filling the role of other traditionally recognised social activities. Rather than supplanting standard ways of interacting with friends and family however, it is described as an adjunct that can build stronger relationships:

'If you find that rapport with someone in the gaming world on how you approach gaming, then it's just another facet to your friendship. It just polishes up that lovely stone some more...in peripheral friendships or non-familial friendships or acquaintances, it's a way to sort of maybe throw a rope bridge over a ravine to see if there is an even better friendship there.' (33 year-old male)

Video game play also provided connection with physically distant others as both survey, e.g. *'I live interstate from my brother, so I like bumping into him online'*, and interview data describes:

'It's become a convenient way for all of us to go, I've got 50 minutes, I can have a chat to you, I can do something fun while I am doing it and I can do it now.' (36 year-old male)

The next most frequently cited 'like' of this kind of gameplay related to having fun. While survey responses

were brief, e.g. *'it's fun'*, interview data describes the influence of familiarity and trust:

'Just the level of familiarity and the kind of no-holds barred good-natured riffing and dissing and play, just play ... if you already know someone, then that trust is there.' (39 year-old male)

Teamwork was also valued, perhaps due to an overlap with cooperative and mixed play, as evidenced in Table 2. Teamwork was mentioned in tandem with experiences of challenge/competence, e.g. *'accomplishing things together'*. It was also mentioned with the concept of trust, e.g. *'I trust them. We work well together. We can coop and strategize effectively'* (coded: relatedness, teamwork).

Playing With Strangers - Likes

Playing with strangers appears to provide players with challenging gameplay and the concomitant reward of experiences of competence, by providing unpredictable and possibly better skilled opponents, as well as clear feedback, e.g. *'There's always a challenge of new players that are potentially better'*.

'When versing strangers ... typically I won't know how well they are going to play. So it always keeps me on my toes and makes me play better.' (22 year-old male)

This may be due to online play allowing convenient access to wide-range of opponents and access to gameplay at any hour (logistics), e.g. *'I like the competitiveness of playing against other people. Due to me playing later at night, I play with randoms, rather than people I know, who usually play much earlier'*, and *'I like the challenge of competing 1-on-1 against a wide variety of people all over the world'*.

Play with strangers also brings with it the chance of forging new relationships, thus *'meeting people'* was mentioned with some frequency, e.g. *'It's a chance to just chat with new people and if you feel like it you can choose to get to know them better'*. This is supported by interview data:

'The cliché of people on the internet is that they are all jerks. For the most part that's true. What's nice is meeting people that aren't, people that are competent players and are really polite and friendly.' (22 year-old male)

Autonomy in gameplay appeared closely related to freedom from emotional attachments and social expectations, e.g. *'if you destroy their army and take their resources you don't feel so bad about it'*. Similarly, the convenience of choosing when and how long to play (logistics), e.g. *'I don't have to stick around. can jump in game or out when ever I feel like it'* also reflects a high degree of personal autonomy. This was tied to the potential for anonymous and potentially disruptive interactions: *'I don't have to care about their emotions, so I can troll them into making mistakes'*, or as one interviewee noted:

'In terms of strangers I like how I can act out of character around them.' (20 year-old female)

The enjoyment of teamwork amongst in this context implies an overlap with cooperative or mixed play (Table 2).

Who People Play With - Dislikes

All three contexts disliked mismatches of skill or play style, framed as either between players, or between players and the game, with the solitary context remarking on with the greatest frequency, followed by play with known others, and lastly, play with strangers. Both playing with strangers and known others produced a dislike of others' toxicity, however much more so in play with strangers than the latter. Players in both of these contexts also remarked on logistical issues. Solitary play and play with strangers were linked to a lack of relatedness, while those engaged in solitary play and play with known others reflected on negative impacts on life. Only play with known others produced a dislike of both losing and a lack of autonomy, while only the solitary context was seen as less fun than others. *'No dislike'* was identified for those who played with known others or alone. See Figure 2.

Solitary Play - Dislikes

Lack of relatedness was described in terms of isolation and an inability to share experiences with others. Why an individual might play a game in a context they have an aversion to is partially explained by survey responses such as, *'I really miss the social interactions of playing online, but with an internet connection as terrible as mine I have no choice ☹'*.

When solitary play was perceived as less fun, it was either in reference to social games, e.g. *'Games can get boring without other people in them'*, or repetition, e.g. *'Repetitive game mechanics'*, or predictable AI, e.g. *'AIs become formulaic in their actions thus boring. Wins can become meaningless.'* The interviews contextualise these grievances

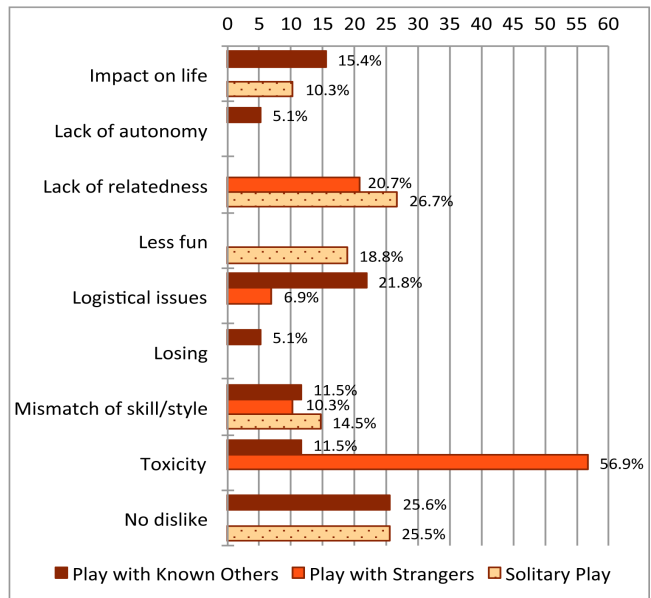


Figure 2 'Who' people play with - Dislikes

in terms of compromise, such as putting up with less fun gameplay in order to avoid toxic behaviours:

‘..the thing that I actually did like about the whole MMO scene was that things would change. It’s just the people were a problem.’ (24 year-old female, referring to playing *Skyrim* alone)

The mismatch of skill/play style refers to both finding the game too hard to progress without help, or again, finding the computer-controlled opponents too predictable and easy to overcome, e.g. *‘Some games can’t offer the same challenge as real opponents.’*

Finally, the sense of negative impacts on their lives, framed as losing time due to long play sessions / frequency of play, e.g. *‘Can lose track of time quickly’*.

Playing With Known Others - Dislikes

Logistical issues were by far the greatest complaint, largely due to the difficulties of scheduling a time to play that suited everyone, e.g. *‘It can be difficult to play games with more depth because it is difficult to coordinate everyone’s schedules’*. However, it could also be related to different lengths of availability, e.g. *‘As a parent and a contract worker, I don’t have hours and hours to commit at a stretch, yet that is often the commitment others want/need’*.

The intimacy of play with known others was a source of distress for players who found that ongoing social discomfort (impact on life) could be created by negative interactions in gameplay (toxicity) e.g. *‘Potential arguments in real life, some friends are selfish’*. Conversely, being overly concerned about potential impacts could affect enjoyment of gameplay. This is illustrated in the interview data:

‘When you’re playing and your mates are the guys screwing up you can’t give them a hard time, because they are the people that you are going to have a drink with the next week or you’re playing a game with them later that night.’ (22 year-old male)

Toxicity was also an issue for this context, with respondents mentioning *‘unnecessary abuse’*. This may have been due to the use of online play, e.g. *‘sometimes peoples personalities clash online (in voice chat)’*. It seems possible that some of these conflicts resulted from the mismatch of skill or play-style, e.g. *‘Some of them have annoying game play styles and don’t seem to be improving’*. It also seems likely that this would impact on a players’ sense of autonomy, e.g. *‘There’s an inherent requirement that I do my best and encourage others to do so. Sometimes I just want to goof around or leave and do something else’* – coded as ‘no autonomy’ and ‘mismatch of skill/play style’. The unique challenge for players in this context was prioritising relationships above gameplay:

‘If you know someone, it’s bad because it means you feel you have to keep playing with them even if you’re not enjoying the game.’ (33 year-old male)

The dislike of losing was expressed in general terms, and was not linked expressly to playing with known others.

Playing With Strangers - Dislikes

Toxicity in others was reported as abuse and harassment, cheating, team killing, and other negative behaviours that players recognised as supported by the relative anonymity of online interactions. For example, *‘You get a lot of assholes on the internet who like that there’s a level of anonymity. People seem to feel less responsible for hurting people they don’t know, or generally being less responsible themselves’*. This is supported by interview data:

‘I dislike the sexism, the misogyny ... I just dislike abuse from other players, not necessarily directed towards me but in general. That kind of agro-macho attitude is not conducive to a fun game.’ (28 year-old female)

For some players this led to a reduction in feelings of relatedness to other players, resulting in loneliness and alienation. For example, *‘I am completely turned off by the MOBA genre, because the playerbase is so acerbic and critical ... I have also felt isolated and alienated from others, and even myself, because of the sheer number of people that play MMOs’*.

For others, the mismatch of skill level or play style created team imbalances, e.g. *‘with team games, it can be hard to find a group of similarly skilled players who act well as a team’*. Logistical issues also occurred when communication between members broke down, and strategy became difficult to enact.

How People Play With Others - Likes

All three contexts produced enjoyable experiences of challenge/competence, with it being reported the most often in regards to competitive play, followed by mixed play, and lastly cooperative play. Reversing this trend, teamwork and relatedness was enjoyed the most in cooperative play, then mixed play, and lastly competitive play. The experience of fun was only reported in mixed play. See Figure 3.

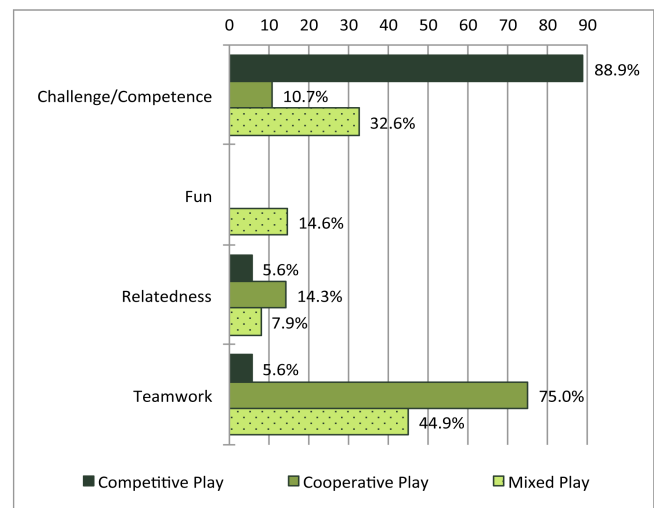


Figure 3 'How' people play with each other - Likes

Competitive Play - Likes

Challenge/competence was typically indicated as an enjoyment of winning e.g. *'The feeling of beating someone else is the best feeling you can have in a game'*. The clear outcomes of competitive play, created (for the winners) a gratifying experience:

'I think there is something satisfying about ... being able to show them through empirical evidence that my score is better than yours.' (20 year-old female)

Comparisons were also made between the challenges of competing against another human as opposed to AI, e.g. *'I generally prefer to compete against other players, who can present vastly different challenges compared to scripted AI (computer) opponents'*. On this last point, the predilection for human opponents was also indicated in the interviews as conferring a more meaningful experience:

'If I am playing against a human, it's a more valuable way to spend time ... I guess it's knowing another person is similarly invested in this battle.' (28 year-old female)

Social competitive play also increased both the risk and value of any potential rewards, when successfully defeating opponents that were well matched:

'A game where you have steamrolled the opposition is not interesting and losing a game where it has been incredibly tight is just as satisfying sometimes, as winning that same game.' (28 year-old female)

To a much lesser degree, teamwork and relatedness also factored into this context, suggesting that some competitive play involves team play.

Cooperative Play - Likes

Teamwork is necessarily a cooperative activity, with potentially competitive aims. The enjoyment of shared goals was indicated by responses such as *'We help each other accomplish goals'*. The interviews describe this in terms of clearly defined and meaningful social interaction:

'I like it because you have a common goal and then you know what you both want to do. And you're doing something together.' (12 year-old female)

'It's a genuine team feeling ... I think you get something really genuinely social out of it. The interactions are meaningful rather than trivial.' (43 year-old male)

Support from other players to achieve a shared goal was also seen as creating more effective play in which achievement was a likely outcome, e.g. *'Cooperating with my team mate, progressing only because we worked together, otherwise we wouldn't have gotten further.'* This is fleshed out in the interviews, in which each player's participation in a role leads to successful outcomes:

'I like strategy, I like having more than one person on the team thinking about ways to victory, I like knowing somebody has my back ... there's always someone filling a

gap.' (24 year-old female)

'The high you get defeating the other team, because you have all understood your role.' (28 year-old female)

Relatedness was described in terms of warm social interaction, e.g. *'The camaraderie'*, and connection with known others, e.g. *'Playing with family'*. Challenge/competence was described in terms of effective gameplay, e.g. *'Playing cooperatively means communication increases how effective we are at the game'*, and a sense of shared achievement, e.g. *'Sense of accomplishment if we finish a challenge or building together'*. Sharing these experiences appears to increase the satisfaction of the win:

'It's the discovery, together, of getting to the next level.' (48 year-old female)

Mixed Play - Likes

While the descriptions of challenge/competence, teamwork and relatedness do not differ from those mentioned for cooperative or competitive play, unique mention is made regarding being able to vary between different competence enhancing experiences, e.g. *'I like being able to switch between things that I like doing. I can go kill things - including people I like - or I can work with them to achieve the same goal. It lets me play how I feel like playing at the time, and I have friends who play in either category, and some friends who play both'*. Mention is also made of MMORPG play, in which players can engage in competitive bouts while waiting to form a group for cooperative play. This allowed for faster character growth and the acquisition of specialised gear from both types of play. Relatedly, references to fun were linked to those regarding teamwork and challenge, as well as to being able to choose between competitive and cooperative play.

How People Play With Others – Dislikes

Toxicity in others and losing were complaints most frequently mentioned in regards to competitive play, followed by mixed play, and lastly cooperative play. Only mixed play and cooperative play produced the dislikes of mismatches of skill or play style, and lack of teamwork. Logistical issues were a greater complaint for cooperative play, than mixed play or competitive play. 'No dislike', was reported most often in mixed play, followed by competitive play, and lastly cooperative play. See Figure 4 over page.

Competitive Play - Dislikes

Toxic behavior was similar to that displayed by the 'play with strangers' context, e.g. *'People, who ruin things on purpose'*, however interview data describes an exaggeration of competitive behaviours:

'Just the level of needless aggression and meanness and sort of narcissism and over-gamesmanship that can be outlet in those realms ... Just shoot you in the back of the head just as soon as you spawn, because it increases their point count or something.' (39 year-old male)

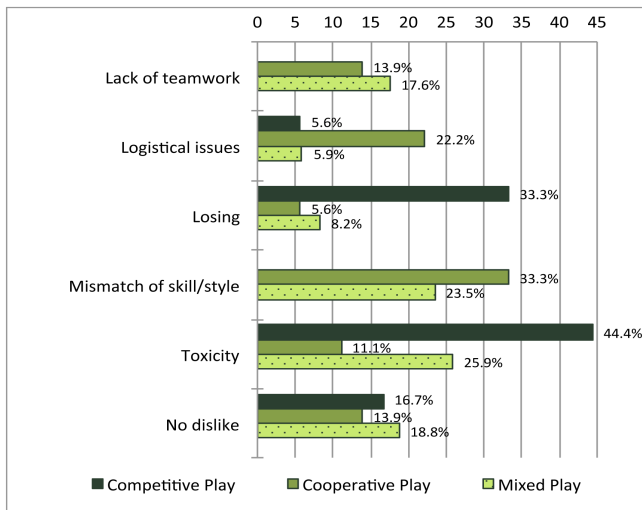


Figure 4 'How' people play with each other - Dislikes

That losing to others would be an aversion of a context devoted to competition is a natural response, however the reaction to losses appears to range:

'If I lose, that means I have more to learn in a game.' (33 year-old male)

'When something either completely goes 'cause of one person, or if I mess up really badly, then that just ... absolutely infuriates me.' (22 year-old male)

The small mention of logistical issues are complaints about sharing of equipment or changes made by the developer.

Cooperative Play - Dislikes

Complaints about mismatches of play-style or skill could go either way in this context - from concern over not being able to contribute effectively to the team, e.g. *'When my skills are well below my partners'*, to disappointment in others *'Sometimes your team mates suck so you lose'*, or as this interviewee states:

'Sometimes you do get a person who is too good for you or not as good and you're either weighing them down - and you spend the entire game feeling guilty - or the other person's weighing you down.' (24 year-old female)

Logistical issues included game bugs resulting in lag, other players dropping out, poor game interface, and difficulties in communication. Other issues overlapped those of playing with known others, regarding coordinating schedules:

'You have to play with your friends sometimes and usually have to plan ahead, which can get annoying.' (20 year-old female)

Uniquely, a lack of teamwork was identified as a reason games were lost and gameplay was not enjoyable. This manifested in various ways, e.g. *'there is sometimes one person who wants to be top dog, regardless of the general feel of the rest of the group'*. Some of these responses were coded as a mismatch of play-style/skill or toxicity, but they

also describe failures of leadership or the failure to put aside personal goals in order to focus on the team's goals.

Toxicity in others was also an issue for this context and though it is not clear whether they are referring to the behaviour of people they know or do not know, the behaviours are similar to those described in 'Playing with strangers'. References to losing were linked to complaints about mismatches of skill/play style where participants either apportioned blame to other members of the team or assumed responsibility for having let others down.

Mixed Play - Dislikes

No uniquely different qualities from competitive or cooperative play were reported.

DISCUSSION

Different social contexts of play produced dissimilar likes and dislikes, demonstrating that players are making choices based on practical as well as psychological considerations. In particular, the distribution of SDT's psychological needs (autonomy, competence and relatedness) across different contexts indicates how each context provides intrinsically motivating experiences. Staying responsive to the other uses and gratifications gameplay offered however, brought greater detail to how SDT's needs might be expressed. For example, it seems likely that the greater autonomy offered by solitary play, combined with more immersive single-player games, led to relaxing and recuperative experiences. Relatedly, while play with known others might provide greater experiences of relatedness, play with strangers provided the first step in developing social connections: the enjoyment of meeting people. As such, SDT and U&G provide complementary means of interrogating data, providing both universal and nuanced explanations for why people play in different social contexts and how to best target design interventions.

Solitary Play

Solitary play was driven by practical considerations (internet access and speed), while players appeared to trade off certain experiences (unpredictable, challenging, fun play and shared experiences) in order to achieve more desirable ones (freedom from pressure and toxicity; autonomous, relaxing and immersive play). Solitary play provided enjoyable experiences of immersion and autonomy, more so than social play; supported by survey studies finding experiences of autonomy [12] and presence/immersion [11, 12] greater for solitary play than social play. While the findings for immersion differ with that utilising experimental research [7, 9, 10] this study suggests that this is due to the difference between single-player games (how players might typically play alone) and multiplayer games (used in experimental contrasts of social contexts of play).

Solitary Play: Dislikes and Design Challenges

Importantly, it should be recalled that people who most often play alone may also play socially on occasion. Thus, in contrast with social play, solitary play was referred to

negatively in terms of fun and challenge (due to predictable AI and repetition). Players also reported wanting to be able to share their game experiences with friends.

The predictability of computer-controlled opponents is well researched issue [24], however more challenging gameplay could be produced via procedural generation (e.g. *Left 4 Dead's* AI Director), or by using physiological signals of arousal to control game mechanics [25]. Additionally, repetitive gameplay could be minimised on two fronts: encouraging emergent gameplay, and making shorter, or episodic, games. Emergent gameplay - a less directed experience, and greater choice in terms of how players engage with the games goals and/or environment [26] - could be also be supported by procedural generation, which uses procedural algorithms to generate game characters, environments, animation and mechanics. Alternatively, the movement towards short, focussed games for a lower price point, or delivering complex content episodically, also removes the need for padding.

Finally, while a native ability to stream gameplay to friends could create feelings of connection without immediate interaction, it is also worth considering increasing asynchronous online content. This allows players to leave messages or replays of gameplay for others to view, or manipulate shared online environments to communicate with others. Tournaments or informal competitions in which players compete individually to achieve a high score, as tracked by the game data, could also bolster social integration (particularly if this information is available to friends who own the same title). By considering solitary play as one end of a spectrum of experiences leading to social play, the potential for connecting people who don't want to directly play with others is increased.

Social Play

In comparison, social play as a whole tended to generate enjoyable experiences of challenge and competence, teamwork, and connection with others. The weighting given to these experiences diverged however, depending on whom they played with and how they played with others.

People who played with known others prioritised feelings of connection and social interaction, and experienced a great deal of fun. This group context provided a medium for connection with physically distant friends and family, and a way to both cement bonds with those more closely situated, supported by research into MMO play [14]. That 'fun' was only noted for the 'play with known others' context is supported by research finding that play with friends is more fun than play against strangers or a computer [16]. Teamwork with known others, being able to overcome challenges together, having shared goals, and experiencing team synergy also created effective and enjoyable gameplay. The intensified sense of enjoyment, in which the risks and rewards of gameplay were given greater meaning, appeared aided by an atmosphere of trust, perhaps due to having more loyal teammates [17]. This in turn would

support the value placed on feelings of relatedness.

In comparison, play with strangers produced great convenience and autonomy in gameplay, as well as experiences of challenge and competence. The low commitment and freedom from emotional attachments of play with strangers, as well as the relative anonymity of online gameplay, allowed players to act out of character. Despite complaints of player toxicity, this group also enjoyed meeting new people and could identify positive interactions with strangers and friendship formation, a key motivation for MMO play [13].

Competitive play, like play with strangers, produced a strong enjoyment of experiences of competence and challenge. The clear goals of competitive play, such as achieving a higher rank or defeating opponents, created an unambiguous sense of achievement when they were carried out, perhaps explaining why competence might be associated with competition [19]. Interestingly, competitive experiences with humans were seen of greater value, than those with computer-controlled opponents.

Cooperative play produced similar appreciations to that of play with known others. Teamwork was the key experience of this group, reinforced by trusting relationships as has been demonstrated in other research [18]. Mixed play however, compared uniquely to the cooperative and competitive contexts, with reports of both the most fun and the most satisfaction ('no dislike'). This may be because having access to both types of interaction is the most likely to lead to enjoyable and arousing gameplay. Alternatively, it may be that players in this context were more active in seeking out fun experiences, rather than becoming entrenched in a habitual style of play, or that they place less importance on either play style, thereby diminishing the impact of negative experiences.

Social Play: Dislikes and Design Challenges

Improvements to social play unsurprisingly revolve around improving interaction. The many complaints linked to social play can be simplified into three broad challenges: scheduling, matchmaking, and minimising toxicity. For people who play with known others, finding the time to meet was described as inconvenient, particularly when negotiating other work/life demands. Casual games have the advantage in that game play can be asynchronous and occur in quick bursts on mobile devices, however for cooperative games, synchronous play is part of the appeal. While real-world sports have scheduling applications, there is space for the development of video game apps that will notify players of others availability and time limits across multiple platforms, so that players do not have to seek out this information or can offer it en masse to a pre-selected community. Team building features and modes, would also support team coordination. Additionally, designing different length play sessions, as well as systems that account for the sudden loss of a team-member will allow players greater

autonomy in choosing how long to engage in cooperative play.

For those who play cooperatively with strangers, one of the key challenges is finding a team that will function well. While match-making in games is typically determined by skill level, the responses of cooperative players suggests that teamwork relies on a more complex set of criteria including personality, maturity and shared motivations. Allowing players to rate those they have played with and choose what personal characteristics they prefer or play-style they prioritise (for example, asking players to rate how highly they prioritise winning, exploration, social interaction, etc.), would allow designers to implement matchmaking algorithms that pair people with players that they have ranked highly in the past, or pair players who have been rated highly by their peers.

Additionally, the alienating aspects of MMO play – described in terms of a lack of community and the ‘alone in a crowd’ phenomenon – suggests that some players were not able to make new friends in these environments. Mechanisms that encourage friendship formation would aid both player wellbeing and player retention. Greater options to personalise players’ online identities with bios may also humanise players, while encouraging engagement with the gaming community (e.g. forums, online events, offline meet-ups) could serve to enhance personal relations both in and out of game play.

Finally, player toxicity potentially impacts on all forms of social play, but appears to be most closely associated with competitive play and play with strangers. As in traditional sports, the linking of behaviours to reputation and future inclusion in desired events (or repercussions) may be effective for committed players. Riot Game’s interventions with player toxicity, (i.e. introduction of a ‘Tribunal’ to give feedback on player behaviour; priming players with messages prior to play; changing communication options), show how a developer might use psychological techniques and intervention to both increase player satisfaction and reduce some of the negative effects of a toxic online culture [22]. Of particular interest, is that by providing feedback on players’ interactions many players were willing to reform behaviours [22]. However, to impact on less committed players, it would also be worth examining the role game mechanics have in terms of player frustration and team cohesion. For example, are all team members equally rewarded for bringing down an opponent or only the player who delivers the last blow? Can new players be supported by the game in order to create a skill-balanced team? Would facilitating ongoing teams (rather than instanced play) provide a greater opportunity for trust and lower the pressure to win in a single game? It is also possible that some of the earlier suggestions regarding matchmaking might forestall toxicity within teams, however it seems likely that a multi-pronged approach is needed to create a sustainable shift to healthier gaming communities.

Other applications

For those designing serious games or gamified applications this study suggests the necessity of understanding the challenges of different social contexts of play. For example, knowing that the inconvenience of coordinating schedules with friends is why some people prefer to play with strangers, or that player toxicity is why some people prefer to play games alone, can frame design decisions so that these contexts can be integrated into broader interventions, e.g. making use of turn-based play if wanting friends to engage easily, or making communication between strangers optional or moderated to offset the possibility of toxicity.

Relatedly, while gamification has become a popular tool this has at times resulted in poorly integrated motivational design, i.e. the ‘stick a badge on it’ approach. There exists an opportunity, however, to take the experiences that promote intrinsic motivation (autonomy, competence, relatedness), and work them into the user experience. This research further strengthens the proposition laid out by Nicholson [27] regarding user-centred design to create meaningful gamification. As such the findings of this study could be used, for example, to inform the design of applications that harness the competence-enhancing elements of competitive play, or the meaningful and social cohesion enhancing interactions of team play, with richer narrative content for solitary use. Additionally, while options to engage in social interaction may be intrinsically motivating for some, solitary play is more prevalent, and it would be wise to keep that as an option if wide acceptance is a goal. More broadly, the current research may be of use applied to other forms of social media technologies that facilitate group-based work or learning environments, by allowing designers to tailor for both collaborative and solitary content engagement in a way that enhances the positive aspects and discourages the negative ones.

CONCLUSION

This research outlines how the social context of play impacts on the player experience. While all contexts show benefits and drawbacks for players, context-aware design can act to increase game enjoyment and player retention. Key challenges for improving solitary play include compensating for or eliminating repetition, and assisting players to share their experiences. Design improvements to social play revolve around game scheduling, expanding the terms of player matchmaking, and minimising toxicity. Further exploration of the social context of play, including other ideations of its components, will aid this endeavour. Future research could also explore interactions between the social context of play and specific game mechanics, such as games that provide the opportunity to forms teams with longevity versus instanced team play.

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