Elderly Digital Surfing: The Influence of Family Support on Media Usage Behaviour

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Abstract

This study employed the theory of planned behavior theory model to explore the impact of family support on the digital media usage of older adults. Structural equation model was utilized for the analysis. Using Guangdong Province as the sampling frame, 416 valid samples were collected through cooperation with residents' committees using purposive sampling methods. The data analysis indicated that there were significant positive correlations among elderly family support, media attitudes, self-efficacy, and media behavior. However, family support did not directly predict digital media usage behavior among the elderly. Instead, family support positively predicted media attitude and self-efficacy among the elderly. Additionally, the elderly media attitude and self-efficacy mediated the relationship between family support and digital media usage behavior. Family support indirectly influences digital media usage behavior through its effects on shaping attitudes and beliefs about media and one's abilities to use it effectively.

Keywords: *Elderly, Family Support, Digital Media Usage Behavior, Self-efficacy*

Melayari Dunia Digital bagi Warga Emas: Pengaruh Sokongan Keluarga terhadap Tingkah Laku Penggunaan Media

Abstrak

Kajian ini menggunakan teori tingkah laku terancang untuk meneroka kesan sokongan keluarga terhadap penggunaan media digital oleh warga emas. Model persamaan berstruktur digunakan untuk analisis. Responden dari Provinsi Guangdong China terpilih dalam rangka pensampelan dengan 416 sampel yang sah telah dikumpulkan melalui kerjasama dengan jawatankuasa penduduk menggunakan kaedah pensampelan bertujuan. Analisis data menunjukkan terdapat korelasi positif yang signifikan antara sokongan keluarga warga emas, sikap media, efikasi diri, dan tingkah laku media. Walau bagaimanapun, sokongan keluarga tidak secara langsung meramalkan tingkah laku penggunaan media digital dalam kalangan warga emas. Sebaliknya, sokongan keluarga secara positif meramalkan sikap media dan efikasi diri dalam kalangan warga emas. Selain itu, sikap media dan efikasi diri warga emas adalah mediasi kepada hubungan antara sokongan keluarga dan tingkah laku penggunaan media digital. Sokongan keluarga secara tidak langsung mempengaruhi tingkah laku penggunaan media digital melalui kesannya dalam membentuk sikap dan kepercayaan mengenai media serta kebolehan seseorang untuk menggunakannya dengan berkesan.

Kata Kunci: *Booktok, Budaya Sastera, Industri Penerbitan*

Introduction

Population aging and technological innovation stand out as two emblematic transformations globally in the 21st century. Fueled by increased life expectancy and declining birth rates, the number and proportion of older adults are rising faster than any other age group (United Nations, 2020). According to data from the seventh national population census in China, as of the end of 2021, the older adult population aged 60 and above reached 264 million, accounting for 18.7% of the total population. It is projected that during the "14th Five-Year Plan" period, the total older adult population in China will surpass 300 million, constituting over 20% of the population. This indicates that China is entering a moderately aging society. Synchronized with the aging process is digital development in China. Digital technologies are comprehensively integrated into various fields and the entire process of human economic, political, cultural, social, and ecological civilization construction. This is bringing extensive and profound impacts on human production and life.

As of June 2023, according to the 52nd Statistical Report on Internet Development in China released by the China Internet Network Information Center (CNNIC), the number of Internet users in China has reached 1.079 billion, showing an increase of 11.09 million compared to December 2022, with an internet penetration rate of 76.4%. There are 140 million internet users aged 60 and above, accounting for 13% of the total internet users, indicating a further penetration of the internet among middle-aged and older adult populations. However, older adult internet users exhibit the lowest level of digital skills among various demographic groups. At least 54.6% of internet users aged 60 and above possess only basic digital skills. The majority of older adult internet users are limited to basic activities such as searching and pasting information on computers or smartphones. Less than 20% of older adult internet users have proficiency in using text, image, video, and data editing tools. The majority of the older adult population still cannot fully experience the convenience and intelligence brought by digital technology.

Existing research indicates that effective social support is a crucial factor in digital media access and usage for the older adult population (Tsai, Shillai & Cotten, 2017). Among them, family support is the most feasible avenue for older adults to receive social support. Intergenerational interactions drive the proactive learning of digital media knowledge among older adults, encouraging their active participation and use of digital media. This enhances the utilization rate and capabilities of older adults in digital media usage (Hunsaker et al., 2019). Existing research has emphasized the significant role of family support in the media use of the elderly. However, there is a lack of studies investigating the mechanisms through which family support influences the media use behavior of the elderly. Does family support directly impact the digital media usage behavior of the elderly, or does it indirectly influence their digital media usage behavior through other mediating factors? The study uses the Theory of Planned Behavior as its research perspective. Through a questionnaire survey, it aims to empirically examine the relationship between family support and digital media usage behavior among elderly, and explore the mechanism by which family support influences the digital media usage behavior of elderly.

Literature Review

The Digital Media Usage Behavior of Elderly

Digital media usage behavior refers to the audience's information behavior, encompassing their utilization and acceptance of mass media.

It involves all activities that include collecting information, using information, and transmitting information (Vraga & Tully, 2021). From a historical perspective, each generational group has its unique upbringing environment and media exposure, leading to distinct characteristics in media usage behavior (Yu & Han, 2020). In the digital age, with the prevalence of digital media, elderly actively integrate into digital life. The most common activities they engage in on digital media platforms include information searching, covering topics like health, travel, traffic updates, stock market news, and more (Chou et al., 2013). With the widespread use of smartphones, elderly utilize social apps for daily chatting, checking or posting updates on social circles, handling life payments, mobile recharges, etc. Smartphones have become a crucial means of elderly's communication and social interaction. For many elderly, internet communication is not only a convenient way to connect but also a fashionable symbol (Tang & Liu, 2015).

Wang & Zhang (2022) found through interviews with urban elderly that their digital media usage behavior primarily involves virtual socializing, watching short videos, and obtaining information. The elderly engage in voice and video chats with peers through WeChat groups and share travel photos and videos, as well as health information links within the group. They remind friends to stay updated on their activities, considering likes, comments, and attention from friends in short video apps as a form of encouragement. The quantity of fans, likes, and comments to some extent represents the popularity of members in the social community and serves as a way for elderly to feel a sense of presence.

However, within the older adult population, influenced by individual diversity, differences in education level, psychological attitudes, economic status, and the degree of autonomous usage led to varying patterns of media contact and usage behavior (Yu & Liu, 2021). Older adult users' behavior on social networking sites (SNS) shows that there are significant differences in media participation. Older adult users with a focus on information dissemination and those who engage in massive followings are the most active. Users with moderate interaction levels and positive engagement tend to have the highest sustained participation. The more followers older adult users have, the longer their continued participation (Yu et al., 2018).

Marston et al. (2020) discovered in their survey that when elderly use digital media and engage in online communication, some participants are more active users of social media, while others exhibit more passive

behavior, and some individuals do not prefer to communicate with others through social media. Wang (2021) through a survey on the digital integration of elderly in Beijing, found that migrant elderly have a lower willingness to use digital technology and lower subjective knowledge about the internet compared to registered residents. The disadvantages in the ways and skills elderly use digital technology can lead to insufficient digital knowledge acquisition. Some elderly may not access relevant digital information or may have misconceptions about digitized public service information. The information filter bubble is created inadvertently during the process of seeking digital information, especially due to algorithmic recommendations, which can cause elderly to unintentionally filter information. This results in phenomena such as speechlessness and voicelessness when expressing social service needs and assessing social service performance (Liu & Ma, 2021).

Family Support for Elderly

Family support is when family members, neighbors, friends, etc., provide spiritual, material, informational, and other forms of support and assistance to an individual facing stress and difficulties. These forms of support and assistance can include informational guidance, emotional support, material aid, and suitable protection and comfort (Caplan, 1974). Family support is essential to meeting the basic needs of elderly. In China, a country that values filial piety, economic support, daily care, and emotional support for elderly primarily comes from the family. Many elderly receive support mainly from their adult children, and family support is a core force in their lives (Jiang, Han & Guo, 2023).
Subjective and objective support from family members, friends, neighbors, or others, forming an individual's social network that they can feel and perceive, represents material or emotional assistance from family members or individuals outside the family for vulnerable groups (Sun, Ji & Huang, 2022). Informal social support from family, friends, and neighbors follows a voluntary principle, lacking specific functions, formal social support norms, professional training, or the pursuit of economic returns. Support behaviors exhibit characteristics of uncertainty, with the relationship between the giver and receiver of support more often appearing as a personal connection between individuals (Fan, 2019).

In China's support system for the elderly, family members, especially spouses and children, play a primary role in providing informal support. Children, in particular, take the lead in providing care, emotional comfort, and economic support to elderly (Sun, 2017). When elderly live with their children, the latter not only offer daily care but also provide economic

and emotional support. The extent of emotional comfort and daily care significantly depends on the living arrangement, and expectations for emotional and practical support can, in turn, influence the living arrangement. There is a substitution effect between the economic support, daily care, and emotional comfort that children provide to their parents (An, 2019).

External social support significantly influences the media access and usage of elderly (Zhang & Fan, 2019). Individuals, especially in the early stages of media exposure, are more likely to use or enhance digital skills when they have higher levels of social support. Without effective social support, individuals cannot use digital devices, may not initiate usage, or lack the motivation to continue usage (Guo & Zhang, 2023). The family is the most viable avenue for elderly to receive social support, and familial encouragement has a more positive impact on their internet usage than professional course training (Friemel, 2016). Intergenerational interactions within the family can drive the proactive learning of digital media knowledge among elderly, encouraging their active participation, enhancing their digital media utilization, and increasing their digital media usage capabilities (Zhou & Lin, 2018). The assistance that elderly receive in digital media usage primarily comes from intergenerational support within the family. Effective digital intergenerational support within the family can, to some extent, increase the elderly's sense of security and happiness in using digital media. Intergenerational support plays a crucial role in alleviating and changing avoidance behaviors in elderly media usage (Gong, 2018).

Research Model and Hypothesis

With the development and widespread adoption of information technology, an increasing number of researchers are applying the Theory of Planned Behavior to the study of online information media usage behavior. Numerous studies have found that factors such as people's attitudes toward computers and their self-efficacy can influence computer usage behavior (Dhir, Kaur & Rajala, 2020). The Theory of Planned Behavior (TPB) is a social psychology theory used to explain and predict individual behavior. Ajzen (1985) developed TPB by incorporating perceived behavioral control variables into the Theory of Reasonable Action. TPB posits that an individual's behavior is directly influenced by behavioral intentions, which are determined by attitudes toward behavior, subjective norms, and perceived behavioral control.

Behavioral attitude refers to the degree to which an individual likes or dislikes the behavior and reacts to the behavior object. People generally tend to engage in behaviors that result in "good" outcomes and avoid behaviors that lead to "bad" outcomes (Fishbein & Ajzen, 1977). In general, behavioral attitudes have a direct impact on behavioral intentions. When an individual's attitude toward a behavior is more positive, their intention to engage in that behavior is higher. Conversely, when an individual's attitude toward a behavior is more negative, their intention to engage in that behavior is lower. Behavioral attitude is considered the most reliable variable in explaining behavioral intentions (Ajzen, 1991).

Subjective norm refers to the emotional recognition or rejection by significant others in an individual's social environment regarding behavior and the actor. It exerts a normative influence on the individual. Terry et al. (1999) found in their research that subjective norm had the weakest impact on behavioral intentions among all variables, only affecting intentions to a low extent. Therefore, in this study, it has not been included in the explanation framework.

Perceived behavioral control is an individual's judgment of their ability to control a specific behavior (Ajzen, 1991). Specifically, it is an individual's perception of the ease or difficulty of implementing a certain behavior based on factors such as the resources, opportunities, and capabilities they possess. Ajzen (1991) suggests that "perceived behavioral control" is similar to the concept of "self-efficacy," and their measurement methods are also similar. Perceived behavioral control can be replaced by self-efficacy. Self-efficacy refers to the belief in one's ability to successfully perform a specific behavior (Bandura, 1977). Under realistic conditions of perceived behavioral control, it can significantly help predict behavior (Ajzen, 1991).

However,the occurrence of a behavior depends not only on individual behavioral attitudes and self-efficacy but also on external non-motivational factors such as external resources (Peach et al., 2005). Ajzen (1991) suggested that exogenous variables, including demographic variables, life experiences, and economic conditions, ultimately influence behavior.

Based on this, the study starts by examining exogenous variables that influence the digital media usage behavior of elderly and explores how family support, as a crucial exogenous variable, impacts the digital media usage behavior of elderly. The study will investigate whether there

is a direct effect between family support and digital media usage behavior or if it exerts an indirect effect through two mediating variables: media attitudes and self-efficacy. The theoretical model is depicted in Figure 1.

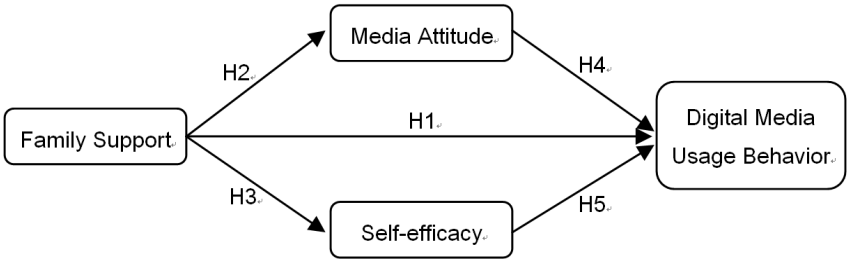

Figure 1: Theoretical model

The following shows the hypotheses of this study.
Hypothesis 1. Family support will have a direct effect on elderly media usage behavior.
Hypothesis 2. Family support will have a direct effect on elderly media usage attitude.
Hypothesis 3. Family support will have a direct effect on elderly self-efficacy.
Hypothesis 4. Media attitude will have a mediator effect on elderly family support and digital media usage behavior.
Hypothesis 5. Self-efficacy will have a mediator effect on elderly family support and digital media usage behavior.

Research Method

Sampling

This study primarily investigates the digital media usage behavior of elderly. Participants in the study are required to possess a certain level of digital skills. According to the statistics released by the China Internet Network Information Center in August 2023, the Internet penetration rate in China was 76.4%. Among them, Guangdong Province had an Internet penetration rate of 76.7%, which was almost the same as the national average. At the same time, the elderly aged 60 and above in Guangdong Province totaled 16.21 million, accounting for 16.1% of the province's total registered population. The proportion of elderly population in

Guangdong ranks at a moderate level among provinces nationwide. Based on this, the study sampled individuals aged 60 and above in Guangdong Province as the target population.

For sample size calculation, the study used the formula for sample size estimation given below (Krejcie & Morgan,1970; Bartlett, Kotrlik & Higgins, 2001). The formula and computation for sample size estimate were as follows:

$$n = \frac{(t)^2(p)(q)}{(d)^2}$$

n = the Cochran's sample size;

t2 = Where is the value for selected alpha level of 0.025 in each tail = 1.96 (the alpha level of 0.05 indicates the level of risk the researcher is willing to take that true margin of error may exceed the acceptable margin of error);

(p)(q) = Estimate of variance = 0.25; where (maximum possible proportion (0.5) x 1- maximum possible proportion (0.5) produces maximum possible sample size);

d = Acceptable margin of error for proportion being estimated = 0.05 (error researcher is willing to except).

$$n = \frac{(1.96)^2\,(0.5)(0.5)}{(0.5)^2}$$

n = 384

Due to the highly homogeneous nature of the elderly population and the influence of media-reported crime incidents and fraud news, elderly individuals generally exhibit a high level of vigilance in unfamiliar environments (Wu, et al., 2019). In order to reduce concerns about risk among surveyed elderly individuals and enhance the efficiency of the investigation, this study collaborated with community residents' committees in various districts of Guangdong Province. Community residents' committee staffs were commissioned to conduct online surveys using purposive sampling methods.

Measurement

Digital media usage behavior

"Digital media usage behavior" is the most crucial dependent variable in the theoretical framework of this study. In existing measurements of digital media usage behavior, the Media Technology Usage Attitude Scale (MTUAS) has been widely employed in research concerning individuals' attitudes, usage patterns, and perspectives on media technology. The scale encompasses various aspects of media technology, such as email, social media, online news, etc (Barton et al., 2021), and has been confirmed to possess high reliability and validity in extensive research. Sharifian (2021) used the MTUAS scale to measure the social media usage behavior of both elderly and young individuals, finding strong internal consistency across the entire sample (α=0.94). Furthermore, several studies utilizing the MTUAS have investigated samples from diverse cultures, including the United States, Turkey and Portugal, revealing the effectiveness and reliability of the MTUAS as an indicator for assessing social media usage patterns in these culturally diverse samples (Sigerson & Cheng, 2018).

In this study, the MTUAS measurement scale is used as a reference to comprehensively assess the digital media usage behavior of elderly in common forms of digital media usage. The measurement is conducted in three aspects: information reception behavior, information processing behavior, and information posting behavior. Eight items are selected as manifest variables reflecting the "digital media usage behavior" of elderly, including "I often check the personal information on my social media accounts", "When doing household chores or other activities, I often check the information received on my social media accounts", "I often browse the profiles and photos of friends on social media accounts", "I often read updates on friends' social media accounts", "I often comment on friends' social media posts", "I often like the status updates of friends", "I often post status updates on social media accounts" and "I often post photos or videos on social media accounts".

Family support

"Family support" is the independent variable in the theoretical framework of this study. In the existing conceptual framework in China, family support primarily refers to the assistance provided by family members (especially children) to elderly in terms of economic support, emotional support, and life care support. This includes support from offspring to

parents, support from elderly spouses, and support from grandchildren (Sun, Ji & Huang, 2022). In the measurement of family support for elderly in this study, the scale developed by Zimet et al. (1988). The family support dimension in this scale includes four items. Chinese researchers have verified its high reliability in various population groups, with Cronbach's alpha of 0.854 (Wu et al., 2022). Drawing upon this scale, the study incorporates the following four items as manifest variables reflecting "family support", including "My family can genuinely provide me with real help", "I can receive emotional help and support from my family when needed", "I can discuss my problems with my family" and "My family is willing to assist me in making various decisions".

Media attitude

"Media attitude" is the first mediating variable in the theoretical framework of this study. Referring to the Brief Version of the Senior Technology Acceptance Model (STAM) developed by Chen & Lou (2020), Cronbach's alpha reliability and composite reliability of each component scale in the brief version are both above 0.80, indicating good internal consistency. Four items were selected as manifest variables reflecting "media attitude", including "I think digital media is useful in daily life", "I believe using digital media can improve efficiency in life" and "I enjoy using digital media".

Self-efficacy

"Self-efficacy" is the subjective assessment of an individual's belief in their ability to accomplish a specific task. It serves as the second mediating variable in the theoretical framework of this study. In the measurement of "self-efficacy", scholars commonly use the General Self-Efficacy Scale (GSES) to assess an individual's self-efficacy beliefs. Developed by Matthias Jerusalem and Ralf Schwarzer in 1979, the scale consists of 10 items designed to measure an individual's perceived ability to cope with challenging situations. GSES has demonstrated high reliability and validity across various populations and cultures (Yudhistira et al., 2021). Therefore, this study adopts the widely used GSES to measure self-efficacy in elderly, including "If I do my best, I can always solve problems", "Even when faced with opposition, I still find ways to achieve what I want", "For me, persisting with ideals and achieving goals is effortless", "I am confident in effectively handling any unexpected situation", "With my intelligence, I am certain that I can cope with unexpected situations", "If I put in the necessary effort, I can definitely

solve most problems", "I can calmly face difficulties because I trust in my ability to handle problems", "When faced with a difficult problem, I usually come up with several coping strategies", "When I encounter trouble, I usually come up with some coping strategies", "No matter what happens to me, I can handle it with ease".

Data Collection Produce

Upon accessing the survey, the first item the respondent encountered was information about the research and an informed consent form. After agreeing to the consent, respondents were prompted to answer the question "What is your age?" Only respondents who are 60 years old and above were invited to proceed with the survey, thus identifying the survey's target population.

Meanwhile, before the questionnaire was distributed, certain measurement items were deliberately designed as reverse-scored questions and incorporated among numerous positively worded statements. For instance, "I never browse the profiles and photos of friends on social media accounts", "I never read updates on friends' social media accounts" etc. If there were significant discrepancies in the response logic between reverse-scored and positively worded questions in the collected questionnaires, it indicates careless responding by the survey participants, suggesting poor questionnaire authenticity. Such sample data will not be retained.

The survey targeted smartphone users aged 60 and above in Guangdong province. The data collection took place in September 2023, spanning one month. Researchers manually examined and screened the collected questionnaires, excluding samples with less than 1 minute response time and those suspected of random responses. And excluding cases where there are significant discrepancies in response logic between reverse-scored and forward-scored items on the questionnaire. In the end, 416 valid samples were obtained.

Data Analysis Method

In current research on social science impact relationships, the majority often employs the linear regression analysis method. This involves testing the direction and magnitude of the independent variable's impact on the dependent variable while controlling for certain variables. This method is relatively straightforward, and the results are easy to interpret, assisting researchers in discovering and testing relationships between

variables that are not easily observed directly (Ma & Lu, 2019). However, linear regression analysis cannot conduct multiple causal analyses on a multivariate linear regression model, and it cannot test a situation where a variable serves both as a dependent and independent variable in a simple regression model. Therefore, this study adopts the structural equation modeling (SEM) approach for analysis, which can better overcome the limitations of general linear regression analysis methods (Wu, 2009). In the research process, key variables such as digital media usage behavior, media attitude, self-efficacy, and family support are treated as latent variables that cannot be directly observed. Multiple indicators from the questionnaire are selected as manifest variables reflecting these latent variables, and causal relationships between latent variables are examined through path analysis.

Results

Sample Profile

Out of the 416 valid samples, 40.4% were male, and 59.6% were female. As the age of the older adult participants increased, their engagement in social activities decreased. In the sample data of this study, the majority ofolder adult individuals were in the age range of 60-69 years, with those aged 70 and above accounting for only 25%. Additionally, due to the slow economic and social development in China during the 1960s, people generally had lower levels of education. Therefore, respondents in this study were mainly concentrated at the primary and junior high school education levels, with only 7.7% having received higher education. As shown in Table 1.

Table 1: Demographics of respondents (n=416)

Demographics	Frequency	Percentage(%)
Sex		
Male	168	40.4
Female	248	59.6
Age		
60-69	312	75
70-79	82	19.7
80 and above	22	5.3
Education Level		
No Formal Education	37	8.9
Primary school	139	33.4
Junior High School	127	30.5

High School	81	19.5
College	32	7.7

Reliability and Validity of the Measurement Model

Reliability typically refers to the internal consistency of a scale, often assessed using Cronbach's α. In this study, the Cronbach's α coefficients for each measurement scale ranged from 0.893 to 0.953, all exceeding 0.8, indicating good internal consistency of the scales. Convergent validity involves verifying each measurement model through confirmatory factor analysis. Some scholars have pointed out that poor fit of the measurement model can lead to erroneous results. Therefore, it is essential to conduct confirmatory factor analysis on the fit of each measurement model before establishing the structural model (Segars, 1997). Using AMOS 26.0 for confirmatory factor analysis, the fit of the measurement models for family support, media attitudes, self-efficacy, and media behavior was satisfactory.

Regarding convergent validity, according to the three evaluation criteria proposed by Hair et al. (2010), Average Variance Extracted (AVE) > 0.5, standardized factor loadings should be > 0.5, Composite Reliability (CR) > 0.7. In this study, factor loadings for each item ranged from 0.691 to 0.920, AVE for each latent variable ranged from 0.671 to 0.781, CR ranged from 0.903 to 0.964. All these indicators meet the requirements, indicating good convergent validity of the measurement scales in this study, as shown in Table 2.

Table 2: Results of Reliability and Convergent Validity

Items	Cronbach's Alpha	CR	AVE	Factor Loading
Family Support	0.928	0.934	0.781	
	My family can genuinely provide me with real help			0.880
	I can receive emotional help and support from my family			0.893
	I can discuss my problems with my family			0.875
	My family is willing to assist me in making various decisions			0.886
Self-efficacy	0.953	0.964	0.729	
	If I do my best, I can always solve problems			0.691
	When faced with opposition, I still find ways to achieve			0.797

	Persisting with ideals and achieving goals is effortless			0.846
	I am confident in effectively handling any unexpected situation			0.891
	I am certain that I can cope with unexpected situations			0.901
	I can definitely solve most problems			0.901
	I can calmly face difficulties			0.904
	I usually come up with several coping strategies			0.862
	I usually come up with some coping strategies			0.857
	No matter what happens to me, I can handle it with ease			0.864
Media Attitude	0.893	0.903	0.757	
	I think digital media is useful in daily life			0.890
	I believe using digital media can improve efficiency in life			0.920
	I enjoy using digital media			0.796
Media Behavior	0.933	0.924	0.671	
	I often check the personal information on my social media			0.814
	I often browse the profiles and photos of friends on social media			0.912
	I often comment on friends' social media posts			0.855
	I often like the status updates of friends			0.81
	I often post status updates on social media			0.764
	I often post photos or videos on social media			0.747

In terms of discriminant validity, Hair et al. (2010) argued that discriminant validity is established when the square root of the average variance extracted (AVE) of each factor is greater than the correlation between that latent variable and other latent variables. In this study, the square root of the AVE for each latent variable ranged from 0.819 to 0.869, which is higher than the correlation between latent variables. Therefore, it is considered that the scale used in this study exhibits good discriminant validity, as shown in Table 3.

Table 3: Results of Discriminant Validity

	AVE	Family Support	Self-efficacy	Media Attitude	Media Behavior
Family Support	0.781	**0.884**			
Self-efficacy	0.729	0.204	**0.854**		
Media Attitude	0.757	0.429	0.097	**0.870**	
Media Behavior	0.671	0.314	0.364	0.523	**0.819**

Structural Model Validation

Multicollinearity between each of the endogenous variables should be confirmed absent prior to SEM analysis (Cassel, Hackl & Westlund, 1999). This can be shown by checking variance inflation factors (VIF) statistics. All VIF values of the model should be lower than 5 (Martínez-Navalón, Gelashvili & Debasa, 2019). Inner VIF of the model were as follows: organizational support 2.244; family support 2.199; self-efficacy 1.053; media attitude 1.219. All VIF values were not greater than 5, as shown in table 4.

Table 4: Results of Multicollinearity Test

Model		B	Std. Error	Beta	t	sig	Tolerance	VIF
1	(Constant)	-0.486	0.336		-1.448	0.148		
	Family Support	-0.071	0.077	-0.055	-0.916	0.360	0.455	2.199
	Self-efficacy	0.335	0.054	0.259	6.204	0.000	0.949	1.053
	Media Attitude	0.492	0.056	0.395	8.778	0.000	0.820	1.219

a. Dependent Variable: Media Behavior

To assess whether the model is supported by the research sample data, that is, the fit between the research sample data and the theoretical model. Through AMOS 26.0 software for structural equation modeling, with family support as the independent variable, media behavior as the dependent variable, and media attitude and self-efficacy as the mediating variables, the results show that the model fit indices are

CMIN/DF = 2.359, TLI = 0.955, NFI = 0.935, RFI = 0.924, IFI = 0.961, CFI = 0.961, RMSEA = 0.057. According to the structural equation model fit indices, the comprehensive analysis of these indicators that the model fit is substandard, the model need further refinement, as shown in Table 5.

Table 5: Results of Structural Model Fit

Item	CMIN/DF	GFI	AGFI	NFI	IFI	CFI	RMSEA
Result	5.624	0.770	0.718	0.868	0.889	0.889	0.106
Fitting Standard	<5.00	>0.80	>0.80	>0.90	>0.90	>0.90	≤0.08

By adjusting modification indices, the model is refined. As indicated by the modification indices, the modification index between e7 and e8 is 209.088, which is the largest modification index within the fitted model. This suggests that adding a path of correlation between e7 and e8 would significantly reduce the chi-square value of the fitted model. Therefore, considering adding a correlation path between e7 and e8 is warranted. Subsequently, the model is refitted, and the process of identifying the largest modification index within the fitted model is repeated. Additional residual correlation paths between the two are then added accordingly. This iterative process continues until the fit indices of the model meet the specified reference values. The refined model is illustrated in Figure 2.

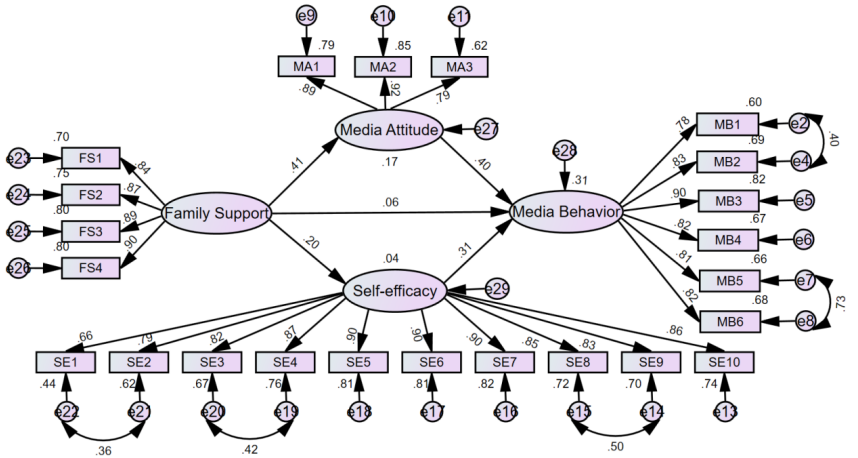

Figure 2: Structure Model

After making modifications to the structural model, it is necessary to reassess the fit between the sample data and the theoretical model. The analysis results obtained through the AMOS 26.0 statistical software are presented in Table 6 as follows.

Table 6: Corrective Fit Index of Structural Model

Item	CMIN/ DF	GFI	AGFI	NFI	IFI	CFI	RMSE A
Result	3.229	0.872	0.839	0.926	0.948	0.948	0.073
Fitting Standard	<5.00	>0.80	>0.80	>0.90	>0.90	>0.90	≤0.08

Correlation Analysis

Through exploratory analysis using Pearson correlation analysis, the relationships among various variables were examined. As indicated in Table 2, the results show significant correlations among all variables, and all correlations are statistically significant at the 99% confidence level. The correlation coefficients (r) for all variables are greater than 0.

In Table 7, Media attitude was strongly correlated with digital media usage behavior, with a correlation coefficient of 0.602 (P < 0.01); Self-efficacy was strongly correlated with digital media usage behavior, with a correlation coefficient of 0.362 (P < 0.01); Family support was strongly correlated with digital media usage behavior, with a correlation coefficient of 0.266 (P < 0.01). Family support was strongly correlated with media attitude, with a correlation coefficient of 0.389 (P < 0.01), and it was also strongly correlated with self-efficacy, with a correlation coefficient of 0.181 (P < 0.01).

Table 7: Pearson Correlation Analysis among Variables

Variable	Digital Media Usage Behavior	Media Attitude	Self-efficacy	Family Support
Digital Media Usage Behavior	1			
Media Attitude	.602**	1		
Self-efficacy	.362**	.244**	1	
Family Support	.266**	.389**	.181**	1

**0.01 (two-tailed), the correlation is significant.

Overall, it can be concluded that there are significant positive correlations between digital media usage behavior, media attitude, self-efficacy, and family support. This aligns with the emphasized relationships between attitude, self-efficacy, and behavior in the Theory of Planned Behavior, as well as the established connections in existing research between media attitude, self-efficacy, and digital media usage behavior. The research findings regarding the relationship between family support and digital media usage behavior are generally consistent with previous studies.

Hypotheses Test

Through an analysis of the path coefficients in the model, it was found that family support (β=0.064, SE=0.059, P>0.05) did not predict digital media usage behavior, thus hypothesis 1was not accepted. Family support positively predicted media attitude (β=0.410, SE=0.049, P<0.001), the hypothesis 2 was accepted. At the same time, family support could also predicted self-efficacy (β=0.201, SE=0.067, P<0.001), the hypothesis 3 was accepted, as shown in table 8.

Table 8: Structural Model Path Coefficient

Item	*β*	B	S.E	C.R	*P*
Digital Media Usage Behavior < Family Support	0.064	0.074	0.059	1.253	0.210
Madia Attitude < Family Support	0.410	0.389	0.049	7.995	***
Self-efficacy < Family Support	0.201	0.207	0.053	3.909	***
Digital Media Usage Behavior < Media Attitude	0.401	0.487	0.067	7.233	***
Digital Media Usage Behavior < Self-efficacy	0.314	0.352	0.054	6.499	***

** P<0.05,** P<0.01,***P<0.001*.

To test the mediator effects, 2000 bootstrap resamples were iteratively taken using the Bootstrap procedure in AMOS 26.0 software. The significance and effect size of the mediating effects in the research model were examined through a 95% confidence interval (CI) test, as shown in Table 9.

Table 9: Mediator Effect Test

Item	Estimate	*P*	Bias-corrected 95% CI	
			Lower	Upper
Digital Media Usage Behavior < Media Attitude < Family Support	0.190	0.001	0.112	0.300
Digital Media Usage Behavior < Self-efficacy < Family Support	0.073	0.002	0.019	0.155

Table 5 shows that the mediating effects of media attitudes and self-efficacy were found to be significant, with average indirect effects falling within the confidence interval range. Digital media usage behavior <media attitude <family support's estimate was 0.190 (95% CI= [0.112, 0.300]), digital media usage behavior <self-efficacy<family support's estimate was 0.073 (95% CI= [0.019, 0.155]). Therefore, the hypothesis 4 and hypothesis 5 were supported.

Conclusion

This study analyzed survey data on elderly family support and digital media usage behavior, revealing significant positive correlations among elderly family support, media attitudes, self-efficacy, and media behavior. The findings showed significant positive correlations between family support and elderly individuals' media attitudes, media behavior, and self-efficacy, indicating that family support plays a crucial role in elderly media usage (Kohir & Sulastri, 2021). This suggests that the family environment positively influences elderly media attitudes, media behavior, and self-efficacy.

Further analysis through structural equation modeling revealed that family support did not directly predict digital media usage behavior among the elderly. However, family support positively predicted media attitude and self-efficacy among the elderly. Additionally, the elderly's media attitude and self-efficacy mediated the relationship between family support and digital media usage behavior. This finding underscores the importance of family support in influencing psychological factors, such as attitude and self-efficacy, which ultimately impact digital media usage behavior among the elderly. Family support indirectly influences digital media usage behavior by shaping attitudes and beliefs about media and one's abilities to use it effectively (Bonnes, 2020; Ugalde, Acosta & Carvallo, 2023). Therefore, interventions aimed at promoting positive digital media usage behavior among the elderly may benefit from targeting not only family support but also enhancing media attitudes and self-efficacy.

Discussion

In the process of media use among elderly, the family often serves as the most important and direct source of support available to them (Kendig, 2023). During the initial stages of elderly engagement with digital media, economic support from the family forms the foundation for their digital media usage. This support involves helping elderly purchase user-friendly digital devices, covering data costs, acquiring digital subscription services, antivirus software, anti-fraud applications, etc. This assistance aims to alleviate various concerns associated with elderly media use, enhancing their overall user experience (Zhang & Xie, 2022).

Simultaneously, family members contribute to elderly media literacy by providing technical support through hands-on demonstrations, practical guidance, and problem-solving(Guo & Zhang, 2023). This guidance can help elderly become familiar with and master relevant skills, addressing potential issues encountered during media use. The approach is beneficial in boosting elderly media self-efficacy, enabling them to actively engage in online social activities, maintain social connections, and access necessary information (Tang et al., 2022).

During shared daily media activities with elderly, family members can provide emotional support by sharing useful information related to media use, including practical applications, new digital services, and interesting content (Xiong & Zou, 2019. This sharing aims to ignite and sustain elderly enthusiasm for media technology. Through verbal encouragement and positive feedback (Ashida et al., 2019), family members can enhance elderly confidence in media use, making it more likely for them to adopt a positive attitude towards and embrace these technologies.

Under the influence of family support, elderly can develop positive media attitudes and a sense of self-efficacy, enabling them to adapt to and make better use of digital media tools for establishing and maintaining social connections. This support helps them navigate the challenges of digital living and enjoy the convenience and intelligence offered by modern digital technologies.

Research ethics.

The respondents in this study have provided informed consent.

The study was approved by the Research Ethics Committee of Universiti Teknologi MARA Protocol Code: REC09/2023 (PG/ MR/ 348) (approval date: 15 September 2023

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