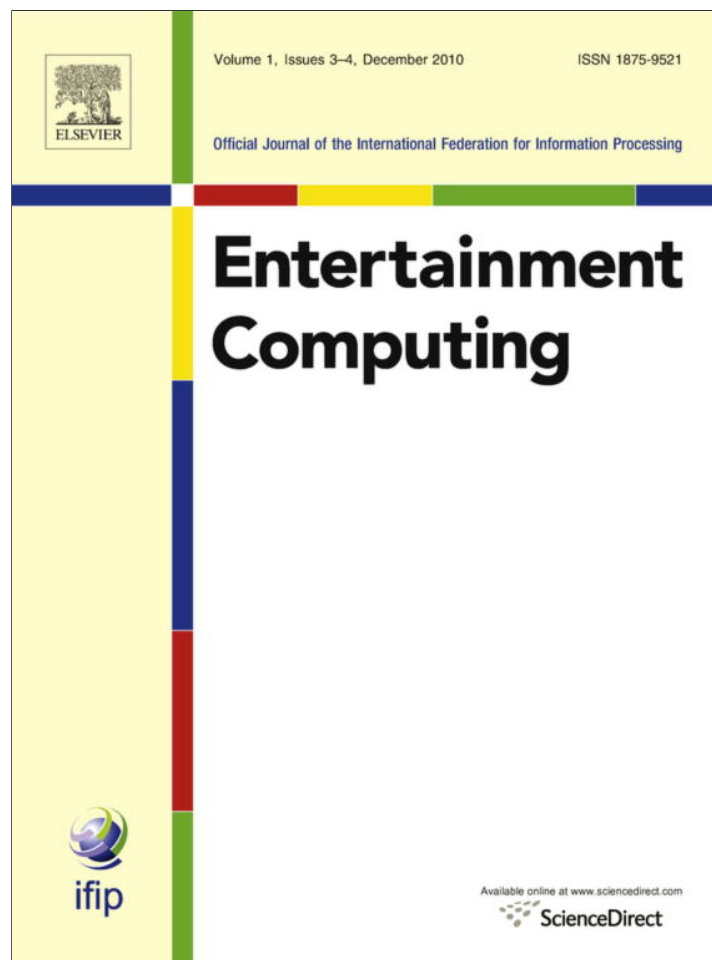


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Players of facebook games and how they play



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ABSTRACT

This study examined the characteristics of people who play social network games—games that incorporate network data from social network sites. Using the framework of uses and gratifications with social cognitive theory, we conducted a survey ($N = 164$) of Facebook game players and identified four motivations and unpacked play into seven different types. We then looked at the relationships between motivations, types of play, and individual characteristics such as gender, age, and cultural differences. We found that motivations previously identified as being “social” split into two categories: building common ground with existing acquaintances, and design-driven reciprocal behavior. Building common ground was associated with stronger use of space customization, spending real money, communicating about game achievements, and exchanging gifts. However, we found that more people were using the games as a coping mechanism and to pass time rather than using it for social purposes. Individual differences are also discussed.

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1. Introduction

Social network games (SNGs) are digital games applications that use network data from social network sites such as Facebook. SNGs are defined by their platform rather than content or game play [44]; the fact that they can pull network data from social network sites is what distinguishes them as a unique subset of digital games. SNGs have become extremely popular in the past few years. As of October, 2012, the top ten games on Facebook each had more than 17 million average monthly users, and *Texas HoldEm Poker*—the most popular Facebook game—alone had more than 39 million average monthly users [2]. While tens of thousands of articles have documented the rapid growth of social networking sites such as Facebook, MySpace, and Friendster [9,30] scholarship on SNGs is still in an infant stage.

SNGs are a collection of different game genres, all of which have different play mechanics. Some games, such as *Farmville* or *Café World*, are simulation games about resource allocation and customization, while games like *Mafia Wars* or *Castle Age* are similar to traditional strategy games. Other SNGs are adaptations of previous popular casual games [18] and include board, word, card, and arcade games.

Despite these genre differences, SNGs share many functional commonalities. Because they are connected to social networking sites, this allows for many types of social interactions—some take place within the game, but others extend outside of the game as well. Interviews with Facebook game players showed that people are not

only playing with their existing friends, but also meeting new ones through online forums only for the purpose of playing games [45]. This type of “Friending” behavior may seem unsocial, but even if one has added another person as a Friend on their social network for the sole purpose of game-play, the action of adding Friends allows users to see other player’s personal profiles and receive the their status updates through their news feed. This creates an environment in which game play is not completely confined within the game application, fostering interaction that takes place both within the game and through use of other social network site features.

Communication scholars have argued that popularity and rapid growth are only superficial reasons for why digital games should be studied. By acknowledging digital games as a new media that fosters social interaction and relationships, the core question is why people are adopting games and how they serve as a form of communication. This is a question that we must answer before we begin to address the social impacts of these games on human relationships. In this paper, we take a uses and gratifications approach to explore why individuals play SNGs and how they are playing, specifically focusing on unpacking the different types of play. We then look at the relationships between motivations, types of play, and individual characteristics such as gender, age, and cultural differences.

2. Theory: uses and gratifications

In this study, we examine SNGs from a mass communication perspective using the uses and gratifications paradigm. Uses and

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gratification has been a guiding research paradigm for mass communication studies. Uses and gratifications is a theoretical framework used to study how people use media to fulfill specific personal needs [32]. It assumes that media users are actively aware of their personal needs and will actively seek different media to gratify these needs.

There have been many different models incorporating uses and gratifications, but most stem from the work of Rosengren [31] and Katz et al. [19]. According to Rosengren [31], media use is a determined by basic needs, individual differences, and social influences. These three components all contribute to different patterns of media use. Similarly, Katz et al. [19] said that media use is based on social and psychological origins; which generate expectations of the media. This, in turn, leads to different patterns of media exposure. The uses and gratification approach has been widely used for studying new media technologies [33], especially to explain people's motivations for using new media such as blogs [20], personal websites [28], and social networking sites [17,29].

There have been a few seminal studies on videogames that have used the uses and gratifications paradigm. The earliest studies [36,41] focused on arcade game use, as home videogame consoles had not yet been developed. About a decade later, Sherry and colleagues [37] did a comprehensive study identifying motivations based on focus group interviews, and then looked at how those motivations affected video game genre preference and amount of game use through a large-scale survey. This study was a major contribution to the field because the domain of videogames had drastically changed in terms of technology.

We are again at that point in time where the videogame industry is undergoing a major change in terms of technology, social status, and outreach. First of all, in contrast to graphic-intense, action-intense games, we are seeing a rise in casual games [18] which are defined by as the industry as simple, non-violent games that can be played in short intervals [7]. Secondly, mobile devices, such as handheld game devices and mobile phones, are becoming a popular platform for games; in 2010, 42% of heads of households reported playing games on wireless devices [10]. Thirdly, more games are incorporating multi-player use through network features [11,42]. Once the realm of game aficionados (e.g., MMORPG and Xbox Live players), networked games have become more mainstream through applications such as those for the mobile phones or Facebook.

SNGs reflect all three of these new trends. Compared to large-budget games designed for console play, SNGs are very simple in interface and game play mechanics. They are also inexpensive, easy to access, easy to play, and can be played for very short intervals at a time. Due to the simplicity of the game, most SNGs can be played on mobile devices or web browsers without separate installation of a game client and have the unique feature of being embedded within a social network site or connected to a social network site that pulls network information from the social network site into the game.

Of the many characteristics that SNGs have, we would like to focus on this last component: integration with social network sites. Indeed, many studies have tapped into interpersonal dynamics among players in social games, mainly in the context of massively multiplayer online role playing games MMOs [11,38,42] but SNGs are unique because the nature of being integrated with social networking sites facilitates social interaction between players both inside the game and in the larger context of the social networking site [45].

2.1. Research questions

We applied the uses and gratifications framework from the perspective of social cognitive theory [3]. This approach posits that performance of behavior is determined by the expected outcomes of the behavior. An expected outcome is a way of measuring motivation or individual needs of game play. LaRose et al. [22] found

that measuring expected outcomes instead of the traditional gratification measurements produced better predictions of internet use. This may be because traditional gratification measurements did not account for the perceived likelihood of achieving the outcome [8]. An individual's expected outcomes reflect their current beliefs about a future behavior based on their overall assessment of personal motivations, resources, and abilities. Based on these studies, our first research question seeks to examine what are the expected outcomes of playing SNGs.

RQ1: What are the expected outcomes of playing SNGs?

The concept of "use" is a key variable in uses and gratifications. In studies of video games, the concept of different "uses" has been examined in the context of classifying players into player types. One of the most popular player typologies was proposed by Bartle [4,5], based on his observation of players in text-based multiplayer underground dungeons (MUDs). Bartle proposed that players in MUDs could be classified into four player types: *achievers*, *explorers*, *socializers* and *killers*. Achievers enjoy earning game achievements, whether it is winning over other players or their own personal record. Explorers enjoy exploring new things, learning about game mechanics and role playing. Socializers are not driven by achievements or game design; they are motivated by interactions with other players, and killers enjoy ruining other player's fun. Bartle's player types have served as a general framework for other game researchers [38,45] and a guideline for game designers, but they only apply to specific types of games such as MUD or massively multiplayer online games. Some researchers have found that when applied to different forms of digital games, players often fall between different player types [16,21] which may be because these player types are not necessarily mutually exclusive [46].

This led us to shift the focus from identifying types of players to identifying the types of play, by unpacking the different types of uses that occur when playing SNGs. This would be more consistent with other mass communication studies that identify different uses of the medium. Studies have found that instead of focusing on a media as a whole, different uses must be distinguished to better explain variance. For example, in the case of television, Heeter [15] used the concept of "channel repertoire" to explain how viewer motivations affect how many different channels they watched. Ferguson and Perse [13] categorized different types of use for the World Wide Web.

Similarly, we decided to examine the different uses (play features) of SNGs, leading to our second research question:

RQ2: What types of behaviors (uses) are people engaging in when they play SNGs?

Once we have identified the expected outcomes and uses, we wanted to see how these dimensions affect each other and the total time spent playing games.

RQ3: How do expected outcomes explain overall time spent on the site?

Since social cognitive theory emphasizes a reciprocal relation between cognition (expected outcome) and behavior (uses), we posed the following research question:

RQ4: What is the association between SNG expected outcomes and uses?

The theory also predicts that individual differences will affect behavior. We can thus expect to find differences between different groups of people. Thus our final research question was:

RQ5: How do individual differences affect SNG expected outcomes and uses?

3. Method

3.1. Participants

Data for this study was collected in late 2009 through a survey of 164 respondents using snowball sampling (chain referral

method). We used snowball sampling for our data collection because the method is ideal for reaching hidden or difficult-to-reach populations, and because the study benefits from existing mutual association between people [34]. Privacy settings in social networking sites make it difficult to identify and contact SNG players for a random sample without server-level access.

We chose to examine games on Facebook due to the high number of Facebook users. We initially sent out 226 invitations through e-mail and Facebook mail to friends who used Facebook, not specifically targeting game-players. Invitees were invited to participate in an online survey. After they finished the survey, they were asked to forward an invitation to the survey to five of their Facebook friends who may or may not play Facebook games.

3.2. Measures

We asked participants to choose their favorite game among those they were currently playing out of the top 25 Facebook games, and answer subsequent questions based on that one specific game. The top 25 games on Facebook were selected for this study according to monthly active user numbers. We asked participants if their favorite game used specific features and gave participants the questions corresponding to the features.

To measure expected outcomes, we gave participants a list of statements that began with “I play Facebook games to...” and asked them to rate the items on a five-point Likert-type scale ranging from “Strongly Disagree” to “Strongly Agree.” The items were based on Internet use scales developed by LaRose et al. [22] that we adapted to fit the context of SNGs. We also added several original items based on pilot interviews. We wanted to use social networking site scales [17,29] but these scales were too specific to features of social network sites (e.g., uploading photos, seeking information) that would not apply to SNGs.

Questions for SNG uses were adapted from Yee's [46] online game scales but we also developed original items to reflect unique SNG uses such as gift exchange, buying virtual items, and virtual space customization based on pilot interviews with Facebook game players. Participants were asked to rate statements such as “I give gifts to my friends,” and “I spend real money to decorate my avatar,” on a five-point Likert-type index, ranging from “Strongly Disagree” to “Strongly Agree.” A total of 24 items were randomized through the questionnaire server to prevent an order bias.

Habit strength was measured with three-item scales developed by LaRose and Eastin [23] that were rephrased so that Facebook game play replaced references about Internet use. The three items were: “I would miss Facebook games if they were not available,” “Playing Facebook games is part of my daily routine,” and “I play Facebook games every day.” Participants were asked to rate these statements on a five-point Likert-type scale ranging from “Strongly Disagree” to “Strongly Agree.” We added habit strength because research has shown that much of media use is habitual, or ritualistic in nature [23,29,43]. Expected outcomes are cognitive in nature, whereas habit is a form of automaticity in media consumption where people do things without thinking about it [40,43]. Habit would therefore be an important control variable along with individual variables.

We also asked for demographic information including gender, age, ethnicity, how much time they spent playing Facebook games every day, and how frequently they played the game.

4. Results

A total of 253 people participated in our survey; about two-thirds ($N = 164$) said that they *currently* played games on Facebook. Our participants' age ranged from 19 to 70 ($M = 32$, $SD = 9.9$). They

were highly educated (75% had a bachelor's degree or higher) and located primarily in North America and east Asia (South Korea, Taiwan). About 60% were female, similar to demographics of casual game players as reported by Nielsen [26].

Of all respondents, those who played Facebook games played an average of 30 mins a day ($M = .52$, $SD = .62$, h), four times a week ($M = 4.1$, $SD = 2.59$). The largest group of respondents' favorite game was farm simulation games (34.6%), followed by arcade (16.0%), pet simulations (12.3%), role-playing games (11.7%), restaurant simulations (9.3%), word games (5.6%), brain games (4.3%), card games (3.7%), and town simulations (2.5%). Due to the small size of genre subgroups, however, we were unable to conduct any analysis utilizing genre due to validity issues. The small size of non-players also made it difficult to make any valid quantitative analyses that would compare SNG players with non-players. We therefore focused our analyses only those who *did* play Facebook games.

4.1. Expected outcomes of SNG use

Our first research question wanted to know what expected outcomes motivate users to play SNGs. To determine the types of expected outcomes, we used a principal components analysis using Varimax rotation to arrive at four components with eigenvalues greater than one and factor loadings above .5: *common ground* (Cronbach's $\alpha = .86$), *reciprocity* ($\alpha = .90$), *coping* ($\alpha = .76$), and *passing time* ($\alpha = .86$). These four factors (13 items) explained 75% of total variance.

We interpreted common ground as the desire to build common topics or shared experience among existing acquaintances. Reciprocity explains exchange of supporting behavior between players, such as helping other people and receiving help. Coping refers to alleviating personal problems (“feel relaxed,” “forget my problems”), and passing time included items such as “Find a way to pass the time” and “relieve boredom.” Precise wording of the items, mean values, and their factor loadings can be seen in Table 1.

4.2. Unpacking SNG uses (types of play)

To answer our second research question of the different types of SNG uses, we conducted a principal components analysis with oblique rotation (Promax, $\kappa = 4$) to reflect the inherent correlations between the components), resulting in seven components with eigenvalues greater than 1. These seven factors (loading above .5) accounted for 76.4% of total variance: *spending real money* (Cronbach's $\alpha = .83$), *avatar customization* ($\alpha = .78$), *publishing* ($\alpha = .78$), *space customization* ($\alpha = .92$), *mechanics* ($\alpha = .35$), *advancement* ($\alpha = .38$), and *gifting* ($\alpha = .58$).

Spending referred to spending real money to buy game items; avatar customization was about dressing up one's in-game virtual character; space customization was about decorating one's in-game space (e.g., farm or virtual room); and publishing referred to writing about the game on one's Facebook Wall. This including publishing one's own game experiences and achievements as well as commenting on other friends' game achievements. Mechanics referred to calculations within the game, and advancement was about increasing one's level. Mechanics and advancement factors had low reliability but were retained in subsequent analyses due to the fact that the same items had been used as scales in several previous studies. Detailed wording of items can be seen in Table 2.

4.3. Explaining overall use (time)

We answered our third research question (How do expected outcomes explain overall time spent on the site?) by conducting a hierarchical regression with time spent playing Facebook games on a typical day as the dependent variable. After controlling for

Table 1
Factor loadings for social network game expected outcomes.

"I play games on Facebook to..."	Factor loadings			
<i>Common ground (M = 2.19, SD = .887)</i>				
Find others who respect my views	.859	.180	.179	-.095
Find people like me	.793	.212	.202	-.108
Improve my future prospects in life	.776	.092	.076	.019
Express myself freely	.751	.286	.239	-.047
Feel like I belong to a group	.638	.348	.238	.067
<i>Reciprocity (M = 2.61, SD = 1.083)</i>				
Help other players	.193	.914	.117	-.025
Get support from other players	.242	.828	.264	-.020
Provide help to others	.347	.822	.053	.005
<i>Coping (M = 3.13, SD = .902)</i>				
Feel relaxed	.013	.251	.863	-.030
Cheer myself up	.258	.203	.783	.011
Forget my problems	.354	-.032	.648	.195
Feel entertained	.029	.047	.569	.340
<i>Passing time (M = 3.95, SD = .970)</i>				
Find a way to pass the time	-.042	-.005	.079	.920
Relieve boredom	-.102	-.043	.169	.893

*Based on a five-point Likert-type scale from "Strongly Disagree" to "Strongly Agree".

gender and number of Facebook Friends, our four expected outcomes explained 14.3% of variance in daily usage. When habit strength was added into the model, it explains an additional 11.3% of variance. Missing data were not replaced with means. As can be seen in Table 3, our overall model ($F[6,144] = 8.338, p < .001$) was statistically significant and had an adjusted $R^2 = .254$. Only gender ($\beta = .150, p < .05$), reciprocity ($\beta = .246, p < .01$), and habit strength ($\beta = .379, p < .001$) were statistically significant predictors of overall use in terms of time.

4.4. Relationships between expected outcomes and uses

To address RQ4 (What is the relationship between expected outcomes and uses?) a Pearson correlation coefficient was calculated for the relationships between expected outcome factors to types

Table 2
Factor loadings for types of social network game use.

	Factor loadings						
<i>Spending (M = 1.34, SD = .718)*</i>							
I spend real money to decorate my in-game space/environment	.954	-.100	.031	-.014	.056	-.014	.033
I spend real money to decorate my avatar	.871	-.069	-.285	.147	-.014	-.1	.113
I spend real money to buy virtual cash	.775	.128	.323	-.054	.033	.021	-.049
<i>Avatar customization (M = 2.80, SD = .946)*</i>							
I change how my avatar looks	-.024	.979	-.318	-.065	.138	-.007	-.058
I try to look different from other players	-.019	.822	.023	-.095	.154	.007	-.082
I spend a lot of time customizing my avatar's appearance	-.110	.699	.105	.312	-.071	.022	-.158
<i>Publishing (M = 2.77, SD = 1.016)*</i>							
I publish game achievements to my wall	-.008	-.119	.919	-.167	.087	-.085	.092
My Facebook wall has information about my game playing	-.036	-.196	.907	-.073	-.019	.274	.099
I post comments when my friends share their game achievements	.091	.239	.509	.331	.004	-.188	.051
<i>Mechanics (M = 3.49, SD = .775)*</i>							
I will get gifts if I give gifts	.123	-.011	-.187	.933	-.147	.138	.931
I try to know as much about the game mechanics and rules as possible	-.013	-.170	-.033	.774	.192	.301	.089
<i>Space customization (M = 3.41, SD = 1.107)*</i>							
I spend a lot of time decorating my in-game space/environment	-.025	.083	.036	-.037	.900	.034	.006
I try to make my in-game space/environment unique	.098	.083	.048	-.035	.892	-.052	-.007
<i>Advancing (M = 2.80, SD = .801)*</i>							
I only give and accept gifts to increase my level	-.025	-.066	-.095	.274	-.041	.848	.098
I try to increase my level as soon as possible	-.097	.060	.266	.102	.043	.728	.108
I buy virtual items for the sake of increasing my level	.164	.189	-.020	-.162	.082	.637	-.246
<i>Gifting (M = 4.29, SD = .741)*</i>							
I accept gifts from my in-game friends	-.170	-.183	-.087	-.081	.058	.087	.850
I give gifts to my in-game friends	.082	-.006	.223	.343	.165	-.115	.791

*Based on a five-point Likert-type scale from "Strongly Disagree" to "Strongly Agree".

Table 3
Regression model explaining time spent on play.^a

Variables	Beta	ΔR^2
Control		.03
Gender	.15 [*]	
Number of friends	.07	
Expected outcomes		.14
Common ground	.01	
Reciprocity	.25 ^{**}	
Coping	-.02	
Pass time	.08	
Habit strength	.38 ^{***}	.11
Model adjusted R ²		.25

^a Daily usage entries are standardized regression coefficients. The adjusted R² value refers to that of the overall model. N = 152.

* p < .05.

** p < .01.

*** p < .001.

of use. The decision to use correlation instead of multiple regression for analysis is because the relation between expected outcomes and uses are reciprocal under the social cognitive theory. People form primary expected outcomes from observing other people, but after one decides to use the medium, their personal usage experience feeds back to reshape their expected outcomes. If their personal experience supports expected outcomes, one will continue usage, if it contradicts their expected outcomes, one might quit or choose to change their expected outcome or uses. We found several significant correlations among specific expected outcomes and uses, as reported in Table 4.

Players who seek common ground devoted more energy to customizing their avatar ($r[83] = .38, p < .001$) and their in-game space ($r[92] = .33, p < .001$), were more inclined to spend real money ($r[100] = .24, p < .05$), and were more likely to publish their game status on their Facebook wall ($r[155] = .46, p < .001$). Players with higher reciprocal expectations were more likely to customize their space ($r[94] = .31, p < .001$), publish their game achievements

Table 4

Pearson's correlations between expected outcomes and uses.

	Spending	Avatar	Space	Mechanics	Gifting	Advancing	Publishing
Common ground	.24*	.38*	.33*	.16	.02	.02	.46**
Reciprocity	.16	.21	.31*	.13	.25*	.01	.27*
Coping	.14	.14	.38**	.16	.14	.08	.39**
Pass time	.03	.07	.17	.00	.04	.24*	.08

* $p < .05$.** $p < .001$.

($r[157] = .27, p < .001$), and exchange gifts with other players ($r[118] = .25, p < .001$). Players who play to cope were more likely to spend time customizing their virtual space ($r[94] = .38, p < .001$) and publish their game status ($r[159] = .39, p < .001$). Players with the expectation of passing time only showed a correlation to advancement ($r[97] = .24, p < .05$).

4.5. Individual differences

4.5.1. Gender

For RQ5 (*How do individual differences affect SNG expected outcomes and uses?*) we looked at three individual components: gender, age, and cultural background. In order to find if there were any gender differences on their motivation to play, an independent sample *t*-test was used. Coping was the only motivation that had significant gender differences, $t(159) = -2.78, p < .05$. Females ($M = 3.27, SD = .85$) played games to cope more than males ($M = 2.68, SD = .95$).

Looking at how people play, there was a significant gender difference on players' use patterns of gifting ($t(117) = -2.43, p < .05$) and space customization ($t(97) = -4.02, p < .001$). We found that females ($M = 3.67, SD = 1.02$) customize their space more than males ($M = 2.76, SD = 1.03$), and that females ($M = 4.41, SD = .62$) exchange gift more than males ($M = 4.08, SD = 0.89$). Participants whose favorite games did not include gifting or space customization elements were not included in the mean comparison.

4.5.2. Age

To see age differences, we did a mean split (32 and older, younger than 32), and conducted an independent sample *t*-test between older and younger players. For expected outcomes, we found that older players were playing more for reciprocity ($t(157) = 2.38, p < .05$) while younger players were playing more to pass time ($t(159) = -2.65, p < .01$). In terms of how they play, the only age difference was seen in mechanics: older users were engaging more in the mechanics of the game than younger users ($t(117) = 1.99, p < .05$).

4.5.3. Cultural differences

We were originally not interested in cultural differences, but the demographics of our participants were dominantly Caucasian (51.2%) and Asian (42%), so we compared those two groups and found interesting results. We used an independent sample *t*-test to examine differences between Caucasians and Asians. The result showed significant differences between Caucasians and Asians in terms of expected outcomes and the extent to which the players engage in visual customization. Asians rated significantly higher than Caucasians in their expectation of achieving common ground through the games ($t(146) = -4.14, p < .001$) and using the games as a coping mechanism ($t(149) = -2.24, p < .05$). Caucasians were playing to pass time significantly more than Asians ($t(149) = 2.61, p < .05$). In terms of types of play, Asians were customizing their avatar more than Caucasians ($t(79) = -4.07, p < .001$). (The reason for the smaller sample size in avatar customization is because players whose favorite game did not include avatar customizing were removed from analysis).

5. Discussion

Using a social cognitive approach to uses and gratifications, we identified four expected outcomes, or motivations, of SNG players—common ground, reciprocity, passing time, and coping—and seven types of play: spending real money, avatar customization, space customization, publishing game status, mechanics, advancing level, and exchanging gifts. We found that habit, not expected outcome, was the strongest predictor of overall use in terms of time spent on the game. However, when looking at the relationships between expected outcomes and uses, we found that different expected outcomes were associated with how people played the game.

5.1. Building common ground vs. reciprocity

The exploratory factor analysis for expected outcomes showed several interesting findings that were distinct from previous literature on game or social networking site use. We found that items that were part of “social” scales in previous literature separated into two factors: common ground and reciprocity. Common ground is social in nature, but it differed from previous social scales because certain aspects of status-seeking were included (see Table 1). This dimension suggests that some people may be playing SNGs to have a common topic of interest with other people. This is certainly supported by the network feature of SNGs that enable players to play with their existing acquaintances. In this respect, SNGs may be more like a “toy” than a game because the goal is external to the artifact. A toy can be defined as an artifact for interaction without a goal of its own [27, p.125]. The content, rule, and goal of the game may matter less to SNG players because the games can be used to either connect or identify with people they know. The common ground factor also contained items such as “improve my future prospects in life” which have a status-seeking component. This could be because building common ground is not only about sharing something to talk about but building the relationship for future social capital, which is consistent with literature showing a strong association between social network site use and perception of social capital [9]. The extent of common ground that can be generated through SNG play and relationship with social capital may be an interesting topic of future study.

The expected outcome of reciprocity reflected a common SNG design which encourages players to help each other out. For instance, buying a cow take a lot of time because one would have to plant, harvest, and sell crops to earn virtual money. However, players have the option of sending free cows as gifts to their in-game friends. This encourages people to exchange gifts and even become friends with strangers in order to reap the benefits of free gift exchange [45]. Even though the items in the reciprocity factor describe helping behavior—which is inherently social—the fact that this factor separated from other “social” items suggests that the reciprocity in SNGs may be more of an instrumental behavior. The concept of helping in SNGs may be fundamentally different from altruism, which is unconditional kindness [12]. The role of

system-facilitated reciprocity is an interesting topic of future research.

Despite the popular assumption that SNGs are social, an unexpected finding was that the means of common ground ($M = 2.19$, $SD = .89$) and reciprocity ($M = 2.61$, $SD = 1.08$) were lower on our five-point scale in comparison to *coping* ($M = 3.13$, $SD = .90$) or *passing time* ($M = 3.95$, $SD = .97$). This implies that SNG players were more driven to play with the expectation of relieving boredom/passing time rather than expecting any social outcomes. This, however, does not mean that players cannot obtain social outcomes. Even if players do not play with high anticipations of social outcomes they can still acquire positive social outcomes as a result of game play—qualitative research [45] has shown that some players “friend” others for selfish reasons (since having more in-game “friends” in SNGs makes the game-play easier) but end up becoming close friends.

5.2. Interpreting different uses

Gift-giving was correlated with mechanics ($r = .31$, $p < .001$) suggesting that gift-giving in SNGs is associated with calculation and somewhat different from gift-giving in real life. Similar to how “Friends” on Facebook have created a different concept of friendship [6], gift-giving in SNGs may also have a different meaning. This “mechanical” gift-giving may be because most players are playing for coping or to pass time, and do not seek any other outcome from SNG other than killing time. The fact that gift-giving did not correlate with common ground but with reciprocity suggests that reciprocity is facilitated by the design of the game; players are gift-giving for their personal interest in the game instead of social reasons.

Publishing one's game status was significantly correlated with common ground, reciprocity, and coping. This may imply that other than self-expression, publishing can act as an invitation for further friendship offline. Another possible explanation is that some games are designed so players can “share” their achievements as free gifts or rewards with friends, thus the publishing is in itself a form of reciprocity that stays within the game.

Our findings also indicate that space customization and avatar customization are two completely different factors in SNG. Since there has been little study on space customization, future researchers should make the distinction between avatar and space customization, as our results suggest that these two variables yield different results with respect to other variables.

5.3. Individual differences

In terms of types of play, we found that women customize their space and exchange gifts more than males, but did not find a significant gender difference in any other types of uses. There can be different explanations as to why gift exchange was more prevalent among female players. The first is need for social interaction. Hartmann and Klimmt [14] have suggested that women may prefer interaction between characters compared to men, giving *The Sims*—a game that is about social interaction between game characters—as an example of a game that was popular among women. Gift-giving can be seen as a form of interaction among players. Even though SNGs are technically single player, asynchronous interaction may create the impression of being in a multiplayer environment. Another explanation could be that women are just more prone to gift-giving, as has been shown in studies on gender differences in perceptions of gift exchange [25].

In explaining why women engage in space customization more than men, we may think of offline equivalents, such as interior decorating. One participant from a series of interviews of Facebook game players speaks to this point: “I think with women it's just a way to play with a little dollhouse without somebody looking at you like you are crazy because you are a grown-up” [45]. We do

not know, however, why gender differences were not seen in avatar customization. Perhaps spatial customization and avatar customization have different psychological elements.

Although collectivism and individualism was not separately measured, results of this study suggest that the ethnic groups of Asians and Caucasians were a rough proxy of collectivist and individual cultures, especially by the fact that Asians rated higher on the common ground factor compared to Caucasians. Most of our Asian participants were either those people currently living in Asia or those who were living in other countries but originally from Asia, which may have been why we saw differences in perception between the two groups. In particular, Asians scored significantly higher than Caucasians on a one-item measure, “I play Facebook games to feel like part of a group” ($t(149) = -3.233$, $p < .01$). Prior research has shown that collectivist cultures emphasize group goals, community, and society as a whole, as opposed to individualist cultures, which place importance on the rights or goals of the individual (for review, see Triandis [39]). More recent research by Lee and Wohn [24] suggest that cultural differences affect play in SNGs; further investigation is needed to map ethnicity and cultural orientation in the context of games.

Although the dichotomy of collectivism and individualism has been criticized for over-generalization [35] and encouraging racial stereotypes [1] these results shows some interesting implications for social game design and applies prior research on cultural differences to social game use. Future studies could measure of individualism and collectivism that could guide our knowledge into why people play differently.

5.4. Limitations

There were several limitations to this study. Firstly, we relied on self-report measures and were unable to capture true behavioral data. Second because SNG share friend networks with one's social network site, it may share the same power-distributions as one's social network. Therefore the snowball sample in this study would only represent players that share similar activities and usage. However, this is a limitation shared by most self-selected sampling of social network sites, generalization of the data must be taken with caution. Third, we asked participants to answer questions about their favorite game. Since certain games such as arcade games did not have certain features such as gift exchange, this created difficulty in maintaining the same sample size consistent across all correlation measures. The demand for interaction also varied from game to game. During the time of our data collection, all the top SNGs consisted of asynchronous interactions, however newer SNGs today have synchronous interactions which may change the relative strength of the expected outcomes and uses. Future research could avoid this by limiting analyses to one game, but this would also limit the generalizability of the study.

Our correlations do not explain causality: a strong positive correlation, for example, only shows that the high score of one variable is likely to be paired with the high score of the other variable. The same applies to lower scores. Also, our mean comparisons for individual differences such as gender, age, and cultural background were all statistically significant but given that our dependent measure was only a 5-point Likert-type scale, it is difficult to gauge the external validity of the significant differences that were noted.

6. Conclusion

Social network games (SNGs) are games applications of social network sites, generating interaction among players both inside

and outside of the game application. In examining play motivation that pertains to the expected outcomes of game play, our study shows that players of SNGs have four expected outcomes: to build common ground, to reciprocate, to pass time, and to cope. We also identified seven types of play (uses) that are found in SNGs: customizing one's avatar, customizing one's in-game space, publishing game achievements, advancing level, caring about mechanics, gifting, and spending real money. Of note, space customization and gifting were strong components of SNG play that were not addressed in previous game literature.

We found that habitual play explains more variance than expected outcomes in predicting time spent on the game. Expected outcomes, however, provided insight into different types of play. More players of SNGs were playing to alleviate personal problems rather than to seek social outcomes. However, the people who were playing to seek social outcomes were engaging in more diverse forms of use: common ground seekers devoted more energy to customizing their avatar, customizing their in-game space, were more likely to publish their game status on their Facebook wall, and more inclined to spend real money. Given that we found that Asians had a significantly higher expectation for common ground than Caucasians, this may explain why countries of collectivist cultures are successful in incorporating microtransactions into games that have heavy customization components; future research should employ validated measures of collectivism and individualism for more refined comparisons. There were a few other individual differences: older users were more likely to play to reciprocate while younger users were more likely to play to pass time. Women were more likely to engage in gift exchange and space customization than men.

Gifting was an important mechanism of SNGs that facilitates reciprocity, but raised more questions than answers. Although the items that made up reciprocity were traditionally considered as being "social" in studies of other media [23], our study results suggested that reciprocal helping behavior in SNGs was strongly prompted by the design of the game. This may be because most SNGs are built on the premise of interactive play. Future studies should try to further distinguish these two concepts of design-driven reciprocity versus self-motivated reciprocity and their implications on social relationships.

Our findings suggest that fewer SNG players seek social outcomes from the games than those who don't. However, we only measured players' expectations. To answer the question of whether or not SNGs are truly social, we must look at whether playing SNGs actually generates some type of social outcome. It may be that engaging in reciprocity—even if it is facilitated by the design of the game—could generate positive emotions among players. Future studies should look at how different types of uses generate different actual outcomes, and whether or not they are affected by motivation.

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