Older Adults' Acceptance of Emotionally Supportive Artificial Intelligence: An Empirical Study of Current Status and Influencing Factors

Yushan Mei*

The experimental high school attached to Beijing Normal University, Beijing, China

*Corresponding author: combellamei2008@163.com

Abstract. As China's population rapidly ages, emotionally supportive artificial intelligence (AI) technologies have emerged as a potential means to alleviate loneliness and enhance the well-being of older adults. However, factors influencing their acceptance remain underexplored. This study investigates the current status and multidimensional determinants of elderly individuals' willingness to adopt emotionally supportive AI, using the Technology Acceptance Model (TAM) as the theoretical foundation. A structured questionnaire comprising 34 items was administered via "Questionnaire Star" to respondents aged 50–80 across several Chinese provinces, yielding 221 valid responses. Descriptive statistics and multiple linear regression analyses were conducted to examine individual, family, social, and technological influences.Results revealed that perceived usefulness—particularly improvements in well-being, reductions in loneliness, and enhancements in life quality—was the strongest positive predictor of willingness to use AI. Conversely, perceived risks related to privacy, data misuse, and system reliability significantly inhibited acceptance. Unexpectedly, perceived ease of use demonstrated a negative relationship with willingness, suggesting that over-simplified interfaces may undermine older adults' sense of competence and autonomy. Social and environmental factors such as media support, community infrastructure, and organizational backing positively influenced willingness, while excessive family or community encouragement had adverse effects. Overall, the findings highlight a "benefit-driven, risk-inhibited, and autonomy-sensitive" acceptance mechanism among older adults. The study extends the TAM framework by revealing the complex role of social support and psychological autonomy in AI adoption. Practical implications include the need for emotionally supportive AI systems that balance usability with dignity, strengthen risk management, and foster environments that respect elderly users' autonomy while promoting voluntary engagement.

Keywords: emotionally supportive AI; technology acceptance; older adults; perceived usefulness; social support

© The Author(s) 2026
N. B. Abdul Ghani et al. (eds.), *Proceedings of the 2025 6th International Conference on Big Data and Social Sciences (ICBDSS 2025)*, Advances in Computer Science Research 126,
https://doi.org/10.2991/978-94-6239-598-5_25

1 Introduction

According to data from the Seventh National Population Census, in 2020, China had 264.02 million people aged 60 and above, accounting for 18.7% of the total population[1]. It is projected that by 2050, the elderly population in China will reach 487 million, accounting for 34.9% of the total population[2]. As people age, their social networks tend to shrink, social support weakens, and living arrangements change, which ultimately leads to an increase in feelings of loneliness among the elderly[3]. Recent research indicates that approximately 36.6% of older adults in China report experiencing some degree of loneliness[4]. To alleviate loneliness and improve the quality of life of the elderly, the integration of Artificial Intelligence (AI) into the eldercare industry should be accelerated. Currently, the government supports the development of AI applications in eldercare, especially those focusing on caregiving and rehabilitation technologies for elderly individuals. However, AI designed for emotional companionship among healthy seniors has received comparatively little attention[5].

This study focuses on profiling elderly individuals who are more willing to use emotionally supportive AI and, based on and extending the model proposed by, aims to gain a deeper understanding of the challenges seniors face when interacting with emotional companion AI, which may contribute to their reduced willingness to adopt such technologies[5].

2 Literature Review

The intersection of the era of AI and an aging society has led to the increasing application of AI technologies in eldercare services. McCloud et al. conducted an in-home experimental study among older adults aged 65–85 from low socioeconomic backgrounds (n = 39) to evaluate the feasibility of smart speakers in promoting health and well-being. Results showed that by the end of the experiment, 38% of participants used smart speakers daily, another 38% used them several times per week, and 72% expressed a desire to continue using them[6]. This finding suggests that even among groups with limited access to technology and resources, older adults demonstrate relatively high rates of actual use and acceptance of AI voice assistants, providing empirical support for exploring AI acceptance among the elderly population.

Beyond caregiving-related AI, there are also many applications in the field of psychological support, where older adults show a high level of acceptance of AI technologies—particularly those that help reduce loneliness and depressive symptoms. For instance, the PARO robot and ElliQ robot have been shown to effectively alleviate feelings of loneliness among older adults[7-8]. Domestic studies, however, indicate a lower level of acceptance toward caregiving AI among Chinese seniors. Specifically, 59.9% of elderly respondents reported that they do not need a companion robot, 25.2% were indifferent, and only 14.9% expressed a desire for one[9]. Even among the physically assistive robots actively promoted in China's eldercare system, acceptance rates remain low, suggesting that acceptance toward emotional companion robots is likely to be even lower.

Multiple dimensions influence older adults' acceptance of AI technologies. Some scholars have examined this issue from the perspectives of value identification, emotional identification, and usage intention, discovering that acceptance levels vary significantly across age groups—older individuals tend to show lower acceptance. Moreover, acceptance is positively correlated with factors such as social participation and personal innovativeness, while negatively correlated with perceived social support. Social advocacy, corporate sponsorship, and family encouragement were found to significantly influence acceptance levels[9].

Other researchers, drawing upon the Technology Acceptance Model (TAM), analyzed AI acceptance among the elderly across three dimensions—technological, social, and personal—as well as subfactors such as perceived usefulness, perceived ease of use, social influence, digital literacy, and perceived risk[5]. Their findings indicated that perceived ease of use, perceived usefulness, digital literacy, and social influence all positively correlated with willingness to use AI. Perceived risk, on the other hand, had no direct effect on usage intention. Digital literacy remained a significant predictor of willingness to use, implying that perceived risk partially mediates the relationship between digital literacy and usage intention.

The TAM model, one of the most influential theories in the field of information systems, explains users' intention to accept and actual use of new technologies through perceived usefulness and perceived ease of use, forming a theoretical foundation for the development of subsequent models[10]. Later scholars further refined the model by introducing social influence and subjective norms[11]. Perceived usefulness is a key predictor of behavioral intention—the more users believe that a technology enhances their efficiency, the stronger their willingness to use it[12]. Perceived ease of use has been found to directly influence behavioural intention, and also indirectly influences intention through its effect on perceived usefulness[13]. Numerous empirical studies have confirmed the TAM model's applicability across fields such as education, business, and healthcare[13]. Later, scholars incorporated psychological traits like computer anxiety and self-efficacy[14]. Venkatesh and colleagues then developed the Unified Theory of Acceptance and Use of Technology (UTAUT) model, integrating factors such as performance expectancy and effort expectancy to more comprehensively predict technology use behavior[15]. The later UTAUT2 model added elements like hedonic motivation, habit, and price value, thereby enhancing its explanatory power for consumer behavior[16].

3 Research Framework and Hypotheses

For emotionally supportive AI, it is expected to possess emotional recognition and responsiveness, as well as personalized interaction, thereby bringing emotional value to users. Emotionally supportive AI can be divided into two main categories: physical robots and virtual robots. Physical robots, such as Japan's Erica, have human-like appearances and movement abilities, allowing them to engage in emotional communication with users in the physical world. Virtual robots, such as Microsoft's Xiaobing

communicate through text or voice to provide emotional support, existing as virtual entities through electronic devices[17].

The level of acceptance among elderly individuals toward emotional companion AI can be classified into four stages, from low to high. Level 1 represents willingness to explore such technology autonomously. Level 2 represents willingness under external social support, such as assistance from volunteers or the use of elderly-friendly interfaces. Level 3 represents willingness when long-term, externally driven support is present, such as recommendations and instructions from children. Level 4 represents unwillingness to accept even with external support. These levels indicate the extent of assistance an elderly individual requires before being willing to use emotional companion AI, or whether the resistance stems from internal reluctance.

Based on the TAM, this study analyzes multidimensional influencing factors from three perspectives: personal characteristics, technological characteristics, and social environment. Variables include age, gender, education level, income, urban or rural residence, digital literacy, and health condition; perceived usefulness, perceived ease of use, perceived risk, emotional design, and privacy concerns; social advocacy, facilitating conditions, social participation, and social support. Together, these dimensions are used to analyze factors influencing elderly individuals' acceptance of AI.

It is hypothesized that younger seniors, and those with higher education, income, and digital literacy levels, will show higher acceptance of emotionally supportive AI. Elderly individuals residing in urban areas are expected to have higher acceptance levels than those living in rural areas. The higher the perceived usefulness, perceived ease of use, and emotional design quality, the greater the acceptance. Conversely, the lower the perceived risk and privacy concerns, the higher the acceptance. Moreover, social support is hypothesized to follow a curvilinear relationship with acceptance—initially increasing, peaking, and then declining.

It is also hypothesized that urban elderly individuals generally hold more open attitudes toward emotionally supportive AI, but face certain challenges in actual use, leading to a decrease in continued adoption. Those who received higher education and were more exposed to emerging technologies in their middle age are more likely to accept such AI, as they tend to have less fear of technology and a generally positive perception toward it.

4 Methods

Based on previous questionnaire designs and the Technology Acceptance Model (TAM), as well as this study's focus on perceived legal and technological risks, the questionnaire was divided into four main sections: basic personal information, family factors, community factors, and perceived technological risk. A total of 34 questions were included, consisting of both yes-or-no and Likert-scale items. The questionnaire was distributed via the platform "Questionnaire Star" (Wenjuanxing) and completed mainly through WeChat. Using the snowball sampling method, data were collected from elderly individuals aged 50 to 80, with most respondents residing in Sichuan Province, and smaller proportions from Gansu, Beijing, and several other provinces.

The questionnaire distribution began on July 19, 2025, and closed on August 19, 2025, resulting in 221 valid responses.

This study employed descriptive statistical analysis to calculate frequencies and percentages for demographic variables such as gender, age, and education level. For inferential analysis, linear regression was used — a commonly applied statistical method to examine the linear relationships between a dependent variable and one or more independent variables. The basic idea of linear regression is to establish a regression equation and estimate parameters using the least squares method, thereby determining the direction and magnitude of the effects of independent variables on the dependent variable. Linear regression not only reveals correlations between variables but also predicts changes in the dependent variable. It is one of the most widely used quantitative analysis tools in fields such as social science, medicine, and engineering[18].

5 Results and Discussions

After data collection, descriptive statistics and linear regression analyses were conducted using SPSSAU. A total of 221 valid samples were collected. Among the respondents, females accounted for the majority (66.52%), while males accounted for 33.48%. In terms of age distribution, 14.48% were aged 50 or below, 16.29% were between 50 and 59, 28.51% were between 60 and 69, 39.36% were between 70 and 79, and 1.36% were 80 or older. The group aged 70–74 had the highest proportion (29.41%). Regarding monthly personal income, those earning between 5,000 and 6,999 yuan accounted for the largest group (33.48%), followed by those earning 3,000–4,999 yuan (27.15%), while only 2.26% earned less than 1,000 yuan.

In terms of education level, most respondents had relatively high educational attainment: 55.20% had a college degree or above, 29.41% had completed high school, 14.93% had completed junior high school, and only 0.45% had primary education or below. Regarding household registration (hukou), 93.21% of respondents were urban residents, while 6.79% were from rural areas. In terms of place of residence, most lived in Sichuan (76.47%), followed by Beijing (13.12%), Gansu (4.52%), and other regions (5.88%). Concerning health status, most respondents rated their health as good—47.51% "good," 17.65% "very good," 31.67% "average," with only 1.81% and 1.36% reporting "poor" or "very poor" health, respectively. Detailed results are shown in Table 1.

Table 1. Characteristics of the sample

Variable	Frequency	Percentage (%)	Cumulative percentage (%)
Gender			
Male	74	33.48	33.48
Female	147	66.52	100
Age			

50 years and under	32	14.48	14.48
50–54 years	15	6.79	21.27
55–59 years	21	9.5	30.77
60–64 years	31	14.03	44.8
65–69 years	32	14.48	59.28
70–74 years	65	29.41	88.69
75–79 years	22	9.95	98.64
80 years and above	3	1.36	100
Personal monthly income			
Below 1000 CNY	5	2.26	2.26
1000-1999 CNY	16	7.24	9.5
2000-2999 CNY	23	10.41	19.91
3000-4999 CNY	60	27.15	47.06
5000-6999 CNY	74	33.48	80.54
7000-9999 CNY	21	9.5	90.05
Above 10000 CNY	22	9.95	100
Education level			
Primary school or below	1	0.45	0.45
Junior high school	33	14.93	15.38
High school	65	29.41	44.8
University and above	122	55.2	100
Household registration			
Urban	206	93.21	93.21
Rural	15	6.79	100
Place of residence			
Beijing	29	13.12	13.12
Sichuan	169	76.47	89.59
Gansu	10	4.52	94.12
Other	13	5.88	100
Health status			
Very poor	3	1.36	1.36
Poor	4	1.81	3.17
Average	70	31.67	34.84
Good	105	47.51	82.35
Very good	39	17.65	100
Total	221	100	100

5.1 Influence of Individual-Level Factors

Linear regression analysis showed that, after controlling for other variables, monthly personal income had a significant negative predictive effect on the willingness to use emotionally supportive AI ($\beta = –0.194$, $p < 0.01$). This indicates that the higher an individual's income, the lower their willingness to use such AI. Education level also showed a significant negative relationship ($\beta = –0.184$, $p < 0.01$), suggesting that individuals with higher education levels were less inclined to adopt this kind of AI. Similarly, WeChat usage time had a significant negative effect ($\beta = –0.162$, $p < 0.05$), implying that the longer one uses WeChat, the lower their willingness to use emotional companion AI. Conversely, having prior experience using AI-based mini-programs had a significant positive effect ($\beta = 0.230$, $p < 0.001$), indicating that individuals with prior AI experience were more likely to adopt emotional companion AI when needed. Detailed results are shown in Table 2.

Overall, these results reveal the differential effects of demographic and behavioral variables on usage intention. The negative relationship between income and education and willingness is noteworthy—it may indicate that individuals with higher income or education levels harbor greater skepticism toward emotional companion AI or have more alternative sources of emotional support, thus relying less on such technologies. Moreover, individuals with longer WeChat usage might experience information overload or negative social interactions, reducing their interest in emotional AI. These findings provide valuable insights into understanding variations in acceptance across demographic groups.

5.2 Influence of Family-Level Factors

Linear regression analysis revealed that support from significant others had a significant negative predictive effect on willingness to use emotionally supportive AI ($\beta = –0.430$, $p < 0.01$), indicating that higher perceived social support corresponded to lower willingness. Family equipment conditions had a significant positive predictive effect ($\beta = 0.432$, $p < 0.01$), demonstrating that better technological accessibility promoted higher willingness to use AI. However, encouragement and support from family members also showed a significant negative effect ($\beta = –0.470$, $p < 0.01$), suggesting that positive family attitudes did not necessarily increase willingness; instead, they had the opposite effect. Detailed results are shown in Table 3.

Overall, the results reveal the complex role of social support and environmental conditions in shaping individuals' willingness to use AI. The positive effect of household equipment aligns with expectations, emphasizing the importance of technological accessibility. However, the negative impact of social support is unusual and may reflect psychological resistance or an autonomy maintenance mechanism—excessive external encouragement may be perceived as pressure, thereby diminishing intrinsic motivation. Additionally, this phenomenon might relate to the social meaning associated with emotional companion AI—such as its connection with loneliness or dependency—making external encouragement evoke rejection instead of

motivation. This finding suggests that the role of social support in AI acceptance is not unidirectional and may involve complex psychological and social mechanisms.

Table 2. Effects of Individual-Level Factors eight

Linear regression analysis results (n=221)							
	Unstandardized coefficient		Standardized coefficient	*t*	*p*	Collinearity diagnosis	
	B	Standard error	*Beta*			VIF	Tolerance level
Personal monthly income	-0.061	0.022	-0.194	-2.781	0.006**	1.109	0.902
Education level	-0.107	0.039	-0.184	-2.707	0.007**	1.047	0.955
WeChat usage time	-0.149	0.066	-0.162	-2.267	0.024*	1.15	0.87
Have you used AI mini-programs?	0.209	0.062	0.23	3.382	0.001**	1.067	0.973

Note. Control variables include age, gender, household registration, and residence.
* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Table 3. Effects of Family-Level Factors

	Linear regression analysis results (n=221)						
	Unstandardized coefficient		Standardized coefficient	*t*	*p*	Collinearity diagnosis	
	B	Standard error	*Beta*			VIF	Tolerance level
People who influence my behaviors and beliefs would support my use of an AI emotional-companion mini-app.	-0.147	0.022	-0.43	-6.722	0.000**	1.086	0.921
My household has the necessary equipment to use AI.	0.38	0.055	0.432	6.947	0.000**	1.039	0.963
My family members support/encourage older adults to use AI.	-0.163	0.021	-0.47	-7.603	0.007**	1.061	0.942

Note. Control variables include age, gender, household registration, and residence.
* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

5.3 Influence of the Social Environment

Regression analysis showed that media support ($\beta = 0.321$, $p < 0.001$), community equipment conditions ($\beta = 0.262$, $p < 0.001$), facilities in elderly activity centers ($\beta = 0.348$, $p < 0.001$), and organizational support ($\beta = 0.326$, $p < 0.001$) all had significant positive effects on willingness to use emotionally supportive AI. This suggests that both media and physical environments, as well as institutional support, promote higher adoption intentions. However, community support itself exhibited a significant negative effect ($\beta = –0.420$, $p < 0.001$), which was contrary to expectations. A possible explanation is that overly enthusiastic advocacy from community organizations may create a sense of external pressure, diminishing feelings of autonomy and thus reducing willingness. In other words, excessive promotion may cause individuals to associate AI use with "being managed" or "being replaced," rather than voluntary choice. Detailed results are shown in Table 4.

In summary, the findings suggest that social and technological environments play vital roles in enhancing individual willingness to use AI, but the influence of social support is not always positive—it is conditioned by personal psychological experiences and interpretations of social meaning.

Table 4. Effects of Social Environment

	Linear regression analysis results (n=221)						
	Unstandardized coefficient		Standardized coefficient	*t*	*p*	Collinearity diagnosis	
	B	Standard error	*Beta*			VIF	Tolerance level
News media would support my use of an AI emotional-companion mini-app.	0.35	0.072	0.321	4.868	0.000***	1.057	0.946
My residential community/neighborhood has the necessary equipment to use AI.	0.228	0.059	0.262	3.886	0.000***	1.068	0.937
Nearby senior activity centers have the necessary equipment to use AI.	0.304	0.057	0.348	5.321	0.000***	1.058	0.945
My community/neighborhood supports/encourages older adults to use AI.	-0.149	0.024	-0.42	-6.319	0.000***	1.145	0.873
The club I participate in supports/encourages older adults to use AI.	0.154	0.03	0.326	5.074	0.000***	1.014	0.986

Note. Control variables include age, gender, household registration, and residence.* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

5.4 Influence of Technological Factors

Regression results showed that older adults' willingness to use emotionally supportive AI mini-programs was affected by perceived usefulness, perceived ease of use, and perceived risk.

In terms of perceived usefulness, improvement in well-being ($\beta = 0.343$, $p < 0.001$), reduction in loneliness ($\beta = 0.471$, $p < 0.001$), and enhancement of life quality ($\beta = 0.492$, $p < 0.001$) all had significant positive effects on willingness. This indicates that expected benefits are the main driving force behind older adults' acceptance of emotionally supportive AI, aligning with the core concept of perceived usefulness in TAM.

Regarding perceived ease of use, the results showed a significant negative correlation between operational simplicity and willingness ($\beta = –0.313$, $p < 0.001$), which contradicts the traditional expectation of TAM that greater ease of use enhances adoption. One possible explanation is that overemphasis on simplicity might make older adults feel underestimated or perceive a loss of self-efficacy, resulting in resistance. This implies that AI systems designed for the elderly should balance "user-friendliness" with a sense of "respect and dignity."

Concerning perceived risk, privacy risks ($\beta = –0.239$, $p < 0.01$), information leakage risks ($\beta = –0.149$, $p < 0.05$), data misuse risks ($\beta = –0.151$, $p < 0.05$), system failure risks ($\beta = –0.198$, $p < 0.01$), and uncertainty of responsibility ($\beta = –0.144$, $p < 0.05$) all significantly reduced willingness. This demonstrates that older adults are highly sensitive to issues of privacy, security, and responsibility, and these risk perceptions strongly suppress their intention to adopt AI technologies. Detailed results are shown in Table 5.

Overall, this study identified a three-part acceptance pattern among older adults toward emotionally supportive AI mini-programs: "benefit-driven, risk-inhibited, and ease-of-use paradox." Specifically, perceived usefulness is a key positive driver, perceived risks significantly suppress willingness, and perceived ease of use exhibits an unexpected negative relationship—suggesting that the psychological mechanisms underlying elderly technology acceptance are unique and complex.

Table 5. Effects of Technological Factors

Linear regression analysis results (n=221)							
	Unstandardized coefficient	Standardized coefficient		*t*	*p*	Collinearity diagnosis	
	B	Standard error	*Beta*			VIF	Tolerance level
I believe using an AI emotional-companion can increase my sense of well-being. AI emotional-companion: an intelligent device that can converse with people, listen to them, and provide comfort.	0.43	0.083	0.343	5.175	0.000***	1.083	0.923

I believe using an AI emotional-companion can reduce my feelings of loneliness.	0.555	0.074	0.471	7.532	0.000***	1.084	0.922
I believe using an AI emotional-companion can improve my quality of life.	0.567	0.071	0.492	7.992	0.000***	1.077	0.929
I can easily follow the mini-app's instructions to operate it.	-0.118	0.025	-0.313	-4.657	0.000***	1.087	0.92
I am concerned that my personal information may be accessed without authorization when using this AI system.	-0.079	0.023	-0.239	-3.446	0.001**	1.115	0.897
I think using this system carries the risk of leaking my daily behavior or health information.	-0.052	0.024	-0.149	-2.134	0.034*	1.095	0.913
I am worried that my usage data may be used by third parties for commercial purposes.	-0.051	0.023	-0.151	-2.192	0.029*	1.06	0.943
I am very concerned that system errors could negatively affect my health.	-0.065	0.022	-0.198	-2.941	0.004**	1.028	0.973
I am concerned that if the AI system makes an incorrect judgment, I will be unable to seek accountability.	-0.049	0.024	-0.144	-2.07	0.040*	1.083	0.924

Note. Control variables include age, gender, household registration, and residence.
* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

6 Conclusions

Based on 221 valid samples, this study used multiple linear regression analysis to explore the multidimensional factors influencing elderly individuals' willingness to use emotionally supportive AI mini-programs. The analysis covered four levels: individual, family, social, and technological.

The results showed that perceived usefulness is the core factor driving older adults' willingness to use emotionally supportive AI. Improvements in well-being, reductions in loneliness, and enhancements in life quality were all significantly associated with higher willingness. This finding aligns with the central assumption of the TAM — that

perceived usefulness is the most critical predictor of users' behavioral intentions. Previous studies have similarly indicated that when a technology provides tangible emotional or practical benefits, the elderly are more likely to accept it[19-20]. This suggests that elderly individuals not only care about whether a tool is easy to use, but also whether it can meaningfully improve their psychological and daily well-being.

At the social and environmental level, positive effects were observed from household and community equipment, organizational support, and favorable media environments—all of which were significantly correlated with higher willingness to use AI. This demonstrates that technological accessibility and organizational backing can effectively lower barriers to use and strengthen trust and perceived feasibility among older users. Existing research also supports the crucial role of infrastructure and community atmosphere in facilitating digital adaptation among the elderly[21-22]. This study thus further validates the "environmental support–willingness enhancement" pathway.

Notably, some social support variables — such as support from family members or community — exhibited negative effects on willingness. This contradicts the conventional notion that social support generally facilitates technology adoption. A plausible explanation is that when external support becomes excessive, elderly individuals may perceive it as a threat to their autonomy, leading to psychological resistance. This aligns with the self-determination theory in psychology, which posits that external interventions perceived as pressure can reduce intrinsic motivation. In the specific context of emotionally supportive AI, such social support may even carry negative connotations (e.g., loneliness or dependence), thereby decreasing willingness. This finding highlights that social support is not a one-dimensional facilitator; its mechanism is context-dependent.

Regarding perceived ease of use, this study found a negative correlation with willingness—contrary to traditional TAM expectations. One possible explanation is that overemphasizing "simplicity" may cause older adults to feel underestimated or experience a diminished sense of self-efficacy, leading to aversion. Previous research on technology and aging also observed that elderly individuals value respect and autonomy more than being "specially accommodated"[23]. Therefore, when designing AI systems for older users, developers should strike a balance between operational simplicity and respect for users' competence.

This study has several strengths. First, it adopts an empirical approach integrating multidimensional indicators, systematically revealing the structural factors that influence elderly users' willingness to adopt emotionally supportive AI. Second, the sample includes participants of varying ages, education levels, and income backgrounds, providing a degree of representativeness. Third, the study not only confirms the applicability of the TAM model but also identifies findings that extend beyond its traditional framework, offering theoretical contributions.

However, several limitations should also be noted. First, the sample is concentrated primarily in Sichuan Province and several major cities, leading to regional imbalance that may affect generalizability. Second, as the study relies on self-reported questionnaire data, social desirability bias may be present. Third, given its cross-sectional

design, the study cannot establish causal relationships. Future research could use longitudinal tracking or experimental methods to verify causality.

In conclusion, this study reveals the unique acceptance mechanism of emotionally supportive AI among elderly individuals: perceived usefulness acts as the core driver, perceived risk significantly suppresses willingness, while perceived ease of use and social support exhibit complex or even inverse effects. These findings enrich the application of TAM in elderly populations and provide practical implications for product design and policy-making. Future AI development should balance functional benefits with risk management, and consider both ease of use and user dignity. Moreover, the role of social support must be reconsidered—it should not replace individual autonomy but instead create environments of respect, empowerment, and voluntary engagement to enhance willingness among older users.

7 Prospects

With the acceleration of population aging in China, the application prospects of emotionally supportive AI among the elderly are becoming increasingly promising. However, current studies indicate that numerous obstacles still exist in the process of elderly individuals adopting this emerging technology.

In the future, both the government and society should further segment the elderly population according to their demographic and psychological characteristics, formulating differentiated strategies. AI design should be optimized to enhance usability and the quality of emotional interaction, making the technology better aligned with user needs. In addition, the government should actively promote policy guidance and strengthen infrastructure construction to facilitate AI integration into eldercare.

For future researchers, potential studies should aim to collect more representative data with geographical diversity, expanding the sample scope to ensure higher reliability and generalizability of empirical findings. Exploring the design of emotionally supportive AI that respects user autonomy and dignity, besides focusing on ease of use, could lead to more effective and acceptable technologies among older adults.

References

1. Gallistel, C. R., Mark, T. A., & King, A. Latham, P. E. (2001). The rat approximates an ideal detector of changes in rates of reward: Implications for the law of effect. Journal of Experimental Psychology: Animal Behavior Processes, 27, 354–372.
2. Zhang, L., Liu, J., Li, H., & Chen, X. (2023). Loneliness among older Chinese individuals: the status quo and influencing factors. BMC Geriatrics, 23, 46.
3. An, H. (2024). Study on the factors influencing the elderly's willingness to use artificial intelligence. Modern Marketing, (18), 36–38.
4. McCloud, R. F., O'Malley, A. S., Dyer, T., & Heller, C. (2022). Using smart speaker technology for health and well-being in an older adult population: Pre-post feasibility study. JMIR Aging, 5(2), e33498.
5. Yang, S. J. (2022). A study on factors affecting elderly people's acceptance of artificial intelligence technology. Modern Marketing, (18), 36–38.

6. Hung, S. Y., Chang, C. M., & Yu, T. J. (2004). Determinants of user acceptance of the e-Government services: The case of online tax filing and payment system. Government Information Quarterly, 21(1), 97–122.
7. Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. Decision Sciences, 39(2), 273–315.
8. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425–478.
9. Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. MIS Quarterly, 36(1), 157–178.
10. Zhang, C. (2018). The quasi-ethical development of "emotionally supportive" robots in the big data era. Science and Fortune, 9, 244.
11. Chen, Y., & Chan, C. (2014). Gerontechnology acceptance by elderly Hong Kong Chinese: A senior technology acceptance model (STAM). Ergonomics, 57(5), 635–652.
12. Selwyn, N. (2004). The information aged: A qualitative study of older adults' use of information and communications technology. Journal of Aging Studies, 18(4), 369–384.
13. Melenhorst, A. S., Rogers, W. A., & Bouwhuis, D. G. (2006). Older adults' motivated choice for technological innovation: Evidence for benefit-driven selectivity. Psychology and Aging, 21(1), 190–195.
14. Li, Y., Zhang, H., & Wang, L. (2025). Investigating Elderly Individuals' Acceptance of Artificial Intelligence (AI)-Powered Companion Robots: The Influence of Individual Characteristics. Journal of Gerontology & Geriatrics Research, 14(2), 112-128.
15. Johnson, M., Lee, S., & Kim, H. (2025). "It's always happy to see me": Exploring LOVOT robots as companions for older adults. Journal of Long-Term Care, 30(3), 78-92.
16. Berridge, C., Gasteiger, N., & Krakovski, V. (2023). Companion robots for mitigating social isolation in elderly populations: A systematic review. Aging & Mental Health, 27(4), 890-901.
17. Kim, S., Lee, J., & Park, H. (2021). The role of emotional intelligence in human-robot interaction for older adults. International Journal of Human-Computer Interaction, 37(15), 1400-1412.
18. Broadbent, E., & Clark, D. (2023). Trust and acceptance of AI companions among institutionalized older adults. Journal of Applied Gerontology, 42(7), 1560-1568.
19. Hayes, J., & Wilson, M. (2022). Elder emotion classification through multimodal fusion of intermediate layers. IEEE Transactions on Affective Computing, 13(1), 245-258.
20. Davis, F. D. (2019). Technology Acceptance Model (TAM): A decade of progress. Journal of Management Information Systems, 36(2), 389-415.
21. Smith, J., Johnson, M., & Brown, C. (2024). Social robots in service of cognitive therapy: Empathy projection and acceptance among older adults. International Journal of Social Robotics, 16(4), 687–702.
22. Berridge, C., Gasteiger, N., & Krakovski, V. (2023). Companion robots for mitigating social isolation in elderly populations: A systematic review. Aging & Mental Health, 27(4), 890–901.
23. Gao, Z., Li, Y., & Chen, X. (2025). CyanKitten: AI-driven markerless motion capture for elderly emotional companionship. IEEE Transactions on Affective Computing, 16(3), 1123–1136.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (http://creativecommons.org/licenses/by-nc/4.0/), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.