Are there cultural differences in how we play? Examining cultural effects on playing social network games

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ABSTRACT

Digital games embedded in social network sites are one of the driving forces behind the expansion of digital gamer populations. Previous studies have observed different usage patterns between users in different ethnic groups and countries, suggesting that culture orientations may affect how people play and interact through social network games. This study examined how people's culture orientations affect usage patterns with measures of vertical and horizontal individualism–collectivism. The findings indicate that culture does not directly affect usage patterns. Instead, the effects on usage patterns are mediated by people's expected outcomes of playing social network games. Vertical culture orientations predicted social expected outcomes. Individualism predicted status expected outcomes, but in different directions on the dimensions of vertical or horizontalness. Vertical collectivism was the only culture orientation that indirectly predicted buying in-game products with real money. Implications for game designers and markers are discussed.

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1. Introduction

The stereotypical image of video gamers as adolescent boys playing in solidarity no longer reflects reality. Today, the term "gamers" represent a diverse population of people across different age, gender, and ethnicity groups. In the United States, 72% of American households play video games (Entertainment Software Association, 2011). The average age of American gamers is 37 years old, and 42% of gamers are women. In fact, there are more adult women gamers (37%) than young male gamers aged 17 or younger (13%).

A significant part of this growing gamer population can be attributed to the popularity of social network games (SNGs) such as *Farmville* or *Cityville*. Social network games are games embedded within social network sites such as *Facebook*. SNGs allow players to interact within the game and on their embedded social network sites (Wohn, Lampe, Vitak, Ellison, & Wash, 2011). Currently, 58% of Facebook users play SNGs (Lightspeed Research, 2010). In other words, there are more than 464 million SNG players worldwide on Facebook alone. The market for SNGs in the United States is estimated to surpass 1.14 billion US dollars in 2011 and in Asia, the market value for SNG is estimated to be around 1.63 billion US dollars (Superdata, 2011).

As the SNG market continues to grow, little is known about why and how SNG players are using these games, particularly how different culture orientations may affect player motivations (expected outcomes) and behaviors. From a theoretical perspective, examining why and how people are interacting via SNGs can provide clues to understanding how new forms of computer mediated communication (CMC) are shaping personal relationships. From a practical perspective, with the major changes in player populations, it is likely that the behavioral predictors identified by previous studies need to be reexamined. Without an understanding of what predicts different expected outcomes and usage patterns among SNG's diverse players, SNG designers and marketer are more likely to make mistakes by targeting certain populations while alienating others. The main goal of this study is to examine the effects of cultural orientations on SNG expected outcomes and usage patterns.

Studies of social network sites and more general online games found indications of cultural difference in usage behaviors (e.g., Griffiths, Davies, & Chappell, 2003; Steinkuehler, 2006; Williams, Yee, & Caplan, 2008). For example, Colwell and Kato (2003) compared between adolescents in Japan and UK and found that Japanese did not think playing games could substitute real friendships, and they preferred less violent games than adolescents in the UK. Another study compared Korean and American college students' use of social network sites and found that students in both countries used social network sites to seek friends, gain social support, entertainment, information, and convenience. However, the weight placed on the motives for using SNSs was significantly different. Korean students emphasized seeking social support from existing networks, while American students emphasized entertainment

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(Kim, Sohn, & Choi, 2011). In the context of SNGs, Wohn and Lee (2011) found distinct differences in expected outcomes and usage patterns between Asian and Caucasian respondents in their survey of Facebook game players. Asians were more likely to report social expected outcomes than Caucasians, and were more likely to engage in avatar customization activities than Caucasians, suggesting that cultural differences may affect expected outcomes and usage patterns of SNGs.

The main limitation across all of these studies is that none of these studies directly measured culture orientations among players. Instead, cultural orientations were inferred from the different countries or ethnic groups. Although these studies are useful in suggesting that there are cultural differences in a broad sense, they are difficult to generalize because it is uncertain whether the differences are caused by culture or other variables such as market structure. Moreover, many countries such as the United States are becoming increasingly heterogeneous in terms of ethnic cultures. Therefore comparisons of gamers between different countries creates a conceptual confound of ethnicity, nationality, and geography.

The goals of this study are to identify the expected outcomes and usage patterns of SNG players and examine how cultural orientations could shape those expected outcomes and usage patterns. Specifically, we use the four dimensions of collectivism and individualism proposed by Triandis and his colleagues (see Triandis & Gelfand, 1998; Triandis & Suh, 2002) to predict expected outcomes of SNG and usage patterns.

From an academic perspective, this study expands knowledge of how cultural differences contribute to different patterns of media use and human interactions, particularly around digital gaming and social network sites. This study also has practical implications for SNG design and advertisement related to SNGs. Indentifying how different cultural predictors affect different expected outcomes and usage patterns could provide insights into player psychology, which can be used to optimize game design and increase advertisement effects.

2. Social network games

Social network games (SNGs) refer to game applications that are embedded within social network sites such as *Facebook* or *MySpace*. The game industry generally refers to SNGs as "social games," but this term is misleading because any game can be social. Even single-player games can be shared and discussed among friends as a medium for social interaction. SNGs consist of many different genres with different game mechanics. Some examples of popular SNGs are simulation games such as *Farmville* and *Pet Society* that focus on customization and resource management; others include arcade games such as *Bejeweled Blitz* and card games like *Texas hold 'em* poker. Most SNGs are considered casual games, characterized by easy learning curves and requiring less continuous time and effort (Juul, 2009). But casual does not mean less time devotion: 68% of SNG players in the US play more than once per day, with 28% playing more than 6 h per week (Information Solution Group, 2010).

What distinguishes SNGs from other digital games is not their content, but that they are played with people within one's existing networks via social network sites. Because SNGs are embedded in social network sites, interactions between players occur both within the games and on the social network sites (Wohn et al., 2011). The majority of SNG players are playing with people in their existing friendship networks, such as friends, family, and co-workers. This distinguishes SNGs from massively multiplayer online games (MMOs) which are mostly played with online friends outside of the players' offline networks (Taylor, 2006; Yee, 2006a).

Playing within existing networks results in less anonymity between players, therefore involves more considerations about identity management. Traditional CMC studies have found that people tend to disclose more personal information and perceive the interactions more positively when communicating anonymously (Walther, 1996). In contrast, being identifiable restricts the freedom of self presentation and reduces satisfaction with CMC (Tanis & Postmes, 2007). These findings suggest that SNG players may have the desire for self presentation through SNG, but only to the degree that it does not diverge too far from their self image among their off-line networks. Being embedded in social network sites makes the dynamics of player interaction around SNGs unique from other online games.

2.1. SNG motivations and uses

Few studies have examined why and how people use SNGs. One of the most common approaches is the uses and gratification approach. Uses and gratification has been applied extensively to studying different internet uses because internet use is considered more interactive than traditional media uses (Papacharissi, 2002; Ruggiero, 2000). Shin and Shin (2010) argued that because SNGs are hedonic systems for entertainment, perceived enjoyment and ease of use were both significant predictors of intention to use SNG, but not attitudes towards using SNG. Hou (2011) surveyed *Happy Farm* players in China and found that expected outcomes of diversion and social interactions predicted SNG frequency and engagement, while age and social interaction predicted duration of play.

Wohn and Lee (2011) administered a survey and identified four general outcome expectations for why people use SNGs: To build common ground with existing networks, to reciprocate favors, to cope with daily stress, and to pass time. They also identified seven general ways of how people used SNGs: avatar customization, space customization, advancement, mechanics, spending real money, gifting, and publishing. They found that people who seek common ground are more likely to customize their avatar and in-game space, and are more inclined to spend real money. People who have reciprocal expectations are more likely to customize their in-game space, publish their game status, and send gifts to other players. People who seek coping outcomes were more likely to publish their game status, and people who play to pass time are more likely to focus on advancement.

These studies provide us with a general idea of why and how people are playing SNGs. However, as noted by the authors themselves (Hou, 2011; Wohn & Lee, 2011), the studies have limited generalizability because they used snowball sampling and did not distinguish between different SNGs. Snowball sampling is a non-probability sampling method that is ideal for exploring hard-to-reach populations, but difficult to generalize because of its lack of a clear sampling frame. Another limitation with these two studies is that Hou (2011) only examined one SNG (*Happy Farm* in China), whereas Wohn and Lee (2011) did not distinguish between different genres of SNGs and examined popular Facebook games all together. Previous uses and gratification studies of online games have shown that people choose to play different games to meet different needs (e.g., Sherry & Lucas, 2003; Yee, 2006b). Since different SNGs have different design and mechanics, it is possible that people have different expected outcomes for playing different types of games. Therefore this study will focus on simulation-type games such as *Farmville* and *Café World* – the most popular genre of games on Facebook. Focusing on one genre can reduce the number of confounding factors that may influence expected outcomes and usage patterns. The first research question for this study is:

RQ1: What are the expected outcomes and usage patterns of simulation-type SNGs?

3. Individualism and collectivism

Since previous studies have suggested that there may be cultural differences in SNG motivation and usage patterns (e.g., Hou, 2011; Wohn & Lee, 2011), the second goal of this study is to examine how cultural traits of individualism and collectivism influence SNG motivation (expected outcomes) and usage patterns. Individualism and collectivism are constructs that summarize differences in how people perceive the relationship between individuals and the society (see Oyserman, Coon, & Kemmelmeier, 2002, for review). Individualism can be generally defined as cultural values that emphasize independence, individual goals, and self-reliance (Hofstede, 1980, 1991; Triandis, 1995). On the other hand, collectivism can be defined as cultural values that emphasize the collective, group goals, and interdependence (Hofstede, 1980; Triandis, 1995).

Traditionally, studies have conceptualized the two constructs as a dichotomy and focused on comparing difference on the national level (e.g., Hofstede, 1980, 2001; Yamaguchi, 1994). However, recent developments in cultural psychology indicate that the relation between individualism and collectivism may not be dichotomous, but instead orthogonal (e.g., Dutta-Bergman & Wells, 2002; Lee & Choi, 2006; Singelis & Brown, 1995). In other words, individualistic and collectivistic values co-exist but with different degrees, and the relative strength of their influence is determined by the interaction context. For example, a person may behave more individualistic in certain situations, but more collectivist in other situations.

Overall, individualism and collectivism differentiate along four dimensions: (1) personal or collective definition of the self, (2) personal goals versus group goals, (3) exchange or communal relationships, and (4) the effect of attitudes and norms on behavior (Triandis, 1995). Individualist cultures emphasize autonomy and personal goals over group goals. Interpersonal relations in individualist culture can be explained by rational exchange theory; people will only cooperate to the extent that the cooperation benefits the personal. Personal attitude influences behavior more than norms in individualist culture. On the other end, members of collectivist cultures perceive their self identity as part of the collective. Instead of seeking self-actualization, individuals in collective cultures are more likely to sacrifice personal goals for group goals. Relationships in collectivist cultures are communal, with more concerns for others' welfare (Batson, 1993). Group norms have more influence on personal behaviors than attitudes in collectivist cultures. At the national level, western countries have been assumed to be more individualistic in comparison to East Asian countries, which are assumed more collectivistic (e.g., Kim, Triandis, Kagitcisbasi, Choi, & Yoon, 1994; Tafarodi & Swann, 1996).

3.1. Horizontal and vertical individualism–collectivism

Individualism and collectivism can be further distinguished by their emphasis on equality (horizontal) or hierarchy (vertical) (Triandis, 1995; Triandis & Gelfand, 1998; Singelis, Triandis, Bhawuk, & Gelfand, 1995).

Under this framework, there are two types of collectivism: Horizontal collectivism (HC) is a cultural trait that perceives the self as a member of an in-group, people with higher HC have their self concepts tied to group membership, and treat all members of a group as equal. Equality among group members is the core of HC. Vertical collectivism (VC) on the other hand, emphasizes difference in status and hierarchy among members of in-groups. While one's self concept is also defined by in-group membership, unequal status among members is accepted.

There are also two types of individualism. Horizontal individualism (HI) is a cultural trait that emphasizes the autonomous self. Individuals are independent of one another, but the self is perceived to be the same as the self of others. Vertical individualism (VI), on the other hand, perceives inequality between independent individuals, and emphasis on competition is an important characteristic of this trait. The distinction between horizontal and vertical dimensions of individualism and collectivism has been validated by several studies (e.g., Singelis et al., 1995; Triandis & Gelfand, 1998). Including the vertical and horizontal dimensions has the advantage of improving accuracy when measuring the strength of cultural orientations (Chen, Meindl, & Hunt, 1997).

3.2. Personal-level individualism and collectivism

Although the constructs of individualism and collectivism originated from national-level comparison, more recent studies are interested in its manifestations on the personal level (Triandis, 1995)—in particular, how personal-level individualism and collectivism affect people's behaviors.

Personal-level analyses have constantly found that people within the same nation have different orientations towards individualism and collectivism. These personal-level individualism and collectivism predicts behaviors more than national level cultural orientations. Oyserman et al. (2002) conducted a meta-analysis of 170 empirical studies of individualism and collectivism. Their findings showed that European–Americans (Caucasians) in the US – a group assumed to be highly individualistic, were not more individualistic than African Americans (Blacks) or Latinos. Strikingly, European–Americans showed more collectivism than Asian–Americans. Other studies that examined individual cultural difference within nations supported this finding. For example, personal-level culture orientations were stronger predictors of individuals' likelihood of complying with taking a survey without pay rather than national level culture orientations (Cialdini, Wosinka, Barrett, Butner, & Gurnik-Durose, 1999). Using a national lifestyle database of United States consumer choices, Dutta-Bergman and Wells (2002) found that people in the United States had different levels of individualism and collectivism, and these personal culture orientations were significant predictors of people's consumption choices. These findings indicated that it may be problematic to conceptualize people within a country as sharing the same culture orientations.

More recent studies now conceptualize personal-level individualism and collectivism not as dichotomous, but as orthogonal traits that influence individuals (see Oyserman & Lee, 2008, for review). The idea is that while nations could be categorized as more individualistic or collectivist as a whole, personal-level individualism and collectivism are better perceived as orthogonal traits that influence behaviors (Triandis, 2001). Since people within a country may have varying degrees of culture orientations, it is important for studies to measure personal-level culture orientations directly instead of implying personal-level orientations from national level orientations. Our second research question examines how personal-level culture orientations influence people's expected outcomes and usage patterns of playing SNGs.

RQ2: How does personal-level individualism and collectivism influence people's expected outcomes and usage patterns of simulation-type SNGs?

Personal-level individualism and collectivism may affect people's expected outcomes of playing SNGs. At the same time, expected outcomes may affect people's usage patterns. Therefore, we hypothesize that expected outcomes will mediate the relationship between culture orientations and SNG usage patterns.

H1. Expected outcomes will mediate the relationship between personal-level individualism and collectivism and usage patterns.

4. Method

4.1. Participants and procedures

A survey was administered to 304 undergraduate participants recruited from telecommunication and advertising courses in a large Midwestern university. The participants were asked if they had played or currently play simulation games on *Facebook* such as *Farmville*, *Café World*, and *Pet Society*. Slightly less than half (40.78%, $n = 124$) of the participants reported playing simulation-type SNGs. Therefore only the 124 participants who played simulation-type SNGs were included in the analysis of this study. The average age of participants in this study was 22.47 years old ($SD = 2.56$) and 55.80% were male. In terms of ethnicity, 59.7% were White, 17.8% Asian, 14.7% Black, and 3.9% were multiracial.

The participants reported having an average of 554.73 *Facebook* Friends ($SD = 413.27$). The majority (75.8%) of participants reported playing less than 30 min a day; 16.4% reported playing between 30 min to an hour, and 7.8% reported between 1 and 2 h. In terms of frequency of play, 65.9% reported playing once a week or less, 21.7% played 2–3 days a week, 8.5% played four to 6 days a week, and 3.9% reported playing every day of the week.

4.2. Measures

Expected outcomes and usage patterns were measured using SNG items from Wohn, Lee, Sung, and Bjornrud (2010) that assessed motivations and uses of SNGs in general. Their scale was originally adapted from LaRose and Eastin's (2004) Internet use scales and Yee's (2006) MMO scales. This set of questions asks individuals to mark their level of agreement to a set of statements that begin with "I play simulation games on Facebook to..." on a 5-point Likert-type scale from "strongly disagree" to "strongly agree."

Individualism and collectivism were measured using a Likert-type scale adapted from Triandis and Gelfand's (1998) scale of horizontal and vertical individualism–collectivism. The scale consists of 20 items, with five items measuring each dimension. Reliability test using Cronbach's α showed that the measures were highly reliable: Vertical collectivism (e.g., I usually sacrifice my self-interest for the benefit of the group; $\alpha = .72$); Horizontal collectivism (e.g., I feel good when I cooperate in a group; $\alpha = .85$); Vertical individualism (e.g., Winning is everything to me; $\alpha = .78$); Horizontal individualism (e.g., I am a unique individual; $\alpha = .78$).

We also asked participants to report their number of Facebook friends, number of game neighbors (i.e., people in their network that play the same game), frequency of play, and demographics.

5. Expected outcomes and usage patterns of simulation-type SNGs

5.1. Expected outcomes

In order to examine why people play simulation-type SNGs, we ran the items adopted from Wohn et al. (2010) through a principal component analysis with Varimax rotation, and the items loaded into four factors that explained 77.6% of variance. Varimax assumes that the factors are orthogonal. The four expected outcomes were: *Social* (Cronbach's $\alpha = .92$), *Status* (e.g., $\alpha = .95$), *Relax* ($\alpha = .79$), and *Pass time* ($\alpha = .83$). We interpret these results as that simulation-type SNG players may be motivated to play these games expecting social interaction with other people (social), to present themselves and gain recognition (status seeking), for entertainment (relax), or simply to relieve boredom (pass time). The social and status factors were consistent with traditional uses and gratifications studies of the Internet (LaRose & Eastin, 2004). The exact wording of the items and factor loadings can be found in Appendix 1.

More participants in this study were motivated to relax ($M = 2.95$, $SD = 1.01$) and pass time ($M = 3.78$, $SD = 1.01$) than for social ($M = 1.89$, $SD = .87$) and status ($M = 1.84$. $SD = .89$). This may be caused by the casual characteristics of existing SNGs. Most existing SNGs are not designed for long social interactions, but to give players the freedom of playing for short periods of time. Interactions in SNG are often asynchronous, meaning that players do not need to be playing at the same time.

5.2. Usage patterns

In order to examine how people were using simulation-type SNGs, we ran another principal component analysis for the usage pattern items adopted from Wohn et al. (2010). The items loaded into five factors that explained 67.71% of variance. The five factors are: *Space customization* ($\alpha = .84$), *Avatar customization* ($\alpha = .82$, *Advancement* ($\alpha = .81$, *Publishing* ($\alpha = .84$), and *Spending* ($\alpha = .73$). A summary of the analysis with exact items and factor loadings is available in Appendix 2.

Space customization refers to using virtual items to customize one's in-game space, and also gifting virtual items to one's in-game neighbors. Avatar customization refers to customizing one's avatar with virtual items. Advancement refers to focusing on leveling up and studying the underlying game mechanic for leveling up. Publishing refers to posting one's game status on one's *Facebook* wall. Spending refers to spending real money to purchase in-game virtual items.

6. Cultural influence on SNG expected outcomes and usage patterns

6.1. Predicting expected outcomes

In order to examine the effects of individual-level individualism and collectivism on expected outcomes, we conducted hierarchical regression using the four results (*social, status, relax, pass time*) of our principle factor analysis as dependent variables. *Number of Facebook friends* and *number of neighbors* (*Facebook* friends that are connected within the game) are indicators of the player's network size, and were added as control variables in the first block. Then, we inserted the four constructs of vertical and horizontal individualism–collectivism into the second block. The results are shown in Table 1.

Table 1
Hierarchical regressions predicting expected outcomes with cultural orientation.

IVs/DVs	Social	Status	Relax	Pass time
Step1				
Neighbors	.31**	.34**	.27**	−.04
FB friends	−.08	−.09	.08	.13
Adj. R^2	.07	.09	.07	.01
Step2				
Neighbors	.31**	.28**	.24*	.04
FB friends	−.11	−.12	.06	.08
VC	.29**	.16	.12	−.14
HC	−.11	−.12	−.13	.30*
VI	.23*	.37**	.08	.02
HI	−.20	−.28*	.00	−.00
Adj. R^2	.18	.22	.05	.04
ΔR^2	.14	.16	.02	.08

Numbers show standardized beta coefficients.
* $p < .05$.
** $p < .01$.

The results showed that after controlling for *number of Facebook friends* and *number of SNG neighbors*, individual-level individualism–collectivism was a significant predictor on three of the four expected outcomes (*social, status, pass time*). The four constructs of vertical and horizontal individualism–collectivism explained an additional 8–16% of variance of expected outcomes.

Vertical collectivism was a significant predictor of *social* expected outcomes (β = .29, $p < .01$). It was not surprising since social expected outcomes included items such as "maintain a relationship I value," and "improve a relationship." Vertical collectivism is characterized by emphasizing group harmony and willing to sacrifice personal interests for group interests. Therefore people with higher vertical collectivism are more likely to play SNGs to seek social outcomes.

Horizontal collectivism was a significant predictor of *pass time* (β = .30, $p < .05$). Horizontal collectivism is characterized as emphasizing equal relationship with group members. It could be that players with higher HC tendencies play SNGs with their friends and engage in a chain of exchange. Since these games are asynchronous but require help from other players, it could be that these players consider it important to reciprocate actions. However, since this requires repetitive labor, these players may associate the game play as something they do when they are bored.

Vertical individualism was a significant predictor of *status* (β = .37, $p < .01$) and *social* (β = .23, $p < .05$) expected outcomes. VI is characterized as emphasizing personal independence and competition, thus it was expected that people who have high vertical individualism would seek status. Since VI also predicted *social* expected outcomes, the two results viewed together suggest that people with stronger VI might build relationships through competition, or that a social component is required to manifest the competitive trait.

Like VI, horizontal individualism also predicts status seeking, but negatively (β = −.28, $p < .05$). HI emphasizes equality—thus people with this tendency may consider status seeking as conflicting with equality.

We did not find any support from the data that any of the four cultural orientations are associated with people's expectations to relax through playing SNGs. It could be that desire for relaxation is a common player need and is less affected by cultural orientations.

6.2. Predicting usage patterns

In order to examine the effects of personal-level individualism and collectivism on different SNG usage patterns, we conducted hierarchical regression using the five usage patterns (*Space customization, advancement, avatar customization, publishing*, and *spending*) derived from our principle factor analysis as dependent variables. We controlled for the effects of *number of Facebook friends* and *number of neighbors* by inserting the two variables into the first block. Then, we inserted the four constructs of vertical and horizontal individualism–collectivism into the second block. The results are shown in Table 2.

The results showed that after controlling for *number of Facebook friends* and *number of SNG neighbors*, personal-level individualism–collectivism was a significant predictor of all five usage patterns. The four-constructs of vertical and horizontal individualism–collectivism explained an additional 7–14% of variance in the five different usage patterns.

Vertical collectivism was a significant predictor of advancement (β = .25. $p < .05$), avatar customizing (β = .26. $p < .05$), publishing (β = .29. $p < .01$), and spending real money (β = .31. $p < .01$). There could be two different explanations. The first is that people with high VC are more likely to conform to group norms. If their network of friend were advancing fast, they are more likely to focus on advancing levels in order to keep up with their friends.

Table 2
Hierarchical regression of cultural orientation predicting SNG usage patterns.

IVs/DVs	Space	Advancement	Avatar	Publish	Spend
Step1					
Neighbors	.24[*]	.09	.26[*]	.35[**]	.19
FB friends	.07	−.08	−.15	−.15	−.15
Adj. R²	.05	.01	.07	.11	.05
Step2					
Neighbors	.37[**]	.10	.29[**]	.35[**]	.17
FB friends	−.04	−.15	−.21	−.12	−.16
VC	.05	.25[*]	.26[*]	.29[**]	.31[**]
HC	.33[**]	−.03	−.01	−.11	−.17
VI	−.07	.24[*]	.00	.08	.09
HI	.15	−.12	.06	−.20	−.08
Adj. R²	.15	.12	.14	.19	.15
ΔR²	.14	.11	.07	.11	.10

Numbers shows standardized beta coefficients.
[*] $p < .05$.
[**] $p < .01$.

Likewise, they may be more likely to customize their avatar and publish to conform to the behavior of others. However, we did not measure the speed of advancement within the participants' network of friends in this study or questions related to conformity, which could be an interesting topic for further studies.

An alternative explanation is that people who have a higher VC are manifesting behaviors that they cannot engage in real life. Thus engaging in advancement and customization could be reflecting a desired behavior rather than who they really are. Thus avatar customizing and publishing are both ways of displaying uniqueness; something that the vertical collectivist would rarely do in non-game situations.

Horizontal collectivism was a significant predictor of customizing one's in-game space and gifting behaviors (β = .33. $p < .01$). HC emphasizes maintaining equal relations with group members. Therefore it could be that people with higher HC are more likely to engage in mutual gifting behavior. Space customization is the only usage pattern that requires exchange in many simulation SNGs.

Vertical individualism was a significant predictor of advancement (β = .24. $p < .05$). This finding was expected because individuals with high vertical individualism seek personal status through competition, therefore they are more likely to engage in leveling and advancement behaviors.

7. Indirect effects of culture on usage patterns

The previous analyses showed that personal-level cultural orientations can predict people's SNG expected outcomes and usage patterns. However, because people's expected outcomes could also influence how one uses SNGs, we hypothesized that expected outcomes may mediate the relationship between cultural orientations and usage patterns.

In order to test for mediation effects of expected outcomes between cultural orientation and usage patterns, we followed Baron and Kenny's (1986) method of using three separate regressions: (1) cultural orientation predicting expected outcomes, (2) cultural orientation predicting usage patterns, and (3) expected outcomes predicting usage patterns. If the expected outcomes were a mediator, the relationship in (1), (2) and (3) must all be significant.

Since we already tested (1) and (2) above, we conducted another hierarchical regression that tested (3) the effects of expected outcomes on usage patterns, along with the effect of culture orientations on usage patterns after controlling for expected outcomes (mediation analysis).

Table 3
Mediation analysis.

IVs/DVs	Space	Advancement	Avatar	Publish	Spending
Step1					
Neighbors	.27	.06	.21*	.32**	.17
FB friends	.05	−.07	−.11	−.14	−.16
Adj. R²	.06	.01	.02	.09	.02
Step2					
Neighbors	.20	−.06	.07	.13	.11
FB friends	.01	−.07	−.09	−.09	−.06
Social	.11	−.06	.44**	.33*	.42**
Status	−.04	.41*	−.06	.33**	.10
Relax	.14	.10	.03	−.01	−.36**
Pass time	.34*	−.03	.25*	−.02	−.07
Adj. R²	.22	.17	.25	.42	.22
ΔR²	.18	.16	.25	.34	.23
Step3					
Neighbors	.29**	.00	.11	.17	.14
FB friends	−.08	−.16	−.14	−.06	−.07
Social	.06	−.13	.38*	.30*	.36*
Status	.03	.38*	−.01	.32*	.09
Relax	.20	.14	.07	.01	−.35**
Pass time	.28**	−.03	.26*	−.01	−.04
VC	.13	.19	.21*	.15	.18
HC	.21	.02	−.01	.02	−.04
VI	−.15	.14	−.13	−.07	.04
HI	.25*	−.03	.16	−.10	−.07
Adj. R²	.32	.23	.27	.42	.21
ΔR²	.13	.06	.06	.03	.03

Numbers shows standardized beta coefficients.
* $p < .05$.
** $p < .01$.

Number of Facebook friends and *number of SNG neighbors* were placed in the first block to control for the effects of network size. The four expected outcomes were placed in the second block. And the four constructs of vertical and horizontal individualism–collectivism were placed in the third block with the five usage patterns as dependent variables. The results are shown in Table 3.
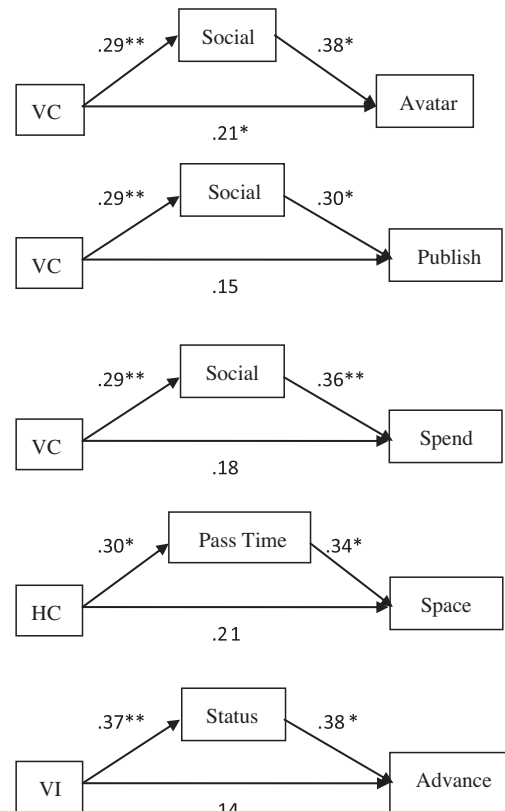
Vertical collectivism was the only construct that has a direct effect on any usage patterns (*advancement*, $\beta = .25$, $p < .05$). *Social* expected outcomes mediated the relationship between VI and *avatar* customizing ($\beta = .21$, $p < .05$), *publishing* ($\beta = .15$, *n.s.*), and *spending real money* ($\beta = .18$, *n.s.*).

The relation between horizontal collectivism and *space customization* ($\beta = .21$, *n.s.*) was mediated by *pass time* expected outcomes. And the relationship between vertical individualism and *advancement* ($\beta = .14$, *n.s.*) was mediated by *status* expected outcomes. The five mediation effects are displayed in Fig. 1.

While previous studies implied that cultural orientations may cause different SNG usage patterns (e.g., Wohn et al., 2010), our finding showed that most of the cultural effects on SNG usage patterns were mediated by expected outcomes. In other words, the different usage patterns observed were not direct results of cultural differences. Different cultural orientations affect people's expected outcomes of using SNGs, which in turn affects different usage patterns.

8. Discussion and implications

Culture plays a small but significant role in explaining why people play social network games and how they play. From a theoretical perspective, this study showed that culture orientations does not directly affect SNG usage patterns, but affects people's expected outcomes of playing SNGs, which in turn affects different usage patterns. This finding suggest that it may be misleading to infer culture difference based on observations of different usage patterns between individualist and collectivist populations.

Fig. 1. Mediation of expected outcome between culture orientation and usage patterns. Numbers shows standardized beta coefficients. $^*p < .05$, $^{**}p < .01$.

This study is consistent with prior studies that showed a small effect of culture on behaviors (e.g., Oyserman et al., 2002). Although the effect sizes are small, it is still a significant predictor of behavior. These cultural orientations affect people's different expectations of adopting SNGs for personal goals.

Also, the findings from this study have practical implications, especially for game designers and advertisers. Given that millions of people are playing SNGs, these small effects of culture could actually make a large difference in terms of attracting a certain user base and generating revenue.

Our results also support including the vertical and horizontal dimensions to measurements of individualism and collectivism. For example, vertical collectivism positively predicted *status* expected outcomes while horizontal collectivism was a negative predictor. Such finding suggests that conceptualizing cultural orientation in a dichotomous individual-collectivism manner may produce null or misleading findings.

Vertical collectivism predicted the most usage patterns and it was also the only cultural orientation that indirectly predicted spending real money to buy virtual goods. VC predicted people's motivation to seek *social* expected outcome, which predicted spending behaviors. Thus, developers of simulation SNGs could benefit from distributing their games in markets with large vertical collectivist populations and highlighting the social aspect of their games. This result may also imply why the free-to-play business model of games are much larger in east Asian countries such as Korea, China, and Taiwan (Park & Lee, 2011) than other parts of the world. These East Asian countries have been categorized as more vertical collectivism on the national level.

There are several limitations to the study. First, our participants were college students in a Midwestern college, thus the population was not representative of national samples in terms of ethnic or cultural diversity. As a result, we were unable to do any meaningful

analyses regarding ethnic differences due to our sample size, but using ethnicity and nationality as additional categorical variables may produce a clearer understanding of how cultural orientation is related to game play. The results from this college sample may not be generalized to other age groups, such as older women playing in home or office environments, or children. Also, we only looked at relationships between variables as our data was cross-sectional, thus the associations we drew between variables should not be interpreted as being causal.

We suggest that future studies of culture effects include actual measurements of culture orientations rather than inferring cultural orientations from ethnicity or nationality. Not only can including the measurement help examine the amount of culture influence on behavior, the distinct dimensions of vertical and horizontal individualism–collectivism also allows more detailed understanding of how culture orientations affect people's cognition and behaviors. Future researchers could examine how individual personality interacts with or attenuates cultural orientations to affect behavior.

Appendix A

Factor loadings of expected outcome items.

Items preceded by "I play simulation games on Facebook to…"	Factors			
	Social $\alpha = .92$	Status $\alpha = .95$	Relax $\alpha = .79$	Pass Time $\alpha = .83$
Maintain a relationship I value	.840			
Improve a relationship	.794			
Find something to talk about	.783			
Forget my problems	.741			
Feel less lonely	.709			
Help other players	.648			
Get support from other players	.618			
Impress other people in the game		.822		
Be well-known for the game		.817		
Find people like me		.803		
Find others who respect my views		.788		
Tell others about myself		.778		
To feel important		.722		
Feel entertained			.779	
Feel relaxed			.762	
Cheer myself up			.741	
Relieve boredom				.934
Find a way to pass the time				.921

Appendix B

Factor loadings of SNG usage pattern items.

	Factors				
	Space	Advance	Avatar	Publish	Spend
I exchange gifts with my in-game friends	.914				

Appendix B (continued)

	Factors				
	Space	Advance	Avatar	Publish	Spend
I often give gifts to my in-game friends	.859				
I often accept gifts from my in-game friends:	.759				
I pay attention to where I'm putting items into my virtual space	.556				
I am conscious of how I design my virtual space	.551				
I try to know as much about the game mechanics and rules as possible		.870			
I study the numbers and percentages underlying the game mechanics:		.826			
I calculate numbers when I am playing the game		.801			
I try to figure out how the game works		.684			
Advancing in the game is important to me:		.509			
I frequently change how my avatar looks:			.842		
I never change my avatar's appearance [reverse]			.820		
I spend a lot of time customizing my avatar's appearance			.776		
I put efforts into make my avatar different from the default			.691		
I often publish				.785	

Appendix B (continued)

	Factors				
	Space	Advance	Avatar	Publish	Spend
my game status to my Facebook wall					
I often share my game achievements with others on my Facebook wall				.768	
My Facebook wall has a lot of information about my game-playing				.719	
I spend real money to buy virtual items					.835
I spend real cash to buy virtual money					.798
I never buy virtual items with real money [reverse]					.755

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