

How Does the AI Try-On for Sports Products on Taobao Influence Consumer Purchase Decisions?

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Abstract

The rapid expansion of AI-enabled virtual try-on in digital fashion retail necessitates understanding consumer psychological mechanisms. Drawing on self-congruence theory and the SOR framework, this study examines how perceived AI authenticity influences purchase intention in sportswear e-commerce. Perceived AI authenticity serves as the stimulus, self-congruence as the organismic state, and purchase intention as the response. Using scenario-based survey and PLS-SEM analysis, findings reveal that higher perceived AI authenticity enhances self-congruence, which subsequently increases purchase intention. Self-congruence mediates the authenticity-purchase relationship, highlighting an identity-based psychological pathway. This study extends SOR applications in AI-driven fashion consumption and offers practical guidance for designing immersive virtual shopping experiences.

Keywords: consumer behaviour, Virtual Try-On, perceived AI authenticity, self-congruence, sportswear E-Commerce, purchase intention

1. Introduction

Against the backdrop of the rapid evolution of global e-commerce, online apparel shopping has shifted from traditional text and image displays to immersive interactive experiences centered on virtual try-on and AI-powered virtual try-on. Leveraging augmented reality (AR), virtual reality (VR), and deep learning technologies, virtual try-on can overlay clothing patterns and dynamic effects onto the consumer's image, thereby alleviating the uncertainty of "not being able to try on clothes" in online shopping and improving decision-making efficiency (Y. Gao & Liang, 2025). AI-driven virtual try-on, with its improvements in visual realism, interactivity, and personalized configuration, has been widely adopted on major platforms such as Taobao, significantly increasing user satisfaction, reducing return rates, and enhancing impulse purchases and purchase intentions (Islam et al., 2024; Molle & Chen, 2025). In this context, sportswear, due to its strong association with physical performance, a healthy lifestyle, and identity expression, has become a typical high-engagement category that more easily evokes emotional resonance and self-congruence, possessing independent research value. According to Abidin et al. (2025), mobility, cultural and heritage tourism, digital landscape transformation, and motivation to use virtual reality are some of the current and emerging tourism trends.

Existing research on virtual try-on is largely based on the Technology Acceptance Model (TAM), diffusion of innovation theory, and systems characteristics perspective, primarily exploring how technological attributes such as interactivity influence perceived usefulness, hedonic value, and adoption intention (Mythili et al., 2025; Tawira & Ivanov, 2023). Some studies further utilize the System of Responsive Orientation (SOR) framework, treating visual realism, personalization, and interactive control as external stimuli, finding that they can promote impulsive purchasing behavior through organismal variables such as utilitarian value (Erensoy et al., 2024). However, this research approach as a whole remains at the level of "technology utility and experience evaluation," with insufficient attention paid to the deeper psychological mechanisms of consumers, especially self-concept-related self-congruence and its role in the "perceived AI authenticity-purchase intention" relationship, which requires further investigation.

On the other hand, whether consumers perceive AI-generated and enhanced virtual try-on images as "real" and "credible" has become a significant antecedent influencing their behavioral responses. Current research indicates that realism and

authenticity in AR/VR scenarios can significantly improve perceived service quality, emotional responses, and platform attachment, thereby promoting purchase intention (Pooja et al., 2024; Yadav et al., 2024). In the fields of eyewear, cosmetics, and ready-to-wear try-on, consumers' assessments of realism, fit, and visual quality directly impact technology trust and purchase decisions (Prakash Ashlin et al., 2025; Sutarjana & Ekawati, 2025). However, the potential biases and risks that AI try-on may cause in shaping self-perception, body image, and brand trust still lack systematic examination. If the design lacks inclusivity or accuracy, it may even weaken brand trust and create psychological burdens (Sharif, 2025). Paradoxically, even excessively realistic AI rendering may prove counterproductive. When try-on images accurately expose consumers' perceived physical imperfections against idealized sportswear aesthetics, the resulting discrepancy between actual and ideal self-image may suppress rather than enhance self-congruence and purchase intention. Therefore, how the perceived AI authenticity influences purchasing intentions in sportswear, a category with high self-involvement, through internal psychological mechanisms still requires further empirical research.

Therefore, this study takes AI-generated virtual try-on in sportswear e-commerce as a scenario, focusing on two core questions: first, can AI-generated images influence consumers' psychological and behavioral responses by enhancing self-congruence; second, does self-congruence mediate the relationship between perceived AI realism and purchase intention? Theoretically, this study integrates Sirgy's self-congruence theory and the SOR framework, defining perceived AI realism as the stimulus variable, self-congruence as the organismic response, and purchase intention as the outcome variable, constructing a comprehensive model applicable to AI try-on scenarios, thereby expanding the application of relevant theories in technology-mediated retail and sportswear consumption. Methodologically, PLS-SEM is used to test structural relationships, responding to the mainstream trend in current AI retail research of expanding SOR and partial least squares analysis (Dulloo et al., 2025). Practically, this study provides strategic insights for platforms and sportswear brands to optimize virtual try-on design, enhance user engagement, and improve sales conversion (Imran et al., 2023).

2. Literature Review

2.1 Perceived AI Authenticity (S) and SOR

AI-generated visual content and virtual try-on are becoming key stimuli (S) in e-commerce, reshaping the online shopping experience through visual realism, interactivity, and personalization (Y. Gao & Liang, 2025). Research shows that the high visual vividness and immersiveness of AI try-on can reduce psychological distance, enhance product imagination and perceived value, thereby increasing impulse purchase or adoption intention (Shi et al., 2025; Yin & Qiu, 2021).

Sportswear is often seen as a highly involved, identity-relevant, and self-expressive product, where brand and appearance influence purchase intentions through self-congruence (Chen et al., 2021). In this category, the realism of visual presentation and accuracy in fitting the body/sports context are particularly crucial. Virtual sportswear try-on systems significantly enhance online decision-making confidence by highly replicating fabric texture and dynamic performance (Gan, 2025). Meanwhile, generative AI images in advertising bring creativity and personalization, but also raise concerns about "authenticity" and trust (Bui et al., 2024; Lee & Kim, 2024).

Thus, this study posits this hypothesis:

H1: Perceived AI Authenticity positively influences consumers' self-congruence.

2.2 Self-Congruence Theory (O)

Self-congruence theory posits that when a product image aligns with a consumer's actual or ideal self, it enhances attitudes, attachment, and purchasing behavior (AlQahtani, 2025; Zhu et al., 2019). Sirgy (1982) originally distinguished between actual self-congruence (the match between product image and one's current self-perception) and ideal self-congruence (the match with one's aspirational self-image). In the sportswear context, these two dimensions are particularly salient and may operate simultaneously. Consumers evaluate AI try-on images both against their current physical state and against an idealized athletic identity. The dual activation of actual and ideal self-concept makes sportswear a theoretically rich category for examining self-congruence in AI-mediated environments (Zogaj et al., 2021). In the apparel and fashion context, the consistency between brand image and consumer self-concept has been repeatedly demonstrated as a typical self-image product mechanism (Chen et al., 2021; Kumar & Kaushik, 2022).

In the digital and AI context, self-congruence is further extended to the consistency between the "online self" and visual content. The more the online image reflects the self, the more conducive it is to forming preferences and making purchases (Song et al., 2024). AI anthropomorphism and intelligent agents are also believed to be gradually integrated into the self-system through alignment with the user's self-concept (Alabed et al., 2022).

In AI-generated try-on scenarios, AI-generated sportswear images can simultaneously activate consumers' representations of their real selves and their ideal athletic selves. In the process of consumers "imagining themselves wearing" the clothes and observing how they match their self-image, self-organism becomes the core psychological mechanism connecting visual stimuli and behavioral responses (De Silva et al., 2025; Rather, 2025).

Thus, this study posits this hypothesis:

H2: Self-congruence positively influences purchase intention toward sport apparel in AI-mediated e-commerce contexts.

2.3 Purchase Intention (R)

According to the SOR model, external stimuli can indirectly influence behavior through organismal state (O) or directly affect response (R) (Wu & Huang, 2023). Current research indicates that the accuracy, interactive experience, and "realism" of AI technology can directly enhance perceived value, trust, and immersion, thereby increasing purchase intention, even without explicitly examining self-congruence (Shi et al., 2025).

In AI-generated image contexts, higher perceived realism is often associated with higher expected quality, trust, and brand usage intention (Bui et al., 2024; Lee & Kim, 2024). Conceptual research on AI-generated images also emphasizes that if AI images are perceived as lacking realism, they may weaken emotional investment and brand trust; conversely, high realism can directly enhance attitudes and behavioral intentions (Nazrin et al., 2025).

In the high-risk, high-involvement category of sportswear, consumers rely heavily on visual cues to assess fit, functionality, and comfort. Highly realistic AI try-on can directly reduce perceived risk and decision uncertainty, thereby increasing purchase intention (Gao & Liang, 2025; Huang et al., 2025). This suggests the existence of a utilitarian pathway operating in parallel to the identity-based pathway. Beyond activating self-concept matching, perceived AI authenticity may directly lower consumers' functional concerns regarding size accuracy, fabric appearance, and fit suitability, translating into increased purchase confidence without necessarily engaging self-congruence processes.

Thus, this study posits this hypothesis:

H3: Perceived AI Authenticity positively influences purchase intention.

2.4 Mediating Role of Self-Congruence

Organization in SOR is generally defined as an internal psychological state that connects stimulus and response, such as perceived value, emotion, or trust (Shi et al., 2025; Yin & Qiu, 2021). Based on self-congruence theory, self-congruence can be seen as a more identity-oriented internal state. It reflects the degree to which an individual subjectively matches "who I am/what kind of person I want to be" in a stimulus situation (Zogaj et al., 2021).

Current research has begun to place "self-congruence" in a mediating position within AI environments. For example, in AI-powered hotel services, self-congruence moderates the impact of perceived value on participation behavior and adoption intention (Rather, 2025); in green consumption and influencer scenarios, real self-congruence has been shown to mediate between knowledge or brand positioning and green purchasing behavior (Chan, 2025; De Silva et al., 2025). In AI-generated vision, the "AI-thenticity" of AI images not only directly enhances trust and visitation intention but also strengthens patronage intention through the alignment of images with tourists' self-image (Bui et al., 2024).

Integrating these perspectives into AI-powered sportswear try-on, we can define "perceived realism" as stimulus (S) and "self-congruence" as Organism. Highly realistic AI sportswear images are more likely to trigger the psychological experience of "this is me, or the athletic self I want to be," thus transforming visual stimulation into purchase motivation at the identity level (AlQahtani, 2025; Zogaj et al., 2021). Simultaneously, SOR also allows for the existence of a direct stimulus-response path (Shi et al., 2025). Therefore, this study proposes and compares the direct effect with the indirect effect through self-congruence, empirically testing whether the mediation is partial or complete.

Thus, this study posits this hypothesis:

H4: Self-congruence mediates the relationship between perceived AI authenticity and purchase intention.

2.5 Research Model

Based on Self-Congruence Theory and the SOR framework, this study proposes a model in which perceived AI authenticity as a stimulus, self-congruence represents the organismic state, and purchase intention serves as the behavioral response. (see Figure 1).

Source: Author's Work

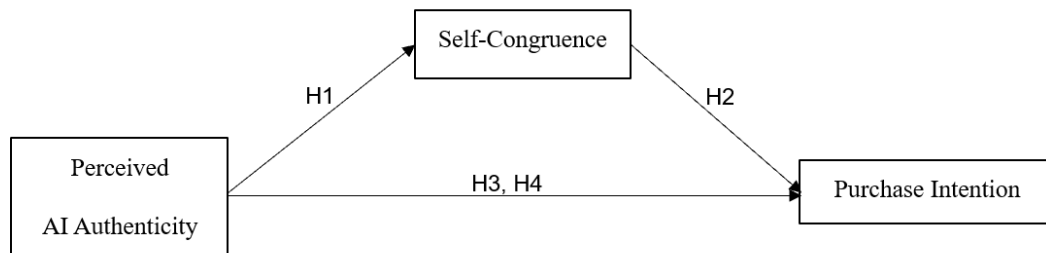


Figure 1. Research Model

3. Methodology

3.1 Measures

The present study employs a scenario-based survey design, in which participants were asked to imaginatively engage with a described AI try-on experience rather than interact with a live system. This approach is consistent with established precedents in consumer behavior and AI retail research, where scenario-based methods are widely used to examine psychological responses to novel technologies that are not yet universally accessible (Bui et al., 2024; Gao & Liang, 2025). By standardizing the stimulus description across all participants, this design controls for extraneous variation in platform interface and technology quality, thereby isolating the cognitive and identity-relevant dimensions of perceived AI authenticity.

A questionnaire was developed to test the study's research hypotheses. The measurement items were adapted from existing scales.

Self-congruence was measured using a likert items formula. Four items adapted from Japutra et al. (2019), were used to measure self-congruence. In the questionnaire, the respondents were asked to read a scenario-like paragraph to measure self-congruence as shown below:

"Take a moment to imagine that you are browsing sportswear apparel on the Taobao platform and using the AI-powered virtual try-on feature. The system generates a personalized virtual model that simulates how the selected sportswear outfit would look on you. Please carefully observe the AI-generated try-on image and, based on your impression of the virtual presentation, answer the following questions. When responding, consider how well the AI-generated sport image aligns with your self-image and ideal self."

After reading the scenario-like paragraph, respondents were asked to rate the self-congruence statements on a 7-point scale anchored by (1) = strongly disagree and (7) = strongly agree. Following Bui et al. (2024) study, perceived AI authenticity was assessed using 3 items on a 7-point scale anchored by (1) = not at all and (7) = completely. Following Gao et al. (2023) study, purchase intention was measured using three items and a 7-point scale anchored by (1) = not very likely and (7) = very likely.

3.2 Data collection and Sample

The questionnaire was distributed through the SoJump platform on Xiaohongshu, WeChat, and Weibo, with customers who have prior experience using the Taobao.com platform selected as the research sample. In total, 1000 questionnaires were distributed and as many as 407 questionnaire were returned. Of these, 392 were retained for further analysis.

The demographic profiles of the respondents were: 78.1% were women. In terms of age group, 45.4% were between 26 and 35 years old, the largest group, followed by 36-45 years old at 25.8%, and 19-25 years old at 22.2%, with fewer respondents in other age groups. Regarding occupation, 29.1% were civil servants or employees of public institutions, 27% were freelancers, 22.2% were enterprise employees, 14.8% were students. The monthly income distribution shows that the middle-income group is the majority, with 37.2% earning 3,001-5,000 yuan, 32.4% earning 5,001-10,000 yuan, 15.1% earning 1,001-3,000 yuan, and 11.2% earning over 10,000 yuan. Regarding exercise habits, respondents exercise 3-4 times per week (40.3%) and 4-5 times per week (32.1%), with 21.2% exercising 1-2 times per week. As for e-commerce usage frequency, most respondents frequently use Taobao or other e-commerce platforms: 40.6% said they "sometimes use it," 34.7% said they "use it frequently," and 9.7% said they "use it very frequently." (see Table 1 for the demographic information).

Table 1. Demographic Information

Demographics	Frequency	Percentage%
Gender		
Male	86	21.9
Female	306	78.1
Age		
18 years old and under	5	1.3
19-25 years old	87	22.2
26-35 years old	178	45.4
36-45 years old	101	25.8
46-55 years old	19	4.8
56 years old and over	2	0.5
Education level		
High school and below	85	21.7
College diploma	106	27
Bachelor's degree	112	28.6
Master's degree and above	89	22.7
Occupation type		
Student	58	14.8
Civil servant	114	29.1
Freelancer	106	27
Enterprise staff	87	22.2
Retired personnel	23	5.9
Unemployed	4	1
Monthly income		
1000 yuan and below	16	4.1
1001-3000 yuan	59	15.1
3001-5000 yuan	146	37.2
5001-10000 yuan	127	32.4
More than 10000 yuan	44	11.2
How often do you exercise a week?		
Never	3	0.8
1-2 times	83	21.2
3-4 times	158	40.3
4-5 times	126	32.1
More than 5 times	22	5.6
How often do you use Taobao or other e-commerce platforms?		
Never	2	0.5
Occasionally	57	14.5
Sometimes	159	40.6
Often	136	34.7
Very frequently	38	9.7

4. Results

4.1 Reliability and Validity of the Measures

Data analysis was performed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS version 4.1.0.9. As noted by Hair et al. (2011), PLS-SEM requires less stringent statistical assumptions and is suitable for relatively small to moderate sample sizes compared to covariance-based SEM.

A two-step procedure was employed, beginning with the assessment of the outer (measurement) model, followed by the evaluation of the inner (structural) model (Hair et al., 2011, 2014). The outer model was examined using the PLS-SEM algorithm to verify the reliability and validity of the constructs. Subsequently, the inner model was tested using a bootstrapping procedure with 5,000 subsamples to assess the significance of the hypothesized relationships.

Composite reliability (CR) and Cronbach's alpha were employed to assess internal consistency reliability. A CR value above 0.60 and a Cronbach's alpha exceeding 0.70 indicate acceptable reliability (Bagozzi, 1986; Hair et al., 2014). The PLS-SEM algorithm results showed that all CR and Cronbach's alpha values were above the recommended thresholds,

confirming satisfactory reliability. Convergent validity was subsequently evaluated. Following Fornell and Larcker (1981), convergent validity is established when the average variance extracted (AVE) exceeds 0.50 and all indicator loadings are greater than 0.70 (Hair et al., 2014). The results demonstrated adequate convergent validity, as both AVE values and outer loadings met the recommended criteria. (see Table 2 for the reliability and validity result).

Table 2. Reliability and Validity

Composite	Item	Factor Loading	Cronbach's alpha	CR	AVE	R ²
Perceived Authenticity	PAIA1	0.875	0.885	0.921	0.744	0.045
	AI PAIA2	0.879				
	PAIA3	0.828				
	PAIA4	0.866				
Self-Congruence	SC1	0.892	0.866	0.918	0.788	0.136
	SC2	0.891				
	SC3	0.881				
Purchase Intention	PI1	0.878	0.838	0.902	0.755	0.136
	PI2	0.861				
	PI3	0.868				

Note: CR: Composite Reliability; AVE: Average Variances Extracted.

After establishing convergent validity, discriminant validity was assessed using the Fornell-Larcker criterion (Fornell & Larcker, 1981). Discriminant validity is supported when the square root of each construct's AVE exceeds its inter-construct correlations. As shown in Table 3, the square roots of the AVE values were higher than the corresponding inter-correlations, indicating satisfactory discriminant validity. The inter-construct correlation (IC) values were lower than the square roots of the corresponding AVE values, indicating that discriminant validity was established.

Table 3. Average Variance Extracted (AVE) and Inter-Correlations (IC)

	Perceived AI Authenticity	Self-Congruence	Purchase Intention
Perceived AI Authenticity	0.862		
Self-Congruence	0.212	0.888	
Purchase Intention	0.22	0.336	0.869

Note: The diagonal scores (in bold) indicate the square root of AVEs.

To further assess discriminant validity beyond the Fornell-Larcker criterion, the HTMT was calculated, which is now considered the preferred standard for discriminant validity assessment in PLS-SEM research (Hair et al., 2017). As shown in Table 4, all HTMT values ranged from 0.239 to 0.392, well below the conservative threshold of 0.85, confirming that all three constructs are empirically distinct. Additionally, Harman's single-factor test was conducted by submitting all items to an unrotated principal component analysis. The first unrotated factor accounted for 38.65% of the total variance, substantially below the 50% threshold (Podsakoff et al., 2003), indicating that common method bias does not pose a critical threat to the validity of the reported structural relationships.

Table 4. Heterotrait-Monotrait Ratio (HTMT)

	PAIA	SC	PI
Perceived AI Authenticity	-		
Self-Congruence	0.239	-	
Purchase Intention	0.254	0.392	-

Note: All HTMT values < 0.85 threshold (Hair et al., 2017), confirming discriminant validity.

4.2 Hypotheses Testing

After confirming the reliability and validity of the measures, a bootstrapping procedure (5000 subsamples) was conducted to test the research hypotheses. Both direct and indirect effects of perceived AI authenticity on purchase intention were examined, with self-congruence as the mediating variable. This allows the empirical results to determine whether the mediation is full or partial. The results for path coefficients, t-values, and significance levels are summarized in Table 5.

Table 5. Hypothesis Testing for Direct Effects, Indirect Effect and Total Effect

Type	Hypothesis	Effect	ρ	<i>T</i> statistics	<i>P</i> values	95%CI	f^2
Direct Effect	H1	Perceived AI Authenticity -> Self-Congruence	0.212	4.292	0	[0.11,0.301]	0.047
	H2	Self-Congruence -> Purchase Intention	0.303	6.638	0	[0.21,0.388]	0.102
	H3	Perceived AI Authenticity -> Purchase Intention	0.155	3.41	0.001	[0.06,0.242]	0.027
Indirect Effect	H4	Perceived AI Authenticity -> Purchase Intention	0.064	3.591	0	[0.032,0.103]	
Total Effect		Perceived AI Authenticity -> Purchase Intention	0.22	4.926	0	[0.125,0.302]	

Hypothesis 1 posited that perceived AI authenticity of AI-generated sport apparel visualization positively affects consumers' self-congruence. The results supported H1, as the path coefficient was $\rho = 0.212$, $t = 4.292$, $p < 0.001$, $95\%CI = [0.11, 0.301]$, indicating a strong and significant positive effect of perceived AI authenticity on self-congruence.

Hypothesis 2 proposed that self-congruence positively influences purchase intention toward sport apparel. This hypothesis was supported, with a path coefficient of $\beta = 0.303$, $t = 6.638$, $p < 0.001$, $95\%CI = [0.21, 0.388]$, confirming that greater self-congruence significantly increases purchase intention.

Notably, the direct effect of perceived AI authenticity on purchase intention (H3: $\beta = 0.155$, $t = 3.410$, $p = 0.001$, $95\%CI = [0.060, 0.242]$) was substantially weaker than its indirect effect via self-congruence ($\beta = 0.064$), confirming that self-congruence functions as a partial rather than full mediator. This partial mediation pattern implies that perceived AI authenticity influences purchase intention through at least two parallel psychological pathways: an identity-based route operating through self-congruence, and an additional direct route that bypasses self-concept activation entirely.

Hypothesis 4 predicted that self-congruence mediates the relationship between perceived AI authenticity and purchase intention. Bootstrapping results showed that the indirect effect was $\beta = 0.064$, $t = 3.591$, $p < 0.001$, $95\%CI = [0.032, 0.103]$. The total effect of perceived AI authenticity on purchase intention was $\beta = 0.22$, $t = 4.926$, $p < 0.001$, $95\%CI = [0.125, 0.302]$. These findings indicate that self-congruence partially mediates the effect of perceived AI authenticity on purchase intention.

The structural model demonstrated modest yet theoretically interpretable explanatory power. Specifically, Perceived AI Authenticity accounted for 4.5% of the variance in Self-Congruence and 13.6% of the variance in Purchase Intention. While the R^2 for Self-Congruence appears low, this is theoretically consistent with the nature of self-congruence as a deeply embedded, multi-determined construct shaped by enduring individual-level factors such as prior brand loyalty, self-esteem, and long-term identity orientations (Sirgy, 1982).

These chronic dispositional antecedents operate largely independent of momentary technological stimuli, meaning that a single situational cue, namely perceived AI authenticity introduced through a brief scenario. It would not be expected to explain the majority of variance in such a stable psychological construct.

Following the assessment of the structural model's explanatory power, the effect sizes (f^2) were assumed to evaluate the practical significance of each path relationship (Chin, 1998). The f^2 values indicate that self-congruence has a moderate effect on purchase intention ($f^2 = 0.102$), suggesting that this variable makes a significant contribution to explaining consumers' behavioral intentions in AI-driven virtual try-on scenarios. In contrast, perceived AI realism has a smaller effect on purchase intention ($f^2 = 0.027$) and self-congruence ($f^2 = 0.047$). While these values are below the moderate effect threshold, they are still above the minimum standard for a small effect ($f^2 > 0.02$), indicating that they have a non-negligible predictive relevance (Hair et al., 2011).

Notably, the relatively modest effect sizes for Perceived AI Authenticity, combined with its direct path to Purchase Intention ($f^2 = 0.027$), suggest the potential dominance of indirect effects through Self-Congruence. This pattern aligns with the theoretical positioning of Self-Congruence as a key psychological mechanism translating consumers' perceived AI authenticity into behavioral outcomes (Sirgy, 1982). The medium effect of Self-Congruence on Purchase Intention ($f^2 = 0.102$) further reinforces its pivotal role in the proposed mediation framework.

Furthermore, collinearity assessment indicates no multicollinearity concerns, with all indicator *VIF* values ranging from 1.948 to 2.499, well below the conservative threshold of 3.0. These results collectively support the robustness of the proposed theoretical framework (Kock, 2015). (see Table 6).

Table 6. Collinearity Statistics (Outer Model)

Indicator	VIF	Indicator	VIF
PAIA1	2.499	PI1	1.948
PAIA2	2.317	PI2	1.963
PAIA3	2.047	PI3	1.973
PAIA4	2.449	SC1	2.245
		SC2	2.372
		SC3	2.144

5. Conclusion

The results show that perceived AI authenticity has a significant positive impact on self-congruence, indicating that when consumers perceive AI-generated fitting results as more realistic and credible, they are more likely to associate the product image with their own identity and lifestyle, thus forming a stronger psychological identification. Secondly, self-congruence significantly enhances purchase intention, verifying that in sportswear consumption with high self-involvement, identity matching is an important psychological basis for driving behavioral responses.

Further mediation analysis reveals that while perceived AI authenticity has a direct impact on purchase intention, its indirect effects are more prominent, with self-identity playing a crucial mediating role between the two. This implies that AI technology itself is not the sole driver of purchasing decisions; its influence likely arises through the formation of a self-brand connection within the AI-mediated shopping experience.

While the explanatory power of the structural model is at a moderate to low level, it is within an acceptable range in the study of consumer behavior and emerging technology contexts. At the same time, effect size analysis further demonstrates that self-congruence is the core psychological mechanism connecting AI authenticity and consumer behavior.

In summary, this study reveals that in an AI-powered virtual try-on environment, consumers do not make judgments solely based on technological functions, but rather complete the decision-making process through a psychological path of "perceived AI authenticity—self-congruence—purchase intention," highlighting the crucial role of identity-oriented mechanisms in AI-enabled retail.

5.1 Theoretical Significance

This study introduces self-congruence theory into AI-generated virtual try-on scenarios, expanding upon existing research perspectives primarily focused on TAM, technology acceptance, or systemic characteristics. Furthermore, this research demonstrates that consumers' perception of the realism of AI-generated images can influence behavioral responses by activating self-concept matching, illustrating that AI-enabled retail is not merely a technological issue but also a process of identity recognition. This finding extends self-congruence from traditional brand and advertising contexts to AI-generated visual environments, enriching its explanatory power in digital retail.

Secondly, this study, by integrating the SOR framework with self-theory, reveals the psychological path of "perceived AI authenticity—self-congruence—purchase intention," providing a new organic variable perspective for understanding AI-driven consumer decisions. Self-congruence, as an identity-oriented cognitive mechanism, plays a crucial mediating role in products with high self-involvement, thus deepening the theoretical implications of the SOR model in technology-mediated consumption scenarios.

This study employs PLS-SEM to examine emerging AI retail models, responding to the current trend of prediction-oriented analysis in extended SOR and digital interaction research. The results indicate that even with moderate explanatory power, self-congruence exhibits a stable effect, further illustrating the central role of consumer psychological mechanisms in the AI shopping experience and providing an empirical foundation for constructing more complex AI consumer models in the future. Furthermore, given that this study is situated within the collectivistic cultural context of Chinese e-commerce, cultural self-construal represents a theoretically meaningful boundary condition of this model. The degree to which perceived AI authenticity activates self-congruence may vary systematically across individualistic and collectivistic cultures, as the self-concept invoked during AI try-on evaluation differs in its social versus personal orientation. This offers a theoretically grounded direction for cross-cultural extension.

5.2 Practical Significance

For e-commerce platforms, research indicates that enhancing the realism of AI-powered virtual try-on systems is a crucial path to boosting user conversion rates. Platforms should not only emphasize technological novelty but also optimize fit, body proportion accuracy, and dynamic presentation to reduce the gap between the virtual avatar and the consumer's real self, thereby increasing trust and purchase intent.

For sportswear brands, a sense of self-identity is a key bridge connecting AI technology with consumer behavior. Therefore, when designing AI-powered virtual try-on content, visual cues related to athletic identity, a healthy lifestyle, and personal style should be emphasized. Furthermore, brands should recognize that the effectiveness of AI try-on is not operating in isolation from platform-level factors. The degree to which perceived AI authenticity translates into self-congruence and purchase intention may be contingent upon consumers' trust in the platform and the brand's existing reputation within it. Brands with stronger reputations on Taobao may find that AI try-on amplifies self-congruence more effectively, as platform trust lowers consumers' skepticism toward AI-generated representations of self.

Critically, brands should nonetheless be alert to the dark side of excessive AI authenticity. Hyper-realistic rendering that exposes perceived physical flaws may widen the actual-ideal self-gap, triggering body image dissatisfaction and suppressing purchase intention (Sharif, 2025). Platforms are therefore advised to pursue authenticity calibrated with inclusivity, such as offering diverse body model representation and adjustable rendering modes, while pairing AI try-on with messaging that anchors self-congruence in athletic identity rather than physical appearance.

5.3 Limitations and Future Research

While this study provides new evidence for the psychological mechanisms underlying AI-powered virtual try-on, several limitations remain. This study focused on sportswear; future research could compare the role of self-congruence across different product involvement levels or cultural backgrounds to improve the model's external validity. Additionally, the exclusive focus on Chinese consumers on Taobao limits the cultural generalizability of the findings. Future research could examine cultural self-construal as a potential moderator, as the collectivistic Chinese context may shape self-congruence differently than individualistic Western markets. Furthermore, the relatively modest R^2 for Self-Congruence signals that the current model captures only a portion of the variance in this multi-determined construct. Future studies should expand the antecedent structure by incorporating individual-level variables that are theoretically linked to self-congruence formation in appearance-related consumption, such as body image self-esteem (Mollet & Chen, 2025), prior brand loyalty (Kumar & Kaushik, 2022), and product involvement. These variables are likely to be primary drivers of self-congruence and their inclusion would substantially improve the model's explanatory power while more precisely isolating the boundary conditions under which perceived AI authenticity exerts its incremental effect.

The significant direct path from perceived AI authenticity to purchase intention indicates that self-congruence does not fully account for the stimulus-response relationship, pointing to the presence of additional mediating mechanisms not captured in the current model. Future research could formally incorporate other psychological "Organisms".

A further limitation concerns the ecological validity of the scenario-based survey design. Participants were asked to imagine using an AI try-on feature rather than interacting with a live interface, which may attenuate the visceral, sensory dimensions of perceived AI authenticity that are more fully activated during actual product interaction. Proxy experience through imagination, while methodologically controllable and theoretically defensible (Bui et al., 2024), may not fully replicate the affective and embodied reactions triggered by real-time AI rendering of one's own body image. Future research could employ experimental designs using live AI try-on prototypes or laboratory-based interfaces to test whether the authenticity to self-congruence pathway is strengthened under conditions of actual vs. imagined interaction, and to establish stronger causal inference.

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