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Exploring the Relationship Between Avatar Ego Types and Communication: A Comparative Study of South Korea and the United States Based on the Expectation Confirmation Model

Mi Yeon Choi, PhD,¹ Elizabeth Avery Foster, PhD,² Hyung Seok Lee, PhD,¹ and Sejin Park, PhD³

Abstract

This research explores the significance of avatar communication in the virtual world, where individuals can create new identities and establish relationships beyond real-world limitations. Avatar users engage in virtual interactions to fulfill their desires, enjoy entertainment, and experience surrogate satisfaction. This study integrates the Expectation Confirmation Model (ECM) and Impression Management Theory (IMT) to investigate the impact of various avatar ego types on communication satisfaction and continued intention to use. Two surveys ($n = 600$) were administered using South Korean and American samples. The results suggest a significant relationship between expectancy confirmation and perceived usefulness. Specifically, high perceived usefulness leads to increased communication satisfaction. Also, when pre-experience expectancy confirmation is low, it positively affects communication satisfaction. In addition, the study highlights differences between Western and Eastern cultural contexts in avatar ego type's expression. This study contributes to the understanding of virtual interactions, offering theoretical insights through the integration of ECM and IMT. Theoretical and practical implications are discussed.

Keywords: expectation confirmation model, avatar ego type, virtual world communication, cross culture

Introduction

Virtual space serves as a reality-based environment that extends offline experiences into the online realm, surpassing the boundaries between reality and virtuality. It provides individuals the opportunity to easily create avatars and engage in diverse activities such as conversations, shopping, and games while interacting with others. Avatars used in virtual spaces can be designed by individuals to resemble their real selves or take on entirely different appearance.¹ Avatars serve as a bridge between an individual's real self and the online space, facilitating the expansion of one's identity.¹ By creating a sense of virtual embodiment,² avatars add another layer of meaning to one's ego,¹ enabling individuals to play multiple roles in different situations and to explore various potential identities.³

Platforms such as Metaverse emphasize the significance of avatar expression, as avatar activities play a central role in these platforms.⁴ This study assesses the effectiveness of avatar communication in virtual spaces by applying the expectation confirmation model⁵ (ECM) and impression management theory (IMT).⁶ Building upon IMT, this research analyzes users' avatar types by categorizing them into original self, ideal self, and social ego. The goal is to investigate whether the avatar types are predictors of expectation fulfillment and perceived usefulness.

This study emphasizes self-type by applying IMT as a precursor to ECM. In the past, EMC has been discussed in terms of user satisfaction and intention to continue using products and services with new technologies. However, at a time when online communication is rapidly expanding,

¹Department of Advertising & Public Relations, Hanyang University ERICA, Ansan, Republic of Korea.

²Department of Advertising & Public Relations, The University of Tennessee, Knoxville, Tennessee, USA.

³Department of Media & Social Informatics, Hanyang University ERICA, Ansan, Republic of Korea.

expanding the theory by applying self-type, which reflects individual identity through the formation of social roles and relationships in avatar communication, as an antecedent of the ECM makes a significant and important contribution to extant literature. In addition, IMT, which has been discussed primarily through qualitative methods, can be objectively quantified by categorizing the self according to different avatar types online. Individuals engage in online relationships, share information, and construct identities through diverse aspects of the virtual world.⁷ Although prior studies have explored avatars, user identities, communication motives, and effects, empirical investigations that specifically examine the segmentations of ego projected onto avatars and the factors influencing personal identity expression and expectations are scarce. Also, in an era where communication transcends physical constraints such as space and time, research that compares different cultures may reveal distinct characteristics and differences in studying interactions using avatars. As language communication reveals cultural distinctions in self-expression, efforts to understand various cultural factors become vital,⁸ especially amid the growing realm of online communication, requiring a shift beyond exclusive cultural viewpoints. Therefore, this study investigates the relationship between avatar self-expression and communication effects in avatar-mediated communication as well as the impacts, if any, of cultural factors.

Expectation confirmation model

The ECM⁵ is a model developed to understand behavior⁵ by exploring the relationship between satisfaction and post-purchase behaviors. According to the model, pre-use expectations' impact on satisfaction is derived from the actual usage of product or service. When the expected level aligns with the actual experience, it influences individual satisfaction and predicts intention for continuous use based on that level of satisfaction.⁵ Within the ECM framework, perceived usefulness and user satisfaction are key variables.⁹ Perceived usefulness refers to the user's perception of the utility of information technology (IT) and service usage.⁵ Expectations that advanced technologies to enhance satisfaction generate external motivation for intentions to use.¹⁰

ECM has been employed to understand the intention for reuse or continuous use of IT services such as social networking^{11,12} and online messaging.¹³ Positive IT user experiences can arouse feelings of enjoyment^{14,15} and contribute to the development of user beliefs over time through continued interaction.

Hypothesis 1: Confirmation of expectation is positively related to perceived usefulness.

Avatar communication satisfaction in virtual world

Within the framework of ECM, expectation confirmation refers to the cognitive trust formed prior to using a product or service,⁵ and it serves as a criterion for user satisfaction.¹⁶ Users develop specific expectations based on word of mouth and information obtained from other users'

experiences before engaging with a product or service.¹⁷ Studies using ECM to study avatar use are limited^{11,18} and primarily focused on the use of IT products and the functional aspects of media as they examined user satisfaction and intentions for continuous use at an individual level.¹⁹

In this study, ECM is applied to examine avatar ego types and their impact on communication. Positive expectations and a smooth communication experience using avatars are likely to generate higher satisfaction levels, given that the motivation and communication goals of users in avatar-mediated communication depend on the specific environment in which they participate and express themselves through avatars.²⁰

Interactivity is defined as a motivation for using avatars, as it fosters interpersonal communication.²¹ Positive interactions between users and media promote exploratory behaviors and increase the duration of media usage.^{22,23} In the context of online environments, these interactions can enhance users' psychological well-being and stability.²⁴ The desire for interpersonal relationships drives goal-oriented behaviors²⁵ and encourages individuals to establish interactive connections.

Previous research suggests that avatar ego types can be categorized as naturally ego, ideal ego, and social ego. As motivations for using avatars vary, individuals' expectations, demands, and levels of expectation confirmation differ accordingly. Positive expectancy confirmation leads to consumer satisfaction and positively influences repurchase intentions.²⁶ For example, an individual's positive perceived usefulness of a technology has a significant impact on satisfaction and intention to continue using the technology when shopping online²⁷ or when using a mobile application or online service.^{15,28} This process builds trust in the technology or service,²⁶ which interacts with user beliefs to increase satisfaction and positively influence user behavior.²⁶ Therefore, variations in individual's perceived usefulness and expectations are anticipated. Hence, the following hypotheses are proposed:

Hypothesis 2: Perceived usefulness is positively related to satisfaction.

Hypothesis 3: Confirmation of expectation is positively related to satisfaction.

According to the studies on ECM, satisfaction refers to the emotional response elicited from the experience of using an IT.⁵ Also, as satisfaction is closely related to factors such as trust, intention for relationship continuity, and loyalty, it can influence the intention to continue communication based on user expectations.⁹ Conversely, a negative or unsatisfactory experience can lower one's intention to continue using the technology. Previous studies have demonstrated that satisfaction is a significant determinant of persistent intentions.²⁹ Based on these findings, it is expected that an increase in communication satisfaction will lead to a greater intention for continuous use. Hence, the following hypothesis is proposed:

Hypothesis 4: Satisfaction is positively related to intentions to continue communication.

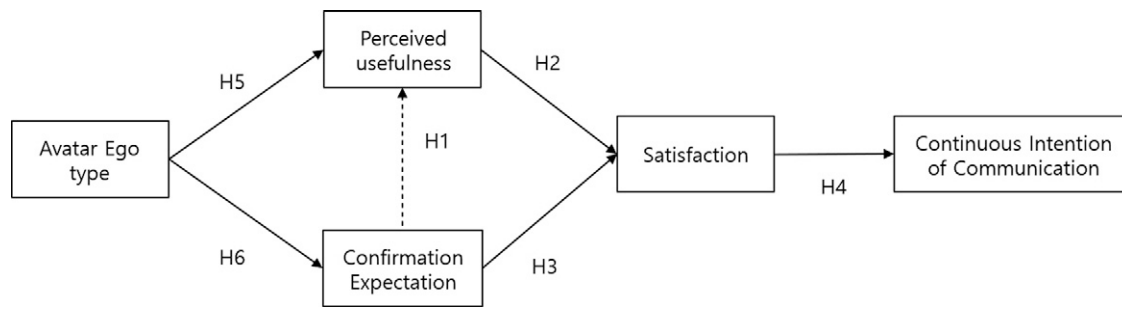


FIG. 1. Conceptual Model.

Avatar ego type

Ego can be understood as self-awareness that distinguishes the individual from others and encompasses various aspects such as perception of the external world, ego image, accidents, and behavior.³⁰ Goffman’s (1978)⁶ IMT emphasizes strategic expression of the self as a key element of interpersonal relationships and provides a comprehensive perspective on how individuals express and evaluate themselves in their relationships with others. In online interactions, self-presentation becomes more prominent.

The ego can be divided into self-seeking, impression-management, and social egos,³¹ with individuals forming attachments or identities through their avatars^{32,33} and developing strong emotional connections within the virtual space.^{34,35} Users select avatars to fulfill their needs, allowing them to express their identity,^{32,33} foster creativity, and experience immersion.³⁶ Self-expression is a key motivation for creating and using avatars,⁴ and changes in self-expression methods constitute a significant aspect of avatar-mediated communication.^{33,37} Both avatar and individual identification are influenced by factors such as self-similarity in the real world, shared embodiment and emotions, and the ideal level of self-reflection,³⁸ which play a vital role in shaping social behavior in the virtual space mediated by avatars and real individuals.³⁸ As individuals spend more time in virtual spaces and their self-expression and identity

in these spaces become multifaceted, it is crucial to establish a foundation for understanding the types of individual selves that emerge in these new social interaction environments.

Hypothesis 5: The avatar ego type (naturally ego, ideal ego, social ego) will have a positive relationship with confirmation expectation.

Hypothesis 6: The avatar ego type (naturally ego, ideal ego, social ego) will have a positive relationship to perceived usefulness.

Cultural differences in avatar ego

It shouldn’t be neglected that avatars, with their diverse ego types,²⁰ are influenced by user self-awareness and social and cultural contexts.³⁹⁻⁴¹ Eastern cultures, with their collectivistic values and emphasis on social relationships, tend to prioritize empathy, reciprocity, and a sense of belonging.^{42,43} On the other hand, Western cultures have been associated with independent and interdependent self-views based on individualistic values.⁴⁴ Cultural differences manifest in self-esteem and self-enhancement experiences, with Westerners tending to maintain a positive self-evaluation and boost their self-esteem.^{44,45} Consequently, Westerners are more likely to use positive statements in their communication.⁴⁶

TABLE 1. VARIABLES AND CORRESPONDING OPERATIONAL DEFINITIONS

Variable	Operational definition	References
Avatar ego types	Naturally ego: The naturally ego represents an individual’s authentic personality and unique traits, closely mirroring their actual reality. Ideal ego: The ideal ego reflects the self that approaches an envisioned utopia, created perfectly and positively by external influences. Social ego: The social ego pertains to a relational identity greatly shaped by a shared perspective and the adaptable social environment within a specific group.	2, 100, 101
Perceived usefulness & expectation confirmation	The value that users expect to meet through communication through avatars is defined as prior expectations, and expectations are satisfaction with individual subjective expectations obtained through avatars’ communication experiences.	23, 102, 103
Communication satisfaction	Communication satisfaction is the socio-emotional result of interaction and is a subjective satisfaction with expectations in the process of interpersonal communication through interaction when using avatars.	13, 97
Continuous intention of communication	Communication allows us to understand the social role by exchanging values and intentions through interaction with others and recognizing and forming the self in the process. It refers to the intention to continuously interact with others and strengthen relationships with others through avatars in the virtual world.	104

TABLE 2. RESULTS OF DEMOGRAPHIC ANALYSIS OF SURVEY PARTICIPANTS

Demographic category	South Korea (n = 300)	United States (n = 300)
	Frequency (%)	Frequency (%)
Nation	300 (50.0)	300 (50.0)
Gender		
Male	150 (50.0)	150 (50.0)
Female	150 (50.0)	150 (50.0)
Age		
18 ~ 29	100 (33.3)	150 (50.0)
30 ~ 39	100 (33.3)	124 (41.3)
40 ~ 49	100 (33.3)	26 (8.7)
High school graduate	33 (11.0)	14 (5.4)
Attending college	38 (12.7)	68 (22.7)
University graduate	198 (66.0)	182 (60.7)
Graduate school or higher	31 (10.3)	34 (11.3)
Average monthly income		
No income	29 (9.7)	11 (3.7)
Less than \$1000	30 (10.0)	9 (3.0)
\$1001 ~ 5000	198 (66.0)	136 (45.3)
More than \$5001	43 (14.3)	144 (48.0)
Job		
Farmer/Forester/Fisherman	3 (1.0)	19 (6.3)
Office worker	120 (40.0)	93 (31.0)
Professional, management, research	36 (12.0)	59 (19.7)
Production technician	19 (6.3)	31 (10.3)
Sales, service	25 (8.3)	17 (5.7)
Self-employed	14 (4.7)	19 (6.3)
Homemaker	19 (6.3)	10 (3.3)
Student	34 (11.3)	39 (13.0)
Unemployed	23 (7.7)	6 (2.0)
Others	7 (2.3)	7 (2.3)
Total (n = 600)	300 (100)	300 (100)

These cultural variations in self-construal and self-esteem affect social psychological processes and emotional experiences, leading to changes in individuals' cognitive, emotional, and motivational experiences.⁴³ Studies have shown cultural differences in avatar perception, including nonverbal communication cues such as facial expressions and gestures, between countries such as the Netherlands and Japan.⁴⁷ Another study⁴⁸ examined cultural differences in emotional expressions in avatar-mediated online communication across Asia, North America, South America, and Europe, highlighting disparities in facial expressions across cultures. The interpretation and expression of emotions through an avatar may vary depending on an individual's socialization,^{49,50} personal experience, or cultural knowledge.⁵¹ Based on the literature, the following is predicted to broaden the literature on avatars and cultural differences:

Hypothesis 7: Individuals in Eastern culture will exhibit a passive avatar ego-expression, while people in Western culture will exhibit an active avatar self-expression.

Method

Participants

An online survey ($n = 600$) was conducted, with 300 participants from South Korea and 300 from the United States),

aged between 18 and 49, who either had created avatars or had experience in virtual spaces. The sample was drawn from an online panel owned by a research company for both countries. Survey participants in the United States and South Korea were drawn from all regions and occupations, with the same gender and age criteria to ensure representativeness. For the validity of the survey questions, all the items in the questionnaire were translated into Korean and then retranslated into English by bilinguals. The different types of self, namely the original self, ideal self, and social ego, were assessed through a set of measurement questions. A statistical model, including confirmatory factor analysis (CFA), was established using technical statistics and the AMOS software with SPSS 23.0. The hypotheses were tested using structural equation modeling. Refer to Figure 1 for the specific model structure.

Variable operational definition

ECM has been widely discussed in the context of technology use and has received objective and quantitative validation from sufficient measurement factors. However, there are very few studies that apply IMT to online avatar communication using quantitative methodology. Therefore, this study identified statistically significant patterns through quantitative data analysis to analyze avatar communication based on previous research on ego types to enhance the validity of the empirical study.

TABLE 3. RELIABILITY AND VALIDITY TESTS RESULTS

<i>Items</i>	<i>Descriptions of the items</i>	<i>Factor loading</i>	<i>Composite reliability</i>	<i>Cronbach's α</i>	<i>AVE</i>
Naturally ego	My avatar looks almost like me	0.884	0.923	0.924	0.802
	My avatar isn't perfect, but I like it better the way it is	0.461 (delete)			
	My avatar is a good representation of my actual image	0.893			
	My avatar looks like me	0.909			
Ideal ego	My avatar reflects the image what I want to project	0.782	0.849	0.847	0.585
	My avatar reflects the ideal image I aspire to	0.757			
	My avatar has the ability to do anything well	0.712			
	My avatar is a better representation of myself	0.805			
Social ego	My avatar places importance on harmony with others	0.749	0.769	0.779	0.526
	My avatar works to prevent disagreements or fights with others	0.740			
	My avatar's behavior changes depending on who I am with	0.563 (delete)			
	My avatar tries to impress others	0.686			
Perceived usefulness	I had more interesting interactions with others than I expected while using my avatar	0.749	0.926	0.943	0.514
	I felt more connected while communicating with my avatar than I expected to while using it	0.712			
	I have maintained positive relationships through communication as much as I expected while using my Avatar	0.751			
	I was able to do things I wouldn't normally do while using my Avatar as much as I expected	0.634			
	I was able to present a positive image to others as much as I expected while using my avatar	0.700			
	I was able to do things I couldn't do in real life as much as I expected to do while using my avatar	0.669			
	My avatar was as much fun as I expected it to be	0.714			
	I felt as attractive as I expected to while using my avatar	0.717			
	My experience with my avatar was as interesting as I expected it to be	0.761			
	I was able to share information with others as much as I expected while using my avatar	0.706			
	I was able to get more information from other people while using my avatar than I expected	0.725			
	I was able to get information that I would like to know about as much as I expected while using my avatar	0.754			
	I anticipate that my avatar will allow me to have interesting communications with others	0.698			
	If you communicate through your avatar, you expect to gain a sense of connection	0.709			
I expect that communicating through my avatar will help me maintain a positive relationship	0.587 (delete)				
I expect my avatar to allow me to do things I wouldn't normally do	0.663				
I expect that using an avatar will help me present a positive image to others	0.550 (delete)				
I expect to be able to do things with an avatar that I would not be able to do in real life	0.690				
I expect that using an avatar will be fun	0.698				
I expect that using an avatar will be attractive	0.701				
I expect to be interesting using an avatar	0.691				
I expect to be able to share information with others through my/an avatar	0.721				
I expect to get more information from others through my/an avatar	0.732				
I expect that my/an avatar will provide me with information that I will like	0.737				

(continued)

TABLE 3. (CONTINUED)

Items	Descriptions of the items	Factor loading	Composite reliability	Cronbach's α	AVE
Satisfaction	I was satisfied with my communication with my avatar in a virtual world	0.812	0.844	0.855	0.644
	I was satisfied that I was able to be who I wanted to be while communicating in a virtual world	0.763			
	I was satisfied communicating with other avatars in a virtual world	.831			
Intentions to continue communication	I will continue to communicate with other avatars in a virtual world in the future	0.867	0.895	0.895	0.741
	I want to continue to communicate with other avatars in a virtual world	0.841			
	I am likely to continue to communicate with other avatars in a virtual world	0.874			

AVE, average variance extract.

The operational definitions of avatar ego types, perceived usefulness, expectation confirmation, communication satisfaction, and continuous intention of communication are shown in Table 1.

Results

Participants

Before commencing the online survey, a comprehensive explanation of the research was provided to the survey respondents, and an approval was obtained from the Institutional Review Board. The respondents, totaling 300 from South Korea (150 males and 150 females) and 300 from the United States (150 males and 150 females), were aged between 18 and 49 years and represented an age group known for diverse use of avatars in virtual worlds⁵²⁻⁵⁴ (See Table 2 for participants' demographic information). In this study, data analysis and hypothesis testing were carried out through a questionnaire survey. For the valid responses, SPSS 23.0 and AMOS CFA were used as the data analysis tools.

Reliability and validity of measurements

Cronbach alpha values, composite reliability values, and the average variance extract (AVE) values were used to assess the convergent validity of measurements. As shown in Table 3, the reliability of the measurements met the standards for each. Also, in terms of convergent validity, all the AVE values (ranging from 0.50 to 0.802) exceeded the

threshold of 0.5. In addition, the factor loadings of each variable were greater than the threshold of 0.5 and were all significant (ranging from 0.634 to 0.884), supporting the convergent validity of the measures.⁵⁵

The mean of each variable was the highest for perceived usefulness (mean value [M] = 5.27, standard deviation [SD] = 0.85), followed by satisfaction (M = 5.15, SD = 1.02), and continuous intention communication (M = 5.12, SD = 1.13). As to the correlations among variables, the correlation between expectation conformation and perceived usefulness was the highest at 0.801. See Table 4 for correlations.

Hypothesis Tests

The suitability of the model was examined to test the hypotheses (See Table 5 for Model fit). The results showed that the fit indices of the single-factor model ($\chi^2 = 1227.451$, $\chi^2/df = 2.088$, $p < 0.001$, GFI = 0.896, AGFI = 0.869, TLI = 0.955, CFI = 0.962, NFI = 0.930, and RMSEA = 0.043) met the criteria.

For H_1 , a positive relationship ($\beta = 0.671$, $p < 0.001$) between confirmation expectation and perceived usefulness was identified, and for H_2 , the results showed that as perceived usefulness increases, so does communication satisfaction ($\beta = 1.064$, $p < 0.001$). As for H_3 , it was confirmed that satisfaction decreases as higher expectation confirmation levels increase ($\beta = -0.182$, $p < 0.05$), and, for H_4 , the higher the communication satisfaction level, the more positive the communication intention ($\beta = 0.941$, $p < 0.001$).

TABLE 4. RESULTS OF CORRELATION ANALYSIS

Variable	1	2	3	4	5	6	7	M	SD
1. Naturally ego	1							4.59	1.51
2. Ideal ego	0.576**	1						5.07	1.08
3. Social ego	0.491**	0.583**	1					5.04	1.02
4. Perceived usefulness	0.428**	0.654**	0.611**	1				5.27	0.85
5. Expectation Conformation	0.480**	0.625**	0.587**	0.801**	1			5.10	0.96
6. Satisfaction	0.431**	0.551**	0.514**	0.679**	0.793**	1		5.15	1.02
7. Continuous intention communication	0.421**	0.481**	0.448**	0.633**	0.773**	0.740**	1	5.12	1.13

** $p < 0.01$.

M, mean value; SD, standard deviation.

TABLE 5. SUMMARY OF MODEL FIT

χ^2	χ^2/DF	RMSEA	GFI	RMR	AGFI	TLI	CFI	NFI	SRMR
1227.451	2.088	0.043	0.896	0.050	0.869	0.955	0.962	0.930	0.032

For the relationship between perceived usefulness and avatar ego type (H_5), ego ($\beta = 0.443, p < 0.001$) and social ego ($\beta = 0.343, p < 0.001$) have statistically significant, positive relationships with perceived usefulness ($\beta = 0.059, p > 0.05$). H_6 explored the relationship between avatar ego type and expectation confirmation factor. Analysis confirmed ego ($\beta = 0.249, p < 0.001$) and the social ego ($\beta = 0.190, p < 0.001$) have positive relationships with expectation confirmation factors while naturally ego ($\beta = -0.117, p > 0.05$) has a negative relationship with expectation confirmation (See Figure 2 and Table 6).

For H_7 , which examined cultural differences, if any, between the South Korea and the United States samples in avatar self-type expressions, a series of t tests was conducted. For naturally ego type, the difference between South Korea ($M = 4.01$) and the United States ($M = 5.35$) was significant, and for ideal ego type, the South Korean participants ($M = 4.70$) showed a lower score than the American participants ($M = 5.47$). Also, as to social ego type, a significant difference between South Korea ($M = 4.67$) and the United States was identified ($M = 5.40$) (See Table 7).

Discussion

Regarding the perceived usefulness of avatar communication in the virtual world, results identified a positive relationship between expectation confirmation and avatar communication satisfaction. These results suggest that positive experiences in avatar-mediated communication enhance perceived usefulness, meet user expectations, and foster satisfaction and intention to continue using avatars.^{17,56}

Furthermore, there was a negative relationship between expectation confirmation and satisfaction, suggesting that users with specific avatar communication purposes and personal values may demonstrate lower levels of expectation confirmation and pre-experience satisfaction. According to ECM, user expectations evolve with experience, and post-use usefulness may differ from pre-experience expectations, as direct experience contributes to more realistic outcomes.^{5,57} These findings highlight the significance of avatar communication experiences in the virtual world and their implications

for users' perceived usefulness, satisfaction, and persistence intentions

In applying Goffman's impression management framework⁶ to ECM, the results showed no significant relationship between perceived usefulness and satisfaction in the original ego type, and a negative relationship was found in the expectation confirmation. This finding suggests that the users who identify more with their original egos, which reflects their genuine selves, show lower communication satisfaction scores. On the other hand, the users who prefer avatars that differ from their real-self had higher satisfaction scores. These findings contrast previous studies' results^{58,59} that indicated a preference for avatars that are visually and psychologically similar to the users and demonstrate how an individual's ego can change in the virtual world as well as how different virtual self-types can be observed across cultures.

The presentation of the self in virtual spaces may be more pronounced and explicit, allowing individuals to shape their ideal and social selves in desired ways and build diverse social networks.⁶⁰ The purpose of self-presentation is to project a positive image to others and to be seen as desired.⁶¹ The negative relationship between intrinsic self and expectation confirmation may be owing to insufficient self-expression and need fulfillment,³¹ resulting in dissatisfaction with the expectations of social interactions online. Self-presentation research⁶² suggests that even in online environments such as Facebook, self-presentation may take the form of behaviors that reflect social norms and motives and may influence interpersonal relations motivated by self-enhancement.⁶² Self-enhancement motives are enhanced when self-presentation behaviors align with culturally prevalent norms of self-presentation,⁶³ and people make inferences about target authenticity based on self-presentation information and feel authentic when presenting themselves.⁶⁴

Furthermore, by comparing South Korea and the United States samples in terms of avatar self-expression, as previous studies contend, we found that Eastern (more collectivist) and Western cultures (more individualist) share a common emphasis on maintaining face or social desirability.⁵⁷ Cultural differences can lead to subtle differences in meaning or

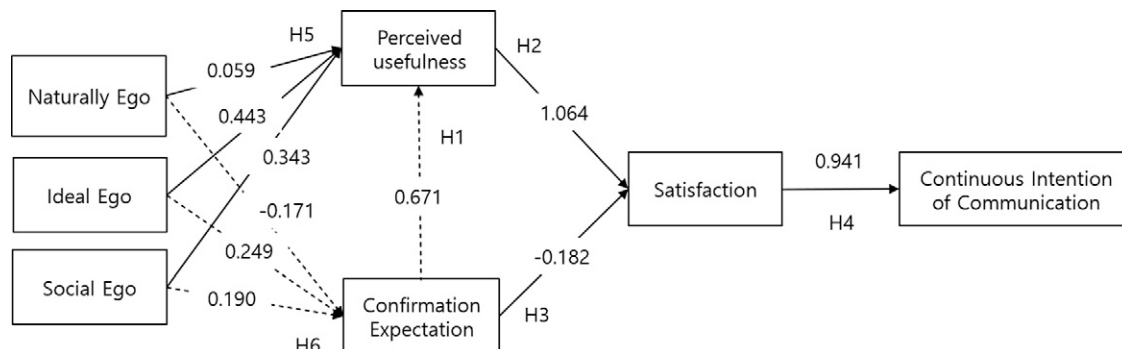


FIG. 2. Results of Hs 1–6 Tests.

TABLE 6. SUMMARY OF H1–H6 TEST RESULTS

Hypothesis	Coefficients	t	Results
H ₁ . CE→PU	0.671	11.827***	Supported
H ₂ . PU→SA	1.064	10.569***	Supported
H ₃ . CE→SA	-0.182	-1.970*	Supported
H ₄ . SA→CI	0.941	20.937***	Supported
H ₅₋₁ . AE (Naturally ego)→PU	0.059	1.288 (0.198)	Not supported
H ₅₋₂ . AE (Ideal ego)→PU	0.443	7.023***	Supported
H ₅₋₃ . AE (Social ego)→PU	0.343	6.250***	Supported
H ₆₋₁ . AE (Naturally ego)→CE	-0.117	-3.320***	Supported
H ₆₋₂ . AE (Ideal ego)→CE	0.249	4.736***	Supported
H ₆₋₃ . AE (Social ego)→CE	0.190	4.364***	Supported

n = 600, **p* < 0.05, ****p* < 0.001.

AE, avatar ego type; CE, confirmation of expectations; CI, continuance intention of communication; PU, perceived usefulness; SA, Satisfaction.

misunderstandings during communication between individuals from diverse cultural backgrounds.⁸ A key perceived factor in avatar use is interactivity, which promotes interpersonal communication,⁶⁵ encourages exploratory behavior when positive interactions occur in the user's relationship with the media, and influences increased usage duration.^{23,38} Because goals and motivations for self-expression are driven by the desire and need to form interpersonal relationships,²⁰ avatar-mediated communication may provide services that facilitate the expansion of social networks,⁶⁶ information sharing, and online experiences.⁶⁷ According to Hofstede's cultural dimension theory, cultural differences between East and West influence individual dispositions in social relationships and attitudes toward online self-presentation, resulting in differences in online communication behaviors.⁶⁵ Although cultural differences in online self-presentation and communication behaviors cannot be generalized as cultural differences, it is important to empirically examine the cases of Korea and the United States as representative examples of Eastern and Western cultures. As a result, cultural understanding and mutual respect are essential for effective communication.

Theoretical implications

This study extends the theoretical understanding of avatar communication by applying the impression management framework and examining the relationship between avatar ego types and communication in the virtual world within the context of ECM. Also, the study extends beyond the technical dimensions of new media that have been predominantly studied in ECM research. First, this study contributes to the understanding of avatar communication by integrating avatar ego types with communication satisfaction and intention to continue using avatars, providing a more comprehensive

understanding of the phenomenon. Specifically, according to IMT^{28,29} and self-discrepancy theory,³⁰ individuals strive to express themselves to others in a desirable way based on what they perceive or what others expect. If the real-self is not satisfactory or consistent with ideal image one desires of others, individuals differentiate their real-selves from their ideal-selves and make efforts to minimize the discrepancy by expressing their ideal-selves through avatars in the virtual world.⁴

In the contemporary context where the boundaries between reality and virtual reality are blurred, the virtual world plays an important role in promoting intercultural exchange and global participation. The formation of the self varies based on the relationships with others within their cultural dimensions.⁴⁰ Within a single country, there can be coexistence of different cultural norms across generations, and the same cultural diversity can also be observed in online environments.^{8,48} The integration of the ECM and IMT is an attempt to understand the cultural differences in the use of avatars for communication in virtual and online environments. Accordingly, it informs recommendations for various strategies for creating communication environments that consider avatar design and item production factors, taking into account self-expression needs and East–West cultural differences. Consequently, the need for research on cultural changes has grown,^{43,48} and ongoing studies may be proposed to measure general human communication behaviors in response to the increasing communication in the virtual world.

Practical implications

The results indicate that users experience greater satisfaction with their ideal and social selves, highlighting the need

TABLE 7. *t* TEST RESULTS

Dependent variable	South Korea (n = 300)		United States (n = 300)		t	p
	M	SD	M	SD		
Natural ego	4.01	1.25	5.35	0.96	-14.78	0.000
Ideal ego	4.70	1.12	5.47	0.89	-9.37	0.000
Social ego	4.67	0.97	5.40	0.86	-9.35	0.000

M, mean value; SD, standard deviation.

to provide services that facilitate vicarious satisfaction, enjoyment, and interaction in the virtual world. It will be necessary to comprehensively apply and validate the two existing theories by considering different cultural situations and contexts in the virtual environment. Based on cultural differences, we can strengthen the connection to the real world and explore the applicability of the theories considering user characteristics. From a social-capital perspective, when users engage in communication using favorable ideal and social self-types, it signifies their intention to enhance bonding and expand social relationships with others. Meeting these user needs can not only fulfill their desires but also improve overall satisfaction with service usage.

Furthermore, considering cultural characteristics when utilizing various avatar types in the process of virtual world communication becomes essential in formulating communication service strategies. By adopting such strategies, users can engage in better communication experiences, leading to enhanced usefulness and satisfaction with virtual world communication. Consequently, providing services that enable users to express themselves autonomously and engage in communication can have positive effects, allowing users to enjoy more fulfilling experiences in the virtual world.

Limitations and directions for future research

There are several limitations to be acknowledged. While we classified self-types as inherent self, ideal self, and social self, the categorization relied on self-report surveys, which may vary depending on the individual's subjective interpretation. In addition, the ongoing research on cultural differences suggests the need for analyzing generational characteristics in the virtual world. It would be interesting to explore age-related effects by examining the significant differences in perceived usefulness, expectation confirmation, communication satisfaction, and intention to continue use between these groups. Existing research on communication in online environments focuses on the differences between Eastern and Western cultures as individual differences influenced by socio-cultural factors such as social norms and collectivism. However, this suggests that we need to consider the diversifying cultural contexts of how individuals define and express themselves, not just the national differences between Korea and the United States. In other words, we need to investigate that how individuals understand themselves in a unique way⁴³ and that culturally influenced differences in self-concept affect how they communicate. Hence, future research is encouraged to integrate these findings into the broader context of communication in the virtual world, including the study of increased communication, to further enhance understanding of avatar-to-avatar communication.

Authors' Contributions

M.Y.C.: Conceptualization (equal); methodology (lead); formal analysis (lead); writing—original draft (equal); writing—review and editing (equal). E.A.F.: Conceptualization (equal); writing original draft (equal); writing—review and editing (equal). H.S.L.: Conceptualization (equal); formal analysis (lead); S.P.: Writing—review and editing (equal); formal analysis (equal); funding (lead).

Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of Hanyang University (HYU IRB-202309-008, September 7, 2023) for studies involving humans.

Author Disclosure Statement

The authors report there are no competing interests to declare.

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Address correspondence to:

Dr. Sejin Park

Department of Media & Social Informatics

Hanyang University (ERICA)

55 Hanyangdaehak-ro, Sangnok-gu, Gyeonggi-do

Ansan 15588

Republic of Korea

E-mail: sj4298@hanyang.ac.kr