
Social Network Games: Exploring Audience Traits

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Abstract

The audience of social network games is an as of yet unexplored group. Given the growing number of users and people spending time playing social network games, a better understanding of the audience, and how they are using social network games is important to crafting better social networking tools in the future. Respondents of this survey reported personality factors, demographics, habit strength, self-efficacy of social network games, and types of use by different features.

Author Keywords

Social network games, audience, social network, traits, personality, habit strength, self-efficacy

ACM Classification Keywords

K.8.0 Games; Web-based interaction.

General Terms

Human Factors

Introduction

Social network games (SNGs) are an extremely popular and rapidly growing feature of social network sites (SNSs). While similar to existing games genres in various respects, SNGs are unique in that they were developed specifically for social network sites.

There has been research implicating different personality traits as moderators of classical media use [5] and mobile games usage, primarily neuroticism [10]. This paper further explores those factors as well as self-efficacy and habit strength on media use. This work is primarily concerned with the following research questions:

- 1) To what degree are personality traits correlated with SNG usage and habit strength of usage?
- 2) What traits (demographic) and properties of users affect SNG usage?
- 3) What, if any, traits affect self-efficacy of using SNGs.

Method

We used a snowball sampling (chain referral) method for our data collection as it is ideal to contact hard to access SNG players, based off private friend networks [7]. We chose to examine games on Facebook instead of other SNSs due to the high number of Facebook users, and available data surrounding the games market within Facebook. Invitations were sent out over e-mail and Facebook message. Subjects were invited to participate in an online questionnaire; at the end of our questionnaire, they were asked to forward an invitation to the survey to five friends who played Facebook games. We did not purposely target friends who we knew played Facebook games in attempt to reach a more diverse network.

All were presented demographic questions. We asked them to pick their favorite genre based on what game

they currently play the most, and respond to all questions just based on that genre:

- Farm sims (Farmville, Farm town, etc)
- Card games (Poker, etc.)
- Pet sims (Pet Society, my fishbowl, etc.),
- Brain games (Brainbuddies, etc.)
- Word games (Scrabulous, Word challenge, etc.)
- RPG (Mafia Wars, Vampire Wars, etc)
- Town sims (Yoville, etc.), etc.)
- Restaurant sims (Restaurant City, café world)
- Arcade games (Tetris, Bejeweled Blitz, etc.)

Since different genres have different features, we asked users if their favorite genre (based on the question above) contained a certain feature. If they responded yes, we asked them more specific questions about that feature.

Big Five personality traits were measured using the Ten Item Personality Inventory [6], with two scale items for each factor. Factors measured included extraversion, openness, neuroticism, agreeableness, and conscientiousness.

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.

	Frequency	Percent	Cumulative
Farm Sims	56	34.6	34.6
Pet Sims	20	12.3	46.9
Arcade	26	16.0	63.0
Restaurant sims	15	9.3	72.2
Town sims	4	2.5	74.7
RPG	19	11.7	86.4
Card Games	6	3.7	90.1
Brain Games	7	4.3	94.4
Word Games	9	5.6	100.0
Total	162	100.0	

Figure 1. Respondents' most-played genre of Facebook game.

Self-efficacy

Self-efficacy and habit strength were measured with three-item scales developed by LaRose and Eastin [8] that were rephrased to the context of SNG. It was hypothesized that self-efficacy would be a predictor for SNG daily playing time. Regression analysis was used to analyze the relationship between the variables. The result was significant, $F(1, 159) = 4.27, p < .05$, adjusted $R^2 = .02$. The analysis showed that self-efficacy was a significant predictor ($\beta = -.16, t = -2.07, p < .05$) of daily playing time. Also, the correlation between self-efficacy and daily playing time was significant but negatively, $r(159) = -.16, p < .05$.

The correlation between self-efficacy and habit strength was significant, but also negative ($r(159) = -.17, p < .05$). Analyses showed that an individual who has lower self-efficacy played spent more time playing than an individual who has higher self-efficacy; also, an individual who has low self-efficacy played more out of habit.

It has been generally accepted that self-efficacy is positively related to motivation, usage, and performance [1][2][8][11]. However, in particular contexts, self-efficacy can be negatively related to usage at the within-person level of analysis [12][15]. According to Vancouver and his colleagues, if goal level is static, an individual who has high self-efficacy could be overconfident with the task, leading to lowering the efforts and investing time. Also, task settings which are relatively simple and repetitive, can contribute negative self-efficacy to higher usage. Social network games are designed to be easy to play with other players. For example, Farmville, the most popular game in Facebook, doesn't need any strategy or complicated skills to earn the points. The game mechanics are repetitive and easy to master. Bejeweled also has simple game mechanics such as making same colored jewels together. Hence, relatively simple rules and repetitive tasks make SNG easy to play, thus players who don't know how to play have to play more than those who find them easy.

Habit Strength

It was hypothesized that habit strength would be a predictor for social network game weekly playing time. Regression analysis was used to analyze the relationships between variables. The result was significant, $F(1, 159) = 183.84, p < .001$, adjusted R^2

= .53. The analysis showed that the habit strength was a significant predictor ($\beta = 1.13$, $t = 13.56$, $p < .001$) of weekly playing time, although explaining little variance.

The correlation and multiple regression analysis were used to analyze the relationships between dimensions of expected outcome and habit strength. We had four expected outcomes based on an exploratory factor analysis: common ground, reciprocity, coping, and passing time. The correlations among expected outcomes and habit strength were significant; common ground, $r(156) = .28$, $p < .001$; reciprocity, $r(158) = .25$, $p < .05$; coping, $r(160) = .43$, $p < .001$; pass time, $r(160) = .23$, $p < .05$. The multiple regression result was also significant, $F(4, 151) = 9.06$, $p < .05$, adjusted $R^2 = .17$. The analysis showed that the coping outcome was a significant predictor ($\beta = .30$, $t = 3.40$, $p < .05$) of habit strength, while common ground ($\beta = .11$, $t = 1.10$, $p > .05$), reciprocity ($\beta = .07$, $t = .77$, $p > .05$), and pass time ($\beta = .15$, $t = 1.93$, $p > .05$) were not. In sum, the higher expected outcomes players have, the more players play SNG regularly. Also, among expected outcome dimensions, "coping" was highly correlated with habit strength and a significant predictor for habit strength. It is consistent with the general game research that the games offer escape and distraction; players quickly learn that they feel better when playing; and so a kind of reinforcement loop develops, in turn, lead to be habitual behavior [16][4][13].

Gender

To find if there were any gender difference on SNG daily playing time and their motivation to play, an independent sample t-test was used. The result showed

a significant difference between male and female on daily use, $t(248) = -3.40$, $p < .05$. Females ($M=0.63$, $SD=0.66$) more played social network game daily than males ($M=0.37$, $SD=0.53$). According to Mayer (2003), television research revealed that females are interested in television programs that have character interaction and meaningful dialogue; on the other hand, they are less attracted by a program that is action-oriented. Most single player computer games adopt the latter pattern and have limited social interaction. However, one of the exceptions is "The Sims" which gives amount of opportunities for social interaction. It is one of few games that are popular among females, because most digital games don't provide social interaction in single player mode [3].

Social network games have various genres such as simulation, arcade, word, brain game, etc. However, they have one common important function: players are encouraged to invite their friends to play, compete, help, or even level up. There was a significant gender difference on players' use patterns of "Gifting," $t(117) = -2.43$, $p < .05$. Females ($M=4.41$, $SD=0.62$) accept and give gift more than males ($M=4.08$, $SD=0.89$). The reason why players give and accept gifts can be to level up, customize their in-game space, or show intimacy. Regardless of specific reason, "Gifting" is a form of interaction among players. Hence, the one of the reason why social network games are more attracted to females can be related with social interaction. Even though SNGs are technically single player, asynchronous interaction may create the impression of being in a multiplayer environment.

Personality Traits

Big five personality traits were not positively correlated

to any measure of overall SNG use or strength of use. Though, interestingly, individuals who reported higher levels of neuroticism reported using SNGs fewer times per week ($r(250) = -.152, p < .01$) in addition to reporting lower habit strength of playing SNGs ($r(162) = -.215, p < .01$). Why those scoring lower in neuroticism having higher habit strength and playing more frequently is unclear, and indicates that there may be some self-selection mechanism whereby neurotic individuals do not trust, are unable, or are not served by frequent SNG use.

Unsurprisingly, extraversion correlated to number of Facebook friends ($r(247) = .328, p < .01$). Extraversion also correlated to space customization uses ($r(96) = .328, p < .01$) as well as reciprocity uses ($r(160) = .152, p < .05$). Since extroversion is a measure of how outgoing someone is, reciprocal uses of SNS games are unsurprising. However, the fact that extroversion correlates with space customization bears the need for further inquiry, as the mechanism between the two is unclear.

Users reporting higher neuroticism were more likely to also report *lower* avatar customization ($r(86) = -.282, p < .01$).

Interestingly, those rating higher in openness were less likely to report using gifting features of SNGs ($r(159) = -.157, p < .05$). Given that a majority of SNGs allow gifting for free, the cost associated with gifting does not explain the prohibitive relationship between being open to new experiences and gifting. It is possible, that at this early stage in the lifecycle of SNGs, gifting is not a *new* experience and has become the norm, accounting

for those more open to new experiences being less interested in that type of use.

Agreeableness was correlated to having higher self-efficacy with using SNGs ($r(161) = .167, p < .05$). With agreeableness being a measure primarily interested with interpersonal relationships, this finding suggests confirmation that there may be some social factors at play in how one feels they are able to play SNGs. The interplay between this social predisposition and individual assessment warrants further study.

Limitations

The private closed network nature of Facebook lent itself well to using snowball sampling to access a sufficiently large population of respondents. However, the relationship between traits and different types of uses is significant enough to warrant further study. Sampling biases of the researchers' friend networks affect the demographics of respondents but relationship of those biases to results found is unclear. As with any survey research, these measurements are of user impressions of themselves and use, and may vary from actual use.

Implications

There is evidence that suggests personality factors and self-efficacy may be moderating different types of uses and features of SNGs in various ways. Designers of these and future systems may benefit from the understanding of how these factors affect perceptions as well as use, so they may best serve their target audience.

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