Intergenerational Differences in Health Information-Sharing Behavior: An Experimental Study on the Mediation of PAD Emotional Structure and the Moderation of Risk Framework

健康信息分享行为的代际差异：一项基于情感结构的实验研究

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Abstract

Family is the basic unit of society and is usually where the communication of health information starts. Thus, intergenerational communication and persuasion of about health information has been an important topic in the field of health communication. This study examines intergenerational differences in health communication and explores the causes of these differences from the perspective of the structure of feeling. An interaction experiment shows that generational differences, as a single physical connection, may not be the only cause of the audience's emotional structure; rather, a dual social connection consisting of both intergenerational differences and the information framework may be the primary cause. The emotions of pleasure and dominance play intermediary roles between generational difference and users' behavior of sharing health information. However, the degree of arousal is not an efficient intermediary. By understanding the cognitive path of microbehaviors and providing empirical evidence, this study hopes to reduce "inefficient public information" in intergenerational health communication and to facilitate more precise communication.

摘要:

家庭是社会的基本单元，通常也是健康类信息传播活动的起点，代际之间的健康信息传播与说服研究成为健康传播研究领域的重要话题。本研究从情感结构的角度出发，寻求健康传播的人际交流中的代际差异表象及原因，通过交互实验发现：影响受众的情感结构的要素可能不仅源于代际差异这样的单一生理性联结，更重要的是源于代际差异和信息框架的双重社会性联结；愉悦度和优势度情感在代际差异与用户的健康信息分享行为间发挥着积极的中介作用，而唤醒度情感的强弱却不能构成有效的中介桥梁。本研究希望通过了解受众微观行为的认知路径，并加以实证支持，减少健康传播中因代际传播造成的传播效果飞沫化，为实现传播的精准化提供有力支撑。

Key Words

Health Communication, Generational Difference, PAD Model, Risk Framework

关键词:

健康传播、代际差异、愉悦-唤醒-优势（PAD）三维情感模型、风险框架

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I. Introduction

Health topics have increasingly occupied newspapers, TV and social media, and the progress of internet technology has changed people's daily life from "offline" to "online". Information on health and maintaining good health has been important to middle-aged and elderly people in China (Gong, 2018). Compared with middle-aged people’s broad understanding of health risks, the younger group shows an intergenerational extension of the information-sharing gap. Based on this communication phenomenon, this study aims to discuss the specific differences in health-sharing behavior between different generations and the factors that cause these differences. We propose a research framework to understand the influencing factors of health information-sharing among different generations to lay a foundation for further relevant academic research.

II. Literature review

Overall, the theme of intergenerational differences in health information sharing behavior remains relatively limited in the scope of communication studies. Foreign research has pioneered relevant interdisciplinary thinking, recognizing the potential impact of generational information upbringing on internet health information sharing behavior and revealing intergenerational differences as a direct determinant of audience health information sharing behavior. For example, Marjolijin (2013), based on group attributes, integrated generational differences into experimental groups, defining young and old groups based on information attributes rather than just age differences, and found that intergenerational differences can well explain differences in audience health behavior. Smith (2019) focused on intergenerational differences in the family communication environment, concluding that

intergenerational differences between parents and children lead to variations in willingness to share disease information and crisis handling abilities.

Currently, domestic empirical research does not treat intergenerational differences as a standalone research variable but rather explains differences in health information dissemination within generations through age differences at the demographic level. For instance, Jin Xiaoling (2017) validated the significant role of age in the dissemination of health information in WeChat Moments, noting that age amplifies audience risk sensitivity, resulting in a unidirectional pattern of information sharing by older individuals in Moments and recognizing the prominent role of middle-aged and elderly audiences in health information sharing patterns (Zhou Tao, 2019). In a study on information sharing behavior among users of online health communities, age was found to have a positive impact on users' information sharing behavior, highlighting age as the most crucial demographic variable influencing health information sharing behavior.

Existing research in China indicates that the demographic variable of age at the population level plays a significant role in audience health information sharing behavior. However, there are several shortcomings in current research. First, some studies overlook differential effects among different groups. Previous studies often treated the sample respondents as a whole, analyzing only the overall impact of age on health information sharing behavior. This analytical approach assumes that age differences in health risk perception are homogeneous across all groups, ignoring significant intergenerational differences due to factors such as growth experiences and living environments. Therefore, it is crucial to examine differential effects among different generational groups on health information sharing behavior in addition to clarifying the overall effects of age. Second, in the limited empirical studies focusing on intergenerational differences, attention to the mechanisms through which intergenerational differences affect health information sharing behavior is insufficient, and a credible research model has yet to be established.

One critical factor to consider when examining intergenerational differences in health information sharing behavior is the nature of health information itself. In the era of the Internet, where information channels are diverse, the concept of health has evolved from a singular to a complex nature, no longer targeted at a specific aspect but linked to more complex and diverse levels. In this information

environment, the framing of health information becomes more complex. Information framing is a common perspective used by communication scholars to analyze information stimuli and often serves as a moderating variable in studying audience information behavior (Milkman (2014), Lou Hu (2018)). When different attributes of information framing interact with the health context, complex persuasive effects occur (Yang Yingxin, 2013). Tang Zhiwei (2015) confirmed the combined impact of information framing effects and external representations of information on netizens' health behavior decisions. Liu Cai (2019) demonstrated the alignment between information risk framing and risk attitudes among residents in suburban Tianjin, incorporating information framing as a moderating factor into the impact model of Hepatitis B vaccine vaccination behavior. Framing not only highlights differences in how information is organized and key points are presented but also is an essential factor that can indirectly influence audience emotions. Ghanem (1997) pointed out that besides setting details in content, frames also serve as a metaphor, and emotional aspects should not be ignored in frame research. Frames are a dominant attribute of information, including themes, directions, and emotions, which are corresponding and compatible within the same frame. Ghanem found the basic dimensions of emotional attributes in news frames, distinguishing between frames with positive and negative emotional tendencies and those with neutral emotional tendencies. The discovery of emotion in frame attributes has led to a new direction in research, and communication pioneer McCombs (2007) affirmed the importance of emotion as a specific attribute in future frame research. Subsequently, the framing process of emotion (framing) and the framing effect it induces have also gained attention in academia. Dennis (2007) confirmed that audiences have pre-existing "emotion frames" when receiving information, resulting in preferences for specific emotional attributes on certain issues. Mossna (2017) proposed an emotion-inspired perspective, suggesting that individuals' emotional states intervene in their judgment process when facing new information. Therefore, when trying to persuade others, changing someone's knowledge frame may be less effective than changing their emotional frame. These findings are reflected in numerous cases in the real communication ecology. For example, in China, viral articles created by self-media such as "Mimeng" and "Ergeng" triggered a frenzy of sharing, demonstrating the crucial role of emotion as a core attribute in the framing set by communicators and confirming the promoting effect of information with emotional enhancement on audience sharing behavior. Some studies have also shown

that the interaction effects between the emotional attributes presented in media frames and the personal emotional frames of the audience exhibit significant intergenerational differences, with the older generation showing significantly higher empathy for emotional attributes than the younger generation (Fang Shishi, 2014). In the specific context of health, it is a further question of whether there are intergenerational differences in the acceptance and selection of themes and emotional attributes in health information sharing behavior among audiences who have grown up in different information environments. Therefore, in refining the model that influences audience health information sharing behavior, it is essential to introduce the inherent framing elements of information as a moderating variable.

Beyond the impact of emotional attributes in media framing on the framing of audience emotional structures, emotion is also a powerful perspective for explaining audience behavior. In the analysis of factors influencing audience health information sharing behavior, some scholars emphasize the crucial role of emotion in explaining audience behavior (Nahil, 2004; Jin Xiaoling, 2017; Wang Wentao, 2018; Zhang Min, 2019). This has shifted the traditional research model of health communication from the "knowledge-attitude-behavior" paradigm to a new interdisciplinary perspective that incorporates emotion, forming a cognitive-affective-conative (CAC) model in the field of cognitive psychology (Davis, 1989), supporting the close relationship between emotion and behavior. Emotion is a significant form of response that triggers differences in audience behavior because different objects of emotional change manifest distinct emotional responses, leading to different subsequent effects on audience information behavior. Therefore, the emotional structure is an essential relational variable that cannot be ignored. Studies by NAIL (2005), Chen Hao (2016), Zhang Kun (2020), among others, have also found that the rich emotions of the audience can serve as an intermediary bridge between cognition and behavior, and audience information behavior can be realized through the intermediary variable of emotion. As a variable that can both incorporate the emotional attributes of media frames and influence audience behavior, the emotional structure can form a mutually reinforcing effect with the moderating variable of media frames, ensuring a high explanatory power for the dependent variable. However, current research is relatively fragmented. As mentioned earlier, most research conclusions only point to intergenerational differences in the emotional arousal of users or the significance of emotion as a

significant factor explaining differences in user sharing behavior. While advancementshave been made in both pre- and post-research in communication studies, a comprehensive intermediary impact path has yet to be constructed. Whether intergenerational audiences can interpret significantly different sharing behaviors through the differences in their emotional structures when reading health information remains unverified. However, this question is particularly meaningful in today's media landscape, where emotional attributes are increasingly emphasized in information framing. By establishing a new intermediary path with emotion as the core, this study aims to explore common factors in explaining intergenerational sharing behavior and apply them to the framing of health information, providing valuable insights into breaking down the generational silos in the dissemination of health information.

In summary, the core theme of this paper is to comparatively analyze the intergenerational differences in personalized health information sharing behavior based on emotional structures under the stimulation of different health risk frames. In an era where media technology continuously fosters a sense of shared time and space in the network age, the differences in information backgrounds brought by different generations and the synergistic effects generated by information framing touch the inner feelings of the audience at the emotional communication level. Emotion possesses a strong immersive driving force, leading the audience to engage in information sharing behavior catalyzed by emotional stimuli. Building upon the review of existing research and the clarification of relationships between key variables, this paper establishes an intermediary model around four critical variables: intergenerational differences (independent variable), information framing (moderating variable), emotional structure (intermediary variable), and audience information sharing behavior (dependent variable) (see Figure 1). The following sections will provide specific explanations for these key variables and articulate the basic hypotheses based on this model.

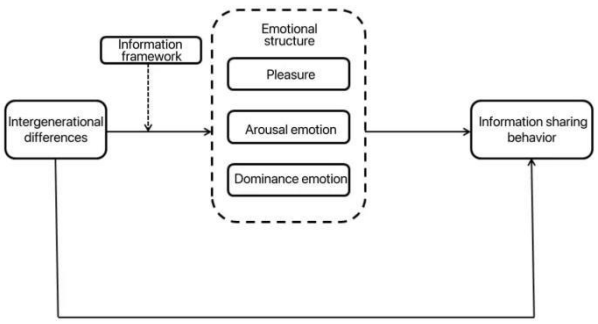

Figure 1: The model studied in this article

(a) Intergenerational differences

Intergenerational does not refer only to birth groups divided according to age but also to the result of the joint action of age effects. The theory of intergenerational differences was first proposed by the German sociologist Karl Mannheim in the 1950s (Sheng, 2019). Middle-aged and older people who grew up in the paper media age and teenagers who grew up in the electronic age naturally have differences in social positions, and intergenerational differences inevitably become the constituent elements of behavioral differences (Zhao, 2019).

(b) Media Framework of Health Information

Research on the influence of the information framework on audience psychology originated from the framework effect verified by Kahneman and Tversky in an experimental study on Asian diseases in 1981. Risk is one of the topics in which health information is often constructed, and scholars have introduced the decision-making attitude of risk preferences into the classification of framework types (Scherr et al. 2019). This classification divides the risk framework into three basic types: risk seeking, risk neutrality and risk avoidance (Cao, 2019). The risk-seeking framework, which emphasizes the potential negative consequences of risks, involves negative emotion; the risk-aversion framework, which attaches importance to the consequences of risks and actively maintains them, involves positive emotion; and the scientific noninductive narrative of the risk-neutral framework involves neutral emotion. The research on health risks in this study is based on the above three frameworks. The most promising health behavior change interventions in the future should be personalized, interactive, and appropriate to the individual's information stage (Prochaska, 1997).

(c) Emotional structure

Emotion and information structure have an isomorphic relationship (Jiang, 2017), and there are similarities and sensibilities between the change in information structure and the audience's different emotional experiences. The interaction between emotion and cognition makes the framing effect better reflect the audience's emotion, thus providing a new perspective for the study of intergenerational health risk perception.

In 1954, Raymond Williams first used the phrase "structure of feeling" to describe the

emotional state of the audience as a tool to analyze the relationship between individuals and social changes (Li, 2015). This study does not use the simple dimensions of positive, neutral and negative when measuring the audience's emotional structure but seeks a more detailed classification of emotional structure on this basis. To ensure the internal validity of the measurement and further refine the explanatory factors, the research adopts the same definition of emotion as the PAD three-dimensional emotion model (Williams, Mehrabian & Russell, 1974) (Figure 2), which has been affirmed by empirical research with regard to the scientific division of emotion into pleasure, arousal and dominance. The deepening and refinement of emotional structure measurement at the micro level makes the PAD scale a common way to measure emotional response. The PAD scale has been frequently utilized in emotion research. The coefficients of internal consistency of pleasure, arousal and dominance were 0.85, 0.58 and 0.72, respectively, and the correlation between each item and its dimensions ranged from 0.641 to 0.872. The fitting indices of the three-factor model were all ideal, and the chi-square degree of freedom ratio was less than 3. In addition, using the three dimensions of the PAD emotion scale can effectively express positive (+ P, + A, + D) and negative (-P, + A, -D) emotion classification, and it is more systematic than positive and negative standard measurement methods.

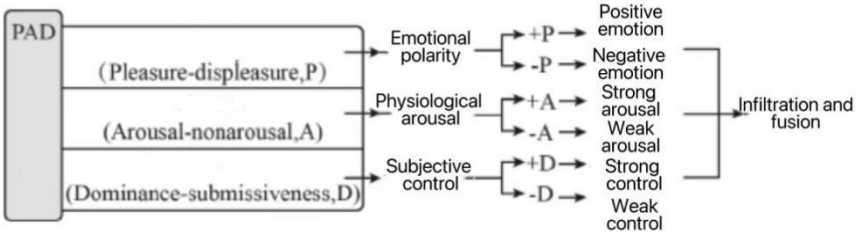

Figure 2: Illustration of the PAD 3-D Affection Scale (Mehrabian & Russell, 1974)

P (pleasure) represents the emotion of pleasure, which is the high-pitched emotional state when consumers' psychological expectations reach saturation and satisfaction. Pleasure is divided into positive and negative levels, where negative emotions include low emotions such as worry, boredom and sadness, while positive emotions include high emotions such as happiness and joy. A (arousal) represents emotional arousal, which refers to individuals' continuous level change from depressed emotions to excited states, that is, the degree to which the audience is stimulated and active. Arousal emotion is also

divided into two levels: strong and weak. The weak arousal state includes quiet, peaceful, absent-minded and other gentle states with low ups and downs, while the strong arousal state includes a high fluctuation consumption state, such as excitement, surprise and concentration. D (dominance) represents the emotion of dominance, which mainly explains the individual's control over his or her own situation. Dominance is also divided into two levels, low and high. Low dominance includes negative emotional states such as doubt and disappointment, while high dominance includes positive emotional states such as belief, satisfaction and carelessness.

(d) Research hypotheses

Based on the above conceptual analysis and literature review, this paper mainly addresses two key questions.

The first problem mainly focuses on the relationship between independent variables, regulatory variables and intermediary variables. The shaping and stimulation of emotion is a comprehensive process, and the final emotional state differs when it is shaped by different prerequisites (Guo, 2009). The overlap of intergenerational differences and different levels of risk framework has complex links to the audience's emotional structure and leads to various emotional changes, so it is necessary to analyze many possibilities of emotional orientation under different combinations of variables, including the influence of the three frameworks on the audience's potential emotional preferences (Xu, 2011). The harmfulness and challenge of risk-seeking information may not only cause the audience to fall into panic and depression but also stimulate the desire for challenge. However, the targeted countermeasures of risk-aversion information are more likely to arouse the hope of the audience and induce positive emotions. Because of the bidirectional and abundant information, the risk-neutral framework is a more peaceful type of emotional stimulation. According to the duality of intergenerational differences and the risk framework effect, this study proposes the following hypotheses:

H1: Different information risk frameworks will affect the differences in pleasure among different generations.

H2: Different information risk frameworks will affect the differences in arousal among different generations.

H3: Different information risk frameworks will affect the differences in dominance among different generations.

The second question is based on exploring the influence of intergenerational differences and information frameworks on audiences' emotional structure and extends to the study of audiences' health information-sharing behavior; that is, it can verify the intermediary model of the article. The multidimensional composition of emotional structure also determines the division of its functions. Emotional pleasure, arousal and dominance create different intermediary bridges (Lien, 2016). These three dimensions of emotion have the potential to transform behavior by exploring the parallel intermediary relationship between intergenerational differences and audiences' health information-sharing behaviors. Therefore, this study proposes the following hypotheses:

H4: In the context of health communication, pleasure plays an intermediary role in intergenerational differences and audiences' information-sharing behavior.

H5: In the context of health communication, arousal plays an intermediary role in intergenerational differences and audiences' information-sharing behavior.

H6: In the context of health communication, dominance plays an intermediary role in intergenerational differences and audiences' information-sharing behavior.

III. Experimental design and variable measurement

(a) Experimental design

This study was a 2 × 3 intergroup experiment with two factors and adopted the experimental design of intergenerational difference (offspring vs. parent) × risk framework type (risk-seeking framework vs. risk-neutral framework vs. risk-aversion framework). The experiment was conducted in a parallel class randomly selected from a high school in Henan Province. The parents of the students in this class were invited to participate in the experiment. A total of 116 subjects were recruited. The age range of all offspring in the experiment was 17~19 years old, and the age range of all parents in the experiment was 42~50 years old. There were three experimental groups, and the subjects were evenly distributed in different experimental groups according to the ratio of parents to offspring (1:1) in the form of a random number table. The specific experimental scheme is shown in Table 1.

Table1: Experimental design presentation table

	Experimental Group 1	Experimental Group 2	Experimental Group 3
	Risk-seeking	Risk-neutral	Risk-aversion

		framework	framework	framework
Intergenerational differences	Progeny	19 persons (9 males and 10 females)	19 persons (10 males and 9 females)	20 persons (10 men and 10 women)
	Parental generation	19 persons (9 males and 10 females)	19 persons (9 males and 10 females)	20 persons (10 men and 10 women)

To ensure the readability of the experimental materials and the closeness to reality, all the materials were selected from the existing WeChat push with a reading volume of 100,000 plus health. Starting with real, common health problems that are encountered by different generations, the reading topic of "sedentary injury" was determined. After three experimenters read and measured the information framework of the article, three pushes unanimously recognized by the three experimenters were identified as the experimental materials.

(b) Variable measurement

Intergenerational differences and risk frameworks were the manipulation variables of the experiment. Offspring were recorded as 0, and parents were recorded as 1. The subjects who read the risk-seeking framework were recorded as 0, the subjects who read the risk-neutral framework were recorded as 1, and the subjects who read the risk-aversion framework were recorded as 2.

All dimensions of emotion measurement refer to the Mehrabian (1974) maturity scale, and some refer to the expression of the simplified Chinese PAD scale (Li et al., 2008). Considering the differences between psychology and communication, some items were adapted for health communication scenarios. The reading emotion of the audience was measured using a nine-point Likert subscale. According to the emotional PAD model, the three dimensions of PAD cover the characteristics of all emotional states. An emotional state includes emotion, feeling and any other concepts related to feeling. In the PAD model, the measurement of the emotional dimension is bipolar, and all emotional items in the study are processed on two levels. Furthermore, the construct validity of the adapted version of the PAD scale used in this study was tested. The loading values of all items in the three-factor model were above 0.5 and $\chi^2/df=2.756 < 3$, indicating that the degree of fit was good.

The article refers to the research and makes some modifications on this basis (Liu, 2018; Tan, 2020). The scores of the following items are used as the quantitative operation of the compound variable "information-sharing behavior". Through data processing and by averaging the scores of the above

questions, the author obtained the variables representing the information-sharing behavior of the respondents (Cronbach's α = 0.887, M=2. 9267, SD=1. 0289).

It can be seen from the above table that the Cronbach's α values of each dimension and the whole risk perception scale were between 0.716 and 0.887, which are all greater than 0.7, indicating that the reliability of the scale is good and the internal consistency of the questionnaire is high. Because the scale is modified according to the previous research scale, it has good surface validity and content validity. To further test the validity of the questionnaire, the KMO of each variable and Bartlett's spherical test showed that the KMO of the questionnaire was 0.823, greater than 0.7, and the *p* value of Bartlett's test was 0.000, which is less than 0.001, indicating that the variables of the scale are significantly correlated. The total variance of explanation is 87.062%, which is more than 70%, indicating that this scale has explanatory power.

IV. Data Analysis and Results

(a) Test the influence of intergenerational differences and the health risk framework on emotional structure

We aimed to determine the relationship between the independent variables, moderator variables and mediator variables and the influence of intergenerational differences on independent variables and the health risk framework of moderator variables on the emotional structure of mediator variables. First, the basic data of the three experimental groups were analyzed by variance. Table 2 shows the mean and standard deviation of emotional pleasure, emotional arousal and emotional dominance in each experimental group with the difference between parents and offspring as the core. It lays the foundation to show the differences in emotional structure within and between groups under different experimental variable levels.

Table 2: The difference in the emotional stimulation effect of subjects under different experimental conditions

Information framework type	Intergenerational	Emotional type	M	SD
Risk	Offspring CH	P (Pleasure)	2.6140	. 9445
Seek		A (Arousal)	4.7544	1.5065
Framework		D (Dominance)	4.6491	1.2246
RS	Parental generation	P (Pleasure)	3.4035	. 5728

	PA	A (Arousal)	7.0351	. 6656
		D (Dominance)	6.4912	. 8267
	Offspring CH	P (Pleasure)	2.3334	. 7114
Risk Neutrality Framework RN		A (Arousal)	3.5614	1.0032
		D (Dominance)	3.8246	. 8849
	Parental generation PA	P (Pleasure)	4.3333	1.4589
		A (Arousal)	5.7167	. 9445
		D (Dominance)	6.2500	1.0589
	Offspring CH	P (Pleasure)	5.5167	. 7451
Risk Evasion Framework RA		A (Arousal)	4.1167	1.2899
		D (Dominance)	6.9500	. 8870
	Parental generation PA	P (Pleasure)	5.4737	1.0453
		A (Arousal)	5.7018	1.3296
		D (Dominance)	6.8596	1.2114

Based on MANOVA, for the measurement of emotional pleasure, the main effect of the information presentation framework was significant, F=68.872, *P*=0.001, and the main effect of age was significant, F=23.641, *P*=0.003. The interaction between the two factors was also significant, F=10. 005, *P*=0.005, and the adjusted R^2 of the interaction model was 0.604.

Furthermore, the simple effects of intergenerational differences on different types of information frameworks were different. The simple effects of intergenerational differences on the risk-seeking framework and the risk-neutral framework were significant (F (RS) = 5.762, *P* (RS) = 0.018; F (RN) = 37.930, *P* (RN) = 0.001), while the simple effects on the risk-aversion framework were not significant (F (RA) = 0.18, *P* (RA) = 0.895). That is, for the emotion of pleasure, the difference between parents and offspring is reflected in the reading of the risk-seeking framework and the risk-neutral framework. Combined with Table 2, it can be seen that although offspring and parents present negative pleasure when reading the information of the risk-seeking framework and the risk-neutral framework, the negative emotional orientation of parents is more prominent than that of offspring. In contrast, when reading the information of the risk-aversion framework, both children and parents show a positive emotional state, and there is little difference.

Similarly, the types of information frames play different roles for different generations. The simple effects of the three types of frames on the arousal differences of offspring's pleasure are significant, F (CH) = 59.405, *P* (CH) = 0.000. The risk aversion framework arouse the emotion of positive pleasure, the risk

seeking framework and the risk neutral framework play a negative role in the emotional tendency toward pleasure, and the risk-seeking framework has a stronger role that produces negative emotion in the audience. The simple effects of the three frames on the emotional arousal of parental pleasure are also significant, F (PA) = 19.882, *P* (PA) = 0.001. As with offspring, the risk-aversion framework arouse the emotion of positive pleasure, while the risk-seeking framework and the risk-neutral framework act on the emotional tendency toward negative pleasure and the risk-seeking framework plays a stronger role.

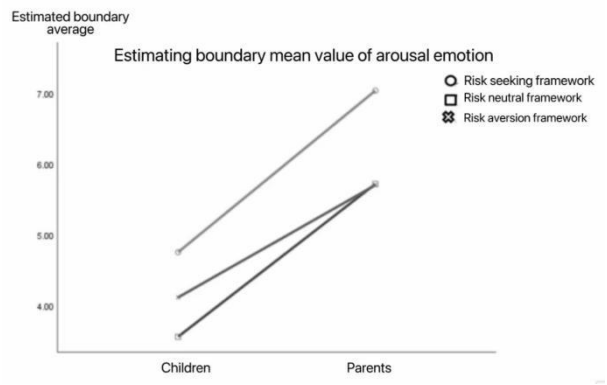

Fig. 3: Comparison of intergenerational differences between groups of pleasure emotion

Based on the MANOVA, the main effect of the information presentation framework is not significant, F=1. 567, *P*=0. 202, while the main effect of age is significant, F=101. 522, *P*=0. 000. The interaction between the two factors is not significant, F=1. 157, *P*=0. 318 > 0.005, and the adjusted R^2 of the interaction model is 0.525. That is, for the audience's arousal emotion, age and framework do not interact on a single level of factors.

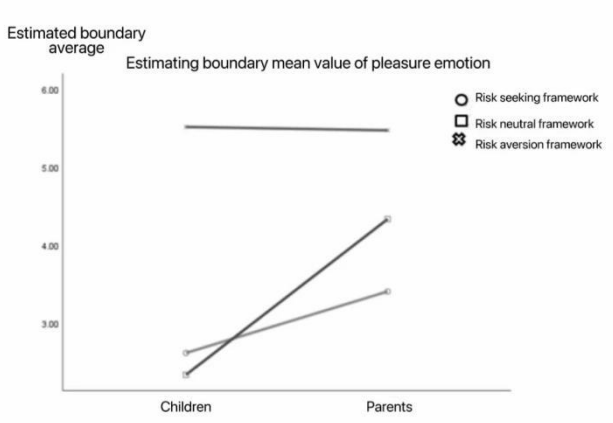

Fig. 4: Comparison of intergenerational differences in arousal emotion between groups

Based on the MANOVA, the main effect of the information presentation framework is significant, F=30. 405, *P*=0. 000, and the main effect of age is significant, F=47. 411, *P*=0. 000. The interaction between the two factors is also significant, F=14. 234, *P*=0. 001, and the adjusted R^2 of the interaction

model is 0.530.

Furthermore, the simple effects of intergenerational differences on different types of information frameworks are also different. The simple effects of intergenerational differences on the risk-seeking framework and risk-neutral framework are significant (F (RS) = 27.199, *P* (RS) = 0. 000; F (RN) = 48.362, *P* (RN) = 0. 000), while the simple effects on the risk-aversion framework are not significant (F (RA) = 0.067, *P* (RA) = 0.796). That is, for the emotion of dominance, the difference between parents and offspring is reflected in the reading of the risk-seeking framework and the risk-neutral framework. Combined with Table 2, it can be seen that there is a significant difference in the dominance emotion between children and parents when reading the information of the risk-seeking framework and the risk-neutral framework. Children show a low tendency toward the dominance emotion, while parents show a high tendency toward the dominance emotion. In contrast, when reading the risk-aversion framework, the offspring and parents show a high tendency toward emotional dominance, and there is little difference.

Similarly, the types of information frames play different roles at different levels of generations. The simple effects of the three types of frames on the arousal differences of offspring's dominance emotion are significant, F (CH) = 43.417, *P* (CH) = 0.000. The risk-aversion framework ens the emotion of high dominance, while the risk-seeking framework and the risk-neutral framework play a role in the emotional tendency of low dominance, and the risk-seeking framework plays a stronger role, which makes the audience have a tendency toward a low dominance emotion. The simple effect of the three frames on the arousal difference of parental dominance affection is not significant, F (PA) = 1.545, *P* (PA) = 0.218.

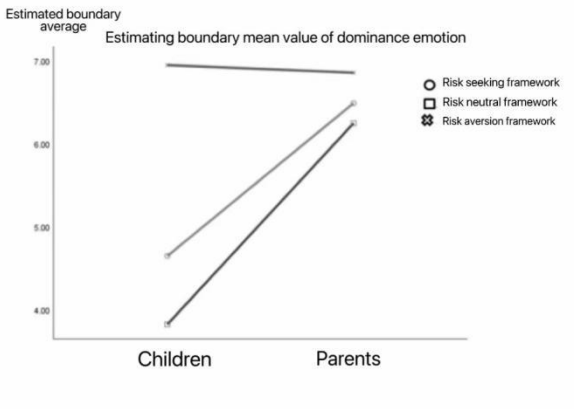

Fig. 5: Comparison of intergenerational differences in dominance emotion between groups

On the basis of the two main factors discussed in this study, another demographic factor, gender, is introduced to further discuss the interaction among intergenerational differences, gender and the

information framework in audiences' emotional stimulation. When introducing the gender effect, the interaction among the three factors is significant, whether for emotional pleasure, arousal or dominance, F (P) = 19.571, *p*(P) = 0.000; F (A) = 15.231, *P* (A) = 0.001; F (D) = 19.530, *P* (D) = 0.000. The main effect of intergenerational difference, the main effect of the risk framework, the interaction effect between intergenerational differenc and the risk framework and intergenerational difference, and the triple interaction effect between the risk framework and gender and the corresponding results of pleasure, arousal and dominance emotions are shown in Table 3.

Table 3: Comparison of the main effect and interactive effect of experimental variables on the audience's emotional structure

	Emotional pleasure	Emotional arousal degree	Emotional dominance
Intergenerational	Tick	Tick	Tick
Risk framework	Tick	×	Tick
Intergenerational * Risk framework	Tick	×	Tick
Intergeneration* Risk Framework * Gender	Tick	Tick	Tick

(b) Parallel mediating effect test

With regard to the mediating effect test procedure, regression analysis was conducted step by step to investigate the possible predictive relationship and mediating effect between perceived intergenerational differences and audiences' health information-sharing behavior (Wen, Zhang, Hou & Liu, 2004).

First, we test the mediating effect of emotional pleasure. The correlation coefficients between intergenerational differences and information-sharing behavior, intergenerational differences and affective pleasure, and affective pleasure and information-sharing behavior are calculated (the above tests were compared with the regression analysis results of paths a, b and c, respectively), and the Sig values are all < 0.05, which indicates a significant correlation. Emotional pleasure is introduced into the relationship between intergenerational differences and information-sharing behavior, and then linear regression analysis is conducted. The coefficient of information quality of the independent variable is 1.489, the original coefficient is 1.612, the coefficient of the intermediate variable is 0.139, and the Sig

values all pass the significance test of 0.01. When controlling intermediary variables, the correlation coefficient between independent variables and dependent variables decreases significantly. Perceived usefulness is the intermediary variable in the relationship between information quality and purchase behavior, which is a partial intermediary effect (see Table 4 for details). Therefore, H4 holds.

As far as the emotional arousal test is concerned, there is no significant linear relationship between emotional arousal as an intermediary variable and intergenerational differences in independent variables, so co-arousal emotion cannot build an intermediary relationship between audiences' information-sharing behavior. Therefore, H5 does not hold.

The mediating effect of affective dominance is tested in the same way. When paths A, B and C are all significant, affective dominance is introduced into the correlation between intergenerational differences and information-sharing behavior for linear regression analysis. The coefficient of the independent variable is 1.351, the original coefficient is 1.612, the coefficient of the intermediate variable is 0.192, and the Sig value passes the significance test of 0.01. Perceived usefulness is also a mediating variable in the relationship between information quality and purchase behavior, which is a partial mediating effect (see Table 4 for details). Therefore, H6 holds.

Table 4: Mediation effect test of three-dimensional emotional structure

Mediating variable	Regression coefficient	Path	R2	T	Results
Pleasure	1.612**	A	. 619	15.319	Partial intermediary
	0.879**	B	. 265	4.043	
	0.267**	C	. 274	4.907	
	1.489**		. 663	12.803	
Arousal degree	1.612**	A	. 619	15.319	None
	2.012	B	. 111	1.021	
	0.444*	C	. 451	9.686	
	1.241**		. 665	8.493	
Dominance	1.612**	A	. 619	15.319	Partial intermediary
	1.356**	B	. 184	5.066	
	0.375**	C	. 336	7.596	
	1.351**		. 691	11.393	

Note: Significance level * P < 0.05; ** P < 0.01

Conclusion and discussion

This study introduces emotional structure into the related research on health communication and,

on this basis, explores the reasons why audiences present different patterns of health information-sharing behavior, which has not yet been addressed in academic circles. This paper mainly draws the following two conclusions.

(a) The interaction between intergenerational differences and the health risk framework on emotional structure is prominent.

The experimental results show that the audience's emotions stimulated by different generations are quite different under the experimental conditions. Under the three risk frameworks, the emotional presentation of different generations of audiences is also different. The audience has high consistency when reading the information of the risk-seeking framework and the risk-neutral framework. Under the influence of the above two frameworks, offspring show negative pleasure, weak arousal and a low-dominance emotional state, while parents show negative pleasure, strong arousal and a high-dominance emotional state. However, under the influence of the risk-aversion framework, there is a stronger effect on offspring's positive pleasure, weak arousal and high-dominance emotional state and a stronger effect on parents' positive pleasure, strong arousal and high-dominance emotional state.

(b) Emotional structure is an effective bridge from information to behavior.

This study explores the similarities between the three emotions in different generations and the final information-sharing behavior. The research not only confirms the complex interaction between the framework setting and intergenerational differences in audiences' emotional state but also confirms that intergenerational health information empathy can bridge intergenerational differences in reading choices and break through the intergenerational stratification of health information-sharing behavior. The realistic dilemma of public communication represented by social media constantly challenges the classic paradigm of "knowing, believing and doing" of healthy communication (Hu, 2012). Health communication practitioners need to realize the important and inspiring role of emotion and apply it to the narrative logic of health information.

Due to the limitation of objective conditions, the research objects selected in this study are underrepresented, and the participants are mostly students with higher education level. In addition, the information materials and questions designed in the experiment are different from people's usual reading behaviors and habits. The deficiency of this paper is that there is no follow-up interview on the

change of the attitude and willingness of the subjects to find out whether there is a difference between their long-term reaction, actual behavior and immediate reaction.

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