

Study on the Influence of the Value Conveying of Emoticons in Mobile Chat Tools on Users' Motivation and Intention: a Case Study of Middle-aged and Elderly Wechat Users

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Abstract

In this study, Wechat, China's mainstream social software, was chosen as the media, and through the combination of online and offline surveys, this study conducted a questionnaire survey on WeChat emoticon users over 45 years old, so as to explore the impact of the value conveyed through WeChat emoticons on the motivation and intention of middle-aged and elderly users. First of all, this study conducted the research through the combination of literature research and interviews. Through online questionnaire distribution and offline face-to-face interviews, the researcher modified the items of the pre-test questionnaire, constructed 6 dimensions with 18 evaluation indicators, collected 326 valid questionnaires, and conducted data analysis through SPSS. By building a structural equation model, this study explored the factors affecting the usage intention of WeChat emoticons of middle-aged and elderly users. The results show that there is a significant positive correlation between the four variables. Based on the research findings, this study makes several suggestions to provide reference for the design of emoticons for middle-aged and elderly users in the future.

Keywords

Middle-aged and Elderly; Emoji; We Chat.

1. Research Background



Figure 1. Source: QuestMobile Turth. China Mobile Internet Database November 2019

The *World Population Outlook* released by the United Nations Population Department in 2019 showed that China had entered the stage of an aging society. In 2020, China's elderly population had reached 250 million, accounting for 17.4%. By 2025, China's elderly population aged 65 and above will exceed 200 million. Such a large population of elderly people has drawn much attention to the research on China's aging development. How to skillfully use the huge potential energy of population aging and turn it into a strong momentum of development has become a

key task in China's response to population aging. [1] According to a report released by the data research company QuestMobile, by the end of 2019, Chinese people had spent an average of 6.2 hours on their mobile phones every day (see Figure 1). [2] WeChat was the social software with the longest time of using.


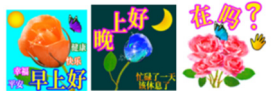

According to *My Elderly World: WeChat Life of the Elderly and Family WeChat Feedback* released by Tencent Institute, the elderly people use WeChat for 1.37 hours and have 104.28 friends. Faced with a large number of middle-aged and elderly users, more and more producers began to create emoticons for middle-aged and elderly users. The unique trend of "middle-aged and elderly emoticons" thus rose. [3]

In China, with the popularity of social media and the arrival of the aging society, the demand for online social networking among middle-aged and elderly people has increased, which has also promoted the rise of emoticons for middle-aged and elderly people. Throughout the academic world, the research on the emoticons for the middle-aged and elderly users has gradually become a new topic. Many scholars have summarized and studied the characteristics and popularity reasons of the emoticons for the middle-aged and elderly users. However, there is no comprehensive discussion on the usage intention of emoticons for the middle-aged and elderly users. Therefore, the purpose of this study is to study the intention and motivation of middle-aged and elderly users when using WeChat emoticons. Its significance is to observe the emotions of users and analyze the differences in their characteristics by understanding the aesthetic taste and transmission value of emoticons for middle-aged and elderly people, and to develop emoticons more suitable for middle-aged and elderly users based on the current social situation and more attractive to the middle-aged and elderly users.

2. An Analysis of Middle-Aged and Elderly People’s Aesthetic Taste of Emoticons

I. The fonts of these expression packs are large, colorful and exaggerated, with high saturation and contrast. The contents are mostly pictures of still life scenery or roses, babies, toasts and other images that create a happy, happy and lively feeling. [4] Table 1 shows the three most popular emoticon packages for middle-aged and elderly WeChat users. The three emoticon packages are colorful and have large fonts. They are with words that convey encouragement, friendship, greetings and blooming flowers of various kinds.

Table 1. Source: Popularity ranking of Wechat emoticon packages

Emoticons	Explanation	Examples
The emoticon package of “a colorful and happy life”	This emoticon package ranked 13 th in the popularity ranking of Wechat emoticon packages	
The emoticon package of “flowers of prosperity and frequent greetings”	This emoticon package ranked 57 th in the popularity ranking of Wechat emoticon packages	
The emoticon package of “destiny brings us together”	This emoticon package ranked 81 st in the popularity ranking of Wechat emoticon packages	

The emoticon packages for the middle-aged and elderly have the characteristics of large font and bright colors, which is related to the physiological characteristics of the middle-aged and

elderly. Due to aging, the physiological indicators of middle-aged and elderly people tend to decline. Among them, their visual perception ability is obviously weakened, their visual threshold is increased, and their color perception ability is weaker than that of young people. [5] In addition, the middle-aged and elderly groups mainly grew up in the Red Revolution period of the last century. Their growth experience makes them prefer square, orderly and propaganda style information transmission, which together outlines the unique aesthetic characteristics of middle-aged and elderly people. [6] Later, the rapid development of social economy and culture, as well as the evolution of social structure and interpersonal communication mode, made the middle-aged and old people feel crisis and uncertainty, leading to the emergence of the psychological state of "retro and nostalgia". This shows from the psychological perspective the reason why the middle-aged and elderly people prefer positive and optimistic expression. In view of the above factors, generally speaking, the aesthetic orientation of the middle-aged and elderly people towards emoticon packages is related to their age, cultural background and physiological state of growth.

At the same time, because emoticon packages contain expressions, gestures and language content, which are closer to the needs of interpersonal communication, middle-aged and elderly people can overcome physical and psychological difficulties with the basic characteristics of expression packs, so as to meet their needs in interpersonal communication.

3. Structural Equation Modeling

Structural equation modeling (SEM) is a tool of statistical data analysis that combines multiple regression analysis, path analysis and confirmatory factor analysis, and it is a statistical method to analyze the relationship between variables based on the covariance matrix of variables [7, 8].

By building a structural equation modeling, this study aims to explore the factors affecting the intention and motivation of middle-aged and elderly people when using WeChat emoticon packages, and the impact of these factors on the use of WeChat emoticon packages by middle-aged and elderly people.

4. Research Framework

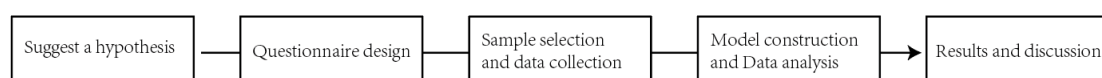


Figure 2. Research Framework

4.1. The Formation of the Formal Questionnaire

In order to verify whether the questionnaire can meet the needs of this study, this paper conducted reliability and validity tests and factor analysis on the collected pre-test questionnaires. After that, this study also summarized the opinions of the pre-test users, adjusted the description of the questions in the questionnaire, and added text descriptions to the difficult questions. Thus, a formal questionnaire was formed. In the formal questionnaire survey, 198 questionnaires were distributed online and offline, and 190 were collected, with a recovery rate of 95%. After excluding the questionnaires filled in in a short time and mechanically filled in, the number of valid questionnaires was 163, and the effective rate was 85.7%. A total of 59 men and 94 women were interviewed online and offline.

4.2. Reliability and Validity Test of the Formal Questionnaire

It can be seen from the reliability test table of the research variables that the analysis results show that the measurement indicators of the research variables have high internal consistency reliability, and the survey data are relatively reliable. The researchers used Bartlett sphere test and KMO sample measurement to analyze the validity. The results show that the KMO statistic value is 0.785, which is greater than the standard of 0.5. Bartlett's sphere test statistic $p=0.00 < 0.05$, which shows that it is very suitable for factor analysis.

Table 2. Reliability analysis of the research scale

Table	Cronbach's Alpha	No.
Interactive quality	.825	3
Prevalence	.784	3
Emotionality	.831	3
Identities	.831	3
Easy-to-use motive	.857	4
Entertainment motivation	.850	3
Total amount table	.863	19

4.3. Confirmatory Factor Analysis

This study used amos24.0 software and maximum likelihood method for confirmatory factor analysis, and the structural validity of the model and scale was verified. When evaluating the model fitness through confirmatory factor analysis, researchers need to consider multiple indicators such as absolute fitness, value-added fitness, and simple fitness. According to the indicator relationship, this study has built an analysis model for the study of confirmatory factors. Using the data obtained from the questionnaire survey, the researchers conducted confirmatory factor analysis on the model and optimized the error items. The results of model fitting are shown in Table 3:

Table 3. Goodness of fit of the confirmatory factor analysis model

Fitness test index	Adaptation standard	Model results	Conclusion
CMIN/DF	1-3	1.273	Fine
RMSEA	< .08	0.041	Fine
RMR	< .08	0.051	Fine
GFI	> .90	0.903	Fine
CFI	> .90	0.971	Fine
IFI	> .90	0.972	Fine
PNFI	> .50	0.707	Fine

The calculation results based on the actual survey data are shown in Table 4.

The combination reliability and construction validity of the questionnaire structural model are both good, and they are highly consistent with the actual data. The questionnaire model passed the confirmatory factor analysis test, indicating that the questionnaire and dimensions were set reasonably.

Table 4. Construct validity of the factor model

Latent variable	Measurement items	Factor load	C.R.	P	Composite reliability	AVE
Interactive quality	Q5	0.738			0.827	0.614
	Q6	0.824	8.968	***		
	Q7	0.787	8.837	***		
Prevalence	Q8	0.701			0.786	0.551
	Q9	0.76	7.527	***		
	Q10	0.764	7.535	***		
Emotionality	Q11	0.782			0.835	0.629
	Q12	0.845	9.664	***		
	Q13	0.749	9.127	***		
Identities	Q14	0.823			0.831	0.621
	Q15	0.77	9.403	***		
	Q16	0.771	9.414	***		
Easy-to-use motive	Q17	0.796			0.859	0.606
	Q18	0.854	11.216	***		
	Q19	0.774	10.183	***		
	Q20	0.679	8.759	***		
Entertainment motivation	Q21	0.794			0.842	0.639
	Q22	0.788	9.84	***		
	Q23	0.816	10.08	***		

4.4. Construction of the Structural Equation Model

4.4.1. Model Construction

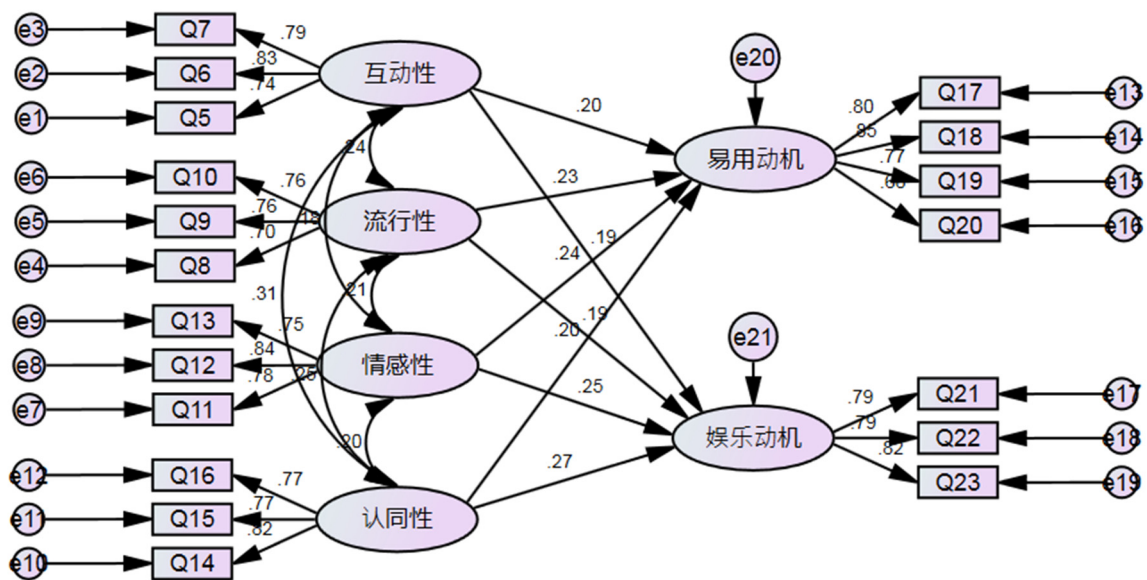


Figure 3. The path analysis of influencing structural equation among variables

According to 6 potential variables and 19 observation variables formed by confirmatory factor analysis, based on the characteristics of structural equation model and WeChat emoticon packages, this study constructed a structural equation model for the emoticon package usage by middle-aged and elderly people. In this model, the four potential variables of interactivity, popularity, identity and emotion are all elements of the communication value system, involving a total of 12 items; the motivations of ease of use and entertainment are the system elements of the usage intention. According to the research theory and research hypothesis of this paper, the researchers constructed the influence relationship model between variables. The path analysis of influencing structural equation among variables is as shown in Figure 3.

4.4.2. Model Fitting Analysis

The simulation results of the structural equation model show that the chi square degree of freedom ratio, that is, the CMOS/DF in the AMOS output results, is 1.295, indicating that the model is well adapted. GFI is a traditional index to evaluate the fit of structural models. The closer its value is to 1, the better the model fits. RMSEA is the primary index to evaluate the fit of the model. It is generally believed that the model with RMSEA less than 0.08 is acceptable, and the model with RMSEA less than 0.05 is a relatively good model. At the same time, based on the fitting results of other fitness indicators, the data show that the results are good, as shown in Table 5. It can be seen that each index has reached the required standard, so the model built in this paper fits the structural relationship of sample data well.

Table 5. Analysis of the overall goodness of fit of the model

Fitness test index	Adaptation standard	Model results	Conclusion
CMIN/DF	1-3	1.295	fine
RMSEA	< .08	0.043	fine
RMR	< .08	0.056	fine
GFI	> .90	0.902	fine
CFI	> .90	0.969	fine
IFI	> .90	0.97	fine
PNFI	> .50	0.71	fine

5. Variable Correlation Analysis

As can be seen from the data in Table 6, there is a significant positive correlation between ease-of-use motivation and entertainment motivation, with a correlation coefficient of 0.391. There is also a significant positive correlation between the motivation of ease of use and interactivity, popularity, emotion and identity, and the correlation coefficient is 0.299-0.312. There is also a significant positive correlation between entertainment motivation and interactivity, popularity, emotion and identity, with a correlation coefficient of 0.28-0.346. Therefore, the hypothesis H1, that is, the transfer value has a positive impact on the use motivation, is valid. It can also be seen that there is also a significant positive correlation between the interactivity, popularity, emotion and identity of the variables within the transfer value, and the correlation coefficient is 0.154-0.25. Therefore, hypothesis H2, that is, there is a correlation between transfer values, is valid.

Table 6. Correlation analysis

		Relevance					
		Easy-to-use motive	Entertainment motivation	Interactivity	Prevalence	Emotionality	Identities
Interactive quality	Pearson correlation	1	.391**	.299**	.300**	.311**	.312**
	Significance (bilateral)		.000	.000	.000	.000	.000
	N	163	163	163	163	163	163
Prevalence	Pearson correlation	.391**	1	.292**	.280**	.319**	.346**
	Significance (bilateral)	.000		.000	.000	.000	.000
	N	163	163	163	163	163	163
Emotionality	Pearson correlation	.299**	.292**	1	.194*	.162*	.250**
	Significance (bilateral)	.000	.000		.013	.038	.001
	N	163	163	163	163	163	163
Identities	Pearson correlation	.300**	.280**	.194*	1	.181*	.198*
	Significance (bilateral)	.000	.000	.013		.020	.011
	N	163	163	163	163	163	163
Easy-to-use motive	Pearson correlation	.311**	.319**	.162*	.181*	1	.154*
	Significance (bilateral)	.000	.000	.038	.020		.050
	N	163	163	163	163	163	163
Entertainment motivation	Pearson correlation	.312**	.346**	.250**	.198*	.154*	1
	Significance (bilateral)	.000	.000	.001	.011	.050	
	N	163	163	163	163	163	163

6. Analysis of the Model Results

In the structural equation model of WeChat expression package for the middle-aged and elderly, as shown in the research results in Table 7, there are significant effects between variables, which are statistically significant ($P < 0.05$), indicating that the path between the above potential variables is established. In addition, it can be seen from the standard path coefficients in Table 1 that all research hypotheses are supported. Specifically, among the four potential variables that affect ease of use motivation, emotion (0.236) is the primary factor affecting motivation, followed by popularity (0.231), identity (0.205), and interaction (0.196); as for the entertainment motivation, the first influencing factor is identification (0.271), followed by emotion (0.254), interactivity (0.186) and popularity (0.188). To sum up, value conveying has a positive impact on ease-of-use motivation, so hypothesis H1-1, that is, interactivity, popularity, emotion and identity have a positive impact on entertainment motivation, is valid; value conveying has a positive impact on entertainment motivation, so hypothesis H1-2, that is, interactivity, popularity, emotionality, and identity have a positive impact on ease-of-use motivation, is valid.

Table 7. Standard path coefficients of the model

Path relation			Standard path coefficient	Standard error	C.R.	Significance P
Easy-to-use motive	<---	interactive quality	0.196	0.097	2.168	0.03
Easy-to-use motive	<---	Prevalence	0.231	0.096	2.492	0.013
Easy-to-use motive	<---	Emotionality	0.236	0.087	2.721	0.007
Easy-to-use motive	<---	Identities	0.205	0.087	2.266	0.023
Entertainment motivation	<---	interactive quality	0.188	0.102	2.07	0.038
Entertainment motivation	<---	Prevalence	0.186	0.1	2.016	0.044
Entertainment motivation	<---	Emotionality	0.254	0.092	2.893	0.004
Entertainment motivation	<---	Identities	0.271	0.093	2.932	0.003

7. Conclusion and Recommendations

Based on the social status quo and literature review, this paper explores the factors that affect the usage intention of WeChat emoticon packages of middle-aged and elderly people by building a structural equation model. Through empirical research, it is found that interactivity, popularity, emotion and identity have a positive impact on entertainment motivation and ease of use motivation, that is, interactivity, popularity, emotion and identity have a positive impact on users' intention to use expression packs. Among them, emotion has the greatest impact on ease-of-use motivation, and identity has the greatest impact on entertainment motivation. At the same time, this study analyzes the interrelationship among the interaction, popularity, emotion and identity of the variables within value conveying. The results show that there is a significant positive correlation between the four variables. Therefore, based on the research findings, this study makes several recommendations, aiming to provide reference for the design of emoticon packages for the middle-aged and elderly users in the future:

1) To design emoticon packages with high emotional characteristics. Emotions are mainly reflected in interpersonal communication, meeting users' needs for friendship and belonging through interpersonal communication. Therefore, only by catering to the needs of consumers and designing a theme or expression package that can better express the feelings between the two sides, can we maximize the willingness of middle-aged and elderly people to use WeChat emoticon packages. For example, currently, emoticon packages with the themes of flowers and human expressions account for a large proportion among the middle-aged and elderly people. In terms of the content, they are mainly greetings and blessings. These emoticon packages are also popular in popularity ranking. Therefore, by summarizing the characteristics of the WeChat expression package for the middle-aged and elderly, and integrating their emotional needs, emoticon packages can be designed to help the middle-aged and elderly to convey their emotions. In this way, content that could not be expressed by words in the past can now be expressed by using only emoticon packages, which greatly improves the communication efficiency and makes communication between people faster and more convenient.

2) Attention should be paid to the reflection of identification in emoticon packages. Identification is based on self-worth cognition, which can deepen the shaping of self-image in the process of interaction. For the middle-aged and old people, this is specifically manifested in

allowing them to obtain self-images with distinctive personal symbols, and then build an idealized self in the virtual world. Therefore, according to the aesthetic style of middle-aged and elderly people, designers can design emoticon packages conforming to users' psychological emotions, wishes and habits to meet their needs for self-cognition.

3) WeChat emoticon packages with strong interactivity and popularity can be designed. The findings of this study show that although interactivity and popularity have a positive impact on the intention of middle-aged and elderly people to use WeChat emoticon packages, their influence is relatively low compared with other influencing factors. The background of middle-aged and elderly people has a great influence on their usage intention. The middle-aged and old people pay more attention to political, historical, and family issues than the young people. Therefore, emoticon packages can be combined with the current hot spots so as to design emoticon packages with strong interactive and popular characteristics, thus improving the intention of the middle-aged and elderly people to use WeChat emoticon packages.

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