Gender and Genre Differences in Multiplayer Gaming Motivations

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Abstract. This study examines gaming motivations for two different genres of multiplayer games — casual social network games (SNGs) and massively multiplayer online (MMO) games — and tests for gender differences in motivation after considering genre. We conducted a survey of 515 SNG players and 505 MMO players in the U.S. through Mechanical Turk, asking about their motivations for play and basic gaming behavior such as frequency and length of play. Using a self-determination theory approach to categorize motivations, we looked at how game genre and gender are associated with six types of motivation. We find that hypotheses of gender differences from previous games research are contradicted or unsupported—for example, female players for both SNGs and MMOs reported higher levels of external game regulation than males, contradicting previous studies of men being more achievement oriented than women. There are also major genre differences in relation to different motivations. Results reflect a cultural shift in gaming away from gender stereotypes, supporting the importance of reconsidering previous scholarship in this area. Future research should account for both the affordances and culture associated with different game genres rather than generalizing gender effects to all games.

Keywords: Multiplayer Games, Gender, Genre, Motivation.

1 Introduction

Many studies have examined gaming motivations, but few have compared gaming motivations in more than one genre at a time. The assumption that motivations to play games are uniform across different genres does not consider the complexities in narrative, mechanics, and social interactions that differ across genres. Moreover, although gender demographics have been found to differ across genres, little research has examined the role of motivation in such gender differences across genres.

In this study, we examine two genres of multiplayer games: massively multiplayer online (MMO) games and social network games (SNGs). These two genres differ on various levels, such as game design and game aesthetics, but this study distinguishes between these two genres primarily because of theoretically relevant factors in understanding motivation and habit. These include communication factors — such as speed of communication (asynchronous/synchronous) and connectivity with a social network

site (high/low anonymity) — as well as frequency of game play (high/low) and gender differences. The study's goal is not to test the effect of these specific factors, but to acknowledge that these two game genres have features that should be considered when hypothesizing and interpreting how theories of motivation operate in these similar, yet different contexts.

MMOs are persistent virtual environments that host thousands of people concurrently [Yee, 2006b]. A persistent world is a digital environment that exists independent of the players, much like the offline physical world. All players access the same world. While MMOs can be played alone, the most popular mode is multiplayer, possibly because socialization is one of the main motivational factors for MMO players [Fuster et al., 2012]. Further, players usually organize themselves into groups (or guilds) because many of the missions in the games require collaboration as each individual has a specific, unique set of skills that complement other players' skill sets. Thus, MMOs are designed to require the skills of others to perform specific tasks, resulting in synchronous interactions between players, usually in groups [Yee, 2006b].

SNGs differ from MMOs because the players are also connected outside of the game through network data from social network sites [Wohn, Lampe, Wash, Ellison, & Vitak, 2011; Wohn & Lee, 2013]. SNGs do not have a single world that is persistent; usually individuals have their own worlds and can visit others'. Because the connection to a social network site is reflective of one's actual identity, people are hindered in their ability to remain completely anonymous (although some SNGs support anonymous play). SNGs often "force" players to interact with each other in order to progress in the game [Wohn et al., 2010; Wohn, 2016]. Unlike MMOs, however, this interaction is mostly asynchronous and dyadic. For example, players usually make requests of each other through private messages within the game (e.g., "Player A would like you to send a virtual gift!") or by posting requests on social media that others can respond to (e.g., "Player A needs more resources, click here to help them out!"). These requests are usually automatically generated by the system even if they are directly sent from one user to another, so the communication is less intimate and usually related to requesting goods or sending gifts.

2 Self-Determination Approach to Understanding Motivation

Self-determination theory [SDT; Ryan & Deci, 2000] has been used extensively to explain gaming behavior. SDT maintains that humans have an innate psychological need for competence, autonomy, and relatedness, and when these needs are met the behavior becomes more enjoyable, which leads to increased engagement and persistence in behavior [Deci, Koestner, & Ryan, 1999; Deci & Ryan, 1991; Ryan & Deci, 2000].

SDT identifies different types of motivation that lie on a continuum from extrinsic to intrinsic. This concept of gaming motivations as lying on a spectrum from extrinsic (external goal-driven) to intrinsic (internal satisfaction-driven) relates to player styles in educational games [Heeter, 2008]. Further, this intrinsic-to-extrinsic gaming motivations spectrum is distinct from the typologies of motivations used in most game motivation research [e.g., Hamari, & Tuunanen, 2014; Kahn, Shen, Lu, Ratan, Coary, Hou,

Meng, Osborn, & Williams, Yee, 2006a] because it is based on a theory of fulfilling fundamental psychological needs rather than affordances of the medium [Ryan, Rigby, & Przybylski, 2006].

The departure of intrinsic and extrinsic as a dichotomy to one that is a continuum is conceptually important in SDT as there can be varying degrees to which the individual can transform external factors into inner values that he or she personally endorses. This proactive process is known as internalization [Deci, Eghrari, Patrick, & Leone, 1994]. Within extrinsic motivation, SDT presents four different forms of regulation to differentiate degrees of internalization: external, introjected, identified, and integrated.

External regulation occurs when behavior is contingent on external stimuli, such as rewards or punishment. It is considered to be the most extrinsic of the four regulation types and is the type of reinforcement-based motivation that is described in operant conditioning. In a gaming context, for example, players who are extrinsically motivated are interested in activities such as getting points, leveling up, completing quests, and collecting items [Heeter, 2008]. SDT posits that this type of regulation allows for very little autonomy, thus resulting in weak maintenance of behavior once the contingencies of reinforcement are removed. Players of social multiplayer games can similarly be externally reinforced via in-game mechanics and events, but have the potential to be motivated by extrinsic social factors as well. For example, a guild's core player may feel unsatisfied with a new update, but keeps playing because they feel doing otherwise would let down the rest of the guild.

Introjected regulation occurs when individuals are driven by reinforcement – rewards or punishment – that they administer on themselves. The behavior is still influenced by the contingencies of immediate reward or punishment, but is self-administered. For example, individuals who want to eat healthfully can reward themselves with a movie after eating vegetables, or punish themselves with chores after eating a candy. Although there is some internalization because the individual is in control of the contingencies, the behaviors that result from introjected regulation are still low on the self-determination continuum because the behaviors are still relatively detached from the internal values. Introjected regulation, however, does not make much sense in the context of wanting to play games, although it may be a mechanism to discourage gaming behavior.

Identified regulation occurs when the individual poses a longer-term goal that is consistent with an underlying understanding of the value of the behavior, such as playing a game to improve a relationship, communication or collaboration skills. Identified regulation is extrinsic because the behavior is a means to the end goal, but the individual still chooses to engage in the behavior, which is internally endorsed. In other words, the individual performance is identified behavior because it is valuable and important to the individual [Levesque, Copeland, & Sutcliffe, 2008]. In the context of multiplayer online games, people may want to play the game to achieve positive relationship outcomes and develop social skills [Wohn et al., 2011].

Integrated regulation occurs when an individual engages in a behavior that supplements internal values. For example, an individual may want to play online multiplayer games because experiencing new entertainment technologies is perceived as valuable.

Integrated regulation is different from intrinsic motivation because it may not necessarily be enjoyable, but it is the most internalized of the four types of extrinsic motivation because it is not associated with a specific goal. Many empirical studies, however, did not find support for this construct as being distinct from intrinsic motivation (e.g., [Markland & Tobin, 2004; R. Vallerand & Bissonnette, 1992].

Finally, intrinsic motivation occurs when the behavior itself is enjoyable on its own. For example, people who explore new territories in virtual worlds simply for the enjoyment of that activity are intrinsically motivated [Heeter, 2008]. This would be considered a hedonic intrinsic motivation. Alternatively, accomplishment-oriented intrinsic motivation is based on the individual's desire to accomplish or fulfill something [Vallerand & Bissonnette, 1992]. Accomplishment-oriented intrinsic motivation has mainly been studied in the context of education and is somewhat similar to identified regulation, except for the fact that there is no specific goal—the individual just has an abstract tendency to want to better themselves [Vallerand & Bissonnette, 1992].

While SDT has been used in games research, no research of which we are aware has examined differences across genres. This is a potentially fruitful area of inquiry given that different game genres tend to offer different mechanics and experiences that likely influence extrinsic and intrinsic motivation. As this is a pioneering research endeavor, we begin with a general open research question that descriptively compares the motivation factors across two gaming genres:

RQ1. Are there differences in self-determined motivations between MMOs and SNGs?

3 Gender Differences in Game Playing Motivation

Many studies have documented gender differences in playing games [e.g., Cassell & Jenkins, 1998; Hartmann & Klimmt, 2006; Lucas & Sherry, 2004]. In summary, scholars have found that males and females tend to prefer different game genres, are motivated to play for different reasons, and significantly differ in terms of how much time they spend playing games. Although these differences have been found across numerous studies, few studies have provided a theoretical explanation for why these gender differences may exist. Here, we take a communication perspective, following Lucas and Sherry [2004], to explain gender differences through the understanding of social norms and stereotypes. However, the landscape of game player demographics has substantially changed in the past ten years, given the rise of "casual" games and with it, the increase of female players [Wohn & Lee, 2013]. As of 2017, 41% of all game players are female [Entertainment Software Association, 2017], and the biggest participation gap happens on the categories of under 18 years old (18% male vs. 11% female) and 18-35 years old (17% male vs. 10% female).

Although many females are playing games, they are not necessarily playing the same ones as males. Industry and research statistics suggest that there are major demographic differences in terms of game genres. For example, MMOs have more male than female players as supported by Williams, Yee, and Caplan [2008] who found that the gender distribution in the MMO EverQuest II was 80.8% male. SNGs cater more to female

players: the average casual game player is a woman between 35 and 44 years old [Casual Games Association, 2012] and 69% of match-three and farm simulation games are played by women, compared to 7% in first-person shooters [Quantic Foundry, 2017]. Thus, there is reason to believe that gender differences in motivation do not persist in this genre where females are just as likely to be game players as males.

3.1 Social Motivation

Numerous studies, both in the context of games and other types of media, have found that females prefer social interaction over males. In a study of girls and women in Germany, Hartmann & Klimmt [2006] asked participants to rate fictional video games and found that females disliked games that lacked meaningful social interaction. Another study suggests that girls who play online "pink games" (i.e., games designed to target girls) tend to seek social interaction [Van Reijmersdal, Jansz, Peters, & Van Noort, 2013]. In the context of SNGs, another study [Sung, Bjornrud, Lee, & Wohn, 2010] also found that females were more likely than males to engage in social interactions such as exchanging gifts. While not interaction per se, Yee [2006a] found that female players of MMOs were significantly more likely than males to be driven by relationship-related motivations. This could explain why players of action-oriented MMOs with minimal social interaction (e.g., First Person Shooter Games) are more likely to be male and to spend less time playing when compared with players of narrative-oriented MMOs in which social interactions are essential to gameplay [e.g., Role Playing Games; Nagygyörgy et al., 2013]. From an SDT perspective, these types of positive social motivations would fall under identified regulation. We would thus expect female players be more motivated by identified regulation than male players.

However, people may also feel socially pressured to play games. This type of social pressure has been identified particularly in SNGs, where players feel obliged to respond to others' requests for help in game [Wohn et al., 2011; Wohn, 2016]. Social pressure could be seen as an external force in SDT. The literature is unclear about whether this type of social pressure would be considered similar to social interaction desires documented in previous studies. Thus, we examine this issue through an open question:

RQ2. Are there gender differences in social motivations, namely, identified regulation and external social motivation?

3.2 Achievement Motivation

There has been significant scholarly interest in how specific gameplay motivations — such as achievement — are influenced in specific player attributes, such as gender or nationality [e.g., Bialas, Tekofsky, & Spronck, 2014; De Grove et al., 2017; Yee, Duchenaut & Nelson, 2012]. Substantial evidence suggests that adult women tend to avoid competition [e.g., Niederle & Vesterlund, 2007; Vandegrift & Brown, 2005]. Many of the studies examining gender differences in competition in a game-playing context are consistent with these theories. Literature from the 1990s to early 2000s pointed to men enjoying competitive games more than women [Lucas & Sherry, 2004). Similarly, Yee [2006b] found that male MMO players were significantly more likely

than female players to be driven by achievement-oriented motivations. Building on this, we pose the following general expectation across genres.

H1. Male players have higher achievement motivations than female players across genre.

Similar to Yee's findings, Hartmann & Klimmt [2006] found that females were less attracted to competitive elements in videogames; games that had time pressure and any kind of conflict or threat in the narrative were defined as being competitive. Further, males reported higher desire to win and higher desire to compete. However, in predicting use of different genres, the authors found that the desire to compete was only a significant predictor for first-person shooter games and strategy games— not for action-adventure games or sports games. The need to win was only a significant predictor for first-person shooters. Further, other research has found gender differences in competitive gameplay motivations dissipate with age; competition is more important for male teenagers than female teenagers, but by the age of 45, there is no longer a significant difference [Yee, 2016]. This is especially notable given general age differences between SNG and MMO players. Additionally, for SNGs, competition and reward systems embedded in the game equally increase the likelihood that men and women will play [Omori, & Felinto, 2012].

Together, these findings suggest that gender differences in achievement motivation may not be as strong in SNGs as in MMOs. One reason for this might be the differences in salience of gender stereotypes between these contexts. According to the theory of Stereotype Threat, reminders of stereotypes about an individual's demographic group will detract from that individual's performance on activities related to the stereotype [Steele & Aaronson, 1995]. There is a common stereotype that female are less skilled than male players [Fox and Tang, 2014; Vermeulen, Castellar and Van Looy, 2014]. Consistent with Stereotype Threat theory, previous studies have found that reminders of such gender stereotypes hinder gaming performance and, in some cases, cause a disassociation from games in general [Kaye and Pennington, 2016; Richard and Hoadley, 2013].

Gender stereotypes about achievement ability may be more salient in MMOs than SNGs for multiple reasons. First, the proportion of women who play SNGs is higher than the proportion who play MMOs and this is common knowledge. In fact, this very knowledge may be the basis for the general stereotype that female players are more casual and less capable in gaming in general [Fox and Tang, 2014]. Further, interpersonal interactions within SNGs are mostly asynchronous reducing the feeling of immediate threat relative to MMOs, where many social interactions occur in real time. Additionally, SNGs players usually play with people they already know [Wohn & Lee, 2013], also reducing the likelihood of threat relative to MMOs, which are often played with others who are unknown to the player prior to the shared gaming experience. Thus, although the general stereotype that women are less capable in gaming is expected to hinder women's achievement motivations relative to men's, this gender difference is expected to be larger in MMOs than SNGs. Building on this line of thought, we ask:

RQ3. Are there gender differences in achievement-oriented motivations?

4 Methods

Participants were recruited through Mechanical Turk (MTurk). MTurk is an online task-completion system that allows participants to perform tasks and receive compensation for their time. Demographic surveys suggest that recruiting participants from MTurk yields similar results in terms of sample distribution when compared to traditional subject pools across a variety of research domains and that retention rates for panel surveys are high [Shapiro, Chandler, & Mueller, 2013]. In particular, a 2011 study found that MTurk users are slightly more diverse than the standard Internet sample demographic and significantly more diverse than a typical American college sample [Buhrmester, Kwang, & Gosling, 2011]. All MTurk participants in this particular study were given $.75 for their participation.

Participants were recruited to two separate surveys: one for MMOs and the other for SNGs. These two genres were chosen so we could recruit a variety of different players, as males are more likely to play MMOs and females are more like to play SNGs [Entertainment Software Association, 2013]. For both surveys, participants were limited to those who indicated that they have played an MMO or SNG and they were adults age 18 or older. The sample was also restricted to participants living within the United States to prevent possible scamming activity and control for possible cultural differences that have been found to exist within the subject population [Lee & Wohn, 2012]. Reported gender was used to "block" participants as to obtain a similar number of male and female participants.

Once participants met these criteria, they were directed to an online consent form and asked to note their favorite MMO or SNG. If the participant's favorite game was not among the ten examples given, they could type in the game name. The questions of the survey were thus tailored specifically to each participant based on their favorite game. For example, participants would be asked, "Think of your favorite game, [NAME OF GAME]" before answering sets of questions, and response items were also tailored ("Playing [NAME OF GAME] is part of who I am"). This customization was intended to help participants focus on the same game throughout the survey.

4.1 Measures

A self-determination gaming motivations scale was developed based on scales regarding general MMO [Yee, 2006a; Yee, Duchenaut, & Nelson, 2012] and SNG motivations [Wohn, Lee, Sung, & Bjornrud, 2010; Wohn & Lee, 2013]. Items were reworded to mirror existing self-determination motivation scales [Lafrenière, Verner-Filion, & Vallerand, 2012] whenever relevant. The items addressed the different regulatory types. Social external regulation ($\alpha = .93$) pertained to reinforcement received from other players within the game (similar to the external regulation of physical activity behaviors; [Gardner & Lally, 2012]) while game external regulation was related to reinforcement via game mechanics ($\alpha = .90$). Identified regulation ($\alpha = .94$) was related to wanting to have a social connection.

Intrinsic motivation was separated into two, following Vallerand and Bissonnette [1992]. Intrinsic accomplishment ($\alpha = .90$) was related to one's feeling of pleasure

when improving one's own performance, while intrinsic hedonic ($\alpha = .94$) was a measure of pure enjoyment — this intrinsic hedonic construct was the measure of intrinsic motivation used by Przybylski et al. [2010] in their study of self-determination in the context of MMOs. Amotivation ($\alpha = .83$) referred to complete absence of motivation. Please see the appendix for a full list of items.

Participants also answered a number of questions about themselves, such as gender, age, race, education level, and household income. Participants also provided descriptive information related to their current favorite game, such as time spent playing their favorite game per session, how many people they actively play with in the game, and how long they had been playing the game.

5 Results

We surveyed a total of 1018 players of MMOs (N = 503) and SNGs. At the time of data collection for MMOs, the most popular game participants reported as being their favorite was World of Warcraft (39.1%), followed by League of Legends (12.7%), Star Wars: The New Republic (6.9%), Guild Wars (5.8%), and Maple Story (3.8%). Several game titles that were "multiplayer" but not "massively multiplayer," such as League of Legends, Halo online, and Team Fortress, were removed from analysis to be consistent with the conceptual definition of MMOs.

For SNGs, Words With Friends (28%) was reported as being the most popular with participants, followed by Candy Crush Saga (25.9%), Draw Something (11.9%), Farmville (8%), Texas Hold'em Poker (7.2%), Tetris Battle (4.7%), and Plants vs. Zombies Adventure (4.3%). Compared to MMOs, SNGs were more diverse in subgenre, ranging from simple arcade games to word, card, strategy, and simulation.

SNG players were an average age of 39 (SD = 9.31) while MMO players were 28 years on average (SD = 7.92). Most respondents were white (79% for SNGs and 84% for MMOs). The average years of formal education completed (excluding kindergarten) were 16 years for both SNG and MMO players.

5.1 Descriptive Differences Between SNGs and MMOs

Frequency. There were statistically significant differences between casual SNG players and MMO players in terms of how frequently they played the game in a typical week ($t(1016) = 3.81$, $p < .001$) and how frequently they played the game in the previous week ($t(1016) = 4.36$, $p < .001$). Casual SNG players reported higher frequency of game play in a typical week than MMO players but spent less time per session than MMO players. Almost half of all MMO players (49.3%) played three or less times a week. In contrast, in a typical week, 27% of casual SNG players played more than seven times, 10.9% played six or seven times, and 21.2% played four or five times (Table 1).

Time. The time spent per session was significantly different between SNGs and MMOs ($t(1016) = -30.51$, $p < .001$).When asked how much time they spend playing the game in a typical session, which was explained as the time between when the player logs on and off, most MMO players said they spent more than an hour but less than 2 hours

(34.9%), followed by those who played more than two hours but less than three hours (29.7%). About 15% said they played more than 30 min. but less than an hour, 2% played more than 10 minutes but less than 30 minutes. There were also 39 players (9.2%) who said they played between three and four hours, and 37 players (8.7%) who played four hours or more. On the other hand, most casual SNG players (42.2%) spent more than 10 minutes but less than 30 minutes during each game session, with the majority (88.7%) of players spending less than one hour per session. There were 45 individuals (8.8%) who played more than one hour but less than two hours, seven who played between two and three hours, two who played between three and four hours, and four individuals who played four hours or more (see Table 1).

Table 1. Differences in Basic Game-Play Variables Between SNGs and MMOs.

	Casual SNG (n = 515)	MMO (n = 503)
Frequency of game play in past week	M = 2.88, SD = 1.45	M = 2.48, SD = 1.31
Frequency of game play in a typical week	M = 3.11, SD = 1.40	M = 2.78, SD = 1.28
Time spent per session	M = 2.30, SD = 1.05	M = 4.54, SD = 1.20
How long they have been playing the game	M = 6.38, SD = 2.13	M = 7.66, SD = 2.01

Length of play. SNG and MMO players were also significantly different in how long they have been playing their favorite game ($t(1016) = -9.37$, $p < .001$). On average, MMO players had been playing their favorite game for a longer period than casual SNG players. For the MMO players, about 62.8% said they had been playing their favorite game for a year or more. In comparison, about 54% of casual SNG players had been playing their favorite SNG for less than six months; 17% had been playing the game between six months and one year, and about 29% had been playing for more than one year (see Table 2).

Table 2. How Long User Has Been Playing Their Favorite Game (Percentage).

	SNGs	MMOs
1 week or less	1.0	.5
More than 1 week but less than 2 weeks	2.3	.9
At least 2 weeks but less than 4 weeks	6.2	2.4
At least 1 month but less than 2 months	9.7	9.0
At least 2 months but less than 4 months	18.9	7.5
At least 4 months but less than 6 months	15.8	5.2
At least 6 months but less than 8 months	11.9	6.8
At least 8 months but less than 1 year	5.4	5.9
1 year or more	28.8	61.8
Total	100.0	100.0

5.2 Genre Differences in Motivation

Our first research question inquired into the differences in self-determined motivations based on genre. A t-test comparison of means showed that all motivations were significantly different between the two genres. MMO players had higher intrinsic hedonic motivations ($t(1016)= -4.48$, $p<.001$), higher intrinsic accomplishment ($t(1016)= -5.38$, $p<.001$), higher social identified ($t(1016)= -5.91$, $p<.001$), and higher external game ($t(1016)= -13.36$, $p<.001$) than casual SNG players. However, SNG players had higher external social ($t(1016)= 3.07$, $p=.002$) and higher amotivation ($t(1016)= 5.35$, $p<.001$) than MMO players. Table 3 shows the means and standard deviations for each motivation type.

Table 3. Means and standard deviations of motivations by genre.

	Casual SNG Players	MMO players
Intrinsic hedonic	5.88 (1.06)	6.17 (.94)
Intrinsic accomplishment	4.52 (1.51)	5.00 (1.28)
Identified social	3.21 (1.67)	3.83 (1.70)
External social	2.57 (1.54)	2.27 (1.43)
External game	3.63 (1.86)	5.03 (1.44)
Amotivation	3.23 (1.55)	2.72 (1.44)

5.3 Gender Differences in Motivation

RQ2 and RQ3 inquired into gender differences in self-determined motivations while taking also into consideration potential genre differences. To test effects of gender, a series of 2 x 2 factorial ANOVAs examining main effects for gender as well as interaction effects of gender and genre, was conducted on four different motivations: identified regulation (desire to be social) and external social motivation (pressure to play by others) were considered "social" motivation (RQ2). Intrinsic accomplishment and external game motivation were considered achievement-related motivations (RQ3).

For identified regulation, there was a significant genre effect ($F(1, 1014) = 4.37$, $p < .05$). MMO players had higher identified motivation than SNG players. There was no main gender effect, but there was an interaction ($F(1, 1014) = 4.4$, $p < .05$): with casual SNG players, males had higher identified motivation than females but the difference was not significant for MMO players. For external social motivation (motivated because others require you to play), there was a main effect of genre ($F(1, 1014) = 9.36$, $p < .001$), but no main gender effect ($F(1, 1014) = .29$, $p = .60$). There was also no gender by game interaction ($F(1, 1014) = 1.59$, $p = .21$). Opposite of the results of identified motivation, SNG players had higher external social motivation than males. These results shed light on RQ2.

RQ3 examined gender differences in two different achievement motivations. Intrinsic accomplishment and external regulation motivations were used to assess achievement motivation. For intrinsic accomplishment, there was only a main effect of genre ($F(1, 1014) = 28.81$) and no main effect of gender ($F(1, 1014) = 2.24$, $p = .14$), nor

interaction effect (F(1, 1014) = 2.22, p = .14). For external regulation related to game mechanics, there was a significant main effect of genre (F(1, 1014) = 179.14, p < .001). This indicates that MMO players were far more driven by game mechanics than casual SNG players. There was also a significant main effect of gender (F(1, 1014) = 6.57, p < .05). Female players for both SNGs and MMOs reported higher levels of external game regulation than males. These results provide no support for H1 and thus contradict some previous studies of males being more achievement oriented than females. Means and standard deviations are reported in Table 4.

Table 4. Means and Standard Deviations of Self-Determined Motivations by Genre and Gender

	SNG		MMO	
Motivation Type	Male (n = 260)	Female (n = 255)	Male (n = 255)	Female (n = 248)
Intrinsic Hedonic	5.77 (1.12)	6.01 (.97)	6.19 (.90)	6.14 (.98)
Intrinsic accomplishment	4.39 (1.50)	4.66 (1.52)	5.00 (1.20)	5.00 (1.36)
Identified social	3.41 (1.65)	3.01 (1.66)	3.82 (1.63)	3.85 (1.76)
External social	2.65 (1.53)	2.48 (1.55)	2.25 (1.43)	2.31 (1.44)
External game	3.46 (1.77)	3.81 (1.94)	4.94 (1.51)	5.12 (1.36)
Amotivation	3.28 (1.58)	3.17 (1.52)	2.82 (1.44)	2.62 (1.43)

6 Discussion

The present study utilized a framework of gaming motivations – built on self-determination theory – to examine gender differences within two distinct genres of gaming, social network games (SNGs) and massively multiplayer online games (MMOs). Results from a survey of 1018 SNG and MMO players were not consistent with gendered expectations derived from previous literature, namely, that women have higher social motivations and are less achievement-oriented than men. Although numerous motivation differences were found between genres, these differences were not gendered. Instead, across both SNGs and MMOs, women reported more achievement motivation than men and no gender differences were found in social motivation. These results may reflect a cultural shift in videogame participation that is consistent with the understanding that gender differences found in gaming are driven more by malleable social norms than by innate biological abilities.

The culture of gaming – just as in most areas of our society – is evolving. Most studies on gender differences in gaming were conducted over ten years ago and the patterns found in such research may no longer hold. As the proportion of women gamers has increased over the past decade, play motivations may have changed as well. Specifically, the notion that women tend to play games primarily to socialize instead of accomplish success, may no longer be supported empirically. On the contrary, the present study offers evidence that women are more motivated than men by game achievement (operationalized as completing missions, unlocking game elements, and collecting items or badges). Further, women were not found to differ from men in their social

motivations to play. While a failure to reject the null hypothesis generally does not indicate support for it, given the present study's large sample and methodological consistency with previous similar studies that did find gender differences in social motivation, we choose to cautiously interpret both findings in tandem. Namely, together, these results may suggest that over the past decade, the population of female gamers has become more achievement-oriented and less socially-oriented while these orientations have not changed much for their male counterparts.

This inference is consistent with the argument articulated in previous research that gender differences in gaming are driven primarily by the amount of previous gaming experience, of which male players tend to have more. For example, multiple studies have found that skill and resources in online games are accrued at the same rate for male than female players when (statistically) controlling for the amount of time played, but without such a consideration of previous time played, male players appear to achieve at a faster rate than female players [Lehdonvirta, Ratan, Kennedy, & Williams, 2014; Ratan, Taylor, Hogan, Kennedy, & Williams, 2015; Shen, Ratan, Leavitt, & Cai, 2016]. Of course, such statistical controls are not available to the casual observer and thus gender stereotypes have persisted in the face of such empirical evidence. However, as the population of female players grows, so does their amount of experience. If the gender gap in experience is decreasing, then the stereotypical perception that female players are less adept than male players should also be decreasing, according to this previous research. This suggests that stereotype threat should be less salient, which means that female players would feel more motivated by achievement in videogames. In other words, the present study helps support the claim that the gender gap in videogames is diminishing.

An alternative explanation would suggest that the gap is further widening and self-selecting to accommodate only certain types of female players. In other words, we do not know if female gamers individually have become more achievement oriented or if the types of games on the market are attracting more achievement-oriented females. Given much documentation of harassment of female players in social games, there is also a potential that current female gamers are more achievement-oriented and less socially-oriented — not by choice but to survive in hostile social gaming environments. Further research is required to unpack the cultural implications of our quantitative results, as statistics indicate what is going on but not why.

This conclusion should be corroborated by additional empirical evidence and interpreted in light of this study's limitations. For one, the study's recruitment methods should be considered. Most large-scale studies of motivation used in-game incentives, while we used Mturk, which provides a small monetary incentive that is not associated with the game itself. Using in-game virtual items may attract more players who are achievement-oriented or less socially oriented, which could help explain the inconsistency between the present study and previous studies.

Because we used a theory-driven approach, another limitation is the lack of consistency between the conceptualization and measures of motivation used in this study and those used in previous studies. As noted in the literature review, many game motivation studies conceptualized motivations as categorical variables rather than a continuum of motivations ranging from intrinsic to extrinsic. Even those that used an SDT

framework did not examine the full spectrum of motivations, which makes it difficult to directly compare our results. However, all previous game studies identified social and achievement motivations — which is why we focused on these two specifically. Furthermore, our study explicated social and achievement in two dimensions and found significantly different patterns; we suggest that this theoretically-driven division provides a more nuanced understanding of player psychology.

A final limitation is that generalizing the effects of gender may be problematic as a whole. Gender is at least in part a social construct and is heavily dependent on the contextual norms of a particular virtual environment, which include the culture of the game as well as the mechanics, or affordances, of the game. The results also showed significant motivation differences between the two genres of SNG and MMO. This suggests that a blanket "gaming motivation" approach may ignore the nuances of context, content, and mechanics that differ by genre. However, although this study looked at genre-based differences, genre may even be broad a lens. Not all games are alike, even within the same genre, so taking a more granular affordance-focused perspective to understanding games might increase validity. For example, comparing games based on specific game mechanics, design, and/or reward structure would enable researchers to make claims about specific game features rather than broader genres.

7 Conclusion

This study examined gaming motivations for two different genres of multiplayer games — casual social network games (SNGs) and massively multiplayer online (MMO) games — and examined whether there are gender differences in motivation after taking genre into consideration. Using a self-determination theory perspective to categorize motivations, we found that gender differences from previous games research were not supported and that player motivations widely differed between genre. These results support the importance of considering both the affordances and culture associated with different game genres rather than generalizing gender effects to all games. Further, this study suggests that the field should reconsider previous findings about gender differences, accounting for shifting cultural norms and player landscapes.

References

1. Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179–211. http://doi.org/10.1016/0749-5978(91)90020-T
2. Ajzen, I. (2011). The theory of planned behaviour: reactions and reflections. Psychology & Health, 26(9), 1113–27. http://doi.org/10.1080/08870446.2011.613995
3. Bialas, M., Tekofsky, S., & Spronck, P. (2014, August). Cultural influences on play style. In 2014 IEEE Conference on Computational Intelligence and Games (pp. 1-7). IEEE.
4. Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A New Source of Inexpensive, Yet High-Quality, Data? Perspectives on Psychological Science, 6(1), 3–5. http://doi.org/10.1177/1745691610393980
5. Casual Games Association (2012). Casual Games Association report.

6. Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization : The Self-Determinatlon Theory Perspective. Journal of Personality, 62(1).
7. Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. Psychological Bulletin, 125(6), 627-68-700. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10589297
8. Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. (R. Dienstbier, Ed.)Nebraska Symposium on Motivation Vol38 Perspectives on Motivation. University of Nebraska Press. Retrieved from http://www.mendeley.com/research/a-motivational-approach-to-self-integration-in-personality/
9. De Grove, F., Breuer, J., Hsueh Hua Chen, V., Quandt, T., Ratan, R., & Van Looy, J. (2017). Validating the Digital Games Motivation Scale for Comparative Research Between Countries. Communication Research Reports, 34(1), 37-47.
10. Entertainment Software Association (2017). Essential facts about the computer and video game industry. Retrieved from http://essentialfacts.theesa.com/mobile/.
11. Fox, J., & Tang, W.Y. (2014) Sexism in online video games: The role of conformity to masculine norms and social dominance orientation. Computers in Human Behavior 33: 314-320.
12. Fuster, H., Oberst, U., Griffiths, M., Carbonell, X., Chamarro, A., & Talarn, A. (2012). Psychological motivation in online role-playing games: A study of Spanish World of Warcraft players. Anales de Psicología/Annals of Psychology, 28(1), 274-280.
13. Gardner, B., & Lally, P. (2012). Does intrinsic motivation strengthen physical activity habit? Modeling relationships between self-determination, past behaviour, and habit strength. Journal of Behavioral Medicine, 1–31. http://doi.org/10.1007/s10865-012-9442-0
14. Heeter, C. (2008). Playstyles and learning styles. In Handbook of research on effective electronic gaming in education. IGI Global. Retrieved from http://gel.msu.edu/carrie/publications/playstyleANDlearninghandbook2008.pdf
15. Kahn, A. S., Shen, C., Lu, L., Ratan, R. A., Coary, S., Hou, J., Meng, J., Osborn, J. C., Williams, D. (2015). The Trojan Player Typology: A cross-genre, cross-cultural, behaviorally validated scale of video game play motivations, 354-361. doi:10.1016/j.chb.2015.03.018
16. Katz, E., Blumler, J. G., & Gurevitch, M. (1974). Utilization of mass communication by the individual. In J. G. Blumler & E. Katz (Eds.), The uses of mass communications Current perspectives on gratifications research (Vol. 3, pp. 19–32). Sage.
17. Kaye, L. K., & Pennington, C. R (2016) 'Girls can't play': The effects of stereotype threat on females' gaming performance. Computers in Human Behavior 59: 202-209.
18. Lafrenière, M. A. K., Verner-Filion, J., & Vallerand, R. J. (2012). Development and validation of the Gaming Motivation Scale (GAMS). Personality and Individual Differences, 53(7), 827-831.
19. Lee, Y.-H., & Wohn, D. Y. (2012). Are there cultural differences in how we play? Examining cultural effects on playing social network games . Computers in Human Behavior, 28(4), 1307–1314. Retrieved from http://www.sciencedirect.com/science/article/pii/S0747563212000568
20. Lehdonvirta, V., Ratan, R., Kennedy, T. L. M., & Williams, D. (2014). Pink and Blue Pixel$: Gender and economic disparity in two massive online games. The Information Society, 30, 243-255. doi:10.1080/01972243.2014.915277.
21. Levesque, C., Copeland, K. J., & Sutcliffe, R. A. (2008). Conscious and nonconscious processes: Implications for self-determination theory. Canadian Psychology/Psychologie Canadienne, 49(3), 218–224. http://doi.org/10.1037/a0012756

22. Shen, C., Ratan, R., Leavitt, A., & Cai, Y. D. (2016). Do Men Advance Faster Than Women? Debunking the Gender Performance Gap in Two Massively Multiplayer Online Games. Journal of Computer-Mediated Communication, 21, 312-329. doi: 10.1111/jcc4.12159.
23. Lucas, K., & Sherry, J. L. (2004). Sex Differences in Video Game Play: A Communication-Based Explanation. Communication Research, 31(5), 499–523. http://doi.org/10.1177/0093650204267930
24. Markland, D., & Tobin, V. (2004). A modification of the Behavioral Regulation in Exercise Questionnaire to include an assessment of amotivation. Journal of Sport and Exercise Psychology, 26, 191–196.
25. Nagygyörgy, K., Urbán, R., Farkas, J., Griffiths, M. D., Zilahy, D., Kökönyei, G., & Harmath, E. (2013). Typology and sociodemographic characteristics of massively multiplayer online game players. International journal of human-computer interaction, 29, 192-200.
26. Omori, M. T., & Felinto, A. S. (2012). Analysis of motivational elements of social games: a puzzle match 3-games study case. International Journal of Computer Games Technology, 2012, 9.
27. Quantic Foundry (2017). Beyond 50/50: Breaking Down The Percentage of Female Gamers by Genre. Retrieved from http://quanticfoundry.com/2017/01/19/female-gamers-by-genre/
28. Ratan, R., Taylor, N., Hogan, J., Kennedy, T.L.M., & Williams, D. (2015). Stand by your Man: An examination of gender disparity in League of Legends. Games and Culture, 10, 438-462. doi: 10.1177/1555412014567228.
29. Richard, G. T., & Hoadley, C. M. (2013). Investigating a supportive online gaming community as a means of reducing stereotype threat vulnerability across gender. In Proceedings of Games, Learning & Society 9.0. ETC Press, pp. 261-266.
30. Ryan, R., & Deci, E. (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. Contemporary Educational Psychology, 25, 54–67. http://doi.org/10.1006/ceps.1999.1020
31. Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The Motivational Pull of Video Games: A Self-Determination Theory Approach. Motivation and Emotion, 30(4), 344–360. http://doi.org/10.1007/s11031-006-9051-8
32. Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. Journal of personality and social psychology, 69(5), 797.
33. Sung, J., Bjornrud, T., Lee, Y., & Wohn, D. Y. (2010). Social network games: Audience traits. In Proceedings of the 28th of the International Conference Extended Abstracts on Human Factors in Computing Systems - CHI EA '10 (pp. 3649–54). New York, New York, USA: ACM Press. http://doi.org/10.1145/1753846.1754033
34. Tamborini, R., Bowman, N. D., Eden, A., Grizzard, M., & Organ, A. (2010). Defining Media Enjoyment as the Satisfaction of Intrinsic Needs. Journal of Communication, 60(4), 758–777. http://doi.org/10.1111/j.1460-2466.2010.01513.x
35. Tamborini, R., Grizzard, M., David Bowman, N., Reinecke, L., Lewis, R. J., & Eden, A. (2011). Media Enjoyment as Need Satisfaction: The Contribution of Hedonic and Nonhedonic Needs. Journal of Communication, 61(6), 1025–1042. http://doi.org/10.1111/j.1460-2466.2011.01593.x
36. Vallerand, R., & Bissonnette, R. (1992). Intrinsic, extrinsic, and amotivational styles as predictors of behavior: A prospective study. Journal of Personality, 60(3), 599–620. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1467-6494.1992.tb00922.x/abstract
37. Van Reijmersdal, E. A., Jansz, J., Peters, O., & Van Noort, G. (2013). Why girls go pink: Game character identification and game-players' motivations. Computers in Human Behavior, 29(6), 2640-2649.

38. Vermeulen L, Castellar EN, et al. (2014) Challenging the other: Exploring the role of opponent gender in digital game competition for female players. Cyberpsychology, Behavior, and Social Networking, 17, 303-309
39. Wohn, D. Y. (2016). From faux-social to pro-social: The mediating role of copresence in developing expectations of social support in a game. PRESENCE: Teleoperators and Virtual Environments, 25 (1), 61-74
40. Wohn, D. Y., Lampe, C., Wash, R., Ellison, N., & Vitak, J. (2011). The "S" in Social Network Games: Initiating, Maintaining, and Enhancing Relationships. In 2011 44th Hawaii International Conference on System Sciences (pp. 1–10). IEEE. http://doi.org/10.1109/HICSS.2011.400
41. Wohn, D. Y., Lee, Y., Sung, J., & Bjornrud, T. (2010). Building common ground and reciprocity through social network games. In Proceedings of the 28th of the international conference extended abstracts on Human factors in computing systems - CHI EA '10 (pp. 4423–28). New York, New York, USA: ACM Press. http://doi.org/10.1145/1753846.1754164
42. Wohn, D. Y., & Lee, Y.-H. (2013). Players of Facebook Games and How They Play. Entertainment Computing, 4(3), 178–171. http://doi.org/10.1016/j.entcom.2013.05.002
43. Yee, N. (2006a). Motivations for play in online games. CyberPsychology & Behavior, 9, 772–775. Retrieved from http://online.liebertpub.com/doi/abs/10.1089/cpb.2006.9.772
44. Yee, N. (2006b). The demographics, motivations, and derived experiences of users of massively multi-user online graphical environments. Presence: Teleoperators and Virtual Environments, 15, 309–329.
45. Yee, N. (2016). As gamers age, the appeal of competition drops the most. strategy is the most age-stable motivation. Quantic Foundry. From http://quanticfoundry.com/2016/02/10/gamer-generation/
46. Yee, N., Ducheneaut, N., & Nelson, L. (2012). Online gaming motivations scale: development and validation. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 2803-2806). ACM.