Modeling and Empirical Study on the Behavioral Intention to Use Early Education and Parenting App

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ABSRTACT
In order to find out the family's behavioral intention to use the Early Education and Parenting Apps, this paper is based on the S-O-R theory、the Technology Acceptance Model and the use and satisfaction theory. The data of 917 valid questionnaires from 33 provinces in China were analyzed by structural equation modeling (SEM) . The results showed that perceived ease of use, perceived usefulness, and subjective norms positively affected the behavioral intention to use, while perceived risk negatively affected the behavioral intention to use. Educational motivation, aesthetic motivation, recreational motivation and social emotional motivation affect perceived usefulness in turn, while other demographic variables, such as family location, have no significant effect on intention of use behavior. The comclusion also provide a new idea for the early education App design and dissemination.

Keywords: *structural equation model, preschool families, Early Education and Parenting App, motivation to use, behavioral intention to use.*

1. INTRODUCTION

With the development of science and technology, digital natives' activity field has changed, children under 2 years old can interact with the electronic screen [7]. At the same time, the post-90s are becoming a new generation of parents, and their demand for "Internet + parenting" and "Internet + early education" is stronger [8].

The application based on mobile intelligent media platform has become an important choice for parents with its characteristics of individuation, intelligence and practicality. "Baby Bus", "click story", "Khan Academy Kids", "PBS Kids", "Music Shell" and many other apps are popular in the market. New Coronary Pneumonia increased the frequency of Apps use. The number of China's online education users reached 325 million in 2021.

However, the research on the App focuses on the analysis of learning effect, interface design strategy and use scenario, but lacking of careful consideration of audience's needs. Many Apps are not very user-friendly now. There are operational inconvenience, lack of attractiveness can not meet the educational needs. It is difficult for users to use. In this paper, we use SEM to make an empirical study to understand the needs of users, so as to better develop and upgrade the Apps, to provide new ideas for the development of the industry.

2. THEORETICAL BASIS AND RESEARCH MODEL

2.1. Theoretical Foundations

Structural equation model(SEM) is a method of establishing, evaluating, and testing cause and effect models. It is used by the covariance matrix of variables to analyze the statistical analysis of the relationships between variables. In the actual research process, many latent variables are difficult to measure directly and accurately (such as motivation), and need to be indirectly measured by explicit indicators. Compared to linear correlation analysis and Regression analysis, the SEM can better deal with multiple dependent variables at the same time, allowing the elastic errors between independent variables and dependent variables, estimating the factor structure and the factor relationship, and predicting the fitting degree of the whole model. It is often used in pedagogy, psychology, and sociology. In this paper, a SEM is proposed to analyze the influence factors of preschool families on Early Education and

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Parenting App use intention.

2.1.1. S-O-R

The S-O-R framework is derived from psychology and used to predict the effects of external stimuli on individual's cognitive psychology and behavior. It includes 3 factors: stimulus, organism and response.

Nowadays the media has changed people's living environment, many scholars use the S-O-R framework to explore the media user's behavior intention.

Zhang Dawei(2021) used it to study the effect of advertising interference on non-sustained use intention in short videos. Zhu Jianzhen (2019) studied the effect of social generalization on diving behavior. Huang Shijing(2021) studied the impact of live streaming on purchasing behavior. Since the framework has been proved to be feasible in the new media environment many times, we use it as a theoretical support.

2.1.2. Technology Acceptance Model

Davis (1989) was the first to propose that perceived usefulness and perceived ease of use are the determinants of computer acceptance, and to construct the Technology Acceptance Model. It is often used to explain the users' acceptance of the system used, Because of its good stability. After that, Davis and others expanded and integrated the model, removing the attitude, adding individual differences, system features and other elements.

Scholars at home and abroad often use the TAM to analyze online education: The Sharing Behavior of academic virtual community [29], the information-based teaching behavior [15][20], and the attitude of users toward online work [2], children's educational game intention [23] and so on.

Based on the TAM model, we propose the following hypothesis:

H1: perceived ease of use affects perceived usefulness.

H2: perceived usefulness affects behavioral intention to use.

H3: perceived ease of use affects behavioral intention to use.

Researchers often introduce new variables to complement TAM to improve its accuracy in different fields. Legris(2003) listed subjective norm as an important variable in TAM model. As an external stimulus, subjective norm refers to the social pressure that individuals face when deciding whether to take certain actions. It was first proposed by Fishbein & Ajzen (1975) to analyze human behavior intention. Liang Shijin (2020) believes that whether people accept new things will be affected by social trends, educational policies and so on. Xue Yunjian(2021) believe that friends and acquaintances will affect user choice.

Based on this, this paper proposes the following assumptions:

H4: subjective norm positively affect behavioral intention to use.

Perceived risk is an important variable in the study of human behavior. Cunningham (1969) proposed that the most important factor in perceived risk is uncertainty and harmfulness to outcomes. Sitkin and Pablo (1992) argued that perceived risk arises from a lack of knowledge and the uncontrollability of outcomes. Pan Meirong et al. (2014) point out that excessive electronization will affect the growth and development of children. Zhao Yongle et al. (2019) argue that the drawbacks of educational software are irreconcilable. Therefore, this paper takes perceived risk as an impact of use behavior and proposes:

H5: perceived risk negatively influenced behavioral intention to use.

2.1.3. Theory of use and satisfaction

The study of "use and satisfaction" originated in the 1940s, and it plays an important role in the history of communication studies. Think of the audience as an individual with a specific "need" [5]. Many scholars have used this theory to study the audience's media use behavior. Yang Yi (2015) based on this analysis of the government we-chat audience situation; Wang Qian (2018) based on this research fitness App use motivation; Jiang Yingying (2020) put forward six motivations of children watching cartoons, such as learning, aesthetic, relaxing, socializing, recreation. In the process of audience's using new media, whether the individual's motivation needs can be satisfied or not influences his using behavior. Therefore, this article takes the users' motivation as the starting point of discussion, exploring the relationship between motivation and perceived usefulness and behavioral intention to use. Based on this, the following hypotheses are proposed:

H6: educational motivation influences perceived usefulness.

H7: social emotional motivation influences perceived usefulness.

H8: recreational motivation influences perceived usefulness.

H9: aesthetic motivation influences perceived usefulness.

2.2. Research framework and assumptions

Based on the S-O-R model framework, we divided perceived usefulness, perceived ease of use, sustained behavioral intention to use, motivations, subjective norm and perceived risk into three categories: external variables representing stimulus, perceived variables representing organism, and response variables, the research framework is constructed, as shown in Figure 1.In addition, we take gender, age, income level, family structure, region, educational background of parents, and the use of new media by parents as the demographic variables to research.

3. RESEARCH DESIGN

3.1. Questionnaire Design

The questionnaire is divided into three parts. In the first part, we investigated the basic situation of the participants, including their age, sex, region, income level, educational background, family structure, and frequency of using new media. The second part investigates the use of APP in preschool families, Including time, frequency, content preferences and so on. The third part investigates families' willingness to continue using apps.

Generally speaking, the need factor index is 3 ~ 5 when using the SEM, so the third part of the questionnaire is based on the previous investigation to determine the items. There are two types of item sources: Some of them are based on the mature scale, and some of them are based on the results of pre-investigation and retain the most influential factors.In the end, 3~4 supporting items were retained for each study variable (see Table 1) .

Each item uses the LIKRT five-level scoring system, the options are "strongly disagree", "disagree", "generally agree", "strongly agree", corresponding to the score of 1~5.

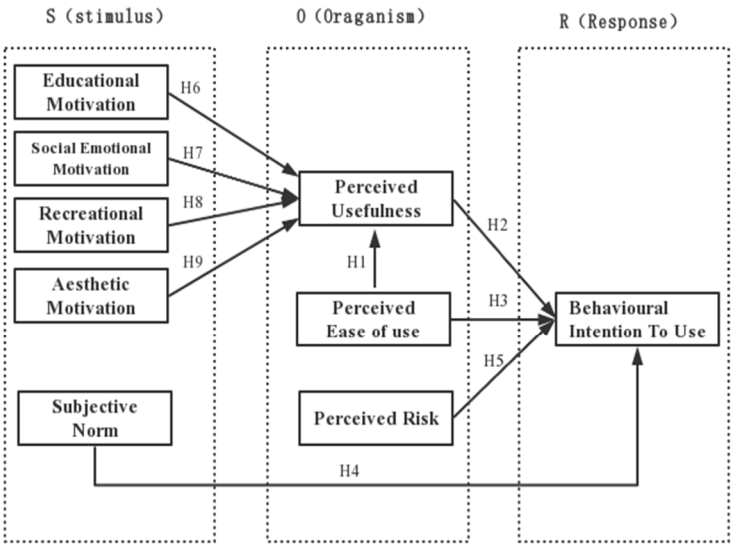

Figure 1: Research model

Table 1. Presentation of observed variables

Variable	Observed variable	Source basis
Educational Motivation (A)	A1 APP is rich in knowledge. A2 We want kids learn a lot of skills and common sense through the App. A3 We want kids to be more interested in learning through Apps. A4 APP can develop a child's intelligence.	Jiang Yingying, Chen Shihong (2020)
Social Emotional Motivation (B)	B1 Unlike television, the App can be used to interact with a virtual character. B2 The App can enhance parent-child interaction. B3 We can interact with other children online.	
Recreational Motivation (C)	C1 Kids use apps that have a pleasant experience. C2 The process of using an App for kids is relaxing. C3 The apps can reduce loneliness.	
Aesthetic	D1 Characters in the App appeal to children.	

Motivation (D)	D2 The storyline in the app appeals to children. D3 Images and scenes in apps appeal to children.	
Subjective Norm (SN)	SN1 Teachers and education experts are important to me want us to use it. SN2 Acquaintances and friends influence me with want us to use it. SN3 The advertisementa makes us more willing to use it. SN4 My life experience prompted us to use it (seeing others use it) .	Peng Xixian, Feng Zhubin, Sun Xiaoling, Zhu Qinghua (2012)
Perceived Usefulness (PU)	PU1 Using the App can enable children to effectively access knowledge. PU2 Using the App can make children happy. PU3 Using the App can improve his performance in life. PU4 The App would help kids.	Davis (1989)
Perceived ease of use (PEOU)	PEOU1 It is easy to use with an App interface. PEOU2 The process of using the App is very easy. PEOU3 The App can be used repeatedly, reducing the number of printed textbooks.	Davis (1989)
Perceived Risk (PR)	PR1 I'm concerned that my child's vision may be impaired. PR2 I'm worried that kids using apps will become addicted. PR3 I'm concerned about the content is not suitable for children. PR4 I'm concerned about the reduction in outdoor activities after children use the App.	Zhao Yongle, he Ying, Jiang Yu, Ma Yingfeng, he baoxun (2019)
Behavioral Intention To Use (BITU)	BITU1 I'm willing to let my kids use the App. BITU2 I have a desire to keep my kids on the App. BITU3 I'd like to recommend a good App to other parents.	Bhattacharjee (2019), Duan Guopeng (2010)

3.2. Data collection

This paper adopts the method of data collection on-line and offline.. On-line part of the author in "Questionnaire Star" on the questionnaire design, and through we-chat friends and other ways to distribute; on-line part in the Fuyang region of Anhui province for distribution. A total of 954 questionnaires were collected. According to the background data of the magnitude of the questionnaires, 917 valid questionnaires were retained, and the sampling results were basically in line with the demographic laws. See Table 2.

Table 2 Sample analysis

Independent variable	Level	Sample size	Percentage
Parents' gender	male	257	28.0
	female	660	72.0
Parents' Age	20-30 y	165	18.0
	31-35 y	432	47.1
	36-40 y	235	25.6
	41-50 y	59	6.4
	Over 50	26	2.8
Family Structure	One-child family	466	50.8
	Non-one-child family	451	49.2
Parents Educational Background	Secondary and below	221	24.1
	University	523	57.0
	Master degree or above	173	18.9
Monthly Income Level	Under ￥3,000	119	13.0
	￥3001-￥5000	198	21.6
	￥5001-￥8000	189	20.6

	￥8,000- ￥15,000	277	30.2
	￥15,000 and up	134	14.6
Family Location	Cities	567	61.8
	County seat	74	8.1
	Countryside	276	30.1
Parents' Use of new media	Never use it	3	0.3
	Occasional use	25	2.7
	So-so	99	10.8
	Use It often	238	26.0
	Always use	552	60.2

4. DATA ANALYSIS

In this paper, SPSS 24 and Amos 23 are used. We analyze the reliability and validity of the questionnaire, the relationship among the variables, the effect of latent variable on parents' behavioral intention to use.

4.1. Reliability and Validity Test

Cronbach's alpha (Cronbach's alpha) and composite reliability (CR) were used to test the reliability of the questionnaire. Cronbach's α coefficients were calculated using SPSS 24 and CR values were calculated using Amos 23.0. Cronbach's alpha is greater than 0.7 and CR is greater than 0.6. As shown in Table 3, the Cronbach's α coefficient and CR value of each variable met the criteria, which indicated that the reliability of the questionnaire was good. In the validity test, Amos software was used to analyze the factor of the verification row in the measurement model, and the standard factor loads of each item were used to calculate the AVE. It can be seen from the table that the factor load and Ave value are both greater than 0.5, which indicates that the questionnaire has good convergent validity.

Table 3 reliability and validity of the questionnaire

Variable	Item	Factor load	α	AVE	CR
A	A1	0.736	0.865	0.62	0.867
	A2	0.796			
	A3	0.729			
	A4	0.88			
B	B1	0.841	0.823	0.611	0.824
	B2	0.777			
	B3	0.722			
C	C1	0.757	0.779	0.541	0.78
	C2	0.699			
	C3	0.75			
D	D1	0.814	0.83	0.627	0.834
	D2	0.764			
	D3	0.796			
SN	SN1	0.906	0.797	0.784	0.935
	SN2	0.908			
	SN3	0.88			
	SN4	0.846			
PU	PU1	0.832	0.936	0.599	0.857
	PU2	0.786			
	PU3	0.73			
	PU4	0.745			
PEOU	PEOU1	0.989	0.863	0.863	0.949
	PEOU2	0.862			
	PEOU3	0.931			
PR	PR1	0.862	0.934	0.784	0.935

	PR2	0.879			
	PR3	0.835			
	PR4	0.961			
	BITU1	0.682			
BITU	BITU2	0.76	0.947	0.551	0.786
	BITU3	0.782			

4.2. Hypothesis Testing Analysis

Then, the whole fitting effect of the SEM is evaluated. All the indexes of fitting degree reach the ideal state.

- GFI=0.849(＞0.8) ;
- RMSEA=0.074(＜0.08);
- CFI=0.893(＞0.8);
- IFI=0.893(＞0.8);
- TLI=0.881(＞0.8);
- PGFI=0.717(＞0.5);
- PNFI=0.788(＞0.5).

Besides, path analysis showed that P<0.05, H1~H9 was verified. It was found that educational motivation had the greatest positive predictive effect on perceived usefulness (β=0.244) , second, aesthetic motivation positively predicted perceived usefulness (β=0.238) , recreational motivation positively predicted perceived usefulness (β=0.193) , and social emotional motivation positively predicted perceived usefulness (β=0.191) ,as shown in Figure 2.

Table 4 Impact factor analysis

(p value * * indicates significant impact)

Path	Standardized path	Non-standardized path	S.E.	C.R.	**P**
PU← PEOU	0.235	0.168	0.021	8.074	***
BITU← PU	0.32	0.283	0.034	8.331	***
BITU← PEOU	0.378	0.24	0.023	10.306	***
BITU← SN	0.172	0.121	0.024	5.093	***
BITU← PR	-0.073	-0.055	0.025	-2.201	0.028
PU←A	0.244	0.192	0.035	5.551	***
PU←B	0.191	0.205	0.036	5.697	***
PU←C	0.193	0.19	0.046	4.167	***
PU←D	0.238	0.206	0.036	5.66	***

4.3. Difference Test

To examine the effect of demographic variables on App use intention, independent sample t test and variance analysis were performed. However, demographic variables had no significant effect on the results.

Table 5 Analysis of demographic variables

Independent variable	t/F	Sig	Significant or not
Parents' gender	-1.01	0.31	no
Parents' Age	1.85	0.12	no
Family Structure	-1.66	0.1	no
Educational Background	0.82	0.44	no
Income Level	0.52	0.72	no
Family Location	0.46	0.71	no
Parents' use of new media	0.78	0.54	no

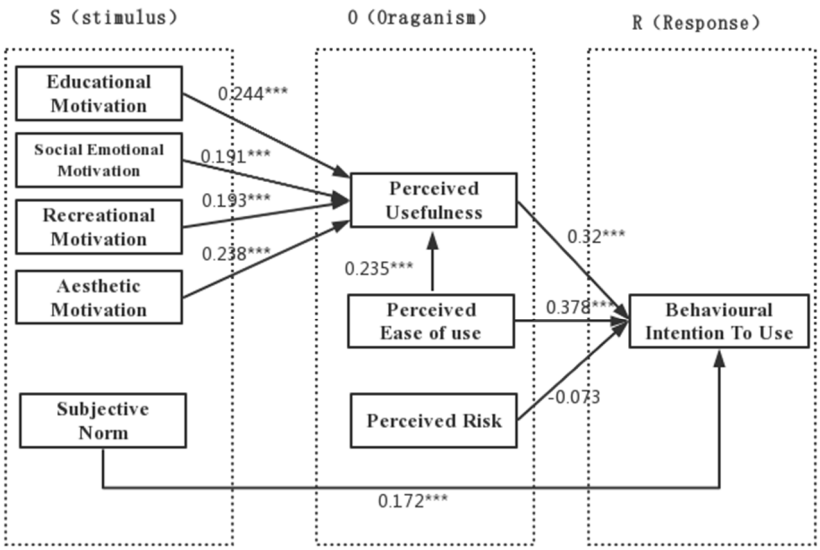

Figure 2. Results

5. RESULTS AND DISCUSSION

5.1. Discussion of Behavioral Intentions

H1-H3 is true, it suggests that perceived usefulness and perceived ease of use are two important variables that influence the behavioral intention to use, and that perceived ease of use not only directly affects the user experience as much as the motivation to use it.

H4 is true, subjective norm has a significant effect on the behavioral intention to use. 86.2% of the respondents use social media regularly, so they have a wide range of ways to find out about App products and services and promote their willingness to use them.

H5 is true, perceived risk negatively influenced behavioral intention, but the degree of influence was not significant. It also hints at the widespread acceptance of Early Education and Parenting App.

In the future, the design and dissemination of Early Education and Parenting App should first enhance ease of use, reduce operational inconvenience, and promote the use of willingness. Second, improve the quality of relevant practitioners, strengthen the content audit, for children to filter out bad information; at the same time, add eye protection model to avoid potential risks. Third, we should attach importance to the law of communication, establish the feedback mechanism of information, train the appropriate opinion leaders, build the media-family-school-government community, put the childrenin the central position and jointly optimize the media environment.

5.2. Discussion on Motivations

H6-H9 is true, it indicates that the motivations positively affect perceived usefulness. From strong to weak significance is:

- educational motivation
- aesthetic motivation
- entertainment motivation
- social emotional motivation

Previous studies have dismissed apps as educational, categorizing them as play tools, and have worried about their impact on children's social skills [14].

However,the findings in this paper are different. The main reasons are as follows: firstly, the educational function of App is becoming more and more prominent. Digital media technology is good at transforming abstract concepts into concrete symbols to help children's cognition. Second, after two years of age children begin to produce aesthetic feelings, will more actively choose cartoon characters and other aesthetic objects. Third, the traditional TV media can not simulate the real-life experience, so mobile touch-screen media has become a favorite toy for children. Fourth, the impact of the global epidemic at the end of 2019, online learning, entertainment has quietly entered people's lives, most parents believe that the use of apps can increase parent-child interaction and increase the chances of learning with other children.

In order to improve the quality of content in the design of Early Education and Parenting App, we must first follow the rules of children's cognitive and aesthetic characteristics. Then, the content is set up to teach in fun. Through interaction design, emotional design, instant feedback and other mechanisms, children can learn by doing and achieve self-efficacy. In addition, the existing high quality educational resources are presented in digital media logic to enhance the sense of story situation and design vivid characters to interact with children, instead of stimulating children's senses by sound, light and electricity, to ensure the sustainability of the App.

5.3. Discussion of Demographic Variables

On the whole, the mean of behavioral intention to use was 3.46, which indicated that the acceptance of App was higher. Among them, 77.8% of the participants had 1-5 related Apps on their mobile phones, 61.8% of them used the media more than once a week, and 60.9% of them used it once for 10-30 minutes. Rhymes and language learning apps are most popular among these families.

The research shows the following parents are more likely to use：female parents, the parents aged 31-40, high-educated, urban families and non-only-child families. On the one hand, these parent groups are more responsible for parenting, so they want to use apps to reduce the burden of parenting. On the other hand, These parents may have higher media literacy and can select suitable high-quality resources.

However, the differences of the demographic variables are not significant, which means that these apps are very popular. If the App is optimized and the quality content is disseminated in the later stage, it can solve the problem of uneven distribution of educational resources between urban and rural areas and between different income families.

6. CONCLUSIONS AND FUTURE WORK

In this paper, SEM was used to assess the willingness of preschool families to continue using Early Education and Parenting App, the results show that educational motivation, aesthetic motivation, recreational motivation, social emotional motivation, perceived ease of use and subjective norm positively affect the behavioral intention to use, perceived risk negatively affect the behavioral intention to use. In the era of digital media, the use of Early Education and Parenting App will be further expanded, the process of design and communication should be educational, aesthetic, recreational and social emotional, simplify the use of the process, to avoid communication risks.

Structural equation model analysis is used to analyze abstract variables that are difficult to measure directly. This statistical method is used to make reasonable statistics of the data and the relationships contained therein. This combination with sociology and pedagogy is of great significance. But we should also understand that the hypothesis of the experiment is much simpler than the actual hypothesis, and that further practice and testing are needed in the design and dissemination of Early Education and Parenting App to examine the persistence of App use in multiple directions.

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REFERENCES

[1] Bhattacherjee, A. . (2019). Understanding information systems continuance: an expectation-confirmation model 1 motivation for the study.

[2] Cao Mei & Song Yun Hua. (2020). Research on the user experience and its influencing factors of online job. Modern Educational Technology (02) , 79-84.

[3] Cox, D. F. . (1969). Risk taking and information handling in consumer behavior. Journal of Marketing Research, 6(1), 110.

[4] Davis, F. D. . (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. Mis Quarterly, 13(3), 319-340.

[5] Guo Qingguang. (1999). A course in communication studies. The Chinese People University Press.

[6] Fishbein, M., & Ajzen, I. (1975). Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research. Reading, MA: Addison-Wesley.

[7] Hoareau L, Tazouti Y, Dinet J, et al.(2020).Co-Designing a New Educational Tablet App for Preschoolers. Computers in the Schools,37(4):234-252.

[8] Huang Chengjia & Zeng Yan. (2020). The transmission characteristics and development trend of parenting apps: A Case Study of Baby-friendly APP. Media (01) , 49-51.

[9] Huang Shijing, Xu Man. (2021). Research on the impact mechanism of mobile e-commerce live broadcast on customers ‘online purchase intention based on SOR theory. Statistics and management (07) , 122-128.

[10] Ji Weimin & Shen Jie. (2021). Report on the use of the Internet by Chinese minors. Social science literature published.

[11] Jiang Yingying and Chen Shihong. (2020). A study on children audience s motivation to watch animation. Modern Communication (Journal of Communication University of China)(04) , 155-159.

[12] Legris, P. ,Ingham, J.,&Collerette, P. . (2003). Why do people use information technology? a critical review of the technology acceptance model. Information & Management, 40(3), 191-204.

[13] Leung Sze-kam. (2020). Social media perspectives on users 'willingness to continue fragmented reading: Empirical evidence based on ec-isc and subjective norms. Research in library science (09) , 80-88.

[14] Lau Dan, Hu Weixing, Li Yubin & Li Chang. (2016). Research and development of mobile education APP and analysis of application problems. Research on audio-visual education (08) , 47-52.

[15] Liu Zhe. (2017). The information-based teaching behavior of teachers based on TPB and TAM model. Modern educational technology (03) , 78-84.

[16] Luo Hui. (2013). Market opportunities and challenges for mobile applications for children. Electronic production (21) , 264.

[17] Luo Yi. (2017). Empirical study on influencing factors of mobile fitness App use among college students based on Tam. Journal of Capital Institute of Physical Education (01) , 72-77.

[18] Pan Meirong, & Zhang Jinsong. (2014). Use of electronic products by preschool children. Journal of Educational Biology (4) , 6.

[19] Peng Xixian, Feng Zhubin, Sun Xiaoling & Zhu Qinghua. (2012). Theoretical model and empirical study on Weibo users 'intention of continuous use. Modern Library and information technology (11) , 78-85.

[20] Sánchez-Mena, Antonio, Martí-Parreo, José, & Aldás-Manzano, Joaquín. (2018). Teachers' intention to use educational video games: the moderating role of gender and age. Innovations in Education and Teaching International, 1-12.

[21] Sitkin, S. B. , & Pablo, A. L. . (1992). Reconceptualizing the determinants of risk behavior. Academy of Management Review, 17(1), 9-38.

[22] Wang Qian. (2018). Socialization, identity and presence: motivation and behavior of users of fitness apps. Modern Communication (Journal of Communication University of China)(12) , 149-156.

[23] Wei Ting & Li Yi. (2011). An empirical study on the influencing factors of educational game participants 'behavioral intention. Research on audio-visual education (04) , 81-87.

[24] Xue Yunjian, Dong Yu & Pu Xujin. (2021). Modeling and empirical research on the willingness to continue using of knowledge payment App users. Economics and management (04) , 17-23.

[25] Yang Yi & Song He. (2015). Research on the use and satisfaction of the government we-chat audience. Modern Communication (Journal of Communication University of China)(04) , 137-140.

[26] Yin Guopeng & Yang Bo. (2010). The theoretical model and empirical research of SNS users 'persistent behavior. Journal of Information Systems (01) , 53-64.

[27] Zhang Baosheng, Zhang Qingpu & Zhao Chenguang. (2021). The influence of the characteristics of live-streaming on consumers 'purchase intention-the mediating effect of consumer perception. China's circulation economy (06) , 52-61.

[28] Zhang Dawei & Wang Zi. (2021). The dark side of User-generated content: A study of negative user intentions on short video platforms. Modern Communication (Journal of Communication University of China)(08) , 137-144.

[29] Zhang Chu & Chang Le. (2017). An empirical study on factors influencing knowledge contribution willingness in academic virtual community: KCM and TAM Perspectives. Soft Science (08) , 19-24.

[30] Zhao Yongle, he Ying, Jiang Yu, Ma Yingfeng & He baoxun. (2019). Parents'acceptance and use of educational video game. Open Education Research (03) , 72-80.

[31] Zhou Xi, Huang Xin-yuan. (2022). Interactive design of educational game characters for preschool children. Packaging Engineering (06) : 243-251.

[32] Zhu Jianzhen. (2019). Research on the causes of social media burnout and the negative use behavior of users from the perspective of Sor theory (master's thesis, Shenzhen University) .