The Relationship Between Avatar Identification Factors and Vicarious Pleasure: The Moderating Role of Affect Intensity in the Metaverse

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Abstract— **This study investigated the connection between avatar identification factors, sharing intentions, and the influence of vicarious pleasure. Additionally, it explored the moderating effect of affect intensity on this relationship. For this, data was collected from 228 college students in South Korea through a survey. This study used hierarchical regression. The findings revealed several key points. Firstly, participants who perceived greater similarity identification, wishful identification, and embodied presence in their avatars within the metaverse platform reported higher satisfaction with their avatars. Secondly, participants who experienced a higher sense of embodied presence in their avatars were more inclined to share their avatars due to the vicarious pleasure they derived from it. Lastly, the positive correlation between perceived embodied presence and vicarious pleasure was stronger for participants with higher affect intensity in the metaverse platform. This study is the first to examine the integral model of avatar identification factors in the metaverse platform.**

Keywords— *Avatar identification, similarity identification, wishful identification, embodied presence, vicarious pleasure, affect intensity, intention to share*

I. INTRODUCTION

Due to the spread of COVID-19, the concept of "untact" has become a common part of our daily lives. This involves non-face-to-face interactions, with schools and companies replacing traditional classes and workspaces with online and telecommuting options. With the rise of the fourth industrial revolution, new technologies such as artificial intelligence and virtual reality have further infiltrated our daily lives, providing highly advanced non-face-to-face environments. These technologies are leading the way in the development of the metaverse, which is a 3D virtual world that allows people to engage in everyday and economic activities through avatars. The metaverse is an extension of the real world, and it represents a transcendent reality where people can interact in a virtual space [1, 2].

Metaverse users view their avatars as equals to themselves and indirectly participate in avatar activities [3]. Fashion-sensitive users consume a variety of fashion items and express their characteristics through avatars, forming virtual communities and blurring the boundaries between reality and virtuality [4, 5]. To increase user awareness and drive product sales, companies are developing strategies to offer a variety of metaverse experiences that encourage users to share their experiences with others [6, 7]. To understand the potential and usability of the metaverse, it is essential to understand the metaverse from the user's perspective. Avatars are an important element of the metaverse, and user perceptions of avatars are considered important in forming attitudes toward the metaverse, such as vicarious enjoyment [8].

Theoretical understanding of avatars in the context of the metaverse includes social psychology and identity formation perspectives [9], cultural studies and representation perspectives [10], and marketing and consumer behavior perspectives [11]. In particular, the psychology of users who intend to share their avatars in the Metaverse is also very important in terms of Metaverse's marketing. However, there is a lack of research in this area.

With this theoretical perspective, this study aims to examine how users react to avatar identification when utilizing branded items in the metaverse. The study focuses on identifying the factors that influence avatar identification and how they impact vicarious pleasure experienced by users. Additionally, the study aims to examine how vicarious pleasure mediates the connection between avatar identification and the intention to share avatars. Lastly, since communication is a crucial aspect of the metaverse such as Second Life, Minecraft, World of Warcraft, etc, the study explores how users' affect intensity affects the relationship between avatar identification and vicarious pleasure.

II. THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

A. *Metaverse and avatars*

The integration of advanced information and communication technology and virtual implementation technology into the metaverse is transforming it into a space where consumers can engage in daily, economic, and cultural activities, driving innovation [12, 13]. Retail companies are interested in understanding the metaverse to stay competitive, and research in this area has expanded from exploring the initial concept of the metaverse to investigating new conceptualizations, case studies, and marketing applications based on technological advancements. As the ecosystem of the metaverse grows, it is replacing a part of daily life and is considered an extension of reality. The metaverse is defined as an expansive fusion world that combines real and virtual spaces through realistic technology [12]. It is a three-dimensional virtual space where avatars engage in creative,

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economic, and interactive activities [14], and is distinct from the comprehensive cyberspace that reflects all online activities, as it allows for value creation through social, economic, and cultural activities [13].

According to Forster [15], avatars were originally represented in various forms such as animals, humans, and abstract shapes. However, as online interactions became more diverse and to facilitate smooth communication between people, avatars became popularized in a more human-like form. Nowak and Rauh [16] define an avatar as a computer-generated image that represents a user in online interactions. Users of metaverse platforms often decorate their avatars to reflect their physical appearance and fashion style [12], as they tend to express themselves through their avatar's appearance and fashion style to gain favor [17]. While avatars may reflect a user's actual appearance, they can also be represented differently from reality to allow for deviation or vicarious satisfaction [18]. Zepeto, a metaverse platform, recognizes the user's face through a camera to create an avatar similar to their actual appearance but also allows for modification of features such as appearance, gestures, and fashion to create unique avatars. Fuschillo et al. [19] found that users with positive emotions tend to create avatars that reflect their actual appearance, considering them as mascots that reflect themselves. In contrast, users who seek to escape from the monotony of daily life tend to express their avatars in an idealized form, as mascots that represent their ideal self-image. Avatars thus fulfill the desire for anonymity in cyberspace and the desire to reveal oneself [12], with users forming a deep attachment to their avatars and considering them as part of themselves, resulting in a sense of identity [20].

B.   Hypotheses development

Identification is the act of comprehending and empathizing with a situation from someone else's viewpoint [21]. A person can achieve identification by creating both cognitive and emotional connections with a particular object, which creates a feeling of identification [22]. They can also perceive themselves as actively participating in the object's situation, resulting in complete engagement [23]. Recent studies examining identification in media suggest that the factors that contribute to an individual's perception of identification can be divided into three categories: similarity identification, wishful identification, and embodied presence [24].

People can experience satisfaction through vicarious experiences of objects that they cannot achieve directly, as noted by [25]. This positive reaction to indirect experiences is referred to as vicarious satisfaction, and it has been suggested that user-avatar identification is an important condition for users to experience vicarious satisfaction [26]. When users identify with objects in the media, they internalize the object's goals, feel a sense of realism in the object's challenges, and experience vicarious satisfaction in the object's rewards [26]. Media viewers who emotionally identified with celebrities were able to vicariously satisfy their desires through media consumption and had a positive attitude toward vlogs [27]. Van Looy et al. [28] argued that user-object identification through similarity can enhance the perception of vicarious experience and create intimacy. Vicarious satisfaction is measured by what reality show viewers feel toward non-celebrity participants and how viewers strongly perceive the experience

of non-celebrity participants and experience vicarious satisfaction by identifying with similar non-celebrities [37].

Examining prior research on the desire for identification and surrogate satisfaction, Hefner et al. [29] claimed that when identification occurs through the desire for similarity, users experience positive emotions by indirectly experiencing the idealized features of the target. Users feel surrogate satisfaction when they decorate their avatars to reflect their desired appearance [30]. When a metaverse user's avatar reflects an ideal image, it provides a low-cost way to fulfill their dreams, resulting in surrogate satisfaction [31]. Previous studies suggest that virtual reality users experience vicarious satisfaction by identifying with the target as if they were one entity [32]. The target's movement and high interaction produce a sense of physical coherence, leading the user to mistake themselves as being present in a specific situation [28]. Furthermore, indirect vicarious experience is enhanced when a digital environment provides a multisensory experience [26]. User reactions to avatar manipulation found that as the interaction between the user and the game increases, the user considers their avatar as a surrogate existence and experiences vicarious satisfaction [33]. Based on these findings, we hypothesize that external embodiment, desire for identification, and presence will positively influence vicarious satisfaction.

H1: Similarity identification will have a positive (+) effect on vicarious pleasure.

H2: Wishful identification will have a positive (+) effect on vicarious pleasure.

H3: Embodied presence will have a positive (+) effect on vicarious pleasure.

According to Zhang et al. [34], individuals tend to share positive or negative aspects of their purchasing experiences with friends and acquaintances. With the increasing variety of communication channels such as social media, people are now able to share information more easily than before [35]. The behavior of sharing information, which has a great influence on other people's product purchase decisions, is continuously addressed in the IT and marketing fields [36], and vicarious satisfaction is suggested as a leading factor. The objective of this research is to examine how avatar identification impacts the intention to share. Previously, a hypothesis was posited that the identification of avatars would enhance the level of vicarious pleasure. The present study aims to investigate whether vicarious pleasure mediates the relationship between avatar identification and intention to share.

People perceive vicarious experiences through others positively, leading to vicarious satisfaction, positive evaluation of the experience, and intentions to engage in future behaviors [37]. Previous studies have shown that when users of media content experience vicarious satisfaction, it positively influences word-of-mouth intentions through attitudes and satisfaction towards the content [38]. Vicarious satisfaction experienced through avatars in live broadcasting positively influenced word-of-mouth intentions [39]. Therefore, in this study, it is argued that vicarious pleasure based on empathy and positive response will affect positive intention to share. This study previously hypothesized that avatar identification would have a positive effect on vicarious pleasure. Furthermore, the

study contends that vicarious pleasure would positively influence the intent to share. Considering the foregoing discussion, this paper suggests that vicarious pleasure will serve as a mediator between avatar identification and the intention to share.

H4: Vicarious pleasure will have a mediating effect on the relationship between similarity identification and the intention to share avatars.

H5: Vicarious pleasure will have a mediating effect on the relationship between wishful identification and the intention to share an avatar.

H6: Vicarious pleasure will have a mediating effect on the relationship between embodied presence and the intention to share avatars.

Furthermore, this study endeavors to explore the possibility of diverse effects of avatar identification on vicarious pleasure, contingent on the characteristics of users, through an exploratory investigation. Affect intensity refers to the strength of emotional responses individuals experience in reaction to emotional stimuli. Larsen [40] introduced this concept and developed a measurement tool for it. Affect intensity is a personal trait that indicates how intensely individuals experience emotions toward a specific object. Groups with high and low affect intensity react differently to the same emotional stimulus, with high groups consistently exhibiting stronger affective responses. Early studies on affect intensity focused on its conceptual independence, validity, and reliability [42]. Larsen et al. [42] analyzed the differences between high and low affect intensity groups in response to positive and negative emotional stimuli. Individuals with high affect intensity experienced stronger emotional responses to both positive and negative stimuli than those with low affect intensity. They also tended to be more friendly, active, alert, and emotionally responsive. Larsen & Diener [43] examined self-reported affect intensity and compared evaluation values from colleagues and high school. Since its introduction, affect intensity has been studied in many fields such as psychology, marketing, and advertising. Understanding users' affective responses is crucial in understanding consumer behavior, especially in affective products such as games.

In the metaverse, users with higher levels of emotional reactivity tend to feel a stronger emotional connection with their avatars, which plays a crucial role in increasing their sense of feeling in the virtual world [44]. This emotional connection is largely influenced by the user's perception of similarity with their avatar. Emotionally reactive users feel a greater sense of empathy with their avatar, and this empathy has a positive impact on their sense of presence and satisfaction. Therefore, if emotionally reactive users perceive a greater similarity with their avatars, it can have a positive effect on their sense of presence and satisfaction in the metaverse, ultimately making their experience more enjoyable and satisfying.

Moreover, people generally prefer avatars that resemble themselves, which is related to their sense of identity [45]. Emotionally reactive users are also more likely to form a stronger identity connection with their avatars, which enhances their self-confidence and positive self-image, leading to greater satisfaction with their virtual identity. Therefore, when emotionally reactive users tend to create avatars that resemble

themselves, it is likely to have a positive impact on their sense of presence and satisfaction, ultimately enhancing their experience of identity in the metaverse.

In addition, embodied presence refers to the feeling of existence that users experience through their avatars in the metaverse. This feeling creates a sense of actually being present in the virtual world, which can contribute to users' satisfaction with their virtual identity. Especially for emotionally reactive users, their avatars can provide a stronger sense of embodied presence, which can further enhance their sense of presence and satisfaction in the metaverse. Therefore, it can be argued that emotionally reactive users in the metaverse are more likely to experience a higher sense of embodied presence through their avatars, ultimately contributing to their sense of satisfaction and well-being. Therefore, in this study, the affect intensity of metaverse service users is also intended to examine the moderating effect between avatar identification and vicarious pleasure.

H7: The influence of similarity identification that users perceive on vicarious pleasure will depend on users' level of affect intensity.

H8: The influence of wishful identification that users perceive on vicarious pleasure will depend on users' level of affect intensity.

H9: The influence of embodied presence that users perceive on vicarious pleasure will depend on users' level of affect intensity.

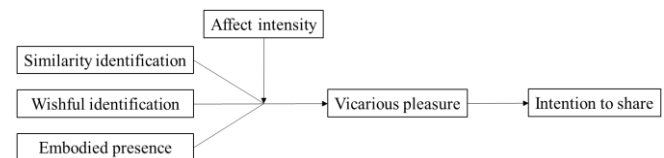The research model of this study is presented in Figure 1.

FIGURE I. RESEARCH MODEL

III. METHODOLOGY

A. Sample

This study sample consists of 228 college students with previous experience engaging in metaverse platforms such as Second Life, Minecraft, World of Warcraft, etc. The sample consists of undergraduate and graduate students in business, social science, and engineering programs in Korea. The criteria for participation in the study include past engagement in the metaverse and a minimum age of 18 years. Though the sample is considered one of convenience, college students represent a significant subset of a major participant's segment that focuses on active users.

B. Data collection and instrumentation

The study's objective was to identify the connection between avatar identification factors, sharing intentions, and the influence of vicarious pleasure. Additionally, it explored the moderating effect of affect intensity on this relationship. These factors can be identified by measuring the participants' perceptions of metaverse platforms. The survey research method is very useful in collecting data from many individuals in a relatively short period and at a lower cost. Hence, for the current study, the questionnaire survey was used for data

collection. All participants received a paper-and-pencil questionnaire with an accompanying letter that explained the purpose of the survey, emphasized voluntary participation, and guaranteed confidence. Participants were asked to fill out the questionnaire and put it back into an envelope collected by the researcher.

The questionnaire employed psychometric measurement [46]. Similarity identification was measured using six items from the scale developed by Van Looy et al. [28]: "The appearance and behavior of my Zepeto avatar seem to be similar to that of my real-life self." Wishful identification was measured using five items from the scale developed by Van Looy et al. [28]: "It would be desirable if I could become like my Zepeto avatar in appearance." Embodied presence was measured using six items from the scale developed by Van Looy et al. [28]: "I feel like my Zepeto Avatar within Zepeto." Affect intensity was measured using twenty items from the scale developed by Larsen et al. [40]: "I get upset easily." Vicarious pleasure was measured using five items from the scale developed by Yang [47]: "I am happy to see the various experiences of avatars in Zepeto and feel vicarious satisfaction." Intention to share avatars was measured using five items from the scale developed by Zhang et al. [34]: "I am planning to share my Zepeto avatar, which is adorned with fashion brand items, on social media.".

IV. RESULTS

A. Verification of reliability and validity

The validity of variables was verified through the principal components method and factor analysis with the varimax method. The criteria for determining the number of factors is defined as a 1.0 eigenvalue. This study applied factors for analysis only if the factor loading was greater than 0.5 (factor loading represents the correlation scale between a factor and other variables). The reliability of variables was judged by internal consistency as assessed by Cronbach's alpha. This study used surveys and regarded each as one measure only if their Cronbach's alpha values were 0.7 or higher.

B. Common method bias

As with all self-reported data, there is the potential for the occurrence of common method variance (CMV) [48]. To alleviate and assess the magnitude of common method bias, this study adopted several procedural and statistical remedies that Podsakoff et al. [49] suggest. First, during the survey, respondents were guaranteed anonymity and confidentiality to reduce the evaluation apprehension. Further, we paid careful attention to the items' wording and carefully developed our questionnaire to reduce the item ambiguity. These procedures would make them less likely to edit their responses to be more socially desirable, acquiescent, and consistent with how they think the researcher wants them to respond when answering the questionnaire [49]. Second, this study conducted Harman's one-factor test on all of the items. Principal components factor analysis revealed that the first factor only explained 34.9 percent of the variance. Thus, no single factor emerged, nor did one factor account for most of the variance.

Furthermore, the measurement model was reassessed with the addition of a latent common method variance factor [49].

All indicator variables in the measurement model were loaded on this factor. The common variance factor's addition did not improve the fit over the measurement model without that factor with all indicators remaining significant. These results do suggest that common method variance is not of great concern in this study.

C. Relationship between variables

Table 1 summarizes the Pearson correlation test results between variables and reports the degree of multi-collinearity between independent variables. The minimum tolerance of 0.832 and the maximum variance inflation factor of 1.202 show that the data analysis's statistical significance was not compromised by multi-collinearity.

TABLE I. VARIABLES' CORRELATION COEFFICIENT

	1	2	3	4	5
Similarity identification	1				
Wishful identification	-.033	1			
Embodied presence	.082	.031	1		
Affect intensity	.029	.024	.011	1	
Vicarious pleasure	.034**	.013**	.013**	.031*	1
Intention to share	.038*	.022*	.017**	.051**	.013**

$^*p < .05$, $^{**}p < .01$

D. Hypothesis testing

First, the effect of avatar identification on vicarious pleasure was analyzed. As shown in Table 2, as a result of first introducing demographic variables, it was found that sex is negatively related to vicarious pleasure ($\beta = -.065$, $p < .01$).

TABLE II. ANALYSIS RESULTS ON THE IMPACT OF AVATAR IDENTIFICATION ON VICARIOUS PLEASURE

	Vicarious pleasure	
	Model 1	Model 2
Sex	-.065*	-.053*
Age	-.026	-.014
Educational level	.023	.011
Similarity identification		.072**
Wishful identification		.054**
Embodied presence		.031**
Adj. R^2	.101	.142
F	4.613**	8.881**

$^*p < .05$, $^{**}p < .01$

In model 1, sex was coded as 1 for men, so the analysis results show that women are more likely to fall into vicarious pleasure than men. Second, in model 2, as a result of inputting three variables of avatar identification, it was found that all three variables of similarity identification ($\beta = .072$, $p < .01$), wishful identification ($\beta = .054$, $p < .01$), and embodied presence ($\beta = .031$, $p < .01$) had a positive effect on vicarious pleasure. Hypotheses 1, 2, and 3 were supported.

Second, to ensure that vicarious pleasure mediates the relationship between each of the variables of avatar identification, Baron & Kenny's [50] steps for establishing mediation were followed. First, in model 1 of Table 3, all three

variables of avatar identification should be correlated to share. As a result of the analysis, similarity identification (β = .051, p < .01), wishful identification (β = .034, p < .01), and embodied presence (β = .033, p < .01) have a positive effect on the intention to share. Second, in model 2 of Table 3, it was determined that all three variables of avatar identification are related to vicarious pleasure. This relationship is shown by the analysis results for the verification of hypotheses 1, 2, and 3 above. Third, in model 3 of Table 3, when similarity identification, wishful identification, and embodied presence were then entered into the model, vicarious pleasure was found to be positively related to the intention to share avatars, and some paths were statistically insignificant or other path coefficients decreased. As a result of the analysis, vicarious pleasure (β = .021, p < .01) was found to have a positive effect on intention to share. Among the variables of avatar identification, the effect coefficient and significance level of embodied presence decreased after vicarious pleasure was introduced (β = .018, p < .05). Thus, as shown in Table 3, there is sufficient empirical support to conclude that vicarious pleasure mediates the relationship between avatar identification variables and intention to share. On the other hand, vicarious pleasure did not mediate the relationship between other variables of avatar identification and intention to share. Therefore, only H6 was supported.

TABLE III. ANALYSIS RESULTS ON THE MEDIATING EFFECT OF VICARIOUS PLEASURE IN THE RELATIONSHIP BETWEEN AVATAR IDENTIFICATION AND INTENTION TO SHARE AVATAR

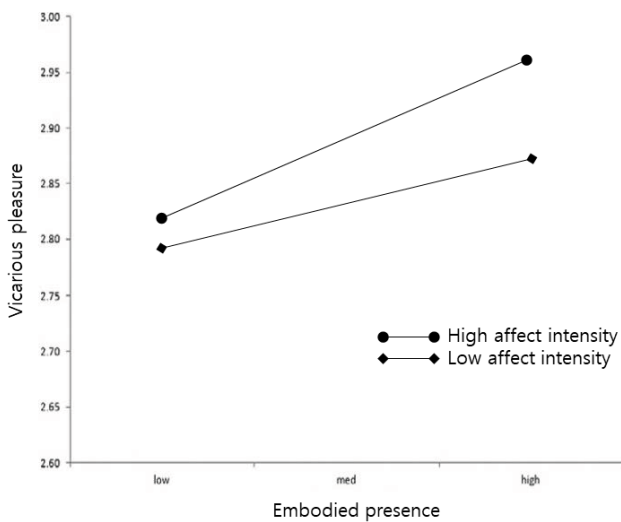|	Intention to share avatar		
	Model 1	Model 2	Model 3
Sex	-.071*	-.045*	-.029*
Age	-.042	-.038	-.023
Educational level	.071	.056	.047
Similarity identification		.051**	.031
Wishful identification		.034**	.021
Embodied presence		.033**	.018*
Vicarious pleasure			.021*
Adj. R^2	.091	.124	.154
F	4.001**	7.451**	9.851**

FIGURE 2. INTERACTION EFFECT

Lastly, model 3 of Table 4, consisting of moderators, shows the interactions between avatar identification variables and affect intensity on vicarious pleasure. Affect intensity positively affected the relationship between embodied presence and vicarious pleasure (β = .022, p < .01). Affect intensity was found to have no significance in the relationship between other variables of avatar identification and intention to share avatar (see Figure 2). Therefore, only H9 was supported.

TABLE IV. ANALYSIS RESULTS ON THE MODERATING EFFECT OF AFFECT INTENSITY IN THE RELATIONSHIP BETWEEN AVATAR IDENTIFICATION AND VICARIOUS PLEASURE

	Vicarious pleasure		
	Model 1	Model 2	Model 3
Sex	-.065*	-.053*	-.023*
Age	-.026	-.014	-.001
Educational level	.023	.011	.022
Similarity identification		.072**	.061**
Wishful identification		.054**	.036**
Embodied presence		.031**	.028**
Affect intensity			.014**
Similarity identification * Affect intensity			.022
Wishful identification * Affect intensity			.012
Embodied presence * Affect intensity			.022*
Adj. R^2	.101	.142	.194
F	4.613**	8.881**	12.665**

V. CONCLUSION

A. Discussion

The purpose of this study is to investigate the effect of avatar identification on the intention to share. To identify this relationship of influence, this study analyzed whether vicarious pleasure mediated the relationship between avatar identification and intention to share avatars and whether affect intensity regulated the relationship between avatar identification and vicarious pleasure. As a result of the analysis, first, similarity identification, wishful identification, and embodied presence, which represent avatar identification, all had a positive relationship with vicarious pleasure. That is, as expected, the more the user is similar to the avatar, wants to resemble the avatar, or has a greater sense of reality through the avatar, the more satisfied the user is with the avatar.

Second, among sub-variables representing avatar identification, only embodied presence increased the intention to share avatars through vicarious pleasure. On the other hand, the other two sub-variables had no mediating effect of vicarious pleasure for the intention to share. "Embodied presence" means that the user has direct control over their avatar, and their movements and actions are transmitted to the avatar. This makes the user's avatar feel more real, thus helping the user feel a real presence in the virtual world. This promotes "vicarious pleasure", which makes the user more satisfied in

the virtual world. Thus, "embodied presence"can help increase users' intention to share their avatars. On the other hand, "similarity identification" and "wishful identification" mean that the user feels similar to their avatar, or that the avatar represents the state they would like to be in. These variables can strengthen the emotional connection between users and their avatars but do not directly influence users to increase their intention to share avatars in the virtual world. The reason for this is that "similarity identification" and "wishful identification"are related to the user's personal needs and self-identification. These factors may not be appropriate material to share with other users. On the other hand, an "embodied presence" is better for interacting more directly with other users, so it can be material that can be easily shared with other users.

Lastly, affect intensity positively moderates the influence relationship between embodied presence and vicarious pleasure among variables representing avatar identification. In other words, the more emotionally responded people are, the more satisfied they are with the realism of the avatar. Users with a higher level of emotional response in the metaverse can increase their vicarious satisfaction with the embodied presence they feel through their avatars than users who do not, which can have a positive effect. On the other hand, "similarity identification" and "wishful identification" are elements that allow you to be more satisfied in the virtual world through an avatar that is similar to you or wants to be you. Thus, these factors do not change their impact on vicarious pleasure in virtual worlds regardless of affect intensity. These results show that the various factors that increase vicarious pleasure in virtual worlds can act in different ways.

B. Research contributions and practical implications

For research contribution, this study is the first to examine the integral model of avatar identification factors in the metaverse platform. Despite growing practical importance, few quantitative studies on avatar identification factors affect participants' intentions to share. Given this situation, this study focused on participants' vicarious pleasure in the relationship between avatar identification and intention to share. This study shows that people who feel an embodied presence with an avatar want to share their avatars through their vicarious pleasure.

Second, this study is the first to investigate the moderating effect of affect intensity on the relation between avatar identification and vicarious pleasure in the metaverse. The results show that since people, who have more affect intensity, feel a more embodied presence through their avatar in the metaverse platform than any others, they are more satisfied in their avatar. Therefore, this study extends the metaverse study's scope by suggesting the study of the moderating effect on the relationship between avatar identification factors and vicarious pleasure.

Third, the findings of this study have the potential to enhance our theoretical understanding of the utilization, perception, and marketing of avatars in the metaverse. This, in turn, can inform the creation of more immersive and socially impactful virtual experiences. In particular, this study conducted a theoretical and empirical investigation into the role of avatars in the metaverse from the perspectives of identity formation from a social psychology perspective, self-expression from a cultural studies perspective, and marketing and consumer behavior.

For practical implications, first, the findings of this study highlight the importance of avatar identification in enhancing the intention to share avatars in the metaverse. Metaverse platform managers should focus on creating an environment where participants can experience similarity identification, wishful identification, and embodied presence with their avatars. One way to achieve this is by implementing a reputation system that rewards active participants with points or other incentives based on their interactions and contributions within the platform. This can encourage users to engage more deeply with their avatars and feel a stronger sense of identification with them. Additionally, the study reveals that the participants' affect intensity plays a significant role in enhancing the impact of embodied presence on vicarious pleasure. Metaverse platform managers should monitor and assess the effect intensity of participants based on their evaluation records. Those who exhibit high levels of activity in evaluating avatars are likely to experience higher affect intensity. Therefore, it is important to provide these users with opportunities to enhance their embodied presence in the metaverse, as this can lead to a greater sense of vicarious pleasure. In summary, metaverse platform managers should focus on promoting avatar identification and enhancing embodied presence to improve user experience and increase engagement. By understanding the factors that influence these aspects, managers can design more effective strategies to create a more immersive and enjoyable metaverse environment for their users.

Second, the results of this study offer specific solutions for leveraging the Metaverse as a marketing tool. For practical application, the study underscores the significance of avatar identification and examines, both theoretically and empirically, its role in fostering sharing intentions in the metaverse. Metaverse platform managers should concentrate on establishing an environment where participants can identify similarities with avatars, aspire to them, and feel physically present. One approach to achieve this physical presence is by implementing a reputation system that rewards active participants with points or other incentives based on their interactions and contributions within the platform. This can enable users to form deeper connections with their avatars and experience a stronger sense of identity. Furthermore, the study highlights the pivotal role of participants' emotional intensity in amplifying the impact of physical presence on virtual enjoyment. Metaverse platform managers should monitor and assess the strength of participants' influence based on their reputation records. Individuals demonstrating higher levels of activity in avatar reputations are likely to experience greater emotional intensity. Therefore, providing these users with opportunities to enhance their physical presence in the metaverse is crucial. This will enable them to experience greater pleasure. In conclusion, Metaverse platform administrators can enhance user experience and boost engagement by facilitating avatar identification and augmenting the sense of physical presence. By comprehending the factors influencing these aspects, managers can devise more effective strategies for their users.

C. *Limitations and future research directions*

This study applies a robust methodological approach to explore a new area, yet there remain opportunities for enhancement. While the findings offer several insights into participants' avatar identification in the metaverse, the following limitations should be acknowledged. First, as this research collected data from university students in South Korea, cultural differences may influence the findings. Future studies should consider expanding the sample to diverse countries and populations to enhance the reliability of these results. Second, given that all variables were measured simultaneously, it is uncertain whether their relationships are consistently stable over time. Although the survey questions were presented in reverse order from the analysis model to mitigate potential issues, causal relationships among the variables cannot be fully ruled out. Thus, future research should consider conducting longitudinal studies to investigate long-term relationships between these factors.

Moreover, this study examined perceived similarity identification, wishful identification, and embodied presence as avatar identification factors, with vicarious pleasure as a mediator and social distance as a moderator. However, considering the multifaceted characteristics of the metaverse, including additional moderating factors could further strengthen the study's academic and practical impact. For instance, platform sustainability may serve as an intrinsic motivation factor, while economic benefits could act as an extrinsic motivator. Additionally, social identity aspects, such as the interdependent self-view perceived by platform participants, may function as significant moderating factors.

CONFLICT OF INTEREST

The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

DATA AVAILABILITY

The data supporting the findings of this study are available upon request from the authors.

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