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AI Voice Cloning Technology under Human-machine Attachment Shared Mechanism Behavior Research

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Abstract: AI voice cloning technology, with its unique anthropomorphic and authenticity characteristics, successfully replicates human voice and endows it with eternal value, thus spawning a new mode of human-machine attachment. Based on the SOR model, this study introduces key variables to reconstruct the voice sharing model and uses structural equation modeling (SEM) to conduct a deep analysis of 302 questionnaire data. The research results show that the anthropomorphism and authenticity of technology, as well as users' attachment emotions, have significant positive effects on sharing behavior, while trust attitude shows a negative effect. In addition, attachment and trust play intermediary roles in sharing behavior. Based on these findings, this paper proposes suggestions for eliminating barriers, building trust, and returning to the user as the main subject to restart the human-machine attachment relationship, providing a new perspective for the research on the mechanism of voice sharing behavior under the background of human-machine attachment, aiming to build a closer and more stable human-machine voice symbiotic relationship.

Keywords: AI voice cloning technology, Man-machine attachment, Voice sharing, SOR model.

1. Introduction

With the rapid development of artificial intelligence technology, it has made significant breakthroughs in key fields such as emotional computing, natural language processing and voice recognition, and gradually established a deeply established emotional bond with human beings, promoting the expansion of artificial intelligence to a wider range of fields. Among them, AI voice cloning technology, as an important symbol of technological change, relies on deep learning model to realize accurate recognition and extraction of voice features, and then generate "new sound" highly similar or almost consistent with the original sound. The technology shows excellent performance in nature, fluency and emotional synchronous transcription, and has a high level of humanity and authenticity characteristics.

Continuous human-machine emotional interaction is the core element of AI voice cloning technology in the era of intelligence [1]. It has become an indispensable and valuable tool for content creators and service platforms [2], not only creating new characters for artistsand bringing immersive experiences to gamers [3] [4], but also revolutionizing the problems of interaction and cross-language communication among groups with language barriers [5]. At the same time, the technology also relies

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on the user data for model upgrade and iteration, and the man-machine forms a close shared relationship in the closed loop [6].

Through literature review, a large number of studies mainly focus on machine system design [7] and human emotional response [8], especially in the research of attachment emotion [9] [10], shared behavior [11] [12]. For example, some studies show that the internal model of attachment is mainly composed of the beliefs of self and others, which guides the behavioral response of users by regulating and influencing emotional intensity [13]; other studies, emphasizing the importance of cooperation and sharing between human and machine, and compare the relationship between shared behavior and human and machine to the relationship between sharp spearhead and blunt spear rod [14]. However, the existing literature considers less about the actual behavioral responses of users after attachment to new technologies, indicating that future research needs to focus more on the intrinsic connection between attachment and shared behavior, and in-depth explore the actual behavioral responses of users after technology adoption to more fully understand the emotional and behavioral dynamics in human-machine relationships.

In conclusion, this study innovative attachment concept as an organizational structure, and try to in the stimulus-body-response (SOR) framework, into the AI voice cloning technology of human nature, authenticity characteristics, and attachment emotion and trust attitude four key variables as independent variables, while the voice sharing behavior as the dependent variable, to build a comprehensive man-machine attachment voice sharing model. This paper conducts empirical test through large sample data and structural equation model (SEM), and aims to provide a new theoretical perspective and practical guidance for voice creation and technology promotion, and help the man-machine relationship achieve the goal of more intimate and harmonious coexistence in the era of intelligence.

2. Literature review and model construction

2.1. Theoretical basis: the S-O-R model

The S-O-R model, developed from Mehrabian and Russell based on consumer behavior theory, believes that stimulation (S) in the environment will affect an individual's emotion and cognition (O), and then affect the change of individual behavior (R) [15]. This model has been widely used in many fields, including smartphone [16], online shopping [17], disease prevention [18], etc.

In the S-O-R model, the stimulus, as the leading variable, similar to the "trigger", can trigger the emotional or cognitive response of users [19]. In this study, the stimulus factors specifically refer to the emotional response characteristics formed between human-computer interactions. The intermediary variable of the model is organism, which represents the intermediate state between stimulus and response [20], mainly represented by affective state and cognitive state [21]. The mediation variable in this study mainly refers to the user's emotional experience after the use of AI cloned voice technology. The outcome variable of the model is reaction, also known as behavior [22], which represents the individual's response to stimuli, which can be approach or avoidance behavior [23]. This study focuses on the user's approach to the technology, such as stay, sharing, purchase, etc. These behavioral responses may become the final form after human-computer interaction [24].

Although researchers of the S-O-R model usually use survey methods to measure user response to post-stimulus effects [25], studies in specific contexts such as human-computer attachment, and human-computer attachment as a stimulus to test user response behavior are relatively scarce [26]. Therefore, this study applies the S-O-R model to the mechanism of user shared behavior under human-machine attachment, trying to explain the relationship between environmental stimuli (humanlike and authenticity), the internal state of the user as an organism (attachment emotion and trust degree), and behavioral responses (shared willingness). To this end, this study used a dynamic

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research model to reproduce the psychological contrast and behavioral changes before and after user use and sharing [27], aiming to fill the shortcomings in the existing literature on user behavioral response in human-computer attachment situations and provide new theoretical support for understanding user behavior in human-computer interaction.

2.2. Research hypothesis

2.2.1. Humanoid — Stimulus level

"Humanoid" is embodied in the appearance design of artificial intelligence, facial expressions, social applications, and interaction and communication with human beings, which makes artificial intelligence quite similar to human beings in different aspects [28]. For a long time, artificial intelligence has been discussed under the framework of "individualism" in the methodology, especially on how to adapt to the non-social environment, the academic circle has launched an in-depth discussion [29]. The "human-like" characteristics of artificial intelligence provide new ideas to solve this contradiction, and greatly promote the social interaction between man and machine [30]. Interaction promotion Thanks to the AI voice cloning technology system, it can feedback a specific language in real time [31], and can simulate real social interaction scenes in only 3-4 seconds [32]. In fact, the voice model forms a closed-loop interaction with the cognitive model, which significantly improves the quality of social dialogue based on the emotional intelligent interaction model [33].

Moreover, human beings will also project human-like qualities such as autonomy and dependence to artificial intelligence to meet their basic needs of belonging and security, so as to establish a long-term attachment relationship with AI[34]. At present, advanced AI voice technology is also designed as "social agent", and is widely used in related fields [35] with distinct "people-oriented" characteristics, such as healthcare and personal assistant [36][37], which further promotes the formation of closer attachment relationship between man and machine [38]. Many studies have shown that the human-like characteristics of technology are crucial to the establishment of human-machine trust relationship [39]. When the human-like characteristics are weakened, it will have a greater negative impact on the construction of human-machine trust relationship [40]. Based on the above analysis, this study includes the theoretical model and proposed the following hypotheses:

H1a: The humanoid of AI voice cloning technology has a positive correlation effect on authenticity.

H1b: The humanoid of AI voice cloning technology has a negative impact on user trust.

H1c: The humanoid of AI voice cloning technology has a positive correlation effect on user attachment.

2.2.2. Authenticity — Stimulus level

Authenticity, derived from the Latin word "authenticus" and the Greek word "authentikos", represents a trustworthy, authoritative, and acceptable trait [41]. Research shows that the "perceived authenticity" of human beings is continuously regulated by "perceived quality" and "vitality" [42], which can interfere in users' consumption behavior [43], and has a positive correlation with brand "loyalty". Specifically, when users have trust and friendly attitude towards a brand with real characteristics [44][45], their purchase intention and behavior trendswill significantly increase [46][47] .

In the field of artificial intelligence, considering authenticity is equally important [48]. On the one hand, the customized services of artificial intelligence can significantly deepen the authenticity of human perception [49] and gradually develop into new human-machine consumption emotions [50]; On the other hand, users impressed by the "real" scenes shaped by artificial intelligence may even regard artificial intelligence as potential emotional partners [51]. However, it has also raised users' questions about the ethics of "trusted" digital partners. Despite similar digital partners, users do not

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necessarily perceive their authenticity [52]. This is the "authenticity" presented by artificial intelligence, which is mostly "colonized" by the consciousness of designers, full of data doctrine and monitoring capitalism [53][54], and there is invisibility [55]. At present, there is still a lack of systematic empirical tests of the "authenticity" measurement in the field of artificial intelligence [56]. Therefore, this study included authenticity in the theoretical model to innovate relevant quantitative research and propose the following research hypotheses:

H2a: The authenticity of AI voice cloning technology has a negative impact on user trust.

H2b: The authenticity of AI voice cloning technology has a positive correlation on user attachment.

2.2.3. Attachment — Organism level

Attachment theory, first developed by Bowlby [57] and Ainsworth et al [58], describes the intimate relationship between infants and caregivers, and was later applied to explain patterns of relationships between adults, covering the dual attachment to the psychological (emotional) and body. Nowadays, attachment theory has been widely used in the study of human-computer interaction. Human beings instinctively desire to accompany and expect belonging [59], prompting the two sides to gradually form a certain relationship or emotional bond [60].

In the past, humans met this instinctive need by interacting with life bodies (e. g., family members, friends, colleagues, pets) and now interacting with inanimate bodies such as robots or artificial intelligence [61]. Human beings in the high-pressure environment are more eager for the company of AI partners [62], and this human-machine closeness mode is similar to the behavior trajectory of human approaching attachment characters. When the target user interacts with AI and feels "preference", it will stimulate their attachment to AI [63], that is, the higher the secure human attachment to AI, the higher the trust [64]. If artificial intelligence shows the willingness to promise and loyalty to users, it will stabilize and enhance the construction of emotional bond between man and machine [65]. It can be seen that attachment emotions not only improve the quality of perceptual experience and information exchange in human-computer dialogue, but also enhance their higher degree of self-disclosure [66]. Therefore, this study incorporated emotional attachment into the relationship between users and AI voice cloning technology [67] and makes the following assumptions:

H3a: Users' attachment to AI voice cloning technology has a positive correlation effect on trust.

H3b: The user's attachment to AI voice cloning technology has a positive correlated effect on voice sharing behavior.

2.2.4. Trust — Organism level

Trust is a particularly important issue in the field of artificial intelligence. Some researchers define trust as a kind attitude towards others, and a confidence in the behavior of the trusted person [68]. In general, users tend to rely on algorithms [69] when performing objective tasks, and under the support of trust [70], gradually improve the perception and willingness of artificial intelligence [71], so as to form a specific and solid human-machine attachment style. Obviously, trust is one of the key reasons why people use and rely on a certain technology [72].

Interestingly, trust is vulnerable to the influence of various factors, including past experience [73], communication [74] , behavior, especially for involving medical [75], hotel service [76] and other related areas of users is very obvious, such users often do not believe in artificial intelligence, partly because the artificial intelligence model of human basic moral prediction and judgment is not complete, lead to man-machine perception of unequal, thus hindered the trust in the field of moral related building [77]. At the same time, the positive motivation of users will also significantly affect the trust relationship between man and machine [78]. In terms of this study, relatively few studies

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explore the relationship between human-computer attachment and trust [79]. Therefore, we included trust in the research model to expand the theoretical research and propose the following assumptions:

H4: Users' trust in AI voice cloning technology has a negative correlation effect on voice sharing behavior.

2.2.5. Voice sharing — Response level

"Sharing" is a complex system involving multiple elements including sender and receiver, knowledge and information, information transmission channel and external environment [80]. Users with high demand for a sense of belonging and involvement are susceptible to their own attachment emotions and will take shared behavior as a response [81]. Such activities that rely on human-computer interaction not only promote the creation of information, but also strengthen the sharing of knowledge [82][83]. Some researchers have found that users with high frequency of an AI platform can make a good prediction of the interpersonal relationship and social atmosphere [84]. However, although users' voice sharing behavior in AI voice cloning technology provides a new way for the operation mode [85], they still need relevant voice data management standards and safe and effective data sharing facilities to support [86], so as to ensure the security and effectiveness of voice sharing behavior. Specifically, when more people participate in sharing information with AI, some users may feel a sense of exploitation, thus reducing their trust in the technology [87]. It can be seen that trust also affects users' intention to share information [88].

Through real-time interaction with users, the AI sharing platform constantly "learns" and corrects data. With its unique personalized and ultra-personalized performance, it can meet the needs of different users [89]. Therefore, the present study summarized the response part into voice-shared behavior.

In conclusion, this paper systematically combs the factors that may affect the attachment and sharing behavior of users to AI voice cloning technology, and provides a corresponding theoretical basis for the promotion of new technologies and enabling human auditory society. To achieve this goal, this study constructed a voice sharing model under human-machine attachment under the SOR framework (see Figure 1).

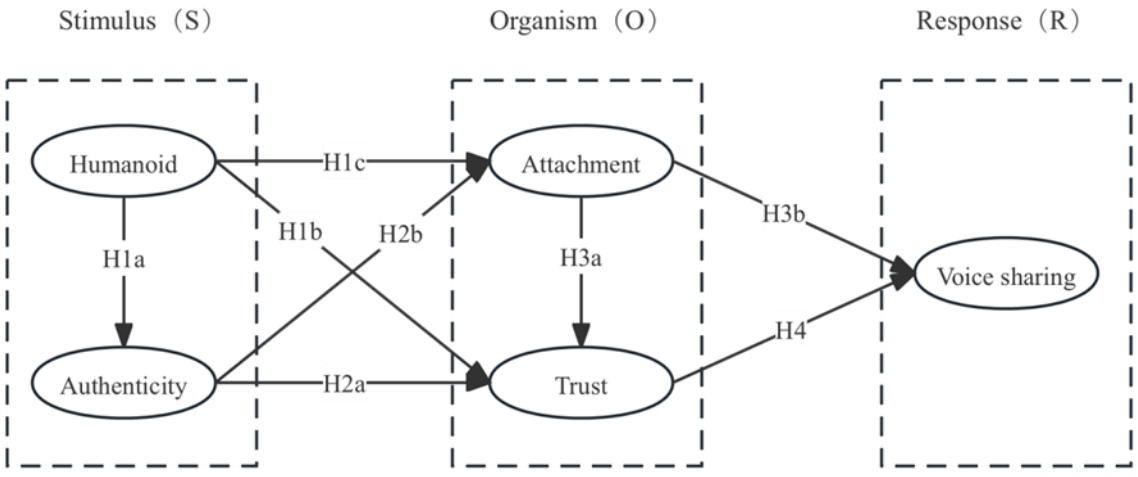

Figure 1: Behavioral mechanism model of voice sharing under human-machine attachment

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3. Research method and design

The theoretical model proposed in this paper covers five key variables: humanoid, authenticity, attachment, trust, and voice sharing. In view of the strong subjectivity of these variables and difficult to quantify directly, this paper chooses to use structural equation model (SEM) to analyze the complex influence relationship between them in order to verify the research hypothesis. In the specific implementation process, this paper verifies the above hypothesis about the influencing factors of IBM SPSS 28.0 and AMOS 28.0.

Considering that the five variables in the research model have relatively mature scales as references, the authors made an innovative design of the questionnaire in combination with the unique theme of AI voice cloning technology. The questionnaire underwent two rounds of strict review by experts, which not only included the basic demographic data of the tested subjects, but also included multiple scales. Among them, the humanoid scale is adapted from the research results of Park et al. [90], the authenticity scale refers to Kim et al. [91], the attachment scale is adapted from Han et al. [92], the trust scale is modified according to Chang et al. [93], and the voice sharing scale is adapted from Bock et al. [94]. Each variable in the model included three carefully designed measurement items, plus basic information from manual statistics, and a total of 22 question items were presented in the questionnaire. In order to ensure the validity of the questionnaire, all variables were strictly measured in this paper, especially with the words requiring each respondent to fill in according to the actual situation, and answered using the seven-level Likert scale, from "1 = strongly disagree" to "7 = strongly agree". Before the official release of the questionnaire, 30 users of AI voice cloning technology were first pre-tested, and the defects and feedback in the expression of the items were modified and adjusted, and finally the final version of the questionnaire was formed.

Before the official release of the questionnaire, in order to more accurately locate the target user groups, the questionnaire was widely released to the groups in professional fields such as news communication, broadcasting and hosting, artificial intelligence, as well as the people in related fields such as web celebrity bloggers. In addition, given that AI voice cloning technology is a newly developed technology that is not widely used and understood by the public, a special screening question is set up in the questionnaire: " Have you ever used AI voice cloning technology?". If you choose "Yes", you can continue to fill in the main part of the questionnaire; if "No", skip the main items to ensure the authenticity and validity of the data collected.

4. Data analysis and model testing

4.1. Descriptive statistical analysis

A total of 600 questionnaires were collected in this round of survey. After excluding 298 invalid questionnaires (i. e., users who chose "not used" the technology), a total of 302 valid samples were obtained, which meant that the users of AI voice cloning technology accounted for 50.33% of the total sample size.

According to the demographic data of the study sample (N=302), there were 160 men, accounting for 52.98%, and 142 women, accounting for 47.02%. The male-female ratio is basically the same, so the sample is somewhat representative. In terms of age distribution, 21-30 years were dominated, accounting for 29.8%, followed by the ages under 20 and 31-40 years. The age distribution is basically in line with the characteristics of the current AI voice cloning technology users, that is, young people are the main users of the technology. In terms of academic qualifications, the undergraduate and junior college respondents dominated, accounting for 35.76% and 37.76%, respectively. From the professional point of view, the use of students is the most prominent, accounting for 42.05%. In addition, when investigating the frequency of AI voice cloning technology, it was found that more

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respondents chose to "sometimes use", accounting for 47.35%. In terms of the daily use time, the user group of about 2-3 hours is the largest, accounting for 35.43%. The details are shown in Table 1.

Table 1: Descriptive statistics of the demographic characteristics of the survey sample (N=302)

Variable	Option	Frequency	Percentage
Sex	Man	160	52.98%
	Woman	142	47.02%
Age	Under 20	79	26.16%
	21-30 Years old	90	29.8%
	31-40 Years old	70	23.18%
	41-50 Years old	32	10.6%
	51-60 Years old	15	4.97%
	61 Years old	16	5.3%
Record of formal Schooling	High school and below	39	12.91%
	Specialty (technical secondary school / junior college)	108	35.76%
	undergraduate course	113	37.42%
	Graduate student or above	42	13.91%
Occupation	student	127	42.05%
	Enterprise staff	79	26.16%
	professional	52	17.22%
	Government / public institutions	26	8.61%
	other	18	5.96%
Frequency of use of AI voice cloning technology	Almost not (less than twice a week)	55	18.21%
	Few (2-4 times a week)	49	16.23%
	Sometimes (5-7 times a week)	143	47.35%
	Often (once a day)	32	10.6%
	Always (many times a day)	23	7.62%
Each time using the AI voice cloning technology length	Less than 1 hour	26	8.61%
	2-3 Hours	107	35.43%
	3-4 Hours	56	18.54%
	5-6 Hours	92	30.46%
	More than 6 hours	21	6.95%

4.2. Testing of validity and reliability

To ensure the reliability of the data of this study, the study conducted a rigorous reliability and validity test. Firstly, through reliability analysis, the Cronbach's α coefficient of the obtained samples was between 0.745 and 0.999, both greater than 0.7, indicating the overall design reliability of the questionnaire and high reliability. Second, the KMO value of 0.896 and the p-value of the Bartlett spherical test approached 0.000 were all statistically significant, further demonstrating the reliability of the data. In addition to the reliability analysis, the study also estimated and tested the combined reliability (CR) input. According to the data in Table 2, the CR values are greater than 0.6, and the AVE values are greater than the recommended minimum value of 0.36, which proves that the high reliability of the overall internal quality of the questionnaire is ideal, and that the convergent validity of the structure is acceptable.

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Table 2: Model confirmatory factor analysis

Variable	Question item	Factor load	Cronbach's α	AVE	CR
Humanoid(H)	H1	0.997	0.999	0.997	0.999
	H2	0.999			
	H3	1.000			
Authenticity (R)	R1	0.762	0.762	0.520	0.764
	R2	0.680			
	R3	0.717			
Attachment(A)	A1	0.841	0.800	0.586	0.805
	A2	0.858			
	A3	0.561			
Trust (T)	T1	0.828	0.909	0.620	0.859
	T2	0.907			
	T3	0.892			
Voice Sharing (S)	S1	0.700	0.745	0.520	0.684
	S2	0.742			
	S3	0.417			

Differentiation validity is an important measure of the degree of difference between different constructs (or variables). It focuses on whether the correlation between each construct and its corresponding measure items is significantly higher than that between them and the other constructs. According to Table 3, the diagonal is the square root of AVE, and the values (minimum value is 0.721) are greater than the correlation coefficient on the off-diagonal (maximum value is 0.681), indicating that the model has good discriminatory validity.

Table 3: Measures the discriminatory validity of the model

	H	AU	A	T	S
H	0.999				
AU	0.458	0.721			
A	0.470	0.520	0.766		
T	0.422	0.544	0.681	0.787	
S	0.506	0.658	0.491	0.437	0.721

4.3. Model goodness-of-fit and hypothesis testing

In the structural equation model (SEM), the fit degree index of the model is the key factor in determining the acceptance degree of the research model. In this study, the hypothesis theoretical model is modified according to the modified value and the corresponding model is established, and also makes the parameter estimation by using the maximum likelihood estimation method. According to the data in Table 4, the fitting of the measurement model and the data is shown: $\chi 2/df=2.391<3$, RMSEA=0.068<0.08,GFI=0.918>0.9,TLI=0.974>0.9,CFI=0.980>0.9,NFI=0.966>0.9. It shows that the measurement model and data in this study have a good fit index, and have a high data and model fit, which can meet the requirements of subsequent analysis.

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Table 4: Overall fit coefficient

Coefficient	Reference value	Fitted value
x^2/df	⩽3.0	2.391
RMSMA	<0.08	0.068
GFI	⩾0.9	0.918
TLI	⩾0.9	0.974
CFI	⩾0.9	0.980
NFI	⩾0.9	0.966

4.4. Pathway analysis of the structural equation model

Structural equation model (SEM) path analysis is a powerful statistical method for exploring the causal relationships between variables. Table 5 shows the results of the model path analysis, and β represents the path coefficient; S. E represents the normalization error; C. R represents the critical proportional value (if CR is greater than ± 1.96, the path coefficient has reached the 0.05 significance level); P represents the likelihood to determine the significance of the path coefficient (* p <0.05, * * p <0.01, * * * p <0.001).

Table 5: Results of the model pathway analysis

Hypothesis		Way		β	SE	CR	P	Assume verification results
H1a	Humanoid	→	Authenticity	0.519	0.046	8.344	***	support
H1b	Humanoid	→	Trust	0.217	0.029	3.650	***	support
H1c	Humanoid	→	Attachment	-0.152	0.045	-3.129	**	support
H2a	Authenticity	→	Trust	0.698	0.069	6.725	***	support
H2b	Authenticity	→	Attachment	-0.577	0.169	-4.299	***	support
H3a	Attachment	→	Trust	1.469	0.394	7.030	***	support
H3b	Attachment	→	Voice sharing	1.881	0.407	6.044	***	support
H4	Trust	→	Voice sharing	-1.199	0.164	-5.062	***	support

Under the framework of SOR (Stimulus-organism-response) theory, this study explores how humanity and authenticity as stimulus factors affect individuals' trust and attachment emotions, and eventually form phonological sharing behavior. Based on the pathway analysis in Table 5, the following variable relationships were obtained. First, at the stimulus level, human-like nature was significantly positively correlated with authenticity (β =0.519, p <0.001), attachment (β =0.217, p <0.001), and negatively associated with trust (β = -0.152, p <0.01), assuming Hla, H1b, and H1c were supported. Authenticity was significantly positively associated with attachment (β =0.698, p <0.001), and significantly negatively associated with trust (β = -0.577, p <0.001), indicating that the assumptions H2a and H2b hold. Secondly, at the level of organism and response, attachment and trust (β =1.469, p <0.001), and voice sharing (β =1.881, p <0.001) were significantly positively related. Trust and voice sharing were significantly negatively related (β = -1.199, p <0.001), assuming that H3a, H3b and H4 were true. The path coefficient is shown in Figure 2.

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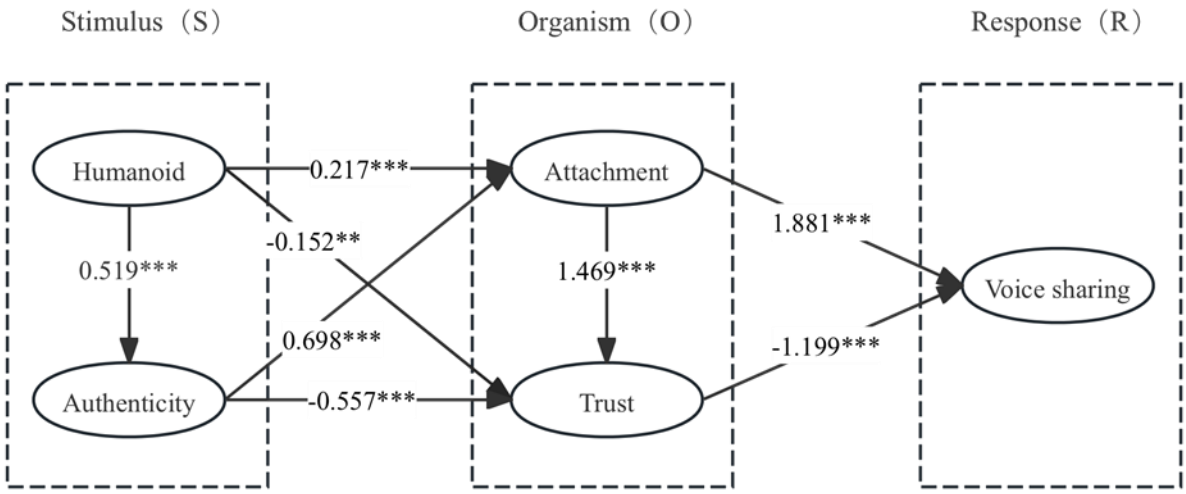

Figure 2: Path analysis diagram of voice sharing behavior mechanism model under man-machine attachment

4.5. Mediation effect detection

The study used structural equation model (SEM) and Bootstrap method for mediation effect analysis, repeated sampling 5000 times with 95% confidence interval, and explored the complex relationships between variables, including direct effects, indirect effects and relationships between latent variables. The results in Table 6 show that the confidence intervals for all effects contain no 0, proving that the mediation effect exists in this paper, namely, humanity (Effect = 0.7454, p <0.001) and authenticity (Effect=0.6874, p <0.001) have a significant mediation effect on voice sharing.

Table 6: Bootstrap Results of mediation effect test (N=302)

Intermediary path	Direct effect	Indirect effect path	Indigo effect	The 95% confidence interval		Gross effect
				LLCI	ULCI	
Humanoid→Voice sharing	0.2655	Humanoid→Attachment→Voice sharing	0.1149	0.0608	0.1730	0.7454
	0.2570	Humanoid→Attachment→Trust→Voice sharing	0.1234	0.0645	0.1852	
	0.3004	Humanoid→Trust→Voice sharing	0.0800	0.0357	0.1319	
	0.1511	Humanoid→Authenticity→Attachment→Voice sharing	0.2293	0.1477	0.3107	
	0.1588	Humanoid→Authenticity→Trust→Voice sharing	0.2216	0.1379	0.3054	
	0.1491	Humanoid→Authenticity→Attachment→Trust→Voice sharing	0.2313	0.1457	0.3160	
Authenticity→voice sharing	0.5995	Authenticity→Attachment→Voice sharing	0.0879	0.0383	0.1463	0.6874
	0.5892	Authenticity→Attachment→Trust→Voice sharing	0.0982	0.0453	0.1565	
	0.6228	Authenticity→Trust→Voice sharing	0.0646	0.0224	0.1130	

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5. Conclusion analysis

Based on the SOR (stimulus-organism-response) theoretical model framework, this study deeply explores the influence of AI voice cloning technology on the user's psychological behavior transition, thus proposing a dual-action model. This model, starting from the unique perspective of user attachment emotion, provides an important theoretical reference for understanding voice sharing behavior in the context of human-computer attachment. By the structural equation model, this study concludes the following conclusions:

5.1. Results analysis

5.1.1. Stimulus level relationship

The results show that there is a significant positive correlation between the human-like characteristics of AI voice cloning technology and attachment emotions, which is consistent with the study by Rosenthal-von der Putten et al., who believe that people are easy to form emotional attachment to artificial organisms [95]. Similarly, the authenticity characteristics is also positively associated with the presentation of attachment emotions, which is consistent with the study of Fu that authenticity is a prerequisite for loyalty [96]. AI voice cloning technology can accurately imitate and copy the sound characteristics of specific individuals, so that users can feel familiar and bound in the process of human-computer interaction, and then develop attachment to the technology. Attachment has become an important driving force to stimulate users' voice sharing behavior.

The results showed that there was a significant negative relationship between humanity, authenticity and trust. The conclusion seems contrary to common sense, often suggesting that more "human" or "real" technologies should be easier to gain the trust of their users. However, users still express deep concerns about the privacy, security and information control of the technology of highly humanoid and real AI technologies. As Osorio pointed out, he believes that the brand management of technology should be more cautious when deciding when to cultivate authenticity and when to choose creativity [97], which means that relying on humanity and authenticity alone is not enough to guarantee users' attachment and trust in technology. Future technologies should fully consider user needs and concerns to develop effective strategies to promote the generation of shared behaviors among users.

5.1.2. Organism and response level relationship

Attachment is positively correlated with trust and voice sharing. When users establish a deep attachment relationship with AI, they expect to meet their own psychological needs through communication and cooperation with them, and even build a romantic lover relationship between man and machine. This view is supported by Singh empirical research, the study points out that the user of virtual intelligent assistant (VAI) trust is an important predictor of their emotional attachment with VAI, and consumer self-disclosure behavior plays a regulatory role [98], shows that when the user is willing to disclose their own more information to AI, man-machine emotional attachment has been further sublimation. At the same time, in the deep interweaving of human-machine emotion, users will not only take the initiative to take voice sharing behavior, but also actively promote the expansion and popularization of the technology.

Trust and voice sharing present a negative correlation. Voice sharing often requires users to expose their personal information and communication content to third-party platforms, which naturally raises concerns about privacy and security. When users perceive that their information is controlled by the platform, they may have resistance and avoidance, leading to a continuous reduction in the willingness to share voice. This finding echoes studies by Wirtz et al [99] and Lu et al [100], who

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reveal the importance of users distinguishing different sources of credibility in virtual interactions. However, with the evolution of human-computer interaction and the convergence of rich media elements, the relevant negative impact is expected to gradually weaken. Technological progress can not only provide better privacy protection measures for users, but also is expected to promote the gradual improvement of users' voice sharing behavior.

5.1.3. Mediation effect analysis

The results show that humanity and authenticity not only directly have a significant impact on voice sharing behavior, but also affect users' voice sharing behavior indirectly by affecting their attachment and trust. The findings highlight the central role of humanoid nature in influencing voice-sharing behavior. At the same time, users' attachment and trust are interrelated and coupled to each other, and they constitute an important driving force for the development of voice sharing behavior. Attachment creates a close emotional link between users and technology, and also provides strong support for the formation of human-machine trust; which stimulates the willingness of users to participate in voice sharing behavior. The conclusion also coincides with the study of Tsai et al., who emphasized that the interpersonal factors of supersocial interaction and perceptual dialogue play a mediating role in enhancing consumer participation in human-computer interaction [101], indicating that technology not only attracts users through function and performance, but also its social attributes and interpersonal interaction ability. In the future, in the design and development of human-computer interaction technology, more attention should be paid to the human-like technology, authenticity characteristics and the establishment of the emotional bond and trust relationship between man and machine.

5.2. Path discussion

5.2.1. Eliminate estrangement, beware of "human-machine lovelorn" phenomenon

With the vigorous rise of digital communication mode, the emotional gap between people is undoubtedly further deepened. In the face of emotional setbacks and social fears in life, people are increasingly inclined to seek emotional talk to AI voice functions. This phenomenon has brought dual impact: on the one hand, the sense of reality, presence and romance created by AI voice cloning technology may induce human beings to rely too much on the communication with them, thus gradually weakening the emotional connection with real human; on the other hand, as the emerging and unpopularized technology, the technical complexity and human adaptability still differ different, the panic caused by technological change may further widen the gap between man and machine, this paper is vividly called "man-machine lovelorn".

In the era of intelligence, we should accelerate the education popularization and practical application of new technologies, improve users' rational and critical thinking ability of AI voice cloning technology, avoid the psychological gap due to over-dependence, and clarify the relationship between self and AI, especially whether as a substitute for real lovers. At the same time, system designers should establish a perfect feedback and insight mechanism to make it more suitable with human voice habits and thinking mode. In addition, we should actively maintain and expand the social relationship with real human beings, because good interpersonal relationship is the source of health and happiness, and deep communication with external people can make people feel rich and full of their own life, which cannot be replaced by any technology.

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5.2.2. Build trust and walk out of the dilemma of "man-machine sadomasochism"

When building the trust relationship between man and machine, there will always be multiple challenges such as data risk, technical ethics, and algorithm black box. So far, trust still cannot be established completely by relying on artificial intelligence itself, and the unilateral efforts of human beings is easy to lead to the imbalance of human-machine relationship. Once the "sunk cost" intensifies, it may cause a series of problems such as cyber sadistic love and social withdrawal, casting a shadow over the seemingly dreamy love between man and machine.

In order to deal with such problems, the optimization and upgrading of the internal algorithm and model of AI voice cloning technology should be enhanced to ensure the stability and accuracy of the technology and avoid voice errors and decoding. At the same time, the system should have adaptive ability, timely response to user language, page interactive feedback, not only to determine the listening experience and voice quality, also want to the user's expression, customized degree and adapt to the scene, to reduce the user in voice sharing by receiving negative feedback of "loneliness". On this basis, gradually enhance the reliability of the system and dependence, whether for professional voice users get auditory enjoyment, or make voice disorder perception emotional flow, are technology should achieve the goal, meet the expectations and needs of different users, and in the value trust, man-machine gradually into intimate community.

5.2.3. Return to the main body and restart the human-machine attachment relationship

With the development and popularization of artificial intelligence, the relationship between man-machine is changing quietly. Man, once seen as the master of AI, has gradually turned into a partner and a partner with AI. However, this technological change is not without challenges. The ethical issues it brings, such as data hegemony and algorithmic dictatorship, are like an undercurrent hidden under a calm sea, which can cause unpredictable "disasters" at any time. This makes us deeply aware that the automatic decision-making of AI voice function cannot exist in isolation from human ethical guidance.

Return to subject consciousness, does not mean that promoting personal centralism, but to seek the perfect integration between "subjectivity" and AI "intelligence", realize a new value beyond the two alone, this concept and our country in the global artificial intelligence governance initiative advocated by the "people-oriented" thought is closely linked. In the new era of human-machine collaboration, human beings need to re-examine and emphasize their own subject value, keep a clear mind and a firm position, and enhance their ethical awareness and intelligent literacy. At this time, the true and false discrimination of the love between man and machine will become no longer important, but more important is the self-awareness and growth of human beings born from love. It is believed that this will be a profound "two-way rush" between human beings and AI voice cloning technology, working together to create a better future of the voice society.

6. Prospect and limitation

From the unique perspective of human-machine attachment, this study gives new insights to the sharing behavior of AI voice cloning technology, and also provides valuable reference for the promotion and marketing strategy of new technologies. Compared with the traditional technology sharing mode, the sharing behavior of AI voice cloning technology from the perspective of human-machine attachment is more driven by emotion. This driving force comes not only from the realism and flexibility of the "sound" given by technology, but deeper, from the deep and unique attachment links established between man and machine.

Looking ahead, the communication between people and AI is expected to be an important complement to interpersonal communication, but that does not mean that "we expect less from each

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other". Instead, we should look at technology in a more sober and prudent manner, and to shape and apply it in a way that respects ourselves and values humanity. When we talk to AI voice cloning technology, we should make sure that the technology is truly "for our use" and becomes an "extension of ourselves", " rather than replacing or weakening our real existence. At the same time, we are also full of expectations, hoping that this "rose" of emotion between man and machine can blossom more gorgeous and benefit a wider audience.

In fact, the phenomenon of "voice sharing" in this study is not only a sharing of technology, but also a reflection of "spiritual resonance" and "soul resonance", which is similar to the process of choosing our future "partner" in real life, which involves deep emotional connection and resonance. Therefore, we have reason to believe that in the future of technological development, the attachment between man and machine will play an increasingly important role, bringing more warmth and color to life.

This study also has some limitations. First, based on the S-O-R perspective, without considering the effects of non-cognitive factors such as personal habits and ethics, future research can focus on this to refine the model. Secondly, the questionnaire survey may not be able to comprehensively summarize the phenomenon. The future research can supplement the qualitative research methods, such as in-depth interview or observation methods, to improve the objectivity and scientificity of the research. Finally, the data of this study are cross-sectional, which cannot demonstrate the dynamic process of variables, and future studies need to add longitudinal design to reveal the dynamic evolution of behavior.

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