

Exploring the Impact of Virtual Artists and Consumers through Social Identity Theory

Yu-Ting, Hsu*

Department of Graph Communication Arts, National Taiwan University of Arts,

New Taipei City, Taiwan; xux900804@gmail.com

*Corresponding Author: xux900804@gmail.com

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Abstract

With the rapid advancement of digital technology, the rise of virtual influencers has emerged as an influential force across various fields. Unlike traditional influencers, virtual influencers have digitally created and customizable characteristics, enabling distinctive identity formation processes within online communities. They not only engage with consumers through diverse interactive formats but also offer innovative development opportunities for businesses, demonstrating considerable influence and appeal.

Grounded in Social Identity Theory, this study investigates how virtual influencers convey their image and values to evoke emotional resonance in consumers, which, under the influence of We-Intention, further enhances brand identification, thereby increasing brand loyalty and purchase intention. The research method adopted an online questionnaire survey, collecting a total of 133 valid responses. Empirical analysis was performed using descriptive statistics, correlation analysis, and regression analysis. The results reveal that once We-Intention is formed, social identity does not have a direct effect on brand loyalty. This suggests that brand loyalty is more influenced by consumers' participation and interaction within the group, which subsequently influences their purchase intentions. This study contributes to the literature by clarifying the mediating role of We-Intention in virtual influencer marketing and offers practical insights for enhancing consumer engagement through community-based strategies. Future research directions include cross-cultural comparisons and investigations into demographic variations in virtual influence effectiveness.

Keywords: Virtual artists, Social identity theory, We-Intention, Brand loyalty

1. Introduction

1.1 Research Background and Motivation

With the rise of ACG (Anime, Comic, and Games) culture and the rapid advancement of digital technology, virtual influencers have emerged as a growing trend, fulfilling diverse public demands for entertainment and imagination in the virtual realm. In recent years, an increasing number of companies have moved beyond relying solely on traditional celebrities for brand promotion. Instead,

they leverage the highly customizable appearances and creative content of virtual influencers to capture consumer attention.

In this evolving landscape, virtual influencers serve not only as a bridge of communication between brands and consumers, but also as emotional connectors that foster interactions, convey values, and strengthen engagement. Through meaningful exchanges, they help enhance brand influence and increase consumer stickiness, establishing themselves as a rising force in brand marketing strategies. However, existing research has predominantly focused on traditional influencers or celebrities, with limited studies addressing the role of virtual influencers in shaping social identity and group intention. How these factors influence brand loyalty in virtual contexts remains underexplored. This study aims to fill this research gap by examining how virtual influencers' image and values evoke emotional resonance in consumers, and how We-Intention further enhances brand identification, ultimately increasing brand loyalty and purchase intention.

Accordingly, this study is grounded in Social Identity Theory to explore how virtual influencers, through the transmission of their image and values, evoke emotional resonance among consumers. It further investigates how We-Intention—the collective intention within a group—reinforces brand identification, ultimately boosting brand loyalty and purchase intention.

1.2 Research Objectives

This study is based on the Social Behavioral Intention Model developed by Cheung and Lee, Bagozzi and Lee [1,2] using social identity and We-Intention as the core analytical framework. Additionally, brand loyalty is incorporated as an extended variable to construct the overall research framework. By focusing on the image of virtual influencers, this study further explores how social identity and We-Intention influence consumers' brand attitudes and purchase intentions.

- 1 To explore the status and trends of virtual influencers.
- 2 To examine the impact of Social Identity Theory on We-Intention.
- 3 To investigate the influence of virtual influencers on brand loyalty.

2. Literature Review

2.1 The Current Status and Trends of Virtual Influencers

Virtual influencers are a new type of entertainer created using artificial intelligence, 3D modeling, and motion capture technologies. These digital personas feature highly realistic appearances and personalized characteristics, attracting fans through interactive formats such as short videos, live streaming, and virtual concerts. According to a report by QY Research [3], the global virtual idol / VTuber market is projected to grow from USD 1.416 billion in 2024 to USD 3.852 billion by 2030, indicating that virtual idols have become an integral part of the idol industry. The virtual idol sector has also drawn significant interest from capital investors and entertainment companies [4].

With the rapid development of digital technology and increasing market competition, many companies are shifting away from traditional celebrity endorsements. Instead, they are turning to

virtual influencers due to their “distinctive benefits to brands, such as controlled content and flexibility” [5], which allow brands to manage the image and behavior of virtual artists, make quick adjustments in response to market demands, and explore innovative development opportunities. In practice, these advantages have been demonstrated in several successful cases. For example, the South Korean virtual boy band PLAVE has not only garnered a large fanbase but has also become a popular choice for brand endorsements, significantly enhancing brand exposure and market performance. This trend highlights the rapid rise of virtual influencers in the entertainment industry and demonstrates their immense potential for commercial and entertainment applications.

Furthermore, Byun and Ahn [6] point out that academic interest in virtual humans has increased significantly in recent years, underscoring that this is a field worthy of in-depth exploration. Their influence and application potential still require further empirical investigation, which constitutes one of the key motivations for this study.

2.2 Social Identity Theory

Social Identity Theory was first proposed by Tajfel [7] and later further developed by Tajfel and Turner [8]. This theory, which focuses on intergroup and intragroup behavior, is based on the minimal group paradigm [8]. According to Tajfel [9], social identity is defined as “that part of an individual’s self-concept which derives from his knowledge of his membership of a social group (or groups) together with the value and emotional significance attached to that membership.” In other words, social identity reflects an individual’s perception of themselves as a member of a particular group and reinforces their self-concept through the emotional belonging and value identification brought by the group.

Social identity can be realized through an individual’s self-perception and sense of belonging within the group [10], and it helps individuals better understand their social positioning by clearly portraying their surrounding social environment [11].

Recent research also supports that in immersive virtual environments and online communities, social identity significantly drives participation and purchase intentions, indicating that virtual entities can function as salient in-group references and strengthen collective behavioral goals [12]. However, the results of this study show that once We-Intention is formed, the direct effect of social identity on brand loyalty becomes insignificant. This highlights the critical role of group dynamics in virtual influencer marketing, which can transform initially indifferent consumers into curious and purchasing ones, thereby strengthening their identification with the brand and offering deeper insights into how social identity operates within digital communities.

2.3 We-Intention

We-Intention refers to an individual’s willingness to engage in collective actions with a group and to share a mutual commitment to the group’s goals and values. It emphasizes the collective nature of group activities [2]. According to Tuomela’s [13] definition, “a person intends to participate in a joint action, and there exists an explicit or implicit agreement among the participants of the collective activity” [13]. This underscores the mutual commitment and acceptance among group participants

[1], requiring individuals to align with the group's action goals and to recognize the normative and directional aspects of these actions.

This study adopts the Social Behavioral Intention Model developed by Bagozzi and Lee [2], and applied by Cheung and Lee [1], using social identity and We-Intention as the core analytical framework. It examines how the transmission of values and emotions can promote consumers' identification with group goals, thereby influencing their participation behavior and brand attitudes (Figure 1).

In addition, recent studies show that social features and cooperative task designs in online games can significantly enhance players' We-Intention, thereby promoting sustained participation and cooperative behaviors [14]. This suggests that We-Intention can be fostered through collective activities and shared goals, thereby strengthening customers' identification with the brand.

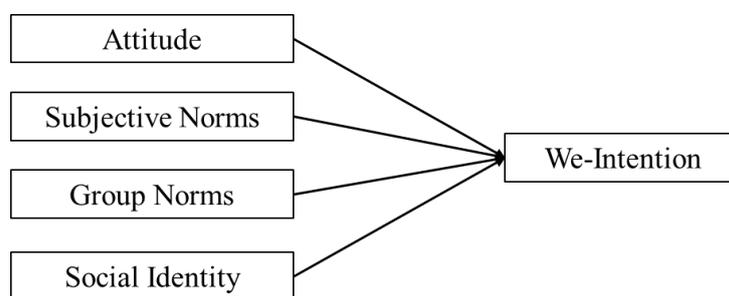


Fig 1 : Research model. Source: Chung and Lee [1].

Note: This figure was compiled and illustrated by the author based on the referenced material.

2.4 Brand Loyalty

Brand Loyalty is a key indicator for evaluating brand value in the field of marketing and is considered one of the core components of brand equity. It refers to customers' continuous loyalty and support toward a brand [13]. Warrington and Shim [15] define brand loyalty as "the repeated purchase of a specific brand and the fulfillment of customer needs, where the decision-making process is simplified through reduced cognitive effort. Therefore, brand loyalty not only reflects consumers' purchasing behavior but also demonstrates their trust in and reliance on the brand, further reinforcing the brand's position in the market.

According to the study by Chatterjee and Basu [16] identified preview, free sampling, perceived brand value, training, and word-of-mouth communication as significant determinants of brand loyalty. Enhancing these factors can strengthen customers' attachment to the brand, increase overall satisfaction, and lower the likelihood of customers switching to competitors, thereby fostering sustained long-term brand commitment. [16]

3. Research Methods

3.1 The Framework

This study is grounded in Social Identity Theory and aims to explore the relationship between virtual influencers and consumers. Based on a review and analysis of relevant literature, the research

framework and hypotheses were constructed (Figure 2). Data were collected through an online questionnaire designed using Google Forms, with the research primarily focused on the Taiwan region. The objective is to understand consumers' identification with virtual influencers and the factors influencing such identification.

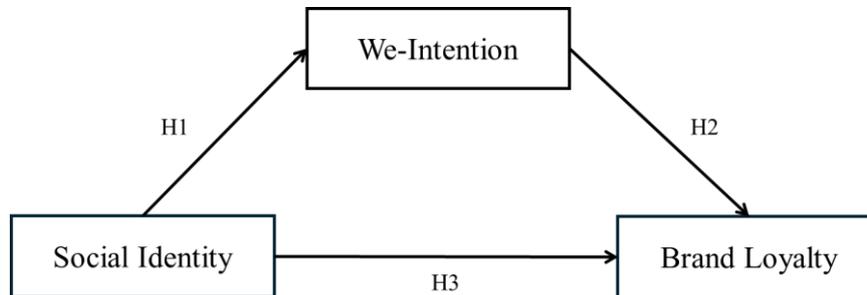


Fig 2 : The framework of the study. Source: By authors.

3.2 Research Hypotheses

H1: Social identity has a significant impact on We-Intention.

H2: We-Intention has a significant impact on brand loyalty.

H3: Social identity has a significant impact on brand loyalty.

3.3 Research Instruments

The questionnaire is divided into four parts. In the preliminary stage, to help respondents better understand the image and characteristics of a virtual influencer endorsing a brand, a short promotional video featuring the virtual influencer was included. This was followed by questions designed to guide respondents in reflecting on their perceptions of the endorsement and their purchase intentions. The questionnaire was structured around three main variables: social identity, We-Intention, and brand loyalty. A five-point Likert scale (1 = strongly disagree, 5 = strongly agree) was used for measurement. The specific contents are as follows:

3.3.1 Social identity

According to Tajfel's [9] definition, social identity is "that part of an individual's self-concept which derives from his knowledge of his membership of a social group (or groups) together with the value and emotional significance attached to that membership." This study uses a questionnaire to measure the emotional connection and degree of self-identification that consumers feel toward brands endorsed by virtual influencers.

3.3.2 We-Intention

According to Tuomela's [17] definition, "a person intends to participate in a joint action, and there exists an explicit or implicit agreement among the participants of the collective activity." This study uses a questionnaire to explore consumers' behavioral tendencies in group interactions and their intention to support brands endorsed by virtual influencers.

3.3.4 Brand loyalty

Warrington and Shim [15] define brand loyalty as "the repeated purchase of a specific brand and the fulfillment of customer needs, where the decision-making process is simplified through reduced cognitive effort." This study uses a questionnaire to measure consumers' long-term preferences and purchase intentions toward brands endorsed by virtual influencers.

3.3.5 Personal information

- (1) Gender: Male, Female
- (2) Age: Categorized by actual age range — 18 and under, 18–65, and over 65
- (3) Education Level: High school/vocational school, College/University, Graduate school or above
- (4) Occupation: Student, Office worker, Freelancer, and other 7 major categories

Through the structural design described above, this questionnaire aims to investigate consumers' perceptions and behavioral intentions toward brands endorsed by virtual influencers, providing a basis for subsequent data analysis.

Table 1. Conceptual Definitions and Items of Each Construct

Variable	Conceptual Definition	Items	Reference Source
Social Identity	How consumers develop a sense of group identification through emotional connection with brands endorsed by virtual influencers and through awareness of their self-identity.	<ol style="list-style-type: none"> 1. I think virtual influencer endorsements help more people become aware of the brand. 2. I think virtual influencer endorsements make the brand appear more attractive. 3. When I purchase products endorsed by virtual influencers, it expresses my affection for the virtual influencer. 4. Buying brands endorsed by virtual influencers makes me feel satisfied because they are related to the virtual influencer. 	Tajfel [9]
We-intention	When a social group recommends a certain brand, individuals	<ol style="list-style-type: none"> 1. If fans of virtual influencer recommend the endorsed brand, I would consider purchasing the product. 	Tuomela [17]

Variable	Conceptual Definition	Items	Reference Source
	may be influenced by the group and choose to support or purchase the brand first because they consider themselves part of that community.	<ol style="list-style-type: none"> 2. When my friends also purchase products endorsed in the video, I would consider following their purchase behavior. 3. When a brand endorsed by a virtual influencer becomes a popular topic among fans, I would consider purchasing it. 4. I feel that supporting the brand featured in the video helps me better integrate into the virtual influencer's fan community. 	
Brand Loyalty	Consumers' continued preference for a brand is reflected in repeated purchasing behavior and a simplified decision-making process when making choices.	<ol style="list-style-type: none"> 1. I am willing to repurchase products from brands endorsed by virtual influencers. 2. Even if the virtual influencer no longer endorses the brand in the future, I will continue to purchase its products. 3. I believe that supporting a brand endorsed by a virtual influencer is a way to express fan loyalty. 4. I am willing to recommend the brand's products featured in the video to my family or friends. 	Warrington & Shim [15]

Source: By authors.

4. Results and Discussions

4.1 The Characteristics of Participants

To ensure the reliability of the scale, a reflective measurement model was calculated using Partial Least Squares (PLS) to determine whether the research data were appropriate for path model analysis [18, 19]. Reliability was rigorously assessed based on Cronbach's α coefficient [20, 21], composite reliability (ρ_c) [22, 23], and average variance extracted (AVE) [24]. The results are shown in Table 1.

The research questionnaire included 12 items across the measured constructs. Cronbach's coefficients ranged from 0.861 to 0.882, all exceeding the acceptable threshold of 0.70 [20, 24]. Composite reliability values ranged from 0.870 to 0.887, all higher than the recommended minimum of 0.70 [22, 23, 25]. Furthermore, the average variance extracted (AVE) ranged from 0.710 to 0.741,

surpassing the standard threshold of 0.50 [26, 27]. Accordingly, the analysis results support that the research instrument demonstrates good reliability.

4.2 Assessment of Construct Validity

4.2.1 Convergence validity

To assess the construct validity of the research instrument using a reflective measurement model, both convergent validity and discriminant validity were estimated. The results are summarized in Table 2. According to the analysis of convergent validity, the factor loadings for each item were required to exceed the standard threshold of 0.70 [28]. The results support that most items under each construct met this criterion.

Table 2. Summary Table of Convergent Validity and Reliability Coefficients for the Final Questionnaire (n=133).

		Convergence Validity		Reliability		
Variables	Items	Factor Loading	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
		>.70	>.70			
SI	SI01	0.843	0.867	0.870	0.910	0.716
	SI02	0.844				
	SI03	0.815				
	SI04	0.881				
WI	WI01	0.900	0.882	0.884	0.919	0.741
	WI02	0.857				
	WI03	0.899				
	WI04	0.781				
BL	BL01	0.929	0.861	0.887	0.907	0.710
	BL02	0.762				
	BL03	0.776				
	BL04	0.890				

Source: By authors.

Note: SI= Social Identity, WI= We-intention, and BL= Brand Loyalty.

4.2.2 Discriminant validity

According to Awang [29], the achievement of the one-dimensionality technique, occurs when the measuring items have respectable factor loadings for the corresponding latent constructs. Any components with a low factor loading should be removed in order to guarantee the one-dimensionality of a measurement model. The factor loading each item should be 0.70 or greater for newly designed scales. Using this method, we have created several pre-tests and have reached the required indicators.

Table 3. Summary Table of Fornell-Larcker Criterion Coefficients for the Final Questionnaire (n=133).

Variables	BL	SI	GI
BL	0.842		
SI	0.720	0.846	
WI	0.841	0.790	0.861

Note: SI= Social Identity, WI= We-intention, and BL= Brand Loyalty.

Finally, the analysis of discriminant validity was conducted using the HTMT (heterotrait-monotrait ratio of correlations) method, which requires the correlation between constructs to be less than 0.90 [30]. The results indicated that the HTMT coefficients ranged from 0.826 to 0.954. Among them, the correlation between WI and BL (HTMT = 0.954 > 0.90) exceeded the threshold and required adjustment. Nevertheless, the remaining factors supported the discriminant validity of the research instrument. The analysis results are presented in Table 4.

Table 4. Summary Table of HTMT Coefficients for the Final Questionnaire (n=133).

Variables	BL	SI	GI
BL	0.843		
SI	0.826	0.846	
WI	0.954	0.900	0.845

Source: By authors.

Note: SI= Social Identity, WI= We-intention, and BL= Brand Loyalty.

4.3 Structural Model Analysis

Before calculating the overall structural model using a formative measurement model, it is essential to examine whether multicollinearity exists among the items. In this study, the variance inflation factor (VIF) was used for testing. When the VIF value is less than 10.0 [31], it indicates that the item estimates are not threatened by multicollinearity. The analysis results are summarized in Table 5, showing that the research scale was not affected by multicollinearity. Using PLS, the model simultaneously estimated the values of R^2 , adjusted R^2 , f^2 , and Q^2 . The results are also presented in Table 5.

Table 5. Summary Table of Formative Measurement Model Analysis Coefficients (n=133).

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Test Results
SI -> BL	0.147	0.156	0.091	1.629	0.104	Not Supported
SI -> WI	0.79	0.789	0.051	15.477	0	Supported
WI -> BL	0.724	0.717	0.086	8.458	0	Supported

Source: By authors.

Note: SI= Social Identity, WI= We-intention, and BL= Brand Loyalty.

The standardized PLS structural equation model and path coefficient estimates are presented in

Figure 3. The analysis results show that Social Identity Theory ($\beta = 0.790$, $p < 0.001$) had a significant effect on We-Intention, indicating that higher levels of social identity among respondents are associated with stronger intentions to engage in behaviors related to virtual influencers. We-Intention ($\beta = 0.724$, $p < 0.001$) also showed a significant positive effect on Brand Loyalty, suggesting that engagement intentions driven by virtual influencers contribute to enhanced consumer brand loyalty. However, Social Identity Theory ($\beta = 0.147$, $p > 0.05$) did not have a statistically significant direct effect on Brand Loyalty, implying that its influence is mediated through We-Intention.

Furthermore, the standardized root means square residual (SRMR) value should be less than 0.05 for a good fit and below 0.08 for an acceptable fit [32]. The SRMR value in this analysis was 0.080, exceeding the recommended threshold. As noted by Hair [31], PLS-SEM is more tolerant of slightly elevated SRMR values when using small sample sizes, and values up to 0.10 may still be deemed acceptable in complex exploratory models. This result suggests that the variance between the observed data and the estimated parameters of the hypothesized model is relatively high, indicating a need for a larger sample size to improve the estimation [33, 34].

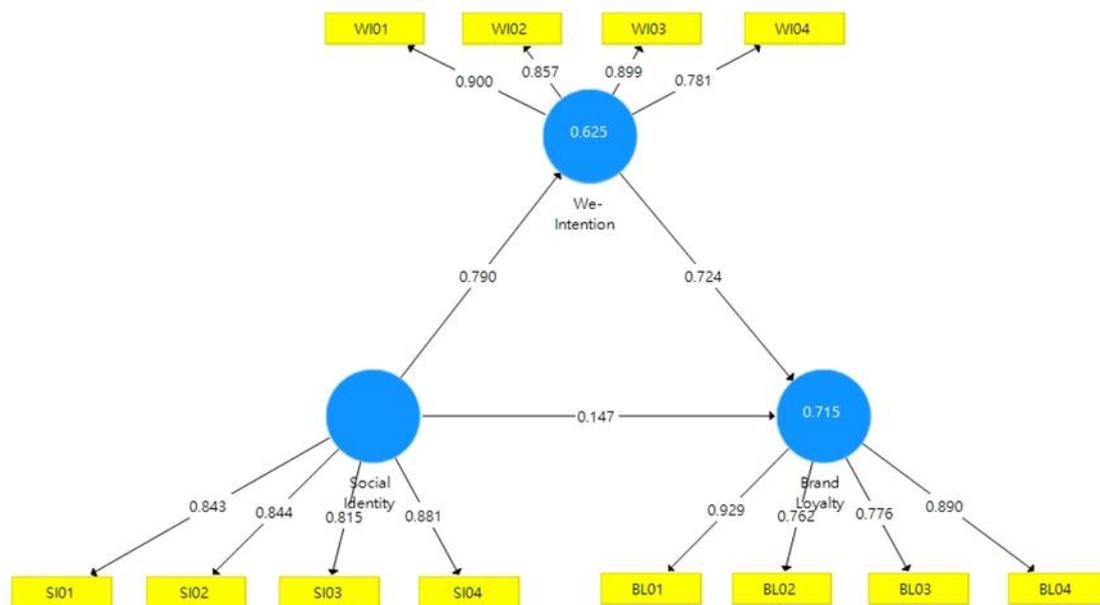


Fig. 3. The standardized regression coefficients of the hypothesized model.

5 Conclusions and Suggestions

5.1 Conclusions

The results of this study indicate that once “We-Intention” is formed, the direct effect of Social Identity on Brand Loyalty disappears. This suggests that consumers’ participation and interaction within a group become the primary drivers of brand loyalty, which in turn affects their purchase intentions. When consumers observe an increasing number of people following virtual influencers, even those who were initially uninterested may develop curiosity and purchasing intent due to the collective buzz generated. This group effect enhances consumer identification through social media participation, making it a key factor in strengthening brand loyalty.

One limitation is the overrepresentation of younger female respondents (73.7% female; 56.4% aged 18–24), which may limit the generalizability of the findings but reflects the main audience of virtual influencers. This aligns with previous research indicating that female fans are often more devoted, and younger fans are more active and social [35]. Another limitation is the SRMR value (0.080), which is slightly above the recommended threshold, suggesting that a larger and more diverse sample could improve model fitness and the robustness of the results. These findings also indicate that virtual influencers, as a marketing tool, tend to attract a younger audience, particularly those who are actively engaged in online community activities.

5.2 Suggestions

Based on the finding that younger female consumers (73.7% female; 56.4% aged 18–24) formed the primary audience. It is recommended that future research incorporates participants from a broader range of age groups to better understand whether virtual influencers can appeal to a wider consumer base. Additionally, the strong mediating effect of We-Intention observed in this study suggests that future research could explore how different forms of group engagement enhance brand identification across diverse cultural contexts.

While this study is grounded in Social Identity Theory, the influence of virtual influencers on consumer behavior is likely shaped by a wider range of psychological and social mechanisms. Future research is advised to integrate additional theoretical models such as the Theory of Planned Behavior (TPB) to examine how consumer attitudes impact brand choice and behavioral intentions. Alternatively, the Uses and Gratifications Theory could be applied to analyze the key needs and gratifications driving consumer interactions with virtual influencers. The incorporation of these complementary theoretical frameworks may provide a more comprehensive understanding of how virtual influencers affect consumer behavior.

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Conflicts of Interest

The author confirms that there are no conflicts of interest.

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