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Virtual Influencer Credibility and Purchase Intention: The Mediating Role of Consumer Skepticism in China

Credibilidad de influencers e intención de compra: el papel mediador del escepticismo del consumidor en China

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ABSTRACT

This study investigates how source credibility of virtual influencers affects purchase intention, with particular attention to the mediating role of consumer skepticism. An online survey was conducted among Chinese consumers who had prior exposure to virtual influencer content. Survey data collected from 350 valid respondents were analysed using structural equation modelling with AMOS 24.0. Results confirm that source credibility positively influences purchase intention and negatively influences consumer skepticism, which in turn negatively affects purchase intention. Bootstrap analysis with 5,000 resamples reveals that consumer skepticism partially mediates the credibility-intention relationship, with the indirect effect accounting for 26.53% of the total effect. These findings extend source credibility theory to the virtual influencer context and highlight the critical role of skepticism reduction in digital persuasion processes. The study contributes to the emerging literature on virtual influencer marketing by identifying consumer skepticism as a key psychological mechanism. Practical implications for brand managers in selecting, designing, and operating virtual influencers are discussed, along with directions for future research.

Keywords: Virtual influencers; Source credibility; Consumer skepticism; Purchase intention; Digital marketing; Persuasion.

Jel Code: M31; M37.



RESUMEN

Este estudio investiga cómo la credibilidad de la fuente de los influencers virtuales incide en la intención de compra, prestando especial atención al papel mediador del escepticismo del consumidor. Se realizó una encuesta en línea entre consumidores chinos con exposición previa al contenido de influencers virtuales. Los datos de la encuesta, recopilados de 350 participantes válidos, se analizaron mediante el modelado de ecuaciones estructurales con AMOS 24.0. Los resultados confirman que la credibilidad de la fuente influye positivamente en la intención de compra y negativamente en el escepticismo del consumidor, lo que, a su vez, afecta negativamente la intención de compra. El análisis bootstrap con 5000 remuestreos revela que el escepticismo del consumidor media parcialmente la relación entre credibilidad e intención, con un efecto indirecto que representa el 26,53 % del efecto total. Estos hallazgos extienden la teoría de la credibilidad de la fuente al contexto de los influencers virtuales y resaltan el papel fundamental de la reducción del escepticismo en los procesos de persuasión digital. El estudio contribuye a la literatura emergente sobre el marketing de influencers virtuales al identificar el escepticismo del consumidor como un mecanismo psicológico clave. Se discuten las implicaciones prácticas para los gerentes de marca en la selección, el diseño y la gestión de influencers virtuales, así como las líneas de investigación futuras.

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Palabras clave: Influencers virtuales; Credibilidad de la fuente; Escepticismo del consumidor; Intención de compra; Marketing digital; Persuasión.

Código JEL: M31; M37.

INTRODUCTION

In recent years, social media has become a vital channel for brand-consumer communication. Influencer marketing, as an emerging digital marketing strategy, is fundamentally reshaping traditional paradigms of brand promotion (Campbell & Farrell, 2020). Influencers publish content on platforms such as Instagram, TikTok, and YouTube, leveraging their expertise, credibility, and intimate relationships with followers to effectively shape consumer attitudes and purchasing decisions (Hudders et al., 2021; Vrontis et al., 2021). Research indicates that influencer credibility is a key determinant of marketing effectiveness, with consumers placing greater trust in product recommendations from influencers perceived as knowledgeable, trustworthy, and attractive (Lou & Yuan, 2019; Wiedmann & von Mettenheim, 2020). Against this backdrop, brands have increasingly incorporated influencer marketing into their integrated marketing communication strategies, seeking to enhance brand awareness and purchase intention through the parasocial relationships between influencers and consumers (Ki et al., 2020).

With the rapid advancement of artificial intelligence (AI) and computer graphics technology, virtual influencers have emerged as an entirely new category of digital spokespersons, quickly becoming a focal point of marketing research (Audrezet et al., 2025). Virtual influencers are digitally created personas developed through AI and computer-generated imagery (CGI) technologies. Examples include Lil Miquela, Imma, and AYAYI, who possess distinct personalities, lifestyles, and social media accounts, enabling them to interact with followers and promote brand products much like their human counterparts (Gerlich, 2023; Su, 2025).

Major brands such as Prada, Gucci, and Louis Vuitton have begun collaborating with virtual influencers, primarily because these digital entities offer high controllability, eliminate scandal risks, and can engage in brand communication around the clock (Sands et al., 2022; Thomas & Fowler, 2021). Studies show that 75% of social media users aged 18 to 24 follow at least one virtual influencer, with approximately 40% having purchased products recommended by virtual influencers (Lee et al., 2025). Nevertheless, the non-human nature of virtual influencers has sparked deeper discussions regarding authenticity, credibility, and consumer trust (Arsenyan & Mirowska, 2021).

Despite the rapid growth of virtual influencer marketing, existing research lacks a thorough understanding of the underlying mechanisms through which virtual influencers affect consumer behaviour (Davlembayeva et al., 2025). Source Credibility Theory (SCT) posits that the expertise, trustworthiness, and attractiveness of information sources are critical dimensions that determine the effectiveness of persuasion (Ohanian, 1990). This theoretical framework has been extensively applied in celebrity endorsement and human influencer

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research (Saima & Khan, 2020). However, as artificially created digital entities, virtual influencers may differ fundamentally from human influencers in how they construct source credibility and the pathways through which credibility operates (Kim & Wang, 2024).

Concurrently, consumer skepticism toward marketing messages represents a significant factor influencing purchasing decisions (Obermiller & Spangenberg, 1998). In the digital era, consumers have developed heightened knowledge of persuasion, enabling them to recognise and resist marketers' persuasive intent (Ringold, 2023). When confronted with virtual influencers as a novel marketing form, consumers may experience intensified skepticism, thereby affecting their acceptance of brand messages and purchase intention (Jamil et al., 2022). This raises the possibility that skepticism functions not merely as an outcome but as a mediating psychological mechanism that transmits and potentially attenuates the persuasive effects of source credibility. Yet, few studies have systematically examined the specific role of consumer skepticism in the virtual influencer marketing context.

Building on these research gaps and practical needs, this study focuses on the virtual influencer marketing context to examine the mechanisms through which source credibility influences consumer purchase intention, with particular emphasis on the mediating effect of consumer skepticism. Specifically, this research seeks to answer: Can the source credibility of virtual influencers effectively reduce consumer skepticism and subsequently promote purchase intention? To address this question, this study integrates SCT and consumer skepticism research to construct a theoretical model and empirically test it through survey methodology.

This study makes three contributions: (1) extending SCT to the virtual influencer context by examining whether expertise, trustworthiness, and attractiveness remain effective when the source is a digitally created entity rather than a human communicator; (2) identifying consumer skepticism as a key psychological mechanism that mediates the credibility-intention relationship, illuminating the process through which virtual influencers overcome consumers' resistance to persuasion; and (3) providing actionable managerial guidance for brands on enhancing virtual influencer credibility and reducing consumer skepticism through expertise signaling, transparency practices, and authenticity cultivation.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Virtual Influencer Marketing

Virtual influencers are digitally created personas developed through computer graphics technology and AI, with human-like appearances, unique personality profiles, and social media accounts that enable them to publish content and interact with followers across various

platforms (de Brito Silva et al., 2022). Compared to human influencers, virtual influencers offer several distinctive advantages: brands can exercise complete control over their image and behaviour, avoiding the scandal risks associated with human endorsers; virtual influencers are unconstrained by time and space, allowing for continuous brand communication; furthermore, their high customizability enables brands to craft ideal spokesperson images tailored to target audience preferences (Igarashi et al., 2024).

Research demonstrates that Millennials and Generation Z consumers exhibit high acceptance and interest in virtual influencers, which are closely related to their upbringing in digital environments and their familiarity with interacting with virtual characters (Angmo & Mahajan, 2024). However, the artificial nature of virtual influencers also presents unique challenges. Because consumers know that virtual influencers are created and controlled entities, they may question the authenticity and motives behind their recommendations, potentially developing resistance toward marketing messages (Barari et al., 2025). Therefore, understanding how virtual influencers establish credibility and effectively influence consumer behaviour has become a pressing issue in contemporary marketing research.

Source Credibility and Purchase Intention

SCT originated in the field of communication, initially proposed by Hovland and Weiss (1951), who argued that source credibility significantly influences audience acceptance of information and attitude change. Ohanian (1990) further developed this framework, proposing a three-dimensional model for measuring endorser credibility comprising expertise, trustworthiness, and attractiveness.

Expertise refers to the audience's perception of the source's knowledge and competence in a specific domain; trustworthiness reflects the audience's judgment of the source's honesty and reliability; attractiveness encompasses the source's physical appearance and the charm of its personality that appeals to audiences. This theoretical framework has been extensively applied in research on celebrity endorsement, advertising communication, and influencer marketing (Schouten et al., 2020).

In the context of influencer marketing, substantial research has confirmed the positive impact of source credibility on consumer purchase intention. When consumers perceive influencers as highly expert, trustworthy, and attractive, they tend to believe the influencer's product recommendations and subsequently develop stronger purchase intentions (Alcántara et al., 2024; Chetioui et al., 2020). In the virtual influencer context, although their non-human nature may raise consumer questions about authenticity, research indicates that carefully designed virtual influencers can similarly demonstrate expertise, build trust, and attract consumers through distinctive visual imagery (Kim & Park, 2023). Based on this analysis, this study proposes:

H₁: Higher source credibility of virtual influencers leads to stronger consumer purchase intention.

Source Credibility and Consumer Skepticism

Consumer skepticism is a stable psychological trait characterised by a general tendency to distrust advertising or marketing messages, manifesting as pervasive questioning of the truthfulness of marketing claims (Obermiller & Spangenberg, 2000). This sceptical attitude stems from consumers' accumulated marketplace experiences, in which they recognise that advertising and marketing messages typically carry persuasive intent, prompting them to exercise vigilance (Petty & Cacioppo, 1986).

According to the Persuasion Knowledge Model (PKM), consumers employ their knowledge of marketers' motives and strategies to evaluate and cope with persuasion attempts; when they identify obvious commercial intent, they tend to develop stronger resistance (Pham & Barretta, 2024). Source credibility plays a crucial role in reducing consumer skepticism. When information sources are perceived as possessing expertise and trustworthiness, consumers more readily believe the conveyed information is objective and reliable, thereby reducing skepticism toward marketing messages (Chen et al., 2021). Conversely, when source credibility is low, consumers become more alert to the commercial motives behind the message, thereby reinforcing their sceptical attitude. In the context of virtual influencer marketing, if virtual influencers demonstrate professional competence, sincere attitudes, and attractiveness, consumers may be more receptive to commercial promotions. Based on this reasoning, this study proposes:

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H₂: Higher source credibility of virtual influencers leads to lower consumer skepticism.

Consumer Skepticism and Purchase Intention

Consumer skepticism significantly impacts purchasing decisions. Highly sceptical consumers tend to question the authenticity of advertising information and hold reservations about product claims, a psychological state that inhibits the formation of positive brand attitudes and purchase intention (Wu & Geylani, 2020). Research indicates that when consumers develop skepticism toward marketing messages, they scrutinise message content more carefully, searching for inconsistencies or exaggerations. This cognitive processing pattern typically leads to negative evaluations of brands and products (Cabeza et al., 2022).

In influencer marketing, consumer skepticism similarly undermines marketing effectiveness. When consumers question the genuine motives behind influencers' product recommendations, their interest in products and purchase propensity decline (Liu & Zheng, 2024). Given their artificial nature, virtual influencers are particularly prone to triggering

scepticism among consumers, who may perceive them as entirely brand-controlled entities whose recommendations lack an authentic experiential foundation. Therefore, this study proposes:

H₃ Higher consumer skepticism leads to lower purchase intention.

The Mediating Role of Consumer Skepticism and the Conceptual Model

Synthesising the theoretical analysis above, this study argues that consumer skepticism mediates the relationship between the credibility of virtual influencer sources and purchase intention. Specifically, the source credibility of virtual influencers operates through its effect on consumer skepticism, which subsequently influences purchase intention. When virtual influencers demonstrate high levels of expertise, trustworthiness, and attractiveness, consumers reduce their vigilance and questioning of marketing messages, and this diminished skepticism further promotes the formation of positive purchase intention (Kanaveedu & Kalapurackal, 2022).

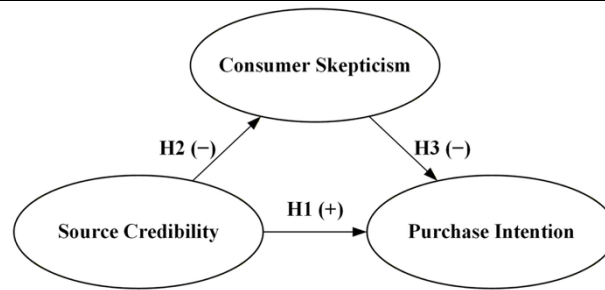
This mediating mechanism reveals the psychological pathway through which source credibility influences purchase intention: credible information sources can effectively dissolve consumers' defensive psychology, making them more open to accepting product recommendation information. Authenticity perception research also supports this view, suggesting that when consumers perceive influencers as sincere and trustworthy, they are less likely to deploy persuasion knowledge to resist marketing messages, thereby becoming more easily persuaded (Lee & Eastin, 2021). Therefore, this study proposes:

H₄: Consumer skepticism mediates the relationship between virtual influencer source credibility and purchase intention.

Based on the literature review and hypothesis development presented above, this study constructs the research conceptual model shown in Figure 1. The model positions source credibility of virtual influencers as the independent variable, consumer purchase intention as the dependent variable, and consumer skepticism as the mediating variable. The model hypothesises that source credibility can directly positively influence purchase intention (H1) and indirectly promote it by reducing consumer skepticism (H2). In contrast, consumer skepticism negatively impacts purchase intention (H3), thereby forming a partial mediating effect pathway (H4).

Figure 1
Research Model

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Source: Own elaboration.

METHODOLOGY

Research Design

This study employed a quantitative research approach, collecting data through survey methodology to test the proposed hypothetical model. Quantitative research methods are suitable for examining causal relationships between variables and can verify the validity of theoretical hypotheses through statistical analysis. Survey methodology is the most commonly used data collection approach in influencer marketing research, offering advantages such as cost-effectiveness, broad sample coverage, and high data standardisation (Vrontis et al., 2021).

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This study designed a structured questionnaire containing measurement items for three core variables, namely virtual influencer source credibility, consumer skepticism, and purchase intention, along with background information on respondents' demographic characteristics and social media usage behaviour. To ensure respondents could answer based on authentic experiences, the questionnaire employed scenario simulation, presenting virtual influencer social media content as stimuli before the measurement items, enabling respondents to complete the questionnaire on a unified cognitive basis.

Stimulus Selection

This study selected a representative virtual influencer as the experimental stimulus. Stimulus selection followed these criteria: first, the selected virtual influencer should possess high visibility and follower base to ensure respondents have some familiarity; second, the virtual influencer's image should be human-like, meaning the appearance approximates real humans rather than cartoon or anime styles, as research indicates human-like virtual influencers are more comparable to human influencers in marketing effectiveness (Kim & Wang, 2024); finally, the selected virtual influencer should have brand collaboration and product promotion experience to align with this study's marketing context.

Based on these criteria, this study selected AYAYI, a prominent Chinese virtual influencer created by Ranmai Technology, as the stimulus. AYAYI debuted on Xiaohongshu (RED) in

May 2021 and quickly gained widespread attention for her hyper-realistic appearance. She has collaborated with major brands including Guerlain, Louis Vuitton, and L'Oréal, making her highly relevant to the marketing context of this study.

The stimulus material consisted of a screenshot of AYAYI's brand collaboration post featuring a beauty product from her official Xiaohongshu account. The post included a product image, AYAYI's endorsement text, and typical social media engagement indicators (likes and comments). In the formal questionnaire, respondents first read a brief explanation of virtual influencers to understand their non-human digital identity, then viewed the stimulus post for approximately 30 seconds, and finally answered subsequent measurement items based on the content they viewed.

Sample and Data Collection

The target sample for this study consisted of consumers with experience with social media and some awareness of virtual influencers. Given that virtual influencer audiences primarily consist of younger demographics, this study focused data collection on consumers aged 18 to 45 (Angmo & Mahajan, 2024). Sample size determination followed the basic requirements for Structural Equation Modelling (SEM) analysis, stipulating that the sample size should be 5 to 10 times the number of measurement items, with a total sample size of at least 200. This study's questionnaire contained 29 core measurement items, yielding a required sample size of 145-290. To ensure analytical robustness and account for potential invalid questionnaires, the study planned to collect at least 350 questionnaires.

Data collection employed online survey methods, distributed through Credamo, a professional survey platform widely used in Chinese consumer research. Respondents were recruited using a combination of convenience sampling and snowball sampling. To ensure that respondents had genuine exposure to virtual influencers, a screening question was included at the beginning of the survey: "Have you ever seen content posted by a virtual influencer on social media?" Only respondents who answered "Yes" were allowed to proceed to the formal questionnaire.

No strict demographic quotas were imposed; however, sample composition was monitored during data collection to ensure adequate representation across age and gender groups. The questionnaire used an anonymous format, with respondents reading informed consent statements before completing the questionnaire to understand the research purposes, data usage, and privacy protection measures, and voluntarily clicking "Agree to Participate" before entering the formal questionnaire. To ensure data quality, the questionnaire included two attention-check items (e.g., "Please select Strongly Agree for this item") and recorded the completion time for each questionnaire. Data cleaning removed questionnaires that failed

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attention checks, had completion times under 120 seconds, or showed obvious patterned responses (e.g., selecting the same option for all items).

Measurement Instruments

All variable measurements in this study employed validated, established scales with appropriate contextual modifications for the virtual influencer marketing context. All items used a seven-point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The measurement instruments, sources, and adaptation notes for each variable are shown in Table 1.

Table 1
Measurement Model, Reliability, Validity, and Discriminant Validity

| Variable | English Name | Scale Source | Original Items | Items Used | Adaptation Notes |
|---------------------|---------------------|---------------------------------|----------------|------------|--|
| Source Credibility | Source Credibility | Ohanian (1990) | 15 | 15 | Changed “celebrity” to “virtual influencer” |
| Consumer Skepticism | Consumer Skepticism | Obermiller & Spangenberg (1998) | 9 | 9 | Changed “advertising” to “virtual influencer’s recommendation” |
| Purchase Intention | Purchase Intention | Spears & Singh (2004) | 5 | 5 | Changed “brand” to “product recommended by virtual influencer” |

Source: Own elaboration.

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Source credibility was measured using the classic scale developed by Ohanian (1990), which comprises three dimensions: Expertise, Trustworthiness, and Attractiveness, with five semantic differential scale items per dimension, totalling 15 items. This scale represents the most widely cited measurement instrument in endorser credibility research and has been adopted by numerous influencer marketing studies (Wiedmann & von Mettenheim, 2020). This study replaced “celebrity” with “virtual influencer” to better fit the research context.

Consumer skepticism was measured using the advertising skepticism scale (SKEP) developed by Obermiller and Spangenberg (1998), which defines consumer skepticism as a general tendency to distrust advertising claims, containing 9 items. This study adapted references to “advertising” to “virtual influencer recommendations” to suit the specific context. Purchase intention was measured using the scale developed by Spears and Singh (2004), specifically designed to measure consumer purchase intention toward brands or products, containing 5 items with demonstrated reliability and validity in advertising and marketing research. This study adjusted the measurement object to “products recommended by virtual influencers.” Additionally, gender, age, education level, monthly income, duration of daily social media use, and familiarity with virtual influencers were included as control variables to exclude potential confounding effects on the research results.

Since the original scales were in English and data collection targeted Chinese respondents, scale translation was necessary. This study followed standard translation-back-translation

procedures: first, a researcher proficient in English with a marketing academic background translated the English scales into Chinese; subsequently, another independent bilingual researcher back-translated the Chinese version into English; finally, the back-translated version was compared with the original English scales, and both researchers jointly discussed and corrected items with semantic deviations to ensure translation accuracy and conceptual equivalence.

Pilot Study

Prior to formal data collection, a pilot study was conducted to examine questionnaire comprehensibility, measurement instrument reliability, and reasonableness of completion time. The pilot sample consisted of 50 respondents who matched the target group's characteristics and were recruited via the online survey platform. After the pilot study, feedback was collected on item clarity, potential ambiguities, and the smoothness of the completion process. Based on feedback, wording adjustments were made to items with unclear expressions.

Simultaneously, reliability analysis was conducted on pilot data, calculating Cronbach's α coefficients for each scale. Results showed α coefficients of 0.87, 0.89, and 0.85 for the three source credibility dimensions (Expertise, Trustworthiness, and Attractiveness), 0.83 for consumer skepticism, and 0.91 for purchase intention, all exceeding the acceptable threshold of 0.70, indicating good internal consistency of the measurement instruments. Furthermore, the average questionnaire completion time recorded during the pilot was approximately 8 minutes, indicating an appropriate questionnaire length that would not cause respondent fatigue.

Data Analysis Methods

Data analysis was conducted using SPSS 26.0 and AMOS 24.0 software, following these analytical steps. First, frequency analysis was performed on the sample demographic characteristics, and descriptive statistics were computed for each variable, including means, standard deviations, skewness, and kurtosis, to understand the basic distribution of the data. Second, the measurement model reliability and validity were examined. Reliability analysis used Cronbach's α coefficients to assess scale internal consistency, with α values greater than 0.70 indicating acceptable reliability. Validity analysis included convergent validity and discriminant validity testing: convergent validity was assessed through Confirmatory Factor Analysis (CFA), examining standardized factor loadings, Composite Reliability (CR), and Average Variance Extracted (AVE), requiring standardized factor loadings greater than 0.50, CR greater than 0.70, and AVE greater than 0.50; discriminant validity was evaluated by comparing the square root of each variable's AVE with inter-variable correlation coefficients, with the former exceeding the latter indicating good discriminant validity.

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Since this study used self-report questionnaires and collected all variables at a single time point, Common Method Bias (CMB) testing was necessary to assess whether it posed a threat to the research results. This study employed Harman's single-factor test, entering all measurement items into exploratory factor analysis; if the first unrotated factor explained less than 50% of variance, CMB was not considered a serious concern (Podsakoff et al., 2003). Acknowledge that Harman's single-factor test has limited sensitivity in detecting CMB. Therefore, several procedural remedies were also implemented during questionnaire design and data collection: (a) respondent anonymity was assured to reduce social desirability bias, (b) predictor and criterion variables were placed in separate sections of the questionnaire to create psychological separation, and (c) item order within each scale was randomised to reduce consistency motif. Additionally, the hypothesised model involves both positive and negative pathways, a pattern that CMB alone cannot artificially produce, and mediation effects tested via bootstrap are less susceptible to CMB inflation than simple bivariate correlations. Hypothesis testing employed SEM analysis. Model goodness-of-fit was first assessed using fit indices and acceptable criteria shown in Table 2.

Table 2
Model Fit Indices and Acceptable Criteria

| Fit Index | Full Name | Acceptable Criteria |
|-------------|---|---------------------|
| χ^2/df | Chi-square/Degrees of Freedom | < 3.00 |
| CFI | Comparative Fit Index | > 0.90 |
| TLI | Tucker-Lewis Index | > 0.90 |
| RMSEA | Root Mean Square Error of Approximation | < 0.08 |
| SRMR | Standardized Root Mean Square Residual | < 0.08 |

Source: Own elaboration.

With adequate model fit established, H1 through H3 were verified by testing the significance of the path coefficients. Mediation effect (H4) testing employed the Bootstrap method, which does not require data to meet normal distribution assumptions and is suitable for mediation effect testing (Preacher & Hayes, 2008). This study set 5,000 resampling iterations to calculate 95% bias-corrected confidence intervals for the mediation effect; if the confidence interval did not include 0, the mediation effect was considered significant. Additionally, by comparing changes in direct effects before and after adding the mediator variable, the type of mediation was determined: if the direct effect became non-significant after adding the mediator, full mediation was indicated; if the direct effect remained significant but weakened, partial mediation was indicated.

RESULTS

Descriptive Statistics

A total of 400 questionnaires were distributed through the online survey platform, with 387 returned, yielding a response rate of 96.75%. After data cleaning, which removed questionnaires failing attention checks (23), having completion times under 120 seconds (8), and showing obvious patterned responses (6), 350 valid questionnaires were obtained, representing an effective rate of 90.44%.

Sample demographic characteristics are shown in Table 3. Regarding gender distribution, female respondents comprised a slightly higher proportion (58.29%), consistent with virtual influencer fan demographics being predominantly female. For age distribution, respondents aged 18-25 and 26-35 together accounted for 82.00%, indicating the sample concentrated on younger consumer groups, aligning with the target sample positioning.

Table 3
Sample Demographics (N = 350)

| Variable | Category | Frequency | Percentage (%) |
|--------------------------|----------------------|-----------|----------------|
| Gender | Male | 146 | 41.71 |
| | Female | 204 | 58.29 |
| Age | 18-25 | 143 | 40.86 |
| | 26-35 | 144 | 41.14 |
| | 36-45 | 63 | 18.00 |
| Education | High school or below | 28 | 8.00 |
| | Associate degree | 77 | 22.00 |
| | Bachelor's degree | 191 | 54.57 |
| | Master's or above | 54 | 15.43 |
| Monthly Income (CNY) | ≤3,000 | 72 | 20.57 |
| | 3,001-6,000 | 106 | 30.29 |
| | 6,001-10,000 | 98 | 28.00 |
| | ≥10,001 | 74 | 21.14 |
| Daily Social Media Usage | <1 hour | 31 | 8.86 |
| | 1-2 hours | 85 | 24.29 |
| | 2-4 hours | 199 | 56.86 |
| | >4 hours | 35 | 10.00 |
| VI Familiarity | Very unfamiliar | 19 | 5.43 |
| | Somewhat unfamiliar | 52 | 14.86 |
| | Neutral | 114 | 32.57 |
| | Fairly familiar | 117 | 33.43 |
| | Very familiar | 48 | 13.71 |

Source: Own elaboration.

Concerning education level, respondents with bachelor's degrees comprised the highest proportion (54.57%), followed by associate degrees (22.00%). Monthly income distribution was relatively balanced, with the 3,001-6,000 CNY range showing the highest proportion

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(30.29%). Regarding daily social media usage, over half of respondents (56.86%) used social media 2-4 hours daily, indicating high social media activity in the sample. Regarding virtual influencer familiarity, respondents who were fairly or very familiar with each other accounted for 47.14%, indicating that nearly half of the respondents had a good understanding of virtual influencers.

Descriptive statistics for each variable are shown in Table 4. Source credibility had a mean of 4.53 and a standard deviation of 1.12, indicating that respondents perceived virtual influencer credibility as moderately high. Consumer skepticism had a mean of 3.89 and a standard deviation of 1.21, indicating respondents held some degree of skepticism toward virtual influencer recommendations. Purchase intention had a mean of 4.21 and a standard deviation of 1.35, indicating moderate purchase intention among respondents. All variables had absolute skewness values below 2 and absolute kurtosis values below 7, indicating that the data met the assumptions of a normal distribution.

Table 4
Descriptive Statistics and Correlation Matrix

| Variable | Mean | SD | Skewness | Kurtosis | 1 | 2 | 3 |
|------------------------|------|------|----------|----------|---------|---------|---|
| 1. Source Credibility | 4.53 | 1.12 | -0.31 | -0.42 | — | | |
| 2. Consumer Skepticism | 3.89 | 1.21 | 0.18 | -0.56 | -0.47** | — | |
| 3. Purchase Intention | 4.21 | 1.35 | -0.22 | -0.68 | 0.52** | -0.44** | — |

Source: Own elaboration.

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Reliability and Validity Analysis

Cronbach's α coefficients and CR were used to assess measurement instrument reliability, while CFA was employed to assess validity. As shown in Table 5, α coefficients for the three source credibility dimensions (Expertise, Trustworthiness, and Attractiveness) were 0.85, 0.87, and 0.83, respectively, with a total scale α of 0.91; consumer skepticism scale α was 0.84; purchase intention scale α was 0.89. All scale α coefficients exceeded the acceptable threshold of 0.70, indicating good internal consistency. CR values for all variables ranged from 0.84 to 0.91, all exceeding the 0.70 threshold, further confirming scale reliability.

Table 5
Reliability and Convergent Validity

| Variable | Dimension | Items | Cronbach's α | CR | AVE |
|---------------------|-----------------|-------|---------------------|------|------|
| Source Credibility | Expertise | 5 | 0.85 | 0.86 | 0.55 |
| | Trustworthiness | 5 | 0.87 | 0.88 | 0.59 |
| | Attractiveness | 5 | 0.83 | 0.84 | 0.52 |
| | Total Scale | 15 | 0.91 | 0.91 | 0.55 |
| Consumer Skepticism | | 9 | 0.84 | 0.85 | 0.51 |
| Purchase Intention | | 5 | 0.89 | 0.90 | 0.64 |

Source: Own elaboration.

Regarding convergent validity, CFA results showed all measurement item standardised factor loadings ranged from 0.62 to 0.86, all exceeding the 0.50 threshold and significant at

$p < 0.001$. AVE values for all variables ranged from 0.51 to 0.64, all exceeding the 0.50 acceptable threshold, indicating good convergent validity. Discriminant validity was assessed using the Fornell-Larcker criterion, requiring each variable's AVE square root to exceed its correlations with other variables. As shown in Table 6, the diagonal values represent the square roots of AVEs, all exceeding the correlations within their respective rows and columns, indicating good discriminant validity among variables.

Table 6
Discriminant Validity (Fornell-Larcker Criterion)

| Variable | 1 | 2 | 3 |
|------------------------|-------|-------|------|
| 1. Source Credibility | 0.74 | | |
| 2. Consumer Skepticism | -0.47 | 0.71 | |
| 3. Purchase Intention | 0.52 | -0.44 | 0.80 |

Source: Own elaboration.

Common Method Bias Test

Since independent, mediating, and dependent variables were all collected via a single questionnaire at a single time point, CMB testing was necessary to assess whether it threatened the research results. Harman's single-factor test was employed by entering all 29 measurement items into an exploratory factor analysis using unrotated principal components extraction. Results revealed 5 factors with eigenvalues greater than 1; the first factor explained 32.47% of variance, below the 50% critical threshold, indicating that CMB did not pose a serious concern in this study.

Hypothesis Testing

SEM was employed to test the hypotheses. Structural model goodness-of-fit was first assessed, and the results are shown in Table 7. The chi-square to degrees of freedom ratio (χ^2/df) was 2.34, below the 3.00 acceptable threshold; CFI was 0.931, and TLI was 0.923, both exceeding the 0.900 threshold; RMSEA was 0.062, and SRMR was 0.054, both below the 0.080 threshold. Collectively, these indicators demonstrated good structural model fit, enabling subsequent path analysis.

Table 7
Discriminant Validity (Fornell-Larcker Criterion)

| Fit Index | Results | Criteria | Assessment |
|-------------|---------|----------|------------|
| χ^2/df | 2.34 | < 3.00 | Acceptable |
| CFI | 0.931 | > 0.900 | Acceptable |
| TLI | 0.923 | > 0.900 | Acceptable |
| RMSEA | 0.062 | < 0.080 | Acceptable |
| SRMR | 0.054 | < 0.080 | Acceptable |

Source: Own elaboration.

Structural model path analysis results are shown in Table 8 and Figure 2. H1 hypothesised that higher source credibility leads to stronger purchase intention. Path analysis revealed a significant direct effect of source credibility on purchase intention ($\beta = 0.36$, $p < 0.001$), supporting H1. H2 hypothesised that higher source credibility leads to lower consumer

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skepticism. Results showed a significant negative path coefficient from source credibility to consumer skepticism ($\beta = -0.49, p < 0.001$), supporting H2. H3 hypothesised that higher consumer skepticism leads to lower purchase intention. Results indicated a significant negative path coefficient from consumer skepticism to purchase intention ($\beta = -0.26, p < 0.001$), supporting H3. The model explained 38% of purchase intention variance ($R^2 = 0.38$), indicating that source credibility and consumer skepticism together accounted for 38% of purchase intention variation.

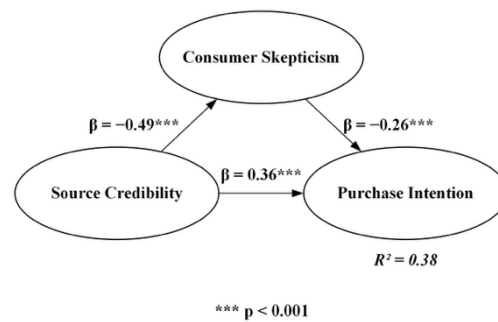
Table 8
Path Analysis Results

| H | Path | Std. β | SE | t | p | Result |
|----|---------------------|--------------|------|------|--------|-----------|
| H1 | SC \rightarrow PI | 0.36 | 0.07 | 5.42 | <0.001 | Supported |
| H2 | SC \rightarrow CS | -0.49 | 0.06 | 7.83 | <0.001 | Supported |
| H3 | CS \rightarrow PI | -0.26 | 0.07 | 3.94 | <0.001 | Supported |

Note: SC = Source Credibility; CS = Consumer Skepticism; PI = Purchase Intention.

Source: Own elaboration.

Figure 2
Structural Model Results



Source: Own elaboration.

Mediation Effect Analysis

H4 hypothesised that consumer skepticism mediates the relationship between source credibility and purchase intention. The Bootstrap method was employed for mediation testing, with 5,000 resampling iterations and 95% bias-corrected confidence intervals. As shown in Table 9, the indirect effect of source credibility on purchase intention through consumer skepticism was 0.13, with a 95% confidence interval of [0.07, 0.21] that did not include 0, indicating a significant mediation effect and supporting H4.

Further analysis of mediation type revealed that since the direct effect of source credibility on purchase intention remained significant after adding the mediator ($\beta = 0.36, p < 0.001$), consumer skepticism partially mediated the relationship between source credibility and purchase intention. The indirect effect accounted for 26.53% of the total effect ($0.13/0.49$), indicating that a substantial portion of source credibility's influence on purchase intention operates through reducing consumer skepticism.

Table 9
Mediation Effect Analysis (Bootstrap N = 5000)

| Effect Path | Effect | SE | 95% CI LL | 95% CI UL | % of Total |
|--------------------------------|--------|------|-----------|-----------|------------|
| Total Effect (SC → PI) | 0.49 | 0.06 | 0.37 | 0.60 | — |
| Direct Effect (SC → PI) | 0.36 | 0.07 | 0.23 | 0.49 | 73.47% |
| Indirect Effect (SC → CS → PI) | 0.13 | 0.04 | 0.07 | 0.21 | 26.53% |

Note: SC = Source Credibility; CS = Consumer Skepticism; PI = Purchase Intention; CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit.

Source: Own elaboration.

DISCUSSION

The empirical results reveal a noteworthy phenomenon in virtual influencer marketing: despite consumers' clear awareness that virtual influencers are artificially created digital entities, high-credibility virtual influencers can still effectively drive purchase intention. More importantly, this influence does not occur entirely directly; rather, a substantial portion (26.53%) operates through the psychological mechanism of reducing consumer skepticism. This indicates that over one-quarter of source credibility's impact on purchase intention is transmitted through skepticism reduction, underscoring the substantive role of this psychological pathway. This suggests that the persuasion process of virtual influencers is essentially a process of "dismantling psychological defences." When virtual influencers successfully establish professional, credible, and attractive images, consumers gradually lower their guard against commercial motives and adopt a more open mindset toward accepting product recommendation information.

The findings extend SCT to the virtual influencer context in two respects. On one hand, the results challenge the intuitive assumption that "virtual identity necessarily undermines credibility." Conventional wisdom holds that consumer trust in artificially created entities should be lower than trust in real humans; however, this study demonstrates that credibility construction does not depend entirely on the ontological attribute of "being human" but rather hinges more on the influencer's professional competence and sincere attitude.

This finding echoes the meta-analysis conclusions of M. M. Barari et al. (2025), who systematically analysed 71 studies and found that influencer credibility and attractiveness represent universal influence mechanisms that transcend different influencer types. On the other hand, the discovery of consumer skepticism as a partial mediator provides a new perspective for understanding persuasion resistance in digital marketing contexts. Consumer skepticism functions as a mechanism that both transmits and attenuates the persuasive effect of source credibility: high credibility lowers consumers' defensive barriers and facilitates persuasion, while low credibility activates skepticism that inhibits purchase intention. Similar

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to Casaló et al.'s (2021) finding of the positive emotions' mediating role in Instagram marketing, this study identifies skepticism as a "negative emotional pathway," with both together constituting dual psychological channels for influencer marketing effectiveness.

The research conclusions offer actionable strategic guidance for virtual influencer marketing practice. When evaluating virtual influencers, brands should establish systematic credibility assessment frameworks that focus on their accumulated professional image and trust capital among target audiences, rather than relying solely on superficial metrics such as follower counts and engagement rates.

Patmawati and Miswanto's (2022) research confirmed that influencer credibility significantly enhances brand awareness and purchase intention; extending this logic to virtual influencers suggests that carefully cultivated high-credibility virtual influencers may possess greater commercial value than those with massive follower bases but lacking trust foundations.

At the content operations level, virtual influencer teams should focus on reducing consumers' sense of "being manipulated." Specific strategies include: (1) enhancing expertise signaling by having virtual influencers demonstrate product knowledge through detailed reviews, usage tutorials, or behind-the-scenes content rather than simple endorsements; (2) adopting transparency practices with clear but non-intrusive sponsorship disclosures, as overly defensive or hidden disclosures may heighten skepticism; (3) cultivating authenticity by displaying virtual influencers' "growth" and "personalization" characteristics through consistent narrative arcs, genuine fan interactions, and content that extends beyond promotional material. These strategies enable consumers to gradually view virtual influencers as trustworthy sources of information rather than mere advertising vehicles.

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This study employed a cross-sectional survey design with single-source self-report data, which, while able to test variable associations, cannot entirely eliminate common method bias and cannot capture the dynamic evolution of consumer trust-building with virtual influencers; future research could adopt longitudinal tracking designs to examine the trajectory of skepticism attitude changes and their long-term effects on purchase behaviour as consumers continuously engage with virtual influencer content.

This study's sample focused on young Chinese consumers, and cultural differences in attitudes toward AI, technology, and digital personas may influence how consumers respond to virtual influencers, limiting the generalizability of the findings to other cultural contexts. Future research could conduct cross-cultural comparisons to examine how cultural values moderate the effectiveness of virtual influencer persuasion.

This study treated source credibility as an aggregate construct, but the relative importance of the expertise, trustworthiness, and attractiveness dimensions in the virtual influencer context may differ from those of human influencers; future research could analyse the unique contributions of each dimension and their interaction effects in greater depth. Other promising directions include experimental designs that manipulate credibility dimensions, comparisons across product categories, and studies directly comparing virtual versus human influencers.

CONCLUSIONS

The rise of virtual influencers marks digital marketing's entry into a new stage where human-machine boundaries grow increasingly blurred. Through empirical testing, this study reveals a seemingly contradictory yet profoundly meaningful phenomenon: consumers do not naturally reject virtual influencers' recommendations simply because they know of their "virtual nature"; what truly determines the effectiveness of persuasion is whether influencers can establish credible professional images and overcome consumers' internal defence mechanisms. The mediating role of consumer skepticism indicates that the core challenge in virtual influencer marketing lies not in "how to make the virtual appear more real," but in "how to make recommendations seem more credible." This finding shifts the research perspective from influencers' ontological attributes to their relational construction capabilities, offering a new theoretical entry point for understanding consumer persuasion in the AI era.

From a broader perspective, virtual influencers' effectiveness reflects profound transformations in contemporary consumer-technology relationships. As younger generations grow up in digital environments and become accustomed to interacting with various virtual characters, the traditional dichotomy between "real" and "virtual" is being redefined. Virtual influencers are no longer merely products of technology but have become a new form of social existence, with their influence boundaries continuing to expand alongside the evolution of AI technology and the enhancement of consumer digital literacy. In marketing practice, this means brands need to embrace this transformation with greater openness while thoughtfully balancing commercial value with consumer trust.

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