The impact of hyper-realistic virtual spokesperson characteristics on brand attitude

Wenxin Shi

School of Economics and Management,Beijing Jiaotong University, China

21120704@bjtu.edu.cn

Abstract. In the highly technological and intelligent era, big data and artificial intelligence technologies are increasingly integrated into people's lives. Under this trend, many brands choose to adopt virtual images with high simulation as brand spokespersons to attract consumers' attention. This paper takes hyper-realistic virtual spokesperson as the research object, and mainly explores the interaction between hyper-realistic virtual spokesperson characteristics, brand trust, brand attitude and adult playfulness. The study found that: (1) hyper-realistic virtual spokesperson relevance and attractiveness characteristics have a positive effect on brand attitude, and interactivity characteristics do not have a significant effect on brand attitude. (2) Brand trust partially mediates between the relevance and attractiveness characteristics of hyper-realistic virtual spokespersons and brand attitude. (3) Adult playfulness plays a moderating role between hyper-realistic virtual spokesperson characteristics and brand trust.

Keywords: hyper-realistic virtual spokesperson; brand trust; brand attitude; adult playfulness.

1. Introduction

With the development of digital technology, especially artificial intelligence (AI), virtual reality (VR), computer-generated imagery (CGI) and other new technologies, the marketing field has given rise to changes in brand spokesperson, the form of spokesperson gradually changed from celebrity or entrepreneur spokesperson, secondary virtual spokesperson to today's hyper-realistic virtual spokesperson. At present, there are mainly two types of hyper-realistic virtual spokesperson: one is the brand's own virtual spokesperson, such as KFC's Colonel Sanders and the domestic beauty brand Huaxizi according to their own brand characteristics to create a virtual spokesperson "Huaxizi"; the other is the authorized spokesperson, the enterprise has a high visibility of its own virtual image. For example, Japanese skincare brand SK-II invites Imma, a popular Japanese virtual netizen, to appear in its advertising campaign. Both brand-built and authorized hyper-realistic virtual spokesperson have the following characteristics: First, they are more attractive based on real-life spokespeople or secondary virtual spokespeople. The hyper-realistic virtual spokesperson is cool and technologically advanced in appearance, with not only a high facial value that is almost perfect, but also high anthropomorphic features in expressions, movements, and tone of voice. Second, they are relevant based on the brand. Super-realistic virtual spokespersons are usually designed by professional teams after investigating the preferences of current target groups, and brand-built virtual spokespersons are created according to the brand's own culture and characteristics, which can be customized. Therefore, the personality of the persona is highly compatible with the brand's personality and philosophy. Third, it is interactive based on consumers. Brand self-built virtual spokesperson can achieve full response to user-generated content (UGC) in the true sense through system-generated content (SGC). [1]And authorized virtual spokespersons often already have high visibility and fan base, and usually actively interact with their fans through social media such as INS and Weibo.

According to source credibility theory, the reliability of information sources affects people's judgment and perception of information, and people usually believe more in those information with more reliable sources. [2]Source attractiveness theory suggests that the validity of a message is mainly influenced by the familiarity, similarity, and likability of the source.[3] This theory was later confirmed, and studies found that the use of attractive spokespersons in advertisements can increase consumers' favorability and propensity to purchase. Based on this, this paper aims to investigate

whether hyper-realistic virtual spokesperson with the above characteristics, born in the context of this digital revolution, can influence consumers' trust in brands? Does it affect consumers' trust in the brand and thus brand attitude?

2. Theoretical foundation and research hypothesis

2.1 Hyper-realistic virtual spokesperson

The concept of spokesperson was first proposed by Kamen, an American scholar, in the 1970s, which divided spokespersons into four categories: testimonies, endorsers, actors, and spokespersons according to the form of spokespersons. [4] In the 1980s Mowen and Brown had a clear definition of the concept of brand spokesperson, believing that a brand spokesperson is a person who expresses his or her approval of a brand through the form of advertising, thus establishing a new advertising attitude for consumers. [5] With the depth of research and the development of the times, the concept of brand spokesperson has been further expanded, and research scholars believe that brand spokespersons include not only people with high fame and prestige, but also animals and even virtual characters can become brand spokespersons.[6,7] Brand virtual spokesperson is a brand spokesperson who, after comprehensive analysis of the market environment, competitors and consumers' psychology, takes cartoon and animation images or highly anthropomorphic virtual images as the final form of presentation from the brand's own philosophy and culture.[8,9] Therefore, the brand virtual spokesperson is not only a symbol of the brand for product identification and commercial promotion, but also a part of the brand's intangible assets, conveying the brand's personality and culture to consumers.[10,11]

As a product of the combination of high technology and humanities, the hyper-realistic virtual spokesperson has only emerged in the marketing market in recent years and has become a new form of brand publicity and promotion. A hyper-realistic virtual spokesperson is a virtual image built with computer-generated imagery (CGI) and artificial intelligence (AI) technology that enables active interaction with target groups through social media, with a highly anthropomorphic appearance and a highly simulated personality. As a type of virtual spokesperson, hyper-realistic virtual spokesperson has characteristics such as attractiveness, relevance and interactivity. [12,13]The attractiveness refers to the fact that the super-realistic virtual spokesperson makes the target group interested in him/her and even wants to know more about him/her based on his/her cool appearance and unique personality. The relevance refers to the extent to which the image and personality of the super-realistic spokesperson fit with the brand concept and personality, and the degree of matching with the brand. The interactivity refers to the extent to which hyper-realistic virtual spokespeople communicate with consumers in social platforms or promotional activities as a way to present the brand image.

2.2 The direct effect of hyper-realistic virtual spokesperson characteristics on consumers' brand attitudes

Brand attitude is the tendency of consumers to like or dislike a particular brand. Some scholars define brand attitude as a combination of cognitive, affective and behavioral tendencies.[14,15] As a unique symbol and personality personification of a brand, the image temperament and persona character of virtual spokesperson can directly influence consumers' attitude toward the brand. According to source attraction theory, the familiarity, similarity and likability of the source affect the effectiveness of the message. It was found that the likability, professionalism and relevance characteristics of virtual endorsers have a positive impact on brand equity, i.e., the adoption of virtual endorsers helps to enhance brand equity.[17] Traits such as sincerity, reliability, and integrity demonstrated by virtual spokespersons can enhance consumers' emotional brand attachment. [18]Yiting Cai (2019) argues that consumers are influenced by the characteristics of brand virtual endorsers in their interactive communication with them, and in the long-term interaction between the two can promote the formation of social interaction-like relationships, the formation of which is

a manifestation of consumers' positive emotions toward the brand and a guarantee for consumers to adopt further purchase behaviors and form brand beliefs. [19]Accordingly, this paper proposes the following hypothesis.

H1a: The relevance characteristics of hyper-realistic virtual spokesperson positively influence consumers' brand attitudes.

H1b: The interactivity characteristics of hyper-realistic virtual spokesperson positively influences consumers' brand attitude.

H1c: The attractiveness characteristics of hyper-realistic virtual spokesperson positively influence consumers' brand attitudes.

2.3 The mediating role of brand trust

The concept of brand trust was first introduced by Western researchers in the 1960s, and it is believed that the reliability of a brand has a greater impact on consumers' purchasing decisions. [20,21]Consumers' trust in brands is influenced by brand awareness and brand reputation. Choosing a spokesperson with high awareness and good image not only drives the brand's own awareness, but also shows the strong strength of the brand itself, which helps to enhance consumers' recognition and confidence in the brand and reduce the perceived risk. In addition, brand trust has a positive effect on brand attitude. The study found that both brand trust and brand emotion have a significant role in increasing consumers' overall attitudes toward the brand and the certainty of brand attitudes. In terms of influence effectiveness, brand emotion influences brand attitude and attitude certainty more than brand trust. [22,23]Accordingly, this paper proposes the following hypothesis.

H2a: Consumers' brand trust mediates between relevance and brand attitude.

H2b: Consumers' brand trust mediates between interactivity and brand attitude.

H2c: Consumers' brand trust mediates between attractiveness and brand attitude.

2.4 Moderating role of adult playfulness

Playfulness initially refers to the element of free traits or attitudes that exist in children when they participate in games or other leisure activities. As research progressed, some scholars suggested that playfulness is not only a trait of children, but also an important factor in the healthy physical and mental development of adults.[24] Glynn (1992) defined adult playfulness as a trait in which individuals tend to define or engage in activities in an imaginative, non-serious, or metaphorical manner to increase internal enjoyment, engagement, and satisfaction.[25] Satisfaction can come from a variety of sources, either through the process of playing or through work, learning, or choosing products or services that bring pleasure to the individual. [26]This definition of adult playfulness is used in this paper. Studies have shown that in a high-stress social context, cute and funny cartoon images attract the attention of adults with a childlike mentality and satisfy their need for social interaction and bonding.[27] Proyer (2014) found that people with adult playfulness had higher levels of happiness, humor, and creativity in their daily work and rest, and were able to develop positive relationships and connections with partners.[28] In conclusion, adult playfulness is an intrinsically motivated, process-oriented trait, and people with playfulness tendency will give their own understanding and feelings to things around them or their own behavior.[29] Based on this, this study argues that individuals with different adult playfulness tendencies make different evaluations of the relevance, interactivity, and attractiveness characteristics of hyper-realistic virtual spokespeople and generate different perceptions of the brand. Accordingly, this paper proposes the following hypothesis.

H3: Adult playfulness plays a moderating role in the influence of hyper-realistic virtual spokesperson characteristics on brand trust.
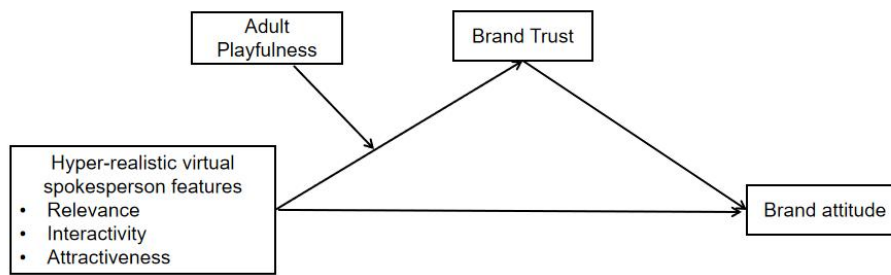
Fig. 1 Conceptual Model Diagram

3. Empirical Study

3.1 Data sources

To test the above hypothesis, this paper investigated the relationship between the characteristics of hyper-realistic virtual spokesperson, brand trust, brand attitude and adult playfulness by sending questionnaires on the Internet. A total of 352 questionnaires were collected in this study, and after excluding 35 invalid questionnaires, 317 valid questionnaires were obtained, with a valid return rate of 90.1%. Among the 352 respondents, 159 were male and 193 were female, accounting for 45.17% and 54.83% respectively; the age of the respondents was concentrated in the periods of 18-25 and 26-30; in terms of education, bachelor's degree was dominant; in terms of income, those with monthly income of 2000-5000 RMB and 5000-10,000 RMB accounted for a higher proportion.

3.2 Hypothesis testing and model validation

This paper first analyzes the influence of hyper-realistic virtual spokesperson characteristics on brand attitudes by constructing a multiple regression model. Model 1 uses gender, age, education, and income as control variables, while Model 2 is tested based on Model 1 after adding three characteristics of hyper-realistic virtual spokespersons (relevance, interactivity, and attractiveness), and the results are shown in Table 1.

Table. 1 Results of regression analysis of virtual spokesperson characteristics on brand attitudes

Variables	Brand Attitude			
	Model 1		Model 2	
	Standard coefficient β	t and significance	Standard coefficient β	t and significance
(Control variable)				
Gender	-0.078	-1.380	0.030	0.596
Age	-0.001	-.015	0.015	0.268
Education	0.115	1.417	0.077	1.095
Income	-0.127	-1.482	-0.096	-1.297
(Independent variable)				
Relevance			0.438	7.719***
Interactivity			0.028	0.508
Attractiveness			0.138	2.516*
F	0.934		14.511***	
R²	0.015		0.015	

Note: *p < 0.05, **p < 0.01, ***p < 0.001

As can be seen from Table 1, after adding the control variables of gender, age, education, and monthly income, the regression model corresponds to an F-value of 14.511, with a significance indicator less than 0.001, indicating that the established regression equation is valid. The t-value for the independent variable correlation is 7.719, with a significance indicator less than 0.001, and the t-value for attractiveness is 2.516, with a significance indicator less than 0.05, indicating that both

of them have a significant effect on brand attitude. Meanwhile, the standardized coefficients β for relevance and attractiveness are 0.438 and 0.138, respectively, indicating that both relevance and attractiveness have a positive influence on brand attitude and the influence of relevance is the largest. The t-value for interactivity is 0.508, but it is not significant, indicating that interactivity does not have a significant effect on brand attitude. Accordingly, hypotheses H1a and H1c are valid.

Second, since the effect of interactivity on brand attitude is not significant, Model 4 in the SPSS macro prepared by Hayes (2012) is used to test only the mediating effect in the relationship between relevance, attractiveness, and brand trust. The results of the test for the mediating effect of brand trust between relevance and brand attitude (see Tables 2 and 3) show that there is a positive and significant effect of relevance on brand trust (B=0.371, t=9.167, p<0.01); a significant positive effect of relevance on brand attitude (B=0.544, t=10.0147, p<0.01), and the positive effect of correlation on brand attitude remained significant when the mediating variable brand trust was put in (B=0.425, t=7.1367, p<0.01). In addition, the upper and lower limits of the Bootstrap 95% confidence interval for the direct effect of relevance on brand attitude and the mediating effect of brand trust do not contain 0 (see Table 3), indicating that the relevance characteristics of the hyper-realistic virtual spokesperson can not only directly influence consumers' attitudes toward the brand, but also influence brand attitude through the mediating effect of brand trust, i.e., hypothesis H2a holds. This direct effect (0.425) and mediating effect (0.119) accounted for 78.13% and 21.87% of the total effect (0.544), respectively.

Table. 2 Mediating effect of brand trust between relevance and brand attitude

Predictor variables	Model 1		Model 2		Model 3	
	Dependent variable: brand trust		Dependent variable: brand attitude		Dependent variable: brand attitude	
	B	t and significance	B	t and significance	B	t and significance
Relevance	0.371	9.167***	0.544	10.0147***	0.425	7.1367***
Brand Trust					0.321	4.3217***
F	15.080		17.738		18.738	
R²	0.226		0.256		0.298	

Note: *p < 0.05, **p < 0.01, ***p < 0.001

Table. 3 Decomposition of the mediating effect of brand trust between relevance and brand attitude

	Effect Value Boot	Standard Error Boot CI	Lower limit Boot CI	Upper limit Relative	Relative Effect Value
Total effect	0.544	0.054	0.437	0 .651	
Direct effect	0.425	0 .064	0.300	0 .550	78.13%
Mediating effect of brand trust	0.119	0.032	0.060	0.184	21.87%

The results of the test for the mediating effect of brand trust between attractiveness and brand attitude (see Tables 4 and 5) show that there is a positive effect of attractiveness on brand trust, and the effect is significant (B=0.345, t=7.843, p<0.01); the positive effect of attractiveness on brand attitude is significant (B=0.375, t=5.995, p<0.01), and when the mediating variable brand trust is put in, the positive effect of attractiveness on brand attitude remains significant (B=0.215, t=3.322, p<0.01). In addition, the upper and lower limits of the Bootstrap 95% confidence interval for the direct effect of attractiveness on brand attitude and the mediating effect of brand trust do not contain 0 (see Table 5), indicating that the attractiveness characteristics of the hyper-realistic virtual

spokesperson can not only directly influence consumers' attitudes toward the brand, but also influence brand attitude through the mediating effect of brand trust, i.e., hypothesis H2c holds. This direct effect (0.215) and mediating effect (0.160) account for 57.33% and 42.67% of the total effect (0.375), respectively.

Table. 4 Mediating effect of brand trust between attractiveness and brand attitude

Predictor variables	Model 1		Model 2		Model 3	
	Dependent variable: brand trust		Dependent variable: brand attitude		Dependent variable: brand attitude	
	B	t and significance	B	t and significance	B	t and significance
Attractiveness	0.345	7.843***	0.375	5.995***	0.215	3.322***
Brand Trust					0.462	6.045
F	11.265		6.855		11.769	
R²	0.179		0.117		0.210	

Note: *p < 0.05, **p < 0.01, ***p < 0.001

Table. 5 Decomposition of the mediating effect of brand trust between attractiveness and brand attitude

	Effect Value Boot	Standard Error Boot CI	Lower limit Boot CI	Upper limit Relative	Relative Effect Value
Total effect	0.375	0.063	0.252	0.498	
Direct effect	0.215	0.070	0.077	0.357	57.33%
Mediating effect of brand trust	0.160	0.037	0.093	0.238	42.67%

Finally, the mediated model with moderation was tested using Model 7 in the SPSS macro prepared by Hayes (2012). The results of the moderating role of adult playfulness between hyper-realistic virtual spokesperson characteristics and brand trust (see Tables 6 and 7) showed that after adding adult playfulness to the model, the product term of hyper-realistic virtual spokesperson characteristics and adult playfulness had a significant effect on brand trust (B= -0.177, t= -3.436, p<0.01), indicating that adult playfulness plays a moderating role in the influence of hyper-realistic virtual spokesperson characteristics on brand trust. Hypothesis 3 holds. As can be seen from Figure 2, for subjects with low levels of adult playfulness (M-1SD), the hyper-realistic virtual spokesperson feature has a positive effect on brand trust, while for subjects with high levels of adult playfulness (M+1SD), the hyper-realistic virtual spokesperson feature also has a positive effect on brand trust, but its effect is smaller. This is also reflected in Table 7, where the direct effect is larger for low adult playfulness levels (M-1SD) than for high adult playfulness levels (M+1SD), indicating that the effect of hyper-realistic virtual endorser characteristics on brand trust tends to decrease as the level of individual adult playfulness increases.

Table. 6 Intermediary model tests with moderation

Independent Variables	Model 1			Model 2		
	Dependent variable: brand trust			Dependent variable: brand attitude		
	B	SE	t and significance	B	SE	t and significance
Virtual Spokesperson Characteristics	0.509	0.058	8.81***	0.473	0.088	5.357***

Brand Trust				0.301	0.084	3.585***
Adult Playfulness	0.018	0.042	0.421			
Virtual Spokesperson Characteristics×Adult Playfulness	-0.177	0.051	-3.436***			
F	27.427			17.309		
R²	0.383			0.251		

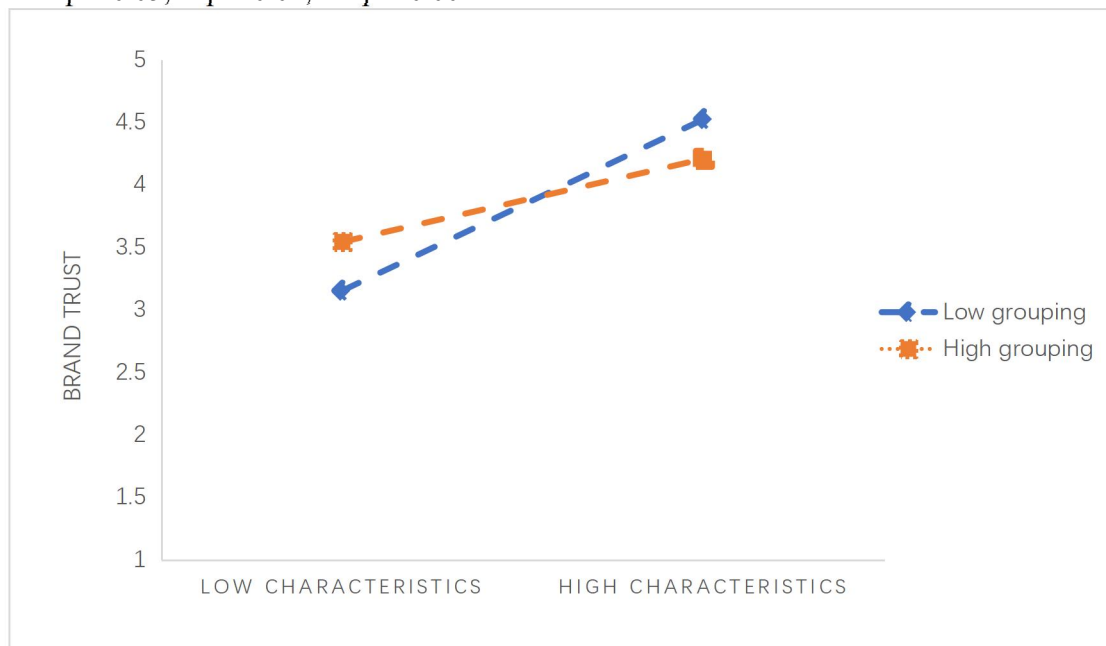Note: *p < 0.05, **p < 0.01, ***p < 0.001

Fig. 2 Moderating role of adult playfulness in the relationship between virtual spokesperson characteristics and brand trust

Table. 7 Direct and mediated effects at different levels of adult playfulness

	Adult Playfulness	Effect Value Boot	Standard Error Boot CI	Lower limit Boot CI	Upper limit Relative
Total effect	M-1SD	0.669	0.057	0.557	0.781
	M	0.509	0.058	0.395	0.623
	M+1SD	0.349	0.088	0.176	0.523
Mediating effect of brand trust	M-1SD	0.201	0.063	0.081	0.328
	M	0.153	0.052	0.059	0.259
	M+1SD	0.105	0.045	0.032	0.208

4. Conclusions and Recommendations

Based on the adult playfulness perspective of consumer interpersonal relationships, this paper investigated the relationship between hyper-realistic virtual spokesperson characteristics, brand trust and brand attitude, and finally obtained the following conclusions: firstly, the relevance and attractiveness characteristics of hyper-realistic virtual spokesperson have significant positive effects

on brand attitude, and the interactivity characteristics have no significant effects on brand attitude. Secondly, brand trust is partially mediated between the relevance, attractiveness characteristics and brand attitude of hyper-realistic virtual spokesperson, respectively. Finally, adult playfulness played a moderating role in the influence of hyper-realistic virtual spokesperson characteristics on brand trust.

Based on the above findings, this paper proposes the following recommendations on how brands can select or create hyper-realistic virtual spokespersons to make customers trust and feel good about the brand: First, in the process of creating or selecting hyper-realistic virtual brand spokespersons, it is important to pay attention to the matching degree between the virtual image and the brand tone. From the research results of this paper, choosing a spokesperson with good relevance to the product can transfer the spokesperson's own good image to the brand and make consumers have a good association with the brand, thus enhancing consumers' trust in the brand and facilitating the brand to establish a good brand image in consumers' mind. Secondly, the appropriate use of super-realistic virtual spokesperson's natural attractiveness advantage. The highly realistic appearance of the virtual spokesperson can certainly attract consumers' attention, but the pursuit of the virtual spokesperson's image simulation will cause people's fear of artificial intelligence, forming the "Valley of Terror effect". Finally, for adult consumers, the promotion of the virtual spokesperson can appropriately enhance the element of playfulness. Brands can use a variety of social media and creative communities to promote the virtual spokesperson and guide the target group to participate in the promotion activities of the virtual spokesperson, so as to enhance the trust and goodwill of the target group towards the brand.

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