

Article

The Influence of Virtual Idol Characteristics on Consumers' Clothing Purchase Intention

Qian-Qian Huang , Hong-Jian Qu * and Pei Li 

College of Textile and Fashion, Shanghai University of Engineering Science, Shanghai 201620, China; hqq19973@163.com (Q.-Q.H.); pacywu@126.com (P.L.)

* Correspondence: quhongjian0535@126.com

Abstract: In the context of a company actively using virtual idols to carry out marketing activities, it is very important to help the company understand the key factors affecting consumer purchase intention. In total, 459 eligible responses were collected via an online questionnaire survey. The psychometric properties of the model were examined by factor analysis, and the multiple regression method was applied to test the hypotheses. This paper empirically analyzes the influence of virtual idol characteristics on consumers' willingness to buy brand clothing, with consumers' attitudes as intermediary variables and clients' involvement in virtual idolatry and adult playfulness as adjusting variables. A quasi-replication study method using both MRA and fsQCA found that the popularity, homogeneity, relevance and anthropomorphism of virtual idols enhance customers' willingness to buy from big to small. Among them, attitude plays an intermediary role in the influence of popularity on purchase intention, and plays a complete intermediary role in the influence of relevance and homogeneity over purchase intention; consumer idolatry involvement positively regulates the relationship between professionalism, relevance and attitude; consumers' adult playfulness positively regulates the relationship between popularity and consumer attitude. Finally, from the perspective of improving attitude and purchase intention, we provide suggestions for virtual idol creation applicable by operation teams and clothing brand companies.

Keywords: virtual idol; marketing; attitude; adult playfulness; idolatry; purchase intention



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1. Introduction

With the increasing number of foreign virtual idols, many companies in China have introduced more than 30 local virtual idols, and many internet companies have carried out many financing activities for the virtual idol industry [1]. The virtual idol has become the traffic owner of the network platform [2]. In total, 62.2% of the post-1990s generation think that the marketing activities of virtual idols can enhance their purchase intention [3]. Because of the characteristics of pursuing fashion and leading the trend, clothing has become the brand type that takes the lead in cooperating with virtual idols, with a high frequency of recurrence (Table 1). The successful marketing precedent shows the market value of virtual idols [4]. Virtual idols, which are more controllable and lower in cost than real idols and stars, have become the partners of multi-industry brands [5]. For example, Lil Miquela has successively cooperated with LV, Calvin Klein, Burberry, Chanel, etc. In addition to endorsing many luxury brands, Lil Miquela has used her popularity to support social causes, demonstrating great business value and social credibility, which led to her being named one of the "Top 25 Influential People on the Internet" by Time Magazine [6]. Virtual idol marketing activities have gradually entered the public's field of vision [7]. Although more and more brand companies use virtual idols to carry out marketing activities, virtual idol marketing lacks consumer research data in the early stage of development, and companies do not know which characteristics of virtual idols will lead to better brand performance, which is the main purpose of their marketing activities, and

they thus face the challenge of reducing the cost and optimizing its effectiveness [8]. To help apparel brand companies choose the right virtual idols, it is important to study the virtual idol marketing audience to obtain preference data on virtual idol characteristics.

Table 1. Virtual idol marketing case of clothing brand.

Clothing Brand	Virtual Idol	Marketing Case
Louis Vuitton	Hatsune Miku	In 2013, Hatsune Miku wore LV dress in the opera.
	Lightning	Lightning shoots LV campaign in 2016.
	Lil Miquela	Lil Miquela lived show to fans in 2018.
	K/DA	In 2020, K/DA wore LV clothes in a music video and appeared in the fashion magazine named Dazed.
Prada	Lightning	Lightning wore Prada clothes in men's fashion magazine named <i>Arena Homme +</i> in 2012.
	Lil Miquela	Lil Miquela endorsed Prada and promoted the brand on her Instagram account.
Givenchy	Aimee	Aimee appeared on Tmall App wearing Prada in 2020.
Gucci	Hatsune Miku	Hatsune Miku wore Givenchy fashion in 2016.
	Tennis Clash	Gucci's official website sold the same clothes of the game character Tennis Clash in 2020.

Studying virtual idols is a process in which commercial practice triggers scholars to analyze successful cases, and the obtained theory guides the follow-up practice. After the virtual idol increases fan traffic by holding concerts and selling peripheral goods, scholars analyze its commercial value [9]. After a virtual idol endorsed a brand, Pakarinen T et al. (2018) discussed the advantages and disadvantages of the phenomenon [10]. After virtual idols emerged in succession, scholars analyzed the transmission mechanism of the virtual idol marketing promotion path and differentiated operation strategies [11], and explored the product type and brand image of virtual idol matching [12]. However, the evolution of technology has unlocked new marketing methods of virtual idols, such as shooting short videos, opening live broadcasts and holding concerts, and the marketing characteristics of virtual idols have changed and updated. Therefore, it is necessary to study the mechanism by which the characteristics of virtual idols in marketing activities influence purchasing intention through consumer brand attitude, and the role of consumer psychology in it.

In addition, the processes by which virtual idols' characteristics lead to consumer empathy, brand attitude, and impulsive purchase intentions are complex and dynamic [8]. Recently, scholars have subjectively analyzed the business model of virtual idol marketing in the form of a single idol case [10], and empirically studied the linear relationship between a factor and consumers' willingness to purchase [11]; the complex causal relationship between multiple factors and behavioral outcomes cannot be explained by using these research methods alone. Therefore, this study adopts a quasi-replication research approach, using multiple regression analysis (MRA) to verify the research hypotheses and using fuzzy-set qualitative comparative analysis (fsQCA) to test the robustness of the empirical results [13]. Because of its ability to determine the cumulative effect of various elements, quasi-replication is increasingly used in social science research, which is based on MRA and fsQCA [14]. This paper uses a quasi-replication research method to investigate the complex causal relationship between multiple factors of virtual idol characteristics and behavioral outcomes, and to clarify the effective characteristics of virtual idols and core paths that motivate consumers' purchase intentions. The effective characteristics and core paths by which virtual idols stimulate consumers' purchase intention are clarified. Therefore, this paper enriches the research in the field of virtual idol marketing from the perspective of research methods, which is the research value and innovation of this paper.

2. Theoretical Basis and Research Model

2.1. Virtual Idol

Early virtual singers Luo Tianyi and Hatsune Miku are representative of virtual idols that perform with the help of algorithms and devices [15], and are virtual presences that can perform in virtual arenas or real scenes using internet technology. In addition, virtual idols have the characteristic of being highly popular and have anthropomorphic virtual images that are loved and admired by certain audiences [16]. In this paper, virtual idols are defined as human virtual images synthesized using computing technology and virtual reality technology.

Virtual idol marketing refers to the use of virtual idols' fan appeal and influence by enterprises to promote and sell their products using various marketing methods [17]. From the marketing cases of apparel brands cooperating with virtual idols in Table 1, it can be seen that in online marketing activities, virtual idols play the role of influencers and show the ability of brand promotion. At the same time, virtual idols drive fans' consumption and inject vitality into the fan economy. Hence virtual idols are both virtual online opinion leaders and virtual digital celebrities, with some characteristics of both [18].

Da Silva Oliveira A B and Chimenti P (2021) identified the factors that determine how virtual influencers can facilitate decisions based on the important factors of anthropomorphism and attractiveness [18]. As one of the representatives of digital celebrities, the important dimensions of YouTube vloggers that influence consumer purchase intention include vloggers' popularity, professionalism, and homogeneity [19]. Sheehan K considered that celebrity spokescharacters' professionalism, attractiveness and relevance are the characteristics that luxury brand spokespersons are required to have in order to be effective [20]. Jain R proposed that cuteness appeals, expertise, relevance and attractiveness are important dimensions of anthropomorphic spokescharacters affecting consumers' recycling intentions [21].

Therefore, after reading related articles (i.e., influencers, digital celebrities, spokescharacters and virtual idols), this study classifies the characteristics of virtual idols into seven dimensions (i.e., popularity, cuteness, anthropomorphism, attractiveness, professionalism, relevance, and homogeneity).

2.2. Attitude

The study of attitude first appeared in the field of psychology. According to monism, attitude is the subject's response to the object's mood and emotion. Attitudes are divided into positive and negative dimensions in dualism [22]; ABC theory divides consumer attitudes into cognitive attitude, affect attitude and behavioral tendency [23]. Because of the similar meanings of behavior tendency and purchase intention, studies involving purchase intention deleted the behavioral tendency from ABC theory [24,25]. On the basis of ABC theory, this study deletes the behavioral tendency. Attitude is defined as the stable cognition and emotion of the audience of virtual idol marketing activities in relation to the clothing brand in this paper. Therefore, attitude is divided into cognitive attitude and emotional attitude.

2.3. Hypothesis of the Relationship between the Characteristics and Purchase Intention of Virtual Idols

- (1) Idols' high popularity has been directly reflected in larger consumer markets [26]. For example, the worldwide popularity of Hatsune Miku has led consumers from different countries to buy Hatsune Miku's derivative products, such as figures, CDs, and concert tickets [27]. In endorsement advertising activities, virtual idols attract consumers' attention to the brand by their high popularity, and impart a more positive attitude towards the brand, thus promoting product sale [6].
- (2) As a concept that is nuanced and complex, cuteness is a characteristic of a virtual idol that makes it appealing, funny, and desirable [28]. From appearance to functions, the cuteness of virtual idols is highly dependent on technology [29]. The cuteness of virtual idols can arouse consumers' positive emotions, such as ease and pleasure,

- increase consumers' alertness to the brand, improve consumers' brand cognitive evaluation, and stimulate their purchase intention [7].
- (3) The anthropomorphism of a virtual idol reflects the dispositional, situational, and cultural integration of the consumers' anthropomorphic cognition [30]. Given their high anthropomorphism, the use of virtual idols as an online marketing measure seems to generate much social engagement [31]. The findings illustrate that the anthropomorphism of intelligent personal assistants leads users to assign greater social attraction to them, which in turn reinforces cognitive or emotional attitudes towards assistants [32]. The anthropomorphic messages of brand products delivered by virtual idols can enhance consumers' positive emotions, and establish the emotional connection between consumers and brands [21]. Consequently, this promotes their willingness to buy branded products.
 - (4) The more attracted consumers feel towards the virtual influencer, the higher their intention to accept information [33]. In marketing activities, the attractiveness of virtual idols as information sources improves the effectiveness of communication between brands and consumers, and then improves the information recipients' willingness to buy branded products [34]. For example, Lil Miquela uses the strategic cultivation of an audience to attain idol status through social media, the attractiveness of which ensures brand loyalty [35].
 - (5) In Virtual Servicescapes, professionalism affects customer satisfaction [36]. As a virtual activist, Marta can improve the effect of brand marketing activities through her virtual charisma as a virtual influencer [37]. The professionalism of a virtual spokesperson increases the credibility of his or her image in the minds of consumers, which in turn improves their attitude toward the brand and awakens their motivation to buy [38]. Specifically, Virtual Tubers are better supported by consumers because they professionally use more expensive motion capture equipment to generate more realistic avatar movement, and have stronger promotion and marketing [39].
 - (6) Different brands have taken advantage of this by adopting related virtual idols to represent their values to attract more customers and appear more reliable [40]. Virtual celebrities are convenient for brands—they are less needy, and speak any language you want, and virtual celebrities consistent with the brand image are the best for brands in need of a spokesperson [41]. Both qualitative and empirical analyses showed the influence of a strong match between virtual endorsers and brands on consumers' attitudes toward brand; in addition, experiments have previously demonstrated that virtual idols with high relevance to the brand's products promote the brand and enhance consumers' attitudes and purchase intentions [42].
 - (7) When virtual idols have high homogeneity with consumers in character setting and value concept setting, consumers will enhance their emotional attitude and purchase intention towards virtual idol endorsement brands [42]. Take Xiaomi's mobile phone, for example; Hatsune Miku's exclusive color scheme is full of a sense of future technology, and here, the consistent promotion of products is based on consumer preferences for commercial success [43]. As a virtual idol, Lil Miquela attracts more followers who love fashion by posting pictures of the brand on social media [44].

Therefore, the following seven hypotheses are put forward:

The popularity (H2a), cuteness (H2b), anthropomorphism (H2c), attractiveness (H2d), professionalism (H2e), relevance to the brand (H2f) and homogeneity with consumers (H2g) of virtual idols positively influence consumers' intention to buy branded clothing through their attitudes.

2.4. Hypothesis of the Moderating Relationship of Idolatry Involvement

According to meaning transfer theory, the involvement of consumers' idolatry determines their attention and willingness to accept, which is the controlling condition that affects the relationship between the characteristics of virtual idols and consumers' attitudes [45]. Specifically, consumers with high idolatry are willing to pay time and energy

for virtual idols, and it is easy to transfer emotions related to virtual idols to the brands they endorse, thus enhancing brand attitudes [46]. The fundamental reason for the success of cross-border marketing carried out by virtual idols is that they come with the attribute of fans, and their marketing activities turn fan traffic into cash flow [47]. Therefore, it is necessary to study the relationship between the characteristics of virtual idols and consumers' brand attitudes by taking the involvement of consumers' idolatry as a moderating variable, so the hypothesis is put forward:

The involvement of consumers' idolatry positively regulates the relationship between virtual idols' popularity (H3a), cuteness (H3b), anthropomorphism (H3c), attractiveness (H3d), professionalism (H3e), relevance (H3f), homogeneity (H3g) and attitudes.

2.5. Hypothesis of the Relationship between Adult Playfulness and Attitude

Playfulness is the trait of participating in activities or completing work with a relaxed attitude, and people with high playfulness often have active and playful characteristics [48]. Scholars have expanded the study of playfulness from children to adults, and have developed the adult playfulness scale [49]. In the marketing field, adult playfulness positively moderates the relationship between anthropomorphism and consumer cognitive attitudes, and adult playfulness positively moderates the relationship between the cuteness, professionalism, brand relevance, and advertising effect of the virtual brand spokesperson, as has been verified by scholars [50]. Therefore, the hypothesis is proposed:

Consumer's adult playfulness positively regulates the relationship between virtual idol popularity (H4a), cuteness (H4b), anthropomorphism (H4c), attractiveness (H4d), professionalism (H4e), relevance (H4f), homogeneity (H4g) and consumer's attitude.

According to the above assumptions, the research model of virtual idol characteristics in marketing activities is constructed as shown in Figure 1.

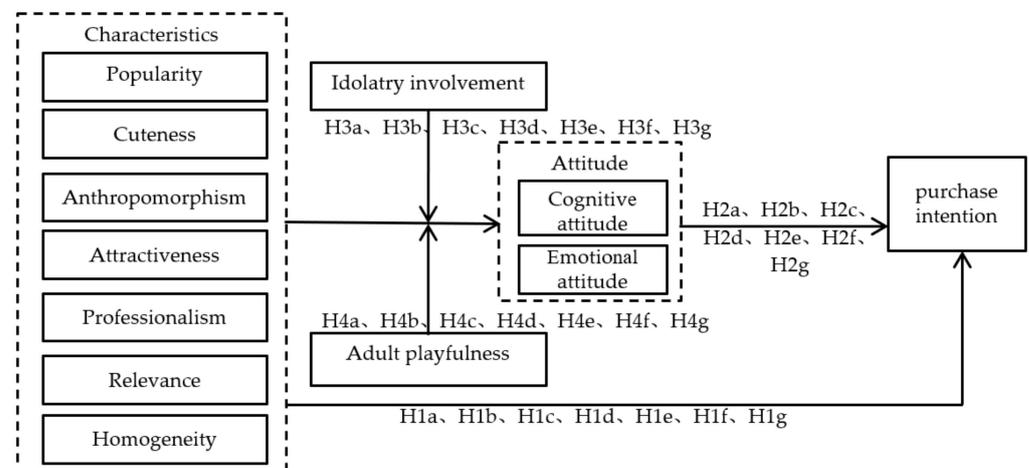


Figure 1. Research model.

As showed in Figure 1, the **research** model was developed with the inclusion of virtual idol characteristics (i.e., popularity, cuteness, anthropomorphism, attractiveness, professionalism, relevance, homogeneity and brand image) as determinants of Chinese consumers' attitudes (i.e., cognitive attitude and emotional attitude) affecting consumers' intention to buy clothing.

3. Research Design

3.1. Selection, Definition and Measurement of Variables

This paper adopts a multi-dimensional measurement approach; the indicators are mostly derived from relevant domestic and international literature and are summarized as shown in Table 2.

Table 2. Indicators of dimensions.

	Dimension	Index	Source		Dimension	Index	Source
X1	Popularity	Capacity to influence consumers Fame and prestige Familiar	Gommans R et al. (2017) [51]	X7	Homogeneity	Similar to consumer personality Consistent with consumer values Similar to consumer hobbies	Masuda H et al. (2022) [42]
X2	Cuteness	Cute appearance Favorable Humorous	Mize J et al. (2008) [52]	Z	Cognitive attitude	Impressing brand Distinctive brand High-quality brand	Hwang et al. (2011) [25]
X3	Anthropomorphism	Appearance Action Expression Mood Personality	Zhang Shengliang et al. (2022) [53]		Emotional attitude	Worth Happy Interesting Authentic	
X4	Attractiveness	Communication Otherness Interesting Novel	Masuda H et al. (2022) [42]	T1	Idolaty involvement	Acceptable Like Discuss	
X5	Professionalism	Clothing marketing ability Clothing expertise Clothing marketing experience Reasonable	Mize J et al. (2008) [52]	T2	Adult playfulness	Hobby Psychology Personality Behavior	Shen X et al. (2021) [55]
X6	Relevance	representation of clothing brands Appropriate representation of clothing brands Images related to clothing brands Personality related to clothing brands	Garretson J A, et al. (2004) [56]	Y	Clothing purchase intention	Immersion Search for brand clothing Accept to buy brand clothing Preferential purchase of brand clothing Recommended purchase of brand clothing Repurchase brand clothing	Yang S J et al. (2019) [57]

3.2. Questionnaire Design and Collection

First, the questionnaire sets up screening questions to ensure that the respondents know and understand the virtual idols; then, the questionnaire introduces the graphic case study of clothing brands using virtual idol marketing in Table 1. After the subjects read the marketing case study, the main part of the questionnaire investigates consumers' attitudes and willingness to buy brand clothing after being exposed to virtual idols wearing brand clothing and carrying out marketing activities, and the main part of the questionnaire is measured using a five-point Likert scale, with 5 being "strongly agree" and 1 being "strongly disagree"; the last part of the questionnaire investigates consumers' characteristics.

Virtual idols rely on internet technology, so to ensure the randomness of the sample, the questionnaire was published to several network platforms such as WeChat, QQ and Weibo. It can be seen from Table 2 that there are 46 variable indicators in this paper. A total

of 479 questionnaires were returned, and after eliminating invalid questionnaires, 459 valid questionnaires were obtained, and the effective recovery rate was 95.8%.

3.3. Quasi-Replication Method

Single empirical studies are often conducted in specific research contexts, with specific research data and using specific research methods [58]. Thus, a single empirical study does not determine whether the findings are generalizable to different research contexts or whether the results are robust with different research methods [59]. Given this, the quasi-replication study can verify the applicability of the research results, thus better serving the practice, and help to test the robustness of the research results and extend them [13].

Since the study of the influence of virtual idol characteristics on consumers' willingness to purchase clothing is still a relatively new research field, there are few relevant empirical studies, and to ensure the stability, generalizability, and usability of the research results, this paper uses SPSS software to conduct descriptive statistical analysis, reliability and validity tests to determine the reliability and trustworthiness of the questionnaire data, and then uses MRA to verify the proposed research hypotheses. It then uses the fsQCA method to conduct a quasi-replication study to test the robustness of the research results.

3.4. Descriptive Statistical Analysis

The profile of survey respondents is presented in Table 3. The proportion of males (52.1%) and females (47.9%) in the survey was balanced, and the age distribution of the sample was much higher in the 19–25 age group (78.6%) than in other age groups; most of the respondents were people with education above college level (95.2%); among the occupations of the sample population, school students (55.6%) and company employees (41.0%) accounted for the highest proportion, and the average monthly income was mainly below RMB 8000 (87.8%). Overall, the structure of the survey sample is similar to the structure of Chinese internet users, which is thus highly representative [60].

Table 3. Profile the survey respondents.

		N	%			N	%
Gender	Male	239	52.1	Education level	Master or higher	135	29.4
	Female	220	47.9		Occupation	Student	255
Age	≤18	11	2.4	Business		188	41.0
	19~25	361	78.6	Public sector		5	1.1
	26~30	69	15.0	Private sector		11	2.4
	31~44	18	3.9	Monthly income level (RMB)	≤5000	308	67.1
	≥45	7	1.5		5001–8000	95	20.7
Education level	Junior high school or lower	8	1.7		8001–12,000	42	9.2
	High school	14	3.1		12,001–20,000	9	2.0
	Some college	302	65.8	≥20,001	5	1.1	

3.5. Reliability and Validity Test

Table 4 presents the reliability and validity of the constructs and variables. The α (DE- α) value, after deleting an item, is smaller than the corresponding dimension α ; the α of each dimension is greater than 0.7, and the combined reliability (CR) is above 0.8, which thus has good internal consistency; the total α value was 0.952, which is above 0.9, so the questionnaire had good reliability and test stability [61]. The dimensions and questions in the questionnaire were mostly taken from the literature, and any improperly formulated questions were corrected to ensure the content validity of the questionnaire [62]. Then, the structural validity of the questionnaire was examined. The KMO value in the exploratory factor analysis was 0.940, which passes the Bartlett's sphericity test, indicating that the

indicators after dimensionality reduction had high convergence; as can be seen from Table 4, the factor loadings (λ) were above 0.500 in the validation factor analysis, the mean value was 0.789, and the AVE of each dimension was > 0.5 , indicating that the measurement indicators of the questionnaire could represent the correspondence of the dimensions [63]. Table 5 presents the discriminatory validity of variables. The square root value of the AVE of a variable was greater than the correlation coefficient of the variable with other variables, indicating that there was good discriminant validity between the variables [64]. The above analysis shows that the data obtained are suitable for regression analysis.

Table 4. Reliability and validity.

		λ	DE- α	α	CR	AVE		λ	DE- α	A	CR	AVE		
X1	X11	0.876	0.720	0.819	0.893	0.735	Z	X72	0.762	0.633	0.787	0.912	0.564	
	X12	0.838	0.778					X73	0.826	0.524				
	X13	0.857	0.749					Z11	0.703	0.729				
X2	X21	0.802	0.630	0.718	0.842	0.640	Z12	0.616	0.776	0.850				
	X22	0.845	0.547				Z13	0.783	0.697					
	X23	0.75	0.701				Z14	0.763	0.726					
X3	X31	0.724	0.840	0.857	0.894	0.584	Z21	0.798	0.799	0.812	0.889	0.727		
	X32	0.804	0.823				Z22	0.745	0.830					
	X33	0.817	0.820				Z23	0.808	0.784					
	X34	0.759	0.831				Z24	0.776	0.816					
	X35	0.74	0.836				T1	T11	0.845				0.753	
X4	X36	0.735	0.837	0.744	0.855	0.662	T12	0.873	0.703	0.759	0.839	0.516		
	X41	0.81	0.667				T13	0.839	0.762					
	X42	0.784	0.703				T2	T21	0.734				0.699	
	X43	0.846	0.600				T22	0.723	0.706					
X5	X51	0.863	0.636	0.774	0.869	0.689	T23	0.784	0.684	0.890	0.919	0.694		
	X52	0.806	0.731				T24	0.796	0.674					
	X53	0.821	0.710				T25	0.519	0.776					
	X61	0.797	0.765				Y1	Y11	0.825				0.868	
X62	0.785	0.772	Y12	0.827	0.868									
X63	0.811	0.755	Y13	0.833	0.866									
X64	0.803	0.760	Y14	0.835	0.865									
X7	X71	0.768	0.626	0.689	0.829	0.590	Y15	0.846	0.862					

Table 5. Discriminatory validity.

	X1	X2	X3	X4	X5	X6	X7	Z	T1	T2	Y
X1	0.857										
X2	0.447	0.800									
X3	0.456	0.562	0.764								
X4	0.385	0.527	0.553	0.814							
X5	0.407	0.498	0.496	0.507	0.830						
X6	0.468	0.501	0.531	0.580	0.641	0.799					
X7	0.371	0.448	0.492	0.383	0.453	0.521	0.768				
Z	0.446	0.418	0.453	0.405	0.478	0.499	0.482	0.751			
T1	0.472	0.328	0.327	0.289	0.351	0.402	0.409	0.579	0.853		
T2	0.404	0.412	0.456	0.420	0.456	0.432	0.435	0.510	0.530	0.718	
Y	0.470	0.318	0.314	0.314	0.317	0.391	0.378	0.641	0.595	0.469	0.833

4. Empirical Research Results Analysis

The relationship test between virtual idol characteristics and consumers' willingness to buy branded clothing is explored in the intermediary effect test of attitude, shown in Table 6, and the moderating effect test of idolatry involvement and adult playfulness is shown in Table 7.

Table 6. Regression analysis results.

	Y (1)	Z (2)	Y (3)	Y (4)
X1	0.353 ** (0.05)	0.147 ** (0.045)		0.239 ** (0.041)
X2	(0.085 0.056)			
X3	0.121 * (0.058)	0.079 (0.049)		
X4	0.061 (0.058)			
X5	0.023 (0.059)			
X6	0.123 * (0.066)	0.254 ** (0.056)		0.057 (0.046)
X7	0.196 ** (0.05)	0.269 ** (0.0466)		0.030 (0.044)
Z			0.628 ** (0.036)	0.545 ** (0.044)
R ²	0.26	0.357	0.395	0.440
F	22.694	63.003	298.295	89.264

Note: ** $p < 1\%$, * $p < 5\%$, standard error in brackets.

4.1. Empirical Analysis of the Characteristics of Virtual Idols and Consumers' Willingness to Buy Branded Clothing

From regression (1) in Table 6, it can be seen that virtual idol awareness ($\beta = 0.353$, $p < 0.01$), anthropomorphism personification ($\beta = 0.121$, $p < 0.05$), relevance ($\beta = 0.123$, $p < 0.05$), and homogeneity ($\beta = 0.196$, $p < 0.01$) are significantly and positively related to consumers' willingness to purchase branded clothing, and hypotheses H1a, H1c, H1f, and H1g are supported.

Among them, the popularity of virtual idols significantly and positively increases consumers' willingness to purchase clothing. When companies choose brand endorsers, they tend to choose high-profile endorsers to take advantage of the money-drawing effect of celebrity endorsements, and this also gives celebrities more endorsement opportunities, such as the fame of virtual idol LilMiquela, which has led many luxury brands to work with them. Hu B (2021) studied the relationship between the two variables, and this paper conducts a further study to prove their findings [65].

The anthropomorphism of virtual idols significantly and positively increases consumers' willingness to purchase clothing. Aggarwal P et al. (2017) found that anthropomorphism marketing makes it easier for consumers to process the information given by the outside world and quickly form an overall perception of the new thing [66]. The results of this paper suggest that consumers are more likely to accept clothing endorsed by virtual idols that tend to resemble the ideal human role model in appearance and substance compared to regular branded clothing. Wolff W E M (2022) proposed a relationship between the two variables, and further research is conducted in this paper to prove their findings [67].

Virtual idol relevance significantly and positively increases consumers' apparel purchase intentions. This finding clarifies the positive relationship between virtual idols and their endorsement brands, i.e., the rationality that consumers will favor the apparel brand the virtual idol is perceived to endorse. Consumers' willingness to purchase apparel brands is significantly higher when the virtual idol's external image and character setting match the apparel brand, compared to when the virtual idol's brand endorsement is inappropriate. A relationship between the two variables was proposed by Chen Y et al. (2022), and further research was conducted in this paper to prove his findings [68].

Virtual idol homogeneity significantly and positively increases consumers' willingness to purchase clothing. The proverb that things come in groups emphasizes people's prefer-

ence for people or things that are highly similar to themselves. This study shows that when virtual idols are endowed with personalities and values in line with mainstream values, the psychological distance between them and consumers is narrowed by homogeneity, and it is easier to evoke consumers' willingness to purchase clothing of the brands endorsed by virtual idols.

Table 7. Analysis results of regulatory effect.

	(5)	(6)	(7)	(8)	Z (9)	(10)	(11)	(12)	(13)
X1	0.125 ** (0.045)	0.123 ** (0.045)	0.103 * (0.045)	0.115 * (0.046)	0.145 ** (0.045)	0.145 ** (0.045)	0.119 ** (0.045)	0.119 ** (0.046)	0.123 ** (0.045)
X2	0.098 (0.051)	0.093 (0.051)	0.087 (0.051)	0.104 * (0.051)	0.087 (0.051)	0.087 (0.051)	0.095 (0.051)	0.104 * (0.051)	0.103 * (0.051)
X3	0.02 (0.053)	0.024 (0.053)	0.047 (0.053)	0.012 (0.053)	0.078 (0.055)	0.078 (0.055)	0.024 (0.053)	0.026 (0.053)	0.024 (0.053)
X4	0.022 (0.053)	0.027 (0.053)	0.019 (0.052)	0.027 (0.053)	0.025 (0.052)	0.025 (0.052)	0.025 (0.053)	0.025 (0.053)	0.026 (0.053)
X5	0.166 ** (0.054)	0.17 ** (0.054)	0.182 ** (0.054)	0.175 ** (0.054)	0.147 ** (0.054)	0.147 ** (0.054)	0.172 ** (0.054)	0.166 ** (0.054)	0.165 ** (0.054)
X6	0.128 * (0.06)	0.126 * (0.06)	0.118 * (0.06)	0.129 * (0.06)	0.113 (0.06)	0.113 (0.06)	0.139 * (0.06)	0.131 * (0.06)	0.132 * (0.06)
X7	0.243 ** (0.046)	0.24 ** (0.046)	0.249 ** (0.045)	0.247 ** (0.046)	0.244 ** (0.045)	0.244 ** (0.045)	0.243 ** (0.046)	0.241 ** (0.046)	0.235 ** (0.046)
X1 × T1		−0.036 (0.035)							
X5 × T1			0.113 ** (0.033)						
X6 × T1				0.076 * (0.036)					
X7 × T1					0.055 (0.035)				
X1 × T2						0.092 ** (0.028)			
X5 × T2							0.061 (0.031)		
X6 × T2								0.037 (0.032)	
X7 × T2									0.05 (0.033)
R ²	0.38	0.381	0.395	0.386	0.383	0.395	0.385	0.382	0.383
F	39.463	34.66	36.789	35.339	34.959	36.657	35.225	34.719	34.919

Note: ** $p < 1%$, * $p < 5%$, standard error in brackets.

The p value of the cuteness of virtual idols in relation to consumers' willingness to buy branded clothing is greater than 0.05, which indicates that there is no significant positive relationship between them, meaning H1b is rejected. A virtual idol with high cuteness can cause consumers to be doubtful, resulting in the lack of persuasiveness of that virtual idol [69].

The p value of the attractiveness of virtual idols to consumers' willingness to buy branded clothing is greater than 0.05, which indicates that there is no significant positive relationship between them, meaning H1d is rejected. Since the apparel brands currently using virtual idol marketing are luxury brands and the number of such cases is small, most of the consumers surveyed have no personal experience comparing the appeal of different forms of marketing, and their apparel purchase intentions cannot be positively influenced by virtual idols [68].

The p value of the professionalism of virtual idols in relation to consumers' willingness to buy branded clothing is greater than 0.05, which indicates that there is no significant positive relationship between them, and H1e is rejected. Because clothing is a necessity,

the difference in the expertise of clothing endorsement celebrities is not important to clothing consumers, and young online consumers prefer clothing endorsers to enhance brand recognition in other ways [70].

By comparing the regression coefficients, it can be seen that the degree of influence of the assumed dimension on consumers' purchasing intention of branded clothing is as follows: popularity (0.353) > homogeneity (0.196) > relevance (0.123) > anthropomorphism (0.121).

4.2. Regulatory Effect Test

From regression (2) to (4), it can be seen that the popularity, relevance and homogeneity of virtual idols have significant positive influences on their purchase intention through attitude, meaning that H2a, H2f and H2g are supported. Among these, attitude completely mediates the influence of relevance and homogeneity to consumers' purchase intention, and attitude partially mediates the influence of virtual idol popularity to consumers' purchase intention.

The popularity of virtual idols positively influences consumers' willingness to purchase branded clothing through attitude. It can be seen that virtual idols with many fans and high popularity have greater influence, and can make a greater number of audiences transfer their attention from the idol to the brand when promoting the brand and form a cognitive impression of the brand. The empathy effect also makes consumers feel good about the apparel brand, and consumers are more willing to buy from a brand inducing a good feeling. Xie C et al. (2019) studied the relationship between the three variables, and their findings are further argued in this paper [71].

The relevance of virtual idols positively influences consumers' willingness to purchase branded clothing through attitudes. In the consumers' view, when the virtual idol image is relevant to the product it promotes, the advertising effects of endorsement or other marketing and promotional activities will be better, and these in turn generate positive brand attitudes. Therefore, a virtual idol that fits with the brand can better interpret the brand connotation and represent the brand image, evoke consumers' awareness and goodwill toward the brand, and more easily move consumers to purchase the brand products. Hu B (2022) studied the relationship between the three variables, and their findings are further argued in this paper [65].

Virtual idol homogeneity significantly and positively influences attitudes. Among the dimensions that positively affect consumers' attitudes, homogeneity has the highest degree of influence on consumers. It can be seen that consumers tend to protect, maintain, and enhance their symbolic selves internally, meaning the more consistent the brand's marketing image is with consumers' real or ideal self-image, the more satisfied consumers are with the brand, the more likely they are to accept the brand cognitively, the more satisfied they are with the brand emotionally, and the more likely they are to choose the brand's products among similar clothing [72]. This result is consistent with the theory of Self-Image Congruence. Kressmann Frank et al. (2006) studied the relationship between the three variables, and their findings are further argued in this paper [73].

Since the corresponding *p*-value is greater than 0.05, this indicates that virtual idol anthropomorphism does not significantly affect consumers' attitudes toward apparel brands. Combined with the previous section, it can be seen that virtual idol anthropomorphism significantly increases consumers' willingness to purchase branded clothing, but consumers' brand attitudes do not have a significant mediating effect in this path. It can be seen that virtual idols with a high degree of anthropomorphism have a better effect on encouraging consumers to try on clothing than those with a low degree of anthropomorphism, which can directly evoke consumers' willingness to purchase clothing and trigger impulsive purchases; in this process, the anthropomorphism of virtual idols' appearance, actions and language does not significantly enhance consumers' attitudes toward clothing brands [74]. Therefore, consumers' brand attitudes are not effective mediating variables in virtual idol anthropomorphism that enhance their clothing purchase intention.

4.3. Moderating Effect Test

Since the corresponding p -value is greater than 0.05, virtual idol anthropomorphism does not significantly affect consumers' attitudes toward apparel brands. Combined with the previous section, it can be seen that virtual idol anthropomorphism significantly increases consumers' willingness to purchase branded clothing, but consumers' brand attitudes do not play a significant mediating role in this path. It can be seen that virtual idols with a high degree of anthropomorphism have a better effect on trying on clothing than those with a low degree of anthropomorphism, which can directly evoke consumers' willingness to purchase clothing and trigger impulsive purchases; in this process, the anthropomorphism of virtual idols' appearance, actions and language does not significantly enhance consumers' attitudes toward clothing brands [74]. Therefore, consumers' brand attitudes are not effective mediating variables in relation to virtual idol anthropomorphism that enhances their clothing purchase intention.

4.3.1. Test of the Moderating Effect of Idolatry Involvement

Consumers' idolatry involvement positively moderates the relationship between virtual idol professionalism and attitude, so hypothesis H3e holds. This indicates that the professionalism exhibited by virtual idols in brand promotion activities can enhance consumers' brand attitudes, whereby the brand attitudes enhanced by consumers with different degrees of virtual idol admiration differ, specifically in that those with a high degree of virtual idol admiration involvement generate more favorable feelings toward the brand. In short, in virtual idol branding campaigns that exhibit the same level of professionalism, the idol filter of the group of fans who follow the idol drives them to have a better attitude toward the brand, and their brand favorability is higher than that of the non-fan group [46].

Consumers' idolatry involvement positively moderates the relationship between virtual idol relevance and attitude, so hypothesis H3f holds. This indicates that when virtual idols endorse brands reasonably in terms of personality and appearance, the presented promotional activities can effectively enhance consumers' favorable perceptions of the brand. Among them, for the perceived relevance of virtual idols to brands, consumers with high involvement in idol worship show better brand attitudes.

The p value corresponding to the interaction items $X5 \times T1$ and $X6 \times T1$ is less than 0.05, which indicates that the degree of idolatry involvement plays a significant positive role in the relationship between the professionalism and attitude of virtual idols, relevance and attitude, meaning that H3e and H3f are supported. The p values corresponding to the interaction items $X1 \times T1$ and $X7 \times T1$ are greater than 0.05, and H3a and H3g are rejected. Firstly, this shows that for consumers with different involvements in idolatry, the popularity of virtual idols makes no difference in the positive promotion of their brand attitudes. Secondly, it shows that there is no difference in the positive promotion effect of virtual idol homogeneity on brand attitude for consumers with different involvement degrees of idolatry. This is also the reason why clothing brand companies do not create brand-specific virtual idols that are more similar to the target users' personalities, based on brand consumers' infatuation psychology, but prefer virtual idols with high national popularity, such as Luo Tianyi and Hatsune Miku, to endorse their brands [47].

4.3.2. Test of the Moderating Effect of Adult Playfulness

Playfulness plays a significantly positive moderating effect between popularity and attitude ($p < 0.05$). Thus, H4a is supported. This suggests that consumer groups develop favorable feelings toward brands when well-known virtual idols promote the brand. Consumers in the consumer group with different adult playfulness levels behave differently, as shown by the fact that consumers with high adult playfulness develop higher brand favorability due to the high visibility of virtual idols compared to those with low adult playfulness. This indicates that the popularity of virtual idols is more likely to impress

consumers with higher playfulness, and such consumers are also more eager to follow the virtual idols they know.

The p values corresponding to the interaction items $X5 \times T2$, $X6 \times T2$ and $X7 \times T2$ are greater than 0.05, which indicates that adult playfulness cannot adjust the relationship between professionalism and attitude, the relationship between relevance and attitude, and the relationship between homogeneity and attitude, meaning that H4e, H4f and H4g are rejected. This shows that the professionalism, relevance and homogeneity of virtual idols positively influence consumers' attitudes towards branded clothing. Clothing consumers with different playfulness levels always have a favorable impression of clothing brands because of the professionalism, relevance and homogeneity of virtual idols involved in promoting clothing brands.

5. Fuzzy-Set Qualitative Comparative Analysis (fsQCA)

5.1. Calibration

Before fsQCA in this paper, we must calibrate the sample data. Firstly, the average value of the measured items of each variable is taken as the reflected value; secondly, the data calibration values of 95% (full membership), 50% (crossover), and 5% (non-membership) are specified for each dimension [14]. The variable calibration values are shown in Table 8.

Table 8. Thresholds in the calibration process.

	X1	X2	X3	X4	X5	X6	X7	Z	T1	T2	Y
full membership	4.667	5	5	5	5	5	4.667	4.750	4.667	4.600	4.400
crossover	3.667	4	4	4	4	4	3.667	3.750	3.667	3.800	3.400
non-membership	2.333	3	3	2.667	2.667	3	2.333	2.750	2	2.800	2

5.2. fsQCA of Clothing Purchase Intention

5.2.1. Necessity Analysis of Clothing Purchase Intention

In terms of the fsQCA analysis with purchase intention as the outcome variable, as shown in Table 9, none of the consistency scores of the antecedent conditions for explaining apparel purchase intention exceed the threshold of 0.9, which is not and does not approximate the necessary condition for consumers' apparel purchase intention [75]. Therefore, the antecedent conditions can be analyzed in combination to further determine the effects of the combination of constructs they constitute on apparel purchase intentions.

Table 9. Necessity analysis of clothing purchase intention.

	Consistency	Coverage		Consistency	Coverage
X1	0.744	0.801	~X1	0.554	0.608
X2	0.654	0.771	~X2	0.617	0.623
X3	0.660	0.766	~X3	0.617	0.631
X4	0.708	0.743	~X4	0.578	0.652
X5	0.692	0.764	~X5	0.593	0.636
X6	0.702	0.770	~X6	0.575	0.620
X7	0.761	0.769	~X7	0.529	0.622
Z	0.742	0.859	~Z	0.542	0.556
T1	0.750	0.858	~T1	0.556	0.577
T2	0.731	0.799	~T2	0.544	0.589

5.2.2. Configuration Analysis of Clothing Purchase Intention

After constructing a truth table explaining the willingness to purchase clothing, this study set the consistency threshold in the analysis of the constructs affecting willingness to purchase clothing at 0.8 based on the criterion that the consistency threshold should be no

less than 0.75, as suggested by Ragin C. C. (2009) [76], and given factors such as the natural break in consistency of the sample data. The results are shown in Table 10.

Table 10. Configuration results of clothing purchase intention.

	M1	M2	M3	M4	M5	M6	M7
X1	●	●	●	●	●	⊗	●
X2		●	●	●	●	●	⊗
X3	●	●		⊗	●	●	⊗
X4	●	●	●	⊗	⊗	●	⊗
X5	●	●	●	⊗	⊗	⊗	●
X6	●		●	●	⊗	⊗	●
X7		●	●	●	⊗	⊗	●
Z	●	●	●	⊗	●	●	●
raw coverage	0.435	0.395	0.394	0.222	0.205	0.198	0.254
unique coverage	0.034	0.006	0.005	0.021	0.007	0.011	0.010
consistency	0.949	0.949	0.943	0.931	0.971	0.961	0.951
solution coverage				0.522			
solution consistency				0.924			

Note: ● = presence of a core condition, ⊗ = absence of a core condition, ● = presence of a peripheral condition, ⊗ = absence of a peripheral condition, blank spaces = do not care.

The clothing purchase intention yields seven models. These seven models can be divided into three types according to different core conditions: one is the existence of popularity (X1) and attitude (Z) as core conditions (M1~M3, and M5~M7); the second one is the existence of anthropomorphism (X3), the existence of attitude (Z) and a lack of homogeneity (X7) as core conditions (M5 and M6); the last one is the existence of popularity (X1), relevance (X6), and homogeneity (X7), and a lack of anthropomorphism (X3), as core conditions (M7). The overall consistency of the seven antecedent constructs is 0.924, which is higher than the critical value of 0.75, indicating that the program has a good consistency.

Specifically, the consistency of each model is greater than 0.9, indicating that all seven models have strong explanatory power for the outcome variables.

In six of the seven models, popularity (X1) is used as one of the core conditions affecting consumers' willingness to purchase; in both M5 and M6, anthropomorphism (X3) variables are present as core conditions affecting consumers' willingness to purchase clothing; three variables (i.e., popularity, relevance, and homogeneity) are present as core conditions jointly affecting consumers' willingness to purchase clothing in both M4 and M7. The results of fsQCA further provide support for the main effect hypotheses H1a, H1c, H1f, and H1g.

All models except M4 contain both attitude and virtual idol popularity (X1), especially in M7, where virtual idol popularity (X1), relevance (X6), homogeneity (X7), and attitude (Z) are simultaneously used as core conditions, indicating that virtual idol popularity (X1), relevance (X6), and homogeneity (X7) affect consumers' apparel purchase intention, and improve consumers' brand attitude, thus enhancing clothing purchase intention. M7 indirectly proves hypotheses H2a, H2f, and H2g that consumer brand attitude mediates the relationship between 'x1 → y', 'x6 → y', 'x7 → y'.

5.3. fsQCA of Attitude

5.3.1. Necessity Analysis of Attitude

In the case of the fsQCA analysis with attitude as the outcome variable, as shown in Table 11, the consistency value of the seven independent variables and the two moderating variables in explaining consumers' attitudes towards branded clothing is less than 0.9, thus not all of them are necessary for the formation of attitude [76]. Therefore, a combination of the nine variables can be analyzed to further determine the impact of the elemental model they constitute on attitudes.

Table 11. Necessity analysis of attitude.

	Consistency	Coverage		Consistency	Coverage
X1	0.778	0.724	~X1	0.569	0.539
X2	0.726	0.739	~X2	0.614	0.535
X3	0.747	0.749	~X3	0.605	0.534
X4	0.787	0.713	~X4	0.567	0.552
X5	0.785	0.747	~X5	0.574	0.531
X6	0.784	0.742	~X6	0.573	0.533
X7	0.831	0.725	~X7	0.523	0.531
T1	0.786	0.776	~T1	0.559	0.500
T2	0.798	0.752	~T2	0.541	0.505

5.3.2. Configuration Analysis of Attitude

After constructing the truth table for explaining attitude adoption, this study set the consistency threshold value in the construct analysis for influencing attitude scheme adoption as 0.8 based on the criterion that the consistency threshold value should be no less than 0.75, as suggested by Ragin C. C. (2009) [77] and in view of the natural break in consistency of the sample data. The results are shown in Table 12. The overall consistency (solution consistency) of the nine antecedent variables is 0.906, which is higher than the critical value of 0.75, indicating that the scheme has good consistency.

Table 12. Configuration results of attitude.

	M1	M2	M3	M4	M5	M6
X1	●		●	●	●	●
X2	●	●	●	●	●	
X3	●	●	●	●	●	●
X4		●	●	●	●	●
X5	●	●	●	●	●	●
X6	●	●	●	●		●
X7	●	●	●		●	●
T1	⊗	⊗	●	●	●	●
T2	●	●		●	●	●
raw coverage	0.284	0.296	0.428	0.420	0.414	0.434
unique coverage	0.008	0.020	0.027	0.018	0.013	0.033
consistency	0.914	0.909	0.945	0.940	0.950	0.948
solution coverage				0.544		
solution consistency				0.906		

Note: ● = presence of a core condition, ● = presence of a peripheral condition, ⊗ = absence of a peripheral condition, blank spaces = do not care.

The conclusion of hypothesis H3f was proven to be credible to some extent.

Specifically, the consistency of each model was greater than 0.9, indicating that all six models had strong explanatory power for the outcome variables [14].

Both professionalism (X5) and idolatry involvement (T1) act as core conditions affecting attitude. In M3~M6, this indicates that from the perspective of marketing audiences who love virtual idols, virtual idols are more likely to evoke favorable feelings toward apparel brands when they show professionalism in apparel brand promotion activities. The M3~M6 empirical test results further indicate that hypothesis H3e holds credibility.

In the model of the role of idolatry involvement (T1) in consumers' brand attitudes, 75% of the models show that idolatry involvement (T1) as the core condition and relevance (X6) as the peripheral condition jointly influence consumers' attitudes. This indicates that fans who love virtual idols will experience an empathy effect, and are more likely to have favorable feelings toward the brand because of the correlation between virtual idols and clothing brands. The conclusion of hypothesis H3f is proven to be credible.

Among the multiple models of the effect of adult playfulness (T2) on consumers' brand attitudes, 80% of the models indicate that adult playfulness (T2) and popularity (X1) jointly influence consumers' attitudes, and 60% of the models indicate that adult playfulness (T2) as a core condition and popularity (X1) as a peripheral condition jointly influence consumers' attitudes. This indicates that consumers with high adult playfulness are more likely to be impressed by the brand marketing activities of virtual idols and have more favorable feelings toward the brand because of the popularity of virtual idols, which means that the empirical test result indicating that hypothesis H4a is valid is credible to some extent.

In summary, the results of fsQCA in this study show that the hypotheses in the empirical test section are robust; here, new research findings are obtained, but more in-depth and detailed extensions should be carried out.

6. Conclusions and Recommendations

6.1. Summary of Findings

The quasi-replication approach adopted in this study, wherein two complementary techniques are applied to uncover the determinants of the influence of virtual idol characteristics on consumers' clothing purchase intention, has revealed unique findings that explain the complex process by which consumer idolatry involvement and adult imagery shape customers' attitudes toward apparel brands. In our quasi-replication study we found that, on the one hand, the MRA approach shows that the popularity, anthropomorphism, relevance and homogeneity with consumers of virtual idols improve consumers' purchasing intention of branded clothing. By comparing the regression coefficients, it can be seen that the degree of influence of the assumed dimension on consumers' purchasing intention of branded clothing is as follows: popularity (0.353) > homogeneity (0.196) > relevance (0.123) > anthropomorphism (0.121). On the other hand, the fsQCA approach shows that the overall positive clothing purchase intention is directly driven by the interactions of three core factors (i.e., popularity, relevance and homogeneity), without the need for favorable anthropomorphism. On the one hand, the MRA approach shows that consumers' attitudes play a completely mediating role in the influence of virtual idols' relevance and homogeneity over consumers' willingness to buy branded clothing, and a partially mediating role in the influence of virtual idols' popularity on consumers' willingness to buy branded clothing. On the other hand, the fsQCA approach shows that the overall positive clothing purchase intention is driven by the interaction of three core factors (i.e., popularity, relevance and homogeneity), with the need for a favorable attitude. Furthermore, the MRA approach shows that consumers with different idolatry involvement degrees show differences in the degree to which the professionalism of virtual idols enhances their consumer brand attitude. On the other hand, the fsQCA approach shows that an overall positive brand attitude is driven by the interaction of two core factors, namely, professionalism (or relevance) and idolatry involvement. On the one hand, the MRA approach shows that compared to consumers with low adult playfulness, consumers with high adult playfulness have higher brand attitudes toward brands promoted by well-known virtual idols. On the other hand, the fsQCA approach shows that an overall positive brand attitude is driven by the interaction of two core factors, namely, popularity and adult playfulness. Such comprehensive insights address the extant gap in the body of literature as regards the influence of virtual idol characteristics over customers' psychological factors.

6.2. Managerial Implications

The development of internet technology is driving changes in online marketing methods, and brand companies that rely more and more on online sales are beginning to venture into digital marketing. In choosing to use virtual idols to promote their brand's new clothes, it is important for apparel brands to use virtual idols as a communication medium to promote their brands and attract traffic more efficiently. Therefore, this paper makes the

following recommendations to virtual idol design and operation teams, and to apparel brand companies.

From the data of consumer research, virtual idol design companies and operation teams should reasonably use artificial intelligence technology and big data promotion technology to improve the popularity and anthropomorphism of virtual idols. This is manifested by intelligently pushing virtual idols to users through the platform database, or creating works related to virtual idols and publishing them on various online platforms to improve the familiarity of virtual idols among internet users; the virtual idol creation team should use voice, image, and other information technologies to improve the degree of virtual idol anthropomorphism and the effects of customers trying on clothing [77].

When companies choose virtual idols to promote their own brands, they should include the popularity, anthropomorphism, professionalism, relevance and homogeneity of virtual idols in the screening criteria. Among them, when choosing cooperative virtual idols, companies should not only consider the influence of virtual idols in the fan circle, but they should also consider their national familiarity. At present, when domestic virtual idols broadcast live to promote brand products, voice and action are not synchronized. Therefore, brand companies need to find a way to match virtual idols' technical support for brand clothing marketing and promotion. Brand companies should require the virtual idol marketing team to have professional knowledge of clothing in order to present a professional campaign effect and reduce the possibility of mistakes occurring with incomplete knowledge reserves. In addition, when choosing virtual idols, brand companies should adhere to the personality preferences and values of mass consumers and choose virtual idols that match the brand image to increase brand product sales.

7. Limitation and Future Research

7.1. Limitations of Data Collection

Due to our limited research capacity and the fact that the study population is mainly composed of domestic consumers with only a small number from abroad, the applicability of the findings to different consumer audiences in the source countries may not be high.

7.2. Further Research

In further research, the further collection of consumer research data from outside China will not only expand the sample size of the research data in this study, but also further test whether there are differences in the responses of consumers from different source countries to virtual idol marketing activities. If there is no significant difference, it can prove the universality of this study's findings regarding virtual idol marketing activities; if there is a significant difference, this will indicate that brand companies need to consider the national and cultural differences of the audience when carrying out virtual idol marketing activities. This research can further supplement the research gap in virtual idol marketing.

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References

1. Ji, Y. China's Virtual Idol Industry Booming, Attracts More Than 300 Million Fans—Global Times. Available online: <https://www.globaltimes.cn/page/202101/1214468> (accessed on 22 July 2021).
2. Gu, Y.; He, Z. Consumer research based on the consumption of IP virtual derivatives. In Proceedings of the IEEE/WIC/ACM International Conference on Web Intelligence and Intelligent Agent Technology, Melbourne, Australia, 14–17 December 2021; pp. 184–191.
3. IQiyi National Creative Planning Center. 2019 Virtual Idol Observation Report. Available online: <http://www.199it.com/archives/1004591.html> (accessed on 22 July 2021).
4. Kong, R.; Qi, Z.; Zhao, S. Difference between Virtual Idols and Traditional Entertainment from Technical Perspectives. In Proceedings of the 2021 3rd International Conference on Economic Management and Cultural Industry (ICEMCI 2021), Guangzhou, China, 22–24 October 2021; Atlantis Press: Amsterdam, The Netherlands, 2021; pp. 344–349.
5. Jiang, H. The New Media: Virtual Idols. Master's Thesis, Pratt Institute, New York, NY, USA, June 2017.
6. Moustakas, E.; Lamba, N.; Mahmoud, D.; Ranganathan, C. Blurring lines between fiction and reality: Perspectives of experts on marketing effectiveness of virtual influencers. In Proceedings of the 2020 International Conference on Cyber Security and Protection of Digital Services (Cyber Security), Dublin, Ireland, 15–19 June 2020; pp. 1–6.
7. Choudhry, A.; Han, J.; Xu, X.; Huang, Y. "I Felt a Little Crazy Following a 'Doll'" Investigating Real Influence of Virtual Influencers on Their Followers. In Proceedings of the ACM on Human-Computer Interaction, New York, NY, USA, 14 January 2022; pp. 1–28.
8. Wibawa, R.C.; Pratiwi, C.P.; Wahyono, E.; Hidayat, D.; Adiasari, W. Virtual Influencers: Is the Persona Trustworthy? *J. Manaj. Inform. (JAMIKA)* **2022**, *12*, 51–62.
9. Le, L.K. Examining the rise of Hatsune Miku: The first international virtual idol. *UCI Undergrad. Res. J.* **2014**, *13*, 1–12.
10. Pakarinen, T.; Hoods, J. From Hybrid Events to the Next Generation-Interactive Virtual Events: Viewed from Three Different Stakeholders' Point of View. 2018. Available online: <https://www.theseus.fi/handle/10024/144784> (accessed on 22 July 2021).
11. Han, H.; Lin, M.; Zurlo, F. An Exploratory Study of the Business Strategies for Virtual Idols in the Era of Phygitalization—Analysis in the Perspective of Cases in China. In Proceedings of the International Conference on Human-Computer Interaction, Virtual Event, 24–29 July 2021; Springer: Cham, Switzerland, 2021; pp. 317–324.
12. Kobayashi, H.; Taguchi, T. Virtual idol Hatsune Miku: Case study of new production/consumption phenomena generated by network effects in Japan's online environment. *Mark. Glob. Dev. Rev.* **2019**, *3*, 3. [\[CrossRef\]](#)
13. Lu, Q.; Deng, Y.; Yu, M.; Song, H.; Liu, B. Supply chain network and financing performance of small and medium enterprises in China: A survey and quasi-replication using fuzzy-set qualitative comparative analysis. *Balt. J. Manag.* **2021**, *16*, 785–803. [\[CrossRef\]](#)
14. Salem, I.E.; Elbaz, A.M.; Al-Alawi, A.; Alkathiri, N.A.; Rashwan, K.A. Investigating the Role of Green Hotel Sustainable Strategies to Improve Customer Cognitive and Affective Image: Evidence from PLS-SEM and fsQCA. *Sustainability* **2022**, *14*, 3545. [\[CrossRef\]](#)
15. Sun, Y.; Lee, J. The Relationship between Commerce and Virtual Singer Fandom as a Subculture: The Case of Luo Tianyi. *Int. J. Art Cult. Technol.* **2020**, *4*, 35–42.
16. Michaud, A. Locating liveness in holographic performances: Technological anxiety and participatory fandom at Vocaloid concerts. *Pop. Music* **2022**, *41*, 1–19. [\[CrossRef\]](#)
17. Molin, V.; Nordgren, S. Robot or Human? The Marketing Phenomenon of Virtual Influencers: A Case Study About Virtual Influencers' Parasocial Interaction on Instagram. Master's Thesis, Business and Management, Uppsala University, Uppsala, Sweden, 2019.
18. Da Silva Oliveira, A.B.; Chimenti, P. "Humanized Robots": A Proposition of Categories to Understand Virtual Influencers. *Australas. J. Inf. Syst.* **2021**, *25*. [\[CrossRef\]](#)
19. Ladhari, R.; Massa, E.; Skandrani, H. YouTube vloggers' popularity and influence: The roles of homophily, emotional attachment, and expertise. *J. Retail. Consum. Serv.* **2020**, *54*, 102027. [\[CrossRef\]](#)
20. Sheehan, K. Who, Moi? Exploring the fit between celebrity spokescharacters and luxury brands. *J. Curr. Issues Res. Advert.* **2020**, *41*, 144–159. [\[CrossRef\]](#)
21. Jain, R. The Influence of Anthropomorphic Spokescharacters on Consumers' Recycling Intentions. Master's Thesis, Queensland University of Technology, Brisbane, Australia, May 2021.
22. Parisi, N.; Katz, I. Attitudes toward posthumous organ donation and commitment to donate. *Health Psychol.* **1986**, *5*, 565. [\[CrossRef\]](#)
23. Chen, H.; Long, R.; Niu, W.; Feng, Q.; Yang, R. How does individual low-carbon consumption behavior occur?—An analysis based on attitude process. *Appl. Energy* **2014**, *116*, 376–386. [\[CrossRef\]](#)
24. Moon, M.A.; Khalid, M.J.; Awan, H.M.; Attiq, S.; Rasool, H.; Kiran, M. Consumer's perceptions of website's utilitarian and hedonic attributes and online purchase intentions: A cognitive-affective attitude approach. *Span. J. Mark. -ESIC* **2017**, *21*, 73–88. [\[CrossRef\]](#)
25. Hwang, J.; Yoon, Y.S.; Park, N.H. Structural effects of cognitive and affective responses to web advertisements, website and brand attitudes, and purchase intentions: The case of casual-dining restaurants. *Int. J. Hosp. Manag.* **2011**, *30*, 897–907. [\[CrossRef\]](#)
26. Cheah, I.; Liang, J.; Phau, I. Idolizing "My Love from the Star": Idol attachment and fanaticism of luxury brands. *Psychol. Mark.* **2019**, *36*, 120–137. [\[CrossRef\]](#)

27. Damar, V.R.; Hartono, M. The impact of supply chain partnership and market driven strategy on consumer behavior in buying Vocaloid Hatsune Miku products. In Proceedings of the MATEC Web of Conferences Volume 204 (2018) International Mechanical and Industrial Engineering Conference 2018 (IMIIEC 2018), Malang, Indonesia, 30–31 August 2018; EDP Sciences: Les Ulis, France, 2018; p. 204.
28. Marcus, A.P.; Ma, X. Cuteness Design in the UX: An Initial Analysis. In Proceedings of the International Conference of Design, User Experience, and Usability, Toronto, ON, Canada, 17–22 July 2016; Springer: Cham, Switzerland, 2016; pp. 46–56.
29. Marcus, A.; Kurosu, M.; Ma, X.; Hashizume, A. Taxonomy of cuteness. In *Cuteness Engineering*; Springer: Cham, Switzerland, 2017; pp. 93–118.
30. Aroean, L.; Sugai, P. An Analysis of Anger Responses within the Context of Virtualized Consumption of Hatsune Miku. *Adv. Consum. Res.* **2013**, *41*, 342–345.
31. Hofeditz, L.; Nissen, A.; Schütte, R.; Mirbabaie, M. Trust Me, I'm an Influencer!—A Comparison of Perceived Trust in Human and Virtual Influencers. In Proceedings of the ECIS 2022 Research-in-Progress, Timișoara, Romania, 18 June 2022; p. 27. Available online: https://aisel.aisnet.org/ecis2022_rip/27/ (accessed on 22 July 2021).
32. Chen, Q.Q.; Park, H.J. How anthropomorphism affects trust in intelligent personal assistants. *Ind. Manag. Data Syst.* **2021**, *121*, 2722–2737. [[CrossRef](#)]
33. Kim, M. A Study on the Effect of Perceived Attractiveness and Social Distance of Virtual influencer on Information Acceptance Intention. *J. Converg. Cult. Technol.* **2022**, *8*, 309–314.
34. Robinson, B. Towards an ontology and ethics of virtual influencers. *Australas. J. Inf. Syst.* **2020**, *24*. [[CrossRef](#)]
35. Rabêlo Neto, A.; de Sousa Filho, J.M. The influence of soft power on the internationalization of Brazilian cultural products: Proposal for a framework. *Internext Rev. Eletrônica Negócios Int. ESPM* **2016**, *11*, 37–49.
36. Bekti, R.S.; Nishigori, H. Cultivating and Nurturing Medical Professionalism in the Cultural Context. In *Challenges and Opportunities in Health Professions Education*; Springer: Singapore, 2022; pp. 141–167.
37. Riboldazzi, S.; Capriello, A. Identifying and selecting the right influencers in the digital era. In *Influencer Marketing*; Routledge: London, UK, 2020; pp. 43–58.
38. Formentini, A. Influencer Marketing: An Investigation on How the Type of Influencer and the Brand Attitude Affect the Purchase Intention of Branded Content on Social Media. Master's Thesis, Luiss Guido Carli, Rome, Italy, April 2020.
39. Lu, Z.; Shen, C.; Li, J.; Shen, H.; Wigdor, D. More kawaii than a real-person live streamer: Understanding how the otaku community engages with and perceives virtual YouTubers. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems, Yokohama, Japan, 8–13 May 2021; pp. 1–14.
40. Molina, L. Celebrity Avatars: A Technical Approach to Creating Digital Avatars for Social Marketing Strategies. Master's Thesis, Florida Atlantic University, Boca Raton, FL, USA, December 2021.
41. Derval, D. Space and Time Perception, XR, and the Future of Communication. In *The Right Sensory Mix*; Springer: Berlin/Heidelberg, Germany, 2022; pp. 121–158.
42. Masuda, H.; Han, S.H.; Lee, J. Impacts of influencer attributes on purchase intentions in social media influencer marketing: Mediating roles of characterizations. *Technol. Forecast. Soc. Chang.* **2022**, *174*, 121246. [[CrossRef](#)]
43. Huang, M.; Hu, X.; Zheng, S. Is precise description in advertising always better than vague ones?—From an accessibility-diagnosability theoretical perspective. *J. Contemp. Mark. Sci.* **2021**, *4*, 238–259. [[CrossRef](#)]
44. Appel, G.; Grewal, L.; Hadi, R.; Stephen, A.T. The future of social media in marketing. *J. Acad. Mark. Sci.* **2020**, *48*, 79–95. [[CrossRef](#)]
45. Chan, K.; Ng, Y.L.; Luk, E.K. Impact of celebrity endorsement in advertising on brand image among Chinese adolescents. *Young Consum.* **2013**, *14*, 167–179. [[CrossRef](#)]
46. Luo, J. The Impact of Celebrity Endorsement Advertising Frequency on Brand Equity among Idolaters and Non-idolaters: A Study of the Chinese Cosmetics Market. Master's Thesis, Bangkok University, Khlong Nueng, Thailand, 2019.
47. Zhou, X. Virtual Youtuber Kizuna AI: Co-Creating Human-Non-Human Interaction and Celebrity-Audience Relationship. Master's Thesis, Lund University, Lund, Sweden, June 2020.
48. Reid, D. A model of playfulness and flow in virtual reality interactions. *Presence Teleoperators Virtual Environ.* **2004**, *13*, 451–462. [[CrossRef](#)]
49. Proyer, R.T. Development and initial assessment of a short measure for adult playfulness: The SMAP. *Personal. Individ. Differ.* **2012**, *53*, 989–994. [[CrossRef](#)]
50. Zhou, F.; Su, Q.; Mou, J. Understanding the effect of website logos as animated spokescharacters on the advertising: A lens of parasocial interaction relationship. *Technol. Soc.* **2021**, *65*, 101571. [[CrossRef](#)]
51. Gommans, R.; Sandstrom, M.J.; Stevens, G.W.J.M.; ter Bogt, T.F.; Cillessen, A.H. Popularity, likeability, and peer conformity: Four field experiments. *J. Exp. Soc. Psychol.* **2017**, *73*, 279–289. [[CrossRef](#)]
52. Mize, J.; Kinney, L. Spokes-character influence on brand relationship quality factors. In Proceedings of the American Academy of Advertising, Conference, Online, March 2008; American Academy of Advertising: San Mateo, CA, USA, 2008; pp. 177–187.
53. Zhang, S.; Lin, X.; Li, X.; Ren, A. Service robots' anthropomorphism: Dimensions, factors and internal relationships. *Electron. Mark.* **2022**, *32*, 1–9. [[CrossRef](#)]
54. Aoyagi, H.; Galbraith, P.W.; Kovacic, M. Idolology in Transcultural Perspective: Anthropological Investigations of Popular Idolatry. In *Idology in Transcultural Perspective*; Palgrave Macmillan: Cham, Switzerland, 2021; pp. 1–16.

55. Shen, X.; Liu, H.; Song, R. Toward a culture-sensitive approach to playfulness research: Development of the Adult Playfulness Trait Scale-Chinese version and an alternative measurement model. *J. Leis. Res.* **2021**, *52*, 401–423. [[CrossRef](#)]
56. Garretson, J.A.; Niedrich, R.W. Spokes-characters: Creating character trust and positive brand attitudes. *J. Advert.* **2004**, *33*, 25–36. [[CrossRef](#)]
57. Yang, S.J.; Lee, Y. Mid-to low-end fashion brand personality affects consumers' perceived quality, commitment, and loyalty. *Soc. Behav. Personal. Int. J.* **2019**, *47*, 1–14. [[CrossRef](#)]
58. De Canio, F.; Nieto-Garcia, M.; Martinelli, E.; Pellegrini, D. The motives behind consumers' intention to use peer-to-peer accommodation: An fsQCA application. *Int. J. Contemp. Hosp. Manag.* **2020**, *32*, 2969–2989. [[CrossRef](#)]
59. Kim, S. Effective and Ineffective Service Recovery Recipes in the Peer-to-Peer (P2P) Sharing-Service Model: Using the Fuzzy-Set Qualitative Comparative Analysis (fsQCA) Approach. *Sustainability* **2022**, *14*, 2525. [[CrossRef](#)]
60. CNNIC. 47th Statistical Report on China's Internet Development Status. Available online: http://www.gov.cn/xinwen/2021-02/03/content_5584518.html (accessed on 28 June 2021).
61. Eysenck, S.B.G.; Eysenck, H.J. The measurement of psychoticism: A study of factor stability and reliability. *Br. J. Soc. Clin. Psychol.* **1968**, *7*, 286–294. [[CrossRef](#)]
62. Balogh, I.; Ørbaek, P.; Winkel, J.; Nordander, C.; Ohlsson, K.; Ektor-Andersen, J. Malmo Shoulder-Neck Study Group. Questionnaire-based mechanical exposure indices for large population studies—Reliability, internal consistency and predictive validity. *Scand. J. Work. Environ. Health* **2001**, *27*, 41–48. [[CrossRef](#)]
63. Bollen, K.A. Evaluating effect, composite, and causal indicators in structural equation models. *MIS Q.* **2011**, *35*, 359–372. [[CrossRef](#)]
64. Tippett Michael, K.; Anderson, J.L.; Bishop, C.H.; Hamill, T.M.; Whitaker, J.S. Ensemble square root filters. *Mon. Weather. Rev.* **2003**, *131*, 1485–1490. [[CrossRef](#)]
65. Hu, B. Influences of Virtual Spokespersons' Characteristics on Brand Personality. In Proceedings of the 4th International Seminar on Education Research and Social Science (ISERSS 2021), Kuala Lumpur, Malaysia, 24–26 December 2021; Atlantis Press: Amsterdam, The Netherlands, 2022; pp. 161–166.
66. Aggarwal, P.; McGill, A.L. Is that car smiling at me? Schema congruity as a basis for evaluating anthropomorphized products. *J. Consum. Res.* **2007**, *34*, 468–479. [[CrossRef](#)]
67. Wolff, W.E.M. A Trend or is the Future of Influencer Marketing Virtual? The effect of Virtual Influencers and Sponsorship Disclosure on Purchase Intention, Brand Trust, and Consumer Engagement. Master's Thesis, University of Twente, Enschede, The Netherlands, 2022.
68. Chen, Y.; Zhong, Y. The Influence of Male Idols Endorsing Beauty Brands on Chinese Female Consumers. In Proceedings of the 2022 7th International Conference on Social Sciences and Economic Development (ICSSSED 2022), Wuhan, China, 25–27 March 2022; Atlantis Press: Amsterdam, The Netherlands, 2022; pp. 1555–1561.
69. Zhang, Z.; Wu, Y.; Pan, Z.; Li, W.; Su, Z. A novel animation authoring framework for the virtual teacher performing experiment in mixed reality. *Comput. Appl. Eng. Educ.* **2022**, *30*, 550–563. [[CrossRef](#)]
70. Schouten, A.P.; Janssen, L.; Verspaget, M. Celebrity vs. Influencer endorsements in advertising: The role of identification, credibility, and Product-Endorser fit. *Int. J. Advert.* **2020**, *39*, 258–281. [[CrossRef](#)]
71. Xie, C.; Bagozzi, R.P.; Grønhaug, K. The impact of corporate social responsibility on consumer brand advocacy: The role of moral emotions, attitudes, and individual differences. *J. Bus. Res.* **2019**, *95*, 514–530. [[CrossRef](#)]
72. Hosany, S.; Martin, D. Self-image congruence in consumer behavior. *J. Bus. Res.* **2012**, *65*, 685–691. [[CrossRef](#)]
73. Kressmann, F.; Sirgy, M.J.; Herrmann, A.; Huber, F.; Huber, S.; Lee, D.J. Direct and indirect effects of self-image congruence on brand loyalty. *J. Bus. Res.* **2006**, *59*, 955–964. [[CrossRef](#)]
74. Arsenyan, J.; Mirowska, A. Almost human? A comparative case study on the social media presence of virtual influencers. *Int. J. Hum.-Comput. Stud.* **2021**, *155*, 102694. [[CrossRef](#)]
75. Zhang, J.; Long, J.; von Schaeuwen, A.M.E. How does digital transformation improve organizational resilience?—Findings from PLS-SEM and fsQCA. *Sustainability* **2021**, *13*, 11487. [[CrossRef](#)]
76. Ragin, C.C. *Redesigning Social Inquiry: Fuzzy Sets and Beyond*; University of Chicago Press: Chicago, IL, USA, 2009.
77. Chang, C.T.; Yeh, W.C.; Lin, Y. Is cute design good for green products? Influences of green appeals and baby-face schema: An abstract. In *Creating Marketing Magic and Innovative Future Marketing Trends*; Springer: Cham, Switzerland, 2017; pp. 1231–1232.