The Effect of Anonymity on the Usage of Avatar: Comparison of Internet Relay Chat and Instant Messenger

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ABSTRACT
The purpose of this study is to examine the difference between chatting avatars and messenger avatars. Users of IRC are not generally known by their ‘real’ names, while users of IM are usually known by their ‘real’ names: i.e., IRC users are anonymous to each other, whereas those of IM are not. Avatars represent users' identity and desire of self-disclosure. Therefore, we assume that the anonymity of user identity influences on the usage of the avatars in terms of self-identify and self-disclosure. Our hypotheses were verified that users have different sense of self-identify and self-disclosure between these two different types of avatars. The moderation effect of gender was significant for both IRC and IM. Meanwhile, age had the mixed moderation effect on IRC and IM.

Keywords
Avatar, Instant messenger, Internet Relay chat, Anonymity, Cyberspace, Computer-mediated-communication

INTRODUCTION
The computer-mediated-communication (CMC) means all the processes of using computer and telecommunication networks to compose, store, and deliver communication without physical contact. Internet Relay Chat (IRC) has been a representative CMC on Internet which provides a synchronous interactive communication. It more tends to be used between people who have never been, most likely will never be (Reid, 1991; Suler, 1999). Recently, P2P (peer-to-peer)-based Instant Messenger (IM) has become a popular CMC method. It is called as a Social software because it more tends to be used between people in close relationship (Robert, 2003; Davies, 2003).

Internet users can conceal their information such as gender, age, job, class, and race if they want. (Sampaio, and Aragon, 1998; Suler, 2001) Anonymity is forged by invisibility and regarded as the primary feature in CMC-based interactions. (Danet, 1998; Reid, 1994) It does not necessarily depend on technology, but on user’s will and choice.

On text-based communications, users can express their identity with their ID, nick name, and profile (Reid, 1994; Bechar, 1995). Recently, avatar, manipulative graphic characters on Internet, has appeared as the main instrument to express user’s identity. The development of graphic interface on Internet has enticed online users to possess graphic avatar as an agent identity on virtual community (Lanier, 1996). Avatars have a special meaning as a symbol of identity in the virtual community which is not necessarily identical to that of real word (Suler, 1999).

After numerous Internet companies went bankrupt following the explosion of Internet bubble in Korea, more services come to be charged for the sake of profitability. The representative successful example is the service of avatar. Avatar was first introduced to Korean in November 2000 by Internet community site "www.sayclub.com". The avatar market has steadily grown for the last three years. In 2001, avatar was selected as one of the ten-hit products in Korea (www.seri.org).

Until 2002, avatar was used as user’s symbol of identity in online communications such as IRC, online game, and portal community between unknown people. In 2003, MSN instant messenger, popular communication tool between friends, coworkers, and family, started the messenger avatar service in Korea. In one month after the service started, the number of registers to MSN messenger avatar exceeded 600,000.

Because avatar on Internet is quite a unique phenomenon in Korea, most of empirical studies in our reference were conducted by Korean researchers (Kim, 2001; Choi, 2002; Hu, 2002). From the studies, we found that the most important reasons why people use avatars in communication with others on virtual community are that people want to build their own identities and disclose themselves. Users have desire to build their own new identity in virtual community as a replacement of their real body and to disclose them to others via a computer as much as they want. This fascination makes Internet users, who are accustomed to free-of-charge, pay for avatars.
Previous researches about virtual community focused on the effect of anonymity on people’s behavior and relationship. Recently, more attention has been paid to how the offline’s social relationship proceeds over cyber-space. Users of IRC are not generally known by their ‘real’ names (Reid, 1991; Suler, 1999; Danet, 1996), whereas users of IM are usually known by their ‘real’ names based on offline’s relationship (Robert, 2003; Davies, 2003). While the avatar services are available in many sites as profit source, there is no research whether the current practice of avatar services fit to user’s different characteristics and purposes at each site. Identifying how the usage of avatar is different between IRC and IM can help design the appropriately featured avatar services at each service, which in turn can enhance the customer’s satisfaction and loyalty, and increase company’s profit.

THEORETICAL BACKGROUNDS AND LITERATURE REVIEW

Self-Identity on Cyberspace

According to Erikson (1959), self-identity (or ego) is beyond the simple recognition about the facts of oneself that is stable, constant and consecutive. The self-identity is the unique characteristics of oneself that are formed by social interactions, developed continuously by time and place, and are distinguished from other people’s (Dignan, 1965; Giddens, 1991).

In reality, one’s appearance is somewhat fixed. Self-identity can be defined according to diverse social roles, but each definition cannot be separate nor unrelated each other because the self-identity is formed by psychological experience beyond one’s social role and position. We cannot change our appearance abruptly in reality. (Reid, 1991) The self-identity in reality is pretty limited and constrained.

Anonymity on cyberspace, caused by invisibility, helps define the identity in quite different meanings from that of the real life. It’s quite easy to find out a reserved person in real life turn to be a very active person in cyberspace. The abrupt change of identity in cyber space results from social anonymity in cyberspace (Turkle, 1997; Suler, 1999). Krueger (1991) states that people can reconstruct a new and perfect physical shape in cyberspace. Invisibility in cyberspace frees users from their own body, and facilitates developing a new identity because body is the fundamental condition and environment for every human-being (Giddens, 1991).

Thus, is the online identity is totally unrelated to the actual identity of real world? Jordan(1999) indicates that the process of building online identity is fluid, so the online identity doesn’t need to be similar to that of offline. However, he contends that online identity is flexibly connected to the offline identity. Cho(2001) notes that people during text-based communication tend to present themselves as they are, or only a part of themselves, or imaginative identities, or can remain as a completely anonymous entity. Baym(1995) insists that users in CMC recognize that anonymity can make alternative self and an opportunity to participate in a new form of interaction. According to him, users can be anyone on cyberspace and the new identity could be similar to or different from their real selves.

From the discussion so far, anonymity itself doesn’t make a separate identity unlike the real life. The figures and appearances could be different from the real, but the self-identity on cyberspace could be an ideal type or an unconscious self-image. Building a cyber-identity can be regarded as a process of being mature and shaping a real self-identity. Thus, even though the appearance of self-identity in cyberspace is very different from that of real life, cyber-identity is not totally separate from the real, and represents a facet of numerous real identities.

Goffman(1959) found that a person develops multiple identities in various ways. Diversity of multiple identities is more explicit on cyberspace because people on IRC or MUD can manipulate their identities due to anonymity (Turkle, 1997). Identities in cyberspace may look complex because they could represent different social roles and positions, but must contain some consistency among themselves. The flexible posture can accept diverse self-identities. The multiple identities on cyberspace do not necessarily mean the dissociation of identities, but the extension of self-identities. More opportunities exist unexplored if we can understand the diverse linkages between multiple identities on cyberspace and consistent real identity.

Self-Disclosure on Cyberspace

Self-disclosure refers to the process of telling another person about oneself, honestly sharing thoughts and feelings that may be very personal and private (Jourard & Lasakow, 1958). Jourard (1974) emphasized the importance of self-disclosure for the intimate relationship with another person. Self-disclosure is sharing how you are reacting to the other person. It is telling the truth, not just presenting your good side or your social mask. Shapiro, Krause & Traux(1969) stated, “Self-disclosure delivers own information to others with verbal and non-verbal behaviors.”

Self-disclosure can have diverse patterns according to different situational contexts. For example, the details of self-disclosure can be different according to the types of counterparts in interaction. Such situational contexts include personal
characteristics, relationships, and topics (Jourard & Lasakow, 1958; Pederson & Hisbee, 1989; Gilbert, 1976). Therefore, we can easily assume that self-disclosure on cyberspace has diverse patterns as well.

In cyberspace, self-disclosure is not only the basic activity to build oneself but also an important occasion that triggers interaction with other people. The degree of other people's recognition of someone depends on the degree of his/her self-disclosure. In the personal relationship on anonymous cyberspace, self-disclosure is the more important facilitator than adjacent location and physical attractiveness which matter for the face-to-face interaction (Merkle & Richardson, 2000).

In cyberspace, the desire of self-disclosure is stronger than remaining in anonymity because people are more likely to enjoy freedom of expression unshackled from various restrictions of reality. In cyberspace, the recognition of others deteriorates due to the lack of social context cues. People on cyberspace come to have little sense about the existence of counterparts (Short, Williams & Christie, 1976). That's because people in cyberspace feel less burdens due to the lack of social reality which in turn leads to free self-disclosure.

Self-disclosure is also very free for the communication with close people in cyberspace. People tend to be more honest in email when they talk to girl- or boy-friend about the very private things than in the face-to-face or telephone. Sproull & Kiesler(1986,1993) conclude that the small-sized CMC groups are more honest and free conversation than the groups in the face-to-face relationship.

According to Goffman(1959), people use certain ways of self-disclosure that fit to the contexts. In other words, they choose the appropriate ways in revealing themselves, considering whether they need to make others like them, whether they want to show off themselves, whether they want to appeal to sympathy, whether they want to receive a sense of fear or respect. Self-disclosure has diverse effects according to the properties of contexts methods, and relationship. Overall, self-disclosure is not uniform in terms of patterns and degrees.

RESEARCH MODEL AND HYPOTHESIS

Research Model

The types of avatar usage (IRC avatar vs. IM avatar) by the degree of anonymity are set as the independent variable, and self-disclosure and self-identity in avatar are set as the dependent variables. Gender and Age that much influence the online behaviors are included as the moderate variables. The research model in (Figure 1) demonstrates our curiosity whether and how the degree of anonymity influences on the usage of avatars in terms of self-identify and self-disclosure.

![Figure 1. Research Model](image-url)
Research Hypotheses

Giddens(1991) indicated that the physical body is associated with self-identity. He also described that the wardrobes are not separate from the social identity, and remain as the symbols of gender, class, and position.

avatars present all the features of self-identity on cyberspace. People make avatars that resemble themselves, or those of extravaganza, or the ones so unlike. They constantly transform their avatars, and make another avatar that has completely different appearance. (Suler, 1999)

Previous studies have approached self-identity in cyberspace with the focus on anonymity in cyberspace. However, such approach is not effective for avatar service of IM because it generally uses user’s real name in cyberspace. In IM, people use avatars to show their own identity to close people in real world. We assume that self-identity through avatar in IM differs from that of avatar in IRC.

Jordan(1999) indicates that resources for building self-identity must be different to each place in cyberspace. For example, the avatars in Email are different from those in MUD. Even though both IRC and IM are CMC tools, the avatars of IM can be more related with the identity of real world than with the imaginary identities that can be more expressed by anonymity-based avatars (IRC avatars). IM users would not use avatars dissimilar from the real identity because IM is a general place to keep communication with people known by real name. On the contrary, avatars of IRC users would be used with any identities without restriction, which may not be the same with the real identity, because IRC more tends to be the virtual community for communication with anyone who can access to the network of computer systems. Thus, our first hypothesis is as follows.

H1-1 There will be a difference in self-identity between usage of IRC avatars and usage of IM avatars. IM avatars have more real self-identity than IRC avatars (IRC avatars have more imaginary self-identity than IM avatars)

The desire of decorating avatar is associated with the desire of disclosing oneself in cyberspace. In order to to let others know about oneself in cyberspace, one should express his/her existence in cyberspace. Other people recognize one as much as one discloses oneself in cyberspace.

Self-disclosure can be diverse according to the context, relationship, topics, time-lapse. Sussman & Sproull(1999) indicates that CMC can increase honesty and accuracy compared to telephone and face-to-face meeting in delivering negative information

In several studies, the degree of self-disclosure differs according to the identity of counterpart in communication (Jourard & Lasakow, 1958; Pederson & Hisbee, 1989). In their studies, people disclose more to close people such as friends, spouse, and parents. In communicating with close people, CMC is more convenient and comfortable communication media than the face-to-face meeting. Kim(1992) states that the case the level of self-disclosure is in proportion to the level of intimacy of personal relationship. Very rarely the substantial level of self-disclosure occurs to the strangers or to the people who will never be met again. However, the more common case is that people feel free to reveal themselves to close people. Consequently, we make the following hypothesis.

H1-2 There will be a difference in self-disclosure between usage of IRC avatars and usage of IM avatars. IM avatars have more self-disclosure than IRC avatars.

Cho(2001) found that gender and age are important factors on online behaviors. Numerous studies concluded that gender and age are important factors on the usage of avatars (e.g., Choi, 2000; J.Kim, 2001; H.Kim, 2001; Son, 2002).

H2 There will be a difference in usage of IRC avatars and usage of IM avatars between different genders.

2-1. Gender will make difference on self-identity between usage of IRC avatars and IM avatars.

2-2. Gender will make difference on self-disclosure between usage of IRC avatars and IM avatars.

H3 There will be a difference in usage of IRC avatars and usage of IM avatars between different ages.
3-1. Age will make difference on self-identity between usage of IRC avatars and IM avatars.

3-2. Age will make difference on self-disclosure between usage of IRC avatars and IM avatars.

**RESEARCH METHOD**

**Construct Variables**

The measures of self-identity were based on the Dignan(1965)’s Ego Identity Scale. Dignan(1965) made 150 questions. We modified 6 questions for realistic identity and virtual identity.

The measures of self-disclosure were adapted from the JSDQ (Jourard Self-Disclosure Questionnaire) of Jourard(1971b). We chose and modified 12 questions for 4 factors of this construct.

We operationalized gender by females and males, and age by teens, twenties, and thirties.

**Research Design**

Data were collected by surveys from users of IRC avatars and users of IM avatars from April 15, 2003 to May 10, 2003. We surveyed 12 sample groups consisting of 2 avatar media, 2 gender groups, and 3 age groups. As for the samples of IRC avatar users, we approached avatar users in Sayclub(www.sayclub.com) who opened their email address. Besides, we uploaded our questionnaires on the bulletin board of various community web-sites, and asked for participation in our survey. Among the samples of IM avatar users, twenties and thirties were in the intimate relationship with the friends of the first author of this study who were using MSNplus (MSN messenger program that enables to use avatars in MSN). We also collected data of these age groups by uploading our questionnaire on the bulletin-board of various community sites. For teenager’s data, we visited two high schools and asked the students in those schools. We originally collected 268 data, but some were not completely responded (unfulfilled and same-number marked). We decided to use 243 data that had sincere and valid replies.

**DATA ANALYSIS AND HYPOTHESIS TEST**

**Reliability and Validity**

The items’ reliability was evaluated by Cronbach’s alpha. Cronbach’s alphas were 0.77, 0.69, 0.75, 0.69, 0.71, and 0.81 for fantasy, reality, hobby, capability, opinion, and attraction, respectively. All these numbers are well above the recommended threshold 0.7 in social science (Nunnally, 1978)

Validity test was necessary because we modified the items from the previous studies to fit to our research context. Separate factor analysis with varimax rotation were performed for each of self identity and self-disclosure to test whether item load onto their respective constructs. One item was dropped due to poor factor loading (less than 0.4). Two factors were extracted as we purposed. The factor of virtual identity consists of items that reflect the better appearance than in reality, imaginary presence, and multiple identities. The factor of actual identity consists of items that represent the similarity to real oneself and the efforts to reflect real oneself.

In the result of factor analysis for self-disclosure, one item was dropped due to poor factor loading less than 0.4. Four factors were extracted in accordance with our original purpose, and the items were loaded on their respective factors. Based on the contents of these items, we named four factors as hobby, opinion, capability, and attraction.

**Hypothesis Test**

In order to check the difference of self-identity and self-disclosure between IRC avatars and IM avatars, we ran MANOVA with the factor scores of self-identity and self-disclosure as dependent variables. The reasons why we use factor scores of self-identity and self-disclosure are that they consist of multiple factor structure, and may well be assessed by true value (excluding measurement errors). We used MANOVA instead of t-test because MANOVA is better when the dependent variables consist of multiple sub-layers and have substantial correlations with each other. Before we advance to hypothesis test, we need to verify the assumptions of MANOVA in our data-set: correlations between dependent variables, equality of covariance matrix, and multivariate normal distribution. All these assumptions were satisfied\(^1\). Wilk’s \(\lambda\) was used for the MANOVA test. Table 2 shows that both self-identity and self-disclosure were different between IRC avatar and IM avatar.

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\(^1\) All the dependent variables had significant correlations (p<0.05). The multivariate normal distributions were verified because stationary distribution curve passed zero with the 45 degree of slope, and the couples of dependent variables had linear relationship with the
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<table>
<thead>
<tr>
<th>Effect</th>
<th>Wilk’s Lambda</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anonymity</td>
<td>Self-identity</td>
<td>.834</td>
<td>23.799</td>
</tr>
<tr>
<td></td>
<td>Self-disclosure</td>
<td>.945</td>
<td>3.454</td>
</tr>
<tr>
<td>The Moderation Effect of Gender</td>
<td>Self-identity*gender</td>
<td>.972</td>
<td>3.329</td>
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<tr>
<td></td>
<td>Self-disclosure*gender</td>
<td>.950</td>
<td>3.125</td>
</tr>
<tr>
<td>The Moderation Effect of Age</td>
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<td>.831</td>
</tr>
<tr>
<td></td>
<td>Self-disclosure*age</td>
<td>.877</td>
<td>3.967</td>
</tr>
</tbody>
</table>

Table 2. MANOVA Tests

MANOVA test was conducted to assess the effect of anonymity on the usage of avatars in terms of two components of self-identity: virtual identity and actual identity (Table 2). Significant differences were found on these two dimensions between two different types of avatar (Wilk’s $\lambda=0.834$, F=23.799, p<0.001). In the subsequent analysis of variance (ANOVA) (Table 3), the realistic feature was prominent for IM avatars (F=28.046, p<0.001), whereas the imaginary feature was prevalent in IRC avatars (F=15.727, p<0.001). Consequently, the hypothesis 1-1 was supported.

MANOVA test was also conducted for the effect of anonymity on the usage of avatars in terms of four factors of self-disclosure: hobby, capability, opinion, and attraction (Table 2). Significant differences were found on these four dimensions between two different types of avatar (Wilk’s $\lambda=0.945$, F=3.454, p<0.01). In the subsequent ANOVA (Table 3), hobby and attraction were more prominent in IM avatars, whereas opinion and capability were similar between IRC avatars and IM avatars. Consequently, the hypothesis 1-2 was supported.

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Anonymity</th>
<th>Mean</th>
<th>Std.deviation</th>
<th>F</th>
<th>Sig.</th>
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<td>IM</td>
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<td>.85673</td>
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<td></td>
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<td>IRC</td>
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<tr>
<td></td>
<td>The realistic</td>
<td>IM</td>
<td>3.4986</td>
<td>.70627</td>
<td>28.046</td>
</tr>
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<td></td>
<td></td>
<td>IRC</td>
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<td>.78970</td>
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Table 3. ANOVA Tests

measurement errors. Two hypotheses were not supported for the equality of variance-covariance matrix. However, the distribution graph was very similar each other, and supported the equality of variance-covariance matrix.
Table 2 presents the moderation effect of gender and age on the differences between IM avatars and IRC avatars in terms of self-identity and self-disclosure. The moderation effect of gender was significant for both IRC and IM (Wilk’s $\lambda=0.972$, $F=3.329$, $p<0.05$ for self-identity, and Wilk’s $\lambda=0.950$, $F=3.125$, $p<0.05$ for self-disclosure). Therefore, hypothesis 2-1 and 2-2 were supported.

Figure 2-1 demonstrates that females expressed the imaginary identity on IRC avatars more than males, whereas there was no gender effect on the realistic identity on IM avatars.

![Figure 2-1. The moderation effect of gender in self-identity](image1)

Figure 2-2 shows that females expressed the capability feature on IRC avatars more than males, whereas such gender effect was not prominent on IM.

![Figure 2-2. The moderation effect of gender in self-disclosure](image2)

Table 2 displays the mixed results on the moderation effect of age on self-identity and self-disclosure. The moderation effect of age on self-identity was not significant, so hypothesis 3-1 was not supported. However, the moderation effect of age on self-disclosure was significant for both IRC and IM (Wilk’s $\lambda=0.877$, $F=3.967$, $p<0.001$ in Table 2), supporting hypothesis 3-2. Especially, the moderation effect of age on self-identity was prevalent in the factors of opinion and capability. Figure3-1
displays that twenties and thirties expressed more opinion in IRC and IM, respectively, more than any other age groups at each avatar medium. Figure 3-2 displays that capability on IRC avatars was expressed most explicitly for thirties, whereas capability on IM avatars was prominent for teenagers.

**Figure 3-1. The moderation effect of age in factors ‘opinion’ of self-disclosure**

**Figure 3-2. The moderation effect of age in factors ‘capability’ of self-disclosure**

**CONCLUSION**

The major purpose of using avatar is to build an identity and reveal it for the sake of satisfactory communication in cyberspace. People maintain personal relationship on cyberspace by constructing and disclosing their identities interactively. This research has started from the assumption that there would be a difference in usage of avatars between IRC and IM where
different level of anonymity exists. As the social relationship based on the real identity is getting important in cyberspace (like MSN), we investigated the influence of anonymity on the usage of avatars.

Avatars of IM contained more features of the realistic characteristics than avatars of IRC, whereas avatars of IRC reflected the ideal, imaginary, and fantastic characteristics of self-identity compared to avatars of IM. Users feel more like to build and express the imaginary self-identity by avatars in IRC than in IM. The realistic characteristic of IM avatars must be related to the nature of IM as CMC media where communication counterparts are already familiar to each other.

Among the four factors composing self-disclosure, the hobby and attraction factors were the more explicit motivations for IM avatars than for IRC avatars, but the opinion and capability factors were similar motivations for both types of avatars. Hobby and attraction are more related to the affective aspect of self-expression, whereas opinion and capability are to the cognitive aspect. From this finding, we conclude that communication with close people on cyberspace exchanges more affective contents than communication with strangers. This conclusion makes sense, provided that close friends are the usual dialogue counterparts for private and personal stuffs. Meanwhile, the dialogue on cognitive aspects is not that different between strangers and close people.

As for the moderation effect of gender on the usage of avatars, female’s preference for the ideal, imaginary, and fantastic expression of avatars was more explicit for IRC than for IM. In other words, females preferred to enjoy the fantastic expressions of avatars with strangers than with close people.

As for self-disclosure, females expressed capability than males especially by IRC avatars. This finding implies that females still feel uncomfortable with exposing their own capabilities in real name due to other’s attention, and prefer anonymous space in this regard.

Lastly, we verified the partial moderation effect of age on the effect of anonymity on the usage of avatars: i.e., age has the moderation effect only on self-disclosure. To the contrary of common guess, teenagers did not have noteworthy pattern of avatar usage because avatars became popular across all different layers of generation.

We found that its moderation effect was prominent for the opinion and capability factors of self-disclosure. Opinion was the prominent motivation for twenties’ usage of IRC avatars and thirties’ usage of IM avatars. Capability was the prominent motivation for thirties’ usage of IRC avatars and teenagers’ usage of IM avatars. Thirties, who are sensitive and active to social issues, used IM avatars in expressing their own opinions than using IRC avatars, well reflecting that IM is a realistic communication media.

These results imply that the usage of avatars differs according to user’s objectives and characteristics, and communication media. The primary factor that influence on the Internet behavior is the objective of visiting a cyberspace. Each cyberspace (i.e., web site) has its own identity that visitors are aware and try to conform to.

The beneficiaries of avatar services are twofold: users themselves and their counterparts. Therefore, our findings on the different usage patterns of IRC avatars and IM avatars have two following implications. Anonymity makes difference in building and expressing avatars. IRC users create and express avatars in an experimental way due to the secure anonymity in the communication media (IRC). However, IM user could not overcome the limitation of the realistic characteristics of IM as for avatars. The characteristics of relationship between communication partners make difference in expressions of avatars for each other. IRC users usually don’t know the real appearance of their counterparts, and thus don’t feel like to disclose themselves as they are in real world. So, they use ideal, imaginary, and fantastic avatars in that cyberspace. IM users mostly communicate with their close people, so feel like to disclose detailed personal information in real format to each other on IM.

The imaginary avatars, which are prevalent on IRC, are not necessarily disconnected from real identities of communicators. Therefore, IRC service providers may well develop their services that help create and express self-identities of features that people cannot realize in real life. Users would be satisfied with the IRC service providers if they can have opportunities to have experiments on avatars with various unrealistic (imaginarily stimulating) avatar-items. Meanwhile, IM service providers may well focus on increasing the realistic characteristics of avatars rather than fantasy features.

Internet users respect their own characteristics, and demand more control and power than before Internet era, so that they don’t accept any unconditional enforcement upon themselves. They lead the offline trends. Consequently, the avatar services cannot make success without enough deliberation of online cultures in terms of users’ purposes, psychology, and usage. There are various kinds of avatar services for IRC, IM, MUD, community, shopping mall, learning service, and blog. The fit between avatar services and aforementioned online cultures can be the critical success factor for avatar business. Unintentional benchmarking of other avatars services should be replaced with deliberate consideration of such online cultures.
This study was conducted in Korea so that it may have some problems about external validity. Future studies could help generalize the findings at this study by expanding the diversity of sample.

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