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# Building Common Ground and Reciprocity through Social Network Games

**D. Yvette Wohn**

Michigan State University  
409 Communication Arts Bldg  
East Lansing, MI 48824 USA  
wohndong@msu.edu

**Yu-hao Lee**

Michigan State University  
409 Communication Arts Bldg  
East Lansing, MI 48824 USA  
leeyuhao@msu.edu

**Jieun Sung**

Michigan State University  
409 Communication Arts Bldg  
East Lansing, MI 48824 USA  
sungji1@msu.edu

**Torger Bjornrud**

Michigan State University  
409 Communication Arts Bldg  
East Lansing, MI 48824 USA  
bjornrud@msu.edu

**Abstract**

Social network games (SNG) are an extremely popular and rapidly growing application of social network sites (SNS). But are SNGs really social? A survey based on a social cognitive theory approach to uses and gratifications revealed that people are motivated to play the game to create common ground, reciprocate, cope, and pass time. People play SNGs to create common ground for future social interaction rather than seeking direct social interaction in the game. Customization was strongly correlated with social motivations; in particular, use of avatar customization was different from use of space customization. Reciprocity was facilitated more by the design of the game than social motives.

**Keywords**

Social network game, social network site, reciprocity, common ground, uses and gratifications, expected outcomes, gifting, space customization, asynchronous

**ACM Classification Keywords**

H5.3. Group and Organization Interfaces;  
Asynchronous interaction; Web-based interaction.

**General Terms**

Design, Human Factors, Theory

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### Introduction

Social network games (SNGs) are an extremely popular and rapidly growing feature of social network sites (SNSs). There are more than 271.6 million monthly active users in just the top ten Facebook games as of Dec. 2009[1]. While similar to existing game genres in various respects, SNGs are unique in that they were developed specifically for SNS; players must be existing acquaintances on the SNS in order to play together. Compared to most online social games and MMOs, SNGs are asynchronous.

SNGs are embedded in a service that has a prominent social purpose; in that case, are the drivers of SNGs the elements of the game or the people who are playing the game? Do SNGs warrant further study—or are they just another type of game?

We review the dimensions of how and why people use SNS and MMOs to select our variables. We then administer a survey asking players of SNGs about their use patterns and expected outcomes of playing the games. We then run an exploratory factor analysis on uses and expected outcomes, and look at the relationship between these two constructs. We conclude by applying our findings toward implication for theory and future studies.

### Uses and Expected Outcomes

Uses and gratifications (UG) has been widely used for the study of new media technologies [2, 3] to explain how people use media by examining their motivations. The theory has been used in various contexts such as the Internet, blogs, personal websites, social network sites and games [4, 5].

UG asks media users what they seek in the present or have sought in the past, a method that started out with identifying gratifications of television viewing [6]

One of the many constructs of Social Cognitive Theory (SCT) is the supposition that performance of behavior is determined by the expected outcomes of behavior. We therefore decided to tweak traditional UG and employed SCT, asking participants about what they expect to obtain in the future.

Although a SNG is a type of game, its nature of being embedded in an SNS platform gives it unique features. A qualitative content analysis showed that other than the game playing aspect, many SNG features align stronger with SNS features instead of MMOs.

	SNG	MMO	SNS
Synchronous	No>Yes	Yes	No>Yes
Communication pool size	Small	Large	Small to Large
Primary Ties	Friends	Random	Friends

**figure 1.** A condensed table comparing features of SNGs, MMOs, and SNSs

Researchers have found that motivations of game-play include fantasy, challenge, competition, social interaction, diversion, and arousal [7]; social interaction is also a main motivation of SNS usage [5]. Would social interaction emerge as a salient factor in SNGs? For this exploratory research, we began with the following research questions:

- RQ1: What are the expected outcomes of people who play SNG? (Why do they play?)
- RQ2: What are the use types of SNG? (How are they playing?)

- RQ3: What kind of relationships lie between expected outcomes and uses of SNGs?

### Method

We used a snowball sampling (chain referral) method based off private friend networks for our data collection because privacy settings in SNSs make it difficult to identify and access SNG players [8]. We chose to examine games on Facebook instead of other SNSs 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 for variance. Invitees were invited to participate in an online survey; at the end of the survey, they were asked to forward an invitation to the survey to five friends who played Facebook games. The survey was open from Nov. 16, 2009 to Dec. 5, 2009.

### Participants

A total of 253 people participated in our survey; about two-thirds (64%, N=162) said that they *currently* play games on Facebook. Our respondents were younger (N=248, mean=32, SD=9.8) and educated (75% had bachelor's degree or higher). Of particular note, 136 participants were White and 94 were Asian. About 60% were female, similar to demographics of casual game players as reported by Nielson in 2009 [9].

### Expected Outcomes

We gave participants a list of items that completed the statement: "I play Facebook games to..." and asked them to rate the items on a 5 point Likert-type scale ranging from "Strongly disagree" to "Strongly agree." A principle components analysis was used to arrive at four components with eigenvalues greater than 1: Common Ground (Cronbach alpha .859), Reciprocity

(.900), Coping (.760), and Passing Time (.855), which explained 75% of total variance.

<b>Common Ground</b> (m=2.19, SD=.886)	
Find others who respect my views	.845
Find people like me	.830
Improve my future prospects in life	.801
Express myself freely	.660
Find something to talk about	.600
<b>Reciprocity</b> (m=2.61, SD=1.083)	
Help other players	.914
Get support from other players	.828
Provide help to others	.822
<b>Coping</b> (m=3.13, SD=.902)	
Feel relaxed	.863
Cheer myself up	.783
Forget my problems	.648
<b>Passing Time</b> (m=3.95, SD=.970)	
Find a way to pass the time	.931
Relieve boredom	.908

**figure 2.** Expected outcomes of SNG with factor loadings

The items that accounted for Reciprocity and Common Ground were defined as social expectations in previous literature[10], but our results show that they are different. We interpreted the first expectation as Common Ground, a desire to build common topics or shared experience among existing acquaintances. This suggests that many people play SNG as a means to acquire or increase joint areas of interest with other players. On the other hand, Reciprocity as an expected outcome is one facilitated by the design of the game since SNGs are largely based on asynchronous reciprocal interaction. It is not about helping in the real world, but rather "helping" and "support" within the game. We later explain why this is so.

### Types of Use

Questions for uses of SNG were adapted from online game motivation scales[11]. We also developed original items to reflect unique SNG uses such as gifting, buying virtual items, and virtual space customization.

Participants used a 5 point Likert-type index, ranging from "Strongly disagree" to "Strongly agree." Using an oblique rotation (Promax, kappa=4) to reflect the inherent correlations between the components, a principle components analysis showed 6 components with eigenvalues greater than 1, accounting for 76.4% of total variance: Spending (Cronbach  $\alpha$  .826), Avatar Customization (.780), Publishing (.784), Space Customization (.920), Mechanics (.352), Advancement (.382), and Gifting (.579).

<b>Spending</b> (m=1.34, SD=.718)	
I spend real money to decorate my in-game space/environment	.957
I spend real money to decorate my avatar	.863
I spend real money to buy virtual cash	.780
<b>Avatar Customization</b> (m=2.80, SD=.946)	
I change how my avatar looks	.979
I try to look different from other players	.822
I spend a lot of time customizing my avatar's appearance	.699
<b>Publishing</b> (m=2.77, SD=1.016)	
I publish game achievements to my wall	.916
My Facebook wall has information about my game playing	.897
I post comments when my friends share their game achievements	.513
<b>Space Customization</b> (m=3.41, SD=1.107)	
I spend a lot of time decorating my in-game space/environment	.931
I try to make my in-game space/ environment unique	.897
<b>Mechanics</b> (m=3.49, SD=.775)	
I will get gifts if I give gifts	.883
I try to know as much about the game mechanics	.794

and rules as possible

### **Advancement** (m=2.80, SD=.801)

I only give and accept gifts to increase my level	.816
I try to increase my level as soon as possible	.690
I buy virtual items for the sake of increasing my level	.519

### **Gifting** (m=4.29, SD=.741)

I accept gifts from my in-game friends	.910
I give gifts to my in-game friends	.814

**figure 3.** Use patterns in social network games

### Relationships Between Expected Outcomes and Uses

A Pearson correlation coefficient was calculated for the relationship between expected outcome factors to types of use. While the overall correlation is weak, and some factors did not correlate at all, we did find some significant correlations.

Correlations indicate that players who seek Common Ground devote more energy to customizing their Avatar ( $r=.376$ ,  $p<.001$  and their in-game Space ( $r=.331$ ,  $p<.001$ ), are more inclined to spend real money ( $r=.239$ ,  $p<.05$ ), and are more likely to publish their game status on their Facebook wall ( $r=.461$ ,  $p<.001$ ).

Players with reciprocal expectations also customize their Space ( $r=.314$ ,  $p<.001$ ) and publish their game achievements ( $r=.268$ ,  $p<.001$ ), however they typically spend less or no real money, and they devote less energy to Avatar customization. But they do give gifts to other players with an expectation of receiving gifts in the future ( $r=.245$ ,  $p<.001$ ).

Players with the expectation of passing time are the only group correlated to advancement ( $r=.238$ ,  $p<.05$ ). This may be because they are playing solely to relieve

boredom and do not seek any other outcome from SNG other than killing time.

The fact that gifting did not correlate with Common Ground but with Reciprocity suggests that Reciprocity may be facilitated by the design of the game; players are gifting for their personal interest in the game instead of social reasons outside of the game.

Publishing one's game status is significantly correlated with Common Ground ( $r=.461$ ,  $p<.001$ ), Reciprocity ( $r=.268$ ,  $p<.001$ ), and Coping ( $r=.387$ ,  $p<.001$ ). This may imply that other than self-expression, publishing may act as an invitation for further friendship offline. Another possible explanation is that some games are designed so players can "share" their achievements with friends, thus the publishing is in itself a form of Reciprocity that stays within the game.

#### *Predicting Reciprocity*

A multiple linear regression for Reciprocity with eight demographic and uses variables (age, sex, time spent daily, time spent weekly, education level, Avatar customization, Space customization, advancement) formed a model ( $F(8, 60)= 5.281$ ,  $p<.001$ ) with an adjusted  $R^2$  of .335. Age and time spent playing the game (both daily and weekly) were positively significant ( $p<.05$ ), suggesting that older players and those who play more on a daily basis have a higher expectation for Reciprocity. Space customization was highly significant ( $p<.001$ ) but Avatar customization was not.

Not surprisingly, expectation of Reciprocity was found to be a significant predictor of giving and receiving in-game gifts in a simple linear regression ( $F(1,$

$118)=7.54$ ,  $p<.05$ ), but it explained only 5% of variance.

#### *Relationships between Uses*

We correlated different usage factors to see whether certain uses correlated with others. A weak but significantly positive correlation was found between advancement and spending ( $r=.222$ ,  $p<.05$ ), and advancement and mechanics ( $r=.202$ ,  $p<.05$ ) indicating that people who play to advance their level are more likely to be interested in the technical details of the game and are more likely to spend money.

Players were also willing to spend money on Space customization ( $r=.234$ ,  $p<.05$ ). Those interested in Space customization were also interested in the mechanics of the game ( $r=.244$ ,  $p<.05$ ) suggesting that customization of Space requires more calculation than Avatar customization.

Publishing about one's game activity was significantly correlated to Avatar customization ( $r=.254$ ,  $p<.05$ ) and Space customization ( $r=.374$ ,  $p<.001$ ). This suggests that people are publishing information about their customized Avatar and Space to others, indicating some level of self-representation. Of particular note, a one-way ANOVA found that Asians were customizing their Avatar more than Whites ( $F(2,83)=1.531$ ,  $p<.001$ ).

Gifting is correlated to Space ( $r=.249$ ,  $p<.05$ ) and mechanics ( $r=.311$ ,  $p<.001$ ), a factor measuring calculations involved in playing. This result suggests that gifting in SNG is associated with calculation as an outcome of a design-generated Reciprocity instead of from the goodness of one's heart.

### Limitations

This study only measured the perceptions of SNG players and lacks behavioral data. The survey asked participants to respond in regard to their *favorite* Facebook game, games that did not have features such as avatars generated missing data. The snowball sample was not representative of a general population; we cannot generalize about SNG as a whole. The low mean of people who spent real money generated weakened any explanations on spending behavior. Lack of relevant questions also created less reliable scales for certain uses and expected outcomes. Importantly, correlations and regression models do not explain causality, only a high probability of relatedness.

### Implications

Our study indicates that people play SNGs to create a joint area of interest for future social interaction rather than seeking direct social interaction in the game, suggesting that the social factors in SNGs are slightly different than those of videogames in general. This makes SNGs an interesting genre in terms of perceiving it as a communication tool more so than a mode of entertainment. We need to rethink what being “social” is because the design of the game strongly reciprocal behavior; future studies should try to distinguish whether or not the “forced” reciprocity is considered a real social interaction and explore whether this design could be used to create an authentic prosocial outcome.

Researchers and developers should also consider the fact that players perceive Avatar and Space customization as different elements. Previous research categorized customization as an immersion factor, but we found that it relates to social interactions, self-representation, and game mechanics; future research

should examine how, why, and whether cultural norms play an effect on these elements.

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