

Farmers' Cognition and Willingness to Participate in Environmental Remediation—A Perspective of "the Pattern of Difference Sequence"

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Abstract: "The pattern of difference sequence" is a classic tool proposed by Mr. Fei Xiaotong to study traditional local society, which is still fresh today. With the help of this tool, this paper constructs the theoretical framework of analysis and empirically tests whether there is a cognitive "difference order pattern" in the environmental remediation work of farmers with the help of the theoretical transcendence of structural equation model (SEM), in order to provide a new theoretical perspective for the further development of rural environmental remediation work. The results show that: (1) there is an obvious state of "The pattern of difference sequence" in farmers' cognition of different ecological environment concepts. (2) The more obvious the "private" attribute of the relevant ecological environment concept, the more significant the positive impact on Farmers' willingness to participate. On the contrary, if the attribute of "public" is obvious, the impact on Farmers' willingness to participate is small or even insignificant.

Keywords: "The pattern of difference sequence", farmers' cognition, willingness to participate, rural human settlement environment

1. Introduction

Rural habitat improvement is an effective way to solve the main social contradictions in the new era and is of great significance for safeguarding the life and health rights and interests, property rights and interests, and development rights and interests of the peasant masses^[1]. In October 2020, the Fifth Plenary Session of the 19th CPC Central Committee considered and passed the "Proposals of the Central Committee of the Communist Party of China on the Formulation of the Fourteenth Five-Year Plan and the Visionary Goals of the 23rd Five-Year Plan of the National Economic and Social Development", which put the following into practice "Significantly improving the urban and rural living environment" and "Promoting rural latrines, domestic garbage disposal and sewage treatment by local conditions, implementing the comprehensive improvement of river and lake systems, and improving the living environment in rural areas" were included as important contents. "Improving rural habitat" will be one of the important goals of China's future implementation of the rural revitalization strategy for medium- and long-term development. As the main participant of rural habitat improvement, the study of the influence of subjective cognition on the willingness to participate is important for the smooth development of environmental improvement and the long-term maintenance of the effectiveness of environmental improvement.

The study of the impact of their subjective perception on their willingness to participate is of theoretical and practical significance for the smooth implementation of the environmental improvement work and the long-term maintenance of its effectiveness.

The innovation of this paper is to introduce the "differential pattern", a classic tool for analyzing Chinese society, into the study of habitat improvement, and to conduct a validation analysis with the help of structural equation modeling based on constructing a theoretical framework, to provide a new approach to the further development of rural environment improvement work. environmental remediation work to provide a new theoretical perspective. The structure of this paper is as follows: the second part of the paper summarizes the existing relevant literature; the second part of the paper is organized as follows. The second part summarizes the existing literature; the third part constructs the

theoretical framework of the analysis and puts forward the research hypotheses; The fourth part briefly explains the data sources and the structure of the model; the fifth part is the process of empirical analysis; and the last part is the conclusion and recommendation of the article.

2. Literature review

Currently, rural habitat remediation has achieved great results, and farmers' sense of well-being has been significantly improved^[2]. However, in the process of remediation practice, environmental remediation and upgrading work is still facing many challenges. One of the most prominent problems is that "the main position of farmers has not been fully respected". China's rural habitat improvement has fallen into the predicament of "strong promotion by the government and weak participation by farmers". Many scholars have launched research on the factors affecting the participation of farmers in the improvement of rural human settlements in response to this phenomenon. More attention is paid to a specific type of behavior in rural habitat improvement, such as the behavior of rural residents in garbage classification^{[3][4]}, environmental improvement^[5], and payment behavior^[6]. Payment behavior^{[5][6]}, domestic sewage management^[7] and rural water pollution management^[9], etc. Some scholars have also quantitatively studied the impacts of rural habitat improvement. Some scholars have also quantitatively studied the effects of livelihood capital^[9], environmental policies^[10], social norms^[11], and institutional trust^[12] on farmers' behavior or willingness.

The above research results are of great significance to this study, but there is still room for further expansion. First, in the study of the willingness of farmers to participate in environmental remediation, often focusing on objective and practical reasons such as income, land, livelihood capital, etc., although there is also part of the literature to study the impact of social norms, social capital and other subjective factors on the participation of farmers, there is a lack of research centered entirely on the subjective perception of farmers. Secondly, most of the research on farmers' willingness to participate focuses on the theory of planning behavior and lacks analysis from other theoretical perspectives. In this paper, we try to introduce the theoretical framework of "differential order pattern" into the study of human environment politics, and empirically test it with the theoretical a priori of structural equation modeling, in order to provide a new theoretical framework for the further development of rural environmental improvement. This paper tries to introduce the theoretical framework of "differential pattern" into the study of human environment politics, and empirically tests the theoretical a priori of structural equation modeling in order to provide a new theoretical perspective for the further development of rural environmental remediation.

3. Theoretical Framework and Research Assumptions

"Differential Order Pattern" is a theoretical tool used to explain the characteristics of social relations in traditional Chinese society proposed by Mr. Fei Xiaotong in his book "Native China" in the late 1940s. It is a highly forward-looking concept that has had a great impact on Chinese academics. Some scholars even argue that after more than half a century, when Chinese sociology has made great progress, there is still no comparable conceptual framework^[13]. So what is the "differential order pattern"? Mr. Fei Xiaotong explained it like this - "It is like the ripples that occur when a stone is thrown on the surface of the water and pushed out in a circle. Each person is the center of the circle pushed out by his social influence. Those who are pushed by the ripples of the circle become connected. The circle that each person uses at a given time and place is the center of his or her social influence. Each person at a certain place at a certain time does not necessarily use the same circle. Mr. Fei Xiaotong called this pattern of social relationships a "differential order pattern"^[14]. Mr. Fei Xiaotong called this pattern of social relationships a "differential order pattern"^[15].

"Mr. Fei Xiaotong found that the biggest problem of Chinese people is "selfishness" compared to "stupidity" and "sickness" through social investigation. Mr. Fei Xiaotong discovered through his social survey that compared to "stupidity" and "sickness", the biggest problem of Chinese people is "selfishness" and the extreme lack of public morality. "No one dares to deny that the saying 'sweep the snow in front of the door, don't care about the frost on the roof of other people's houses' is more or less a credo of the Chinese people. When dealing with their affairs, Chinese people are diligent, hardworking, and economical, but when it comes to the "public", they tend to be wasteful, lazy, and take advantage of the situation, because "as soon as you say that it is the public's, it pretty much means that everyone can take advantage of it a little bit". This is because in the framework of the differential order pattern, "public and private are relative. In the framework of the differential order pattern, "public and private are relative,

standing in any circle and looking inward, one can also say that it is public".

As important participants and beneficiaries of rural habitat construction^[15], farmers are indispensable to the long-term maintenance of environmental improvement^[16]. However, the current rural habitat improvement and upgrading actions follow a government-led, top-down approach, and in the implementation of relevant policies, often do not get a positive response from farmers. The reason for this is that, first of all, in the "poorly ordered pattern" of the vernacular society, the core of the "circle" is the "self" with a strong "egoistic" color, and the promotion of the "self" is the "self", and the "self" is the core of the "circle". The core of the circle is the "self" with a strong color of "egoism", and the "stones" that drive the ripples and even the spreading of the circle are blood relations and geographic relations, the most important of which are blood relations. Foreign policies or projects in the rural areas, both the policy itself and the implementer of the policy, at least initially did not have too much intersection with the blood relations and geographic relations, and thus the relationship with the farmers produced a weak link, often in the "circle ripples" ripples on the outside, it is difficult to stimulate the farmers to participate in environmental remediation. Secondly, environmental remediation itself is a complete public good, in other words, it is "public, can take advantage of", so farmers decided not to participate in environmental remediation, outwardly may be a "private" performance; but inwardly, it is a "public". Public", because the choice not to participate in remediation means that you do not have to pay the cost of participation in remediation must pay, such as time and money, etc., these did not pay for the time and money can be used in their own "circle", which is the "public". Finally, "Chinese morality and law are subject to a degree of expansion and contraction depending on the relationship between the objects on which they are imposed and 'themselves'. For in such a society, all universal standards do not come into play, and one must ask who the object is and what the relationship is to oneself before one can come up with any standards". For individuals living in Chinese culture, each other is at a different distance from the self. The nearest others are family members, who usually have the strongest relational connection with the self, and the farthest others are unfamiliar members of society, who have the weakest relational connection with the self. The implementers of policies related to environmental remediation are usually the grassroots authorities in rural areas, and the specific implementation is carried out by the grassroots authorities or social organizations employed by the grassroots authorities, which are either outside the bloodline of the farmers or outside the geographic location and have weak relational ties, thus making it difficult to effectively increase the participation of farmers in environmental remediation. This makes it difficult to effectively increase the willingness of farmers to participate in environmental remediation.

According to the explanatory framework of the "differential pattern", one of the reasons affecting the participation of farmers in environmental improvement is the proximity or strength of the "relationship", and the core of this "relationship" is "self", and the foundation is "self", and the core of this "relationship" is "self", and the foundation is "self". The core of this "relationship" is the "self", based on blood and geographic ties. According to the theory of "Knowledge-Belief-Action" proposed by Professor Mayo of Harvard University in 1950, human behavioral change is divided into three successive processes acquiring knowledge, generating beliefs, and forming behaviors. Among them, the establishment of beliefs and attitude change must be based on the acquisition of knowledge and the formation of cognition, i.e., there is such a path of influence as "knowledge → belief". The dissemination of ecological and environmental knowledge in habitat improvement and upgrading actions involves different information disseminators and different meanings symbolized by the information, which will have different impacts on farmers' willingness. This is because in a differential pattern, on the one hand, the proximity and strength of the relationship between the disseminator and the receiver will affect the receiver's cognitive attitude towards the relevant ecological and environmental knowledge, and thus have a stronger or weaker impact on the willingness; on the other hand, Mr. Fei Xiaotong discussed the problem of "words going to the countryside" in his book *Native China*, arguing that the language is not the same as the language in the countryside. On the other hand, Mr. Fei Xiaotong, in his book "Native China", discussed the problem of "words going to the countryside", arguing that language and even words, as a kind of "symbolic system", are "things or actions with meanings attached to them", and that "the meanings are added by association and are not the nature of the things or actions themselves". Meaning is added by association and is not a property of the thing or action itself". In other words, the meaning or value of the relevant ecological knowledge is subjectively reconstructed by the farmers before it further influences the formation of their beliefs. The reconstruction of meaning will undoubtedly be affected by the "differential". The reconstruction of meaning will undoubtedly be influenced by the "proximity" or even the "public-private relationship" in the "differential order pattern".

In this paper, we study whether there exists a state of "differential order pattern" in the cognition of rural households in the improvement of the rural human environment, according to the "differential order pattern" and "public-private relationship". "Differential Order Pattern," "Knowledge, Belief and Action

Theory" and "Information Dissemination Theory", this paper argues that "knowledge" The relationship between the disseminator and the farmers The more distant, the less impact on the formation of farmers' willingness to participate, and vice versa. The more the meaning of the "knowledge" reconstructed by farmers is beneficial to farmers, i.e., if the attribute of "private" is obvious, it will have a greater impact on the formation of farmers' willingness to participate. On the contrary, if on the contrary, if the attribute of "public" is obvious, the influence on the formation of farmers' willingness to participate will be smaller.

In summary, the three hypotheses of this paper are proposed:

H1: The disseminators of macro-environmental concepts (such as the ozone hole and the greenhouse effect) are often "social strangers" who are farthest away from farmers, and the attribute of "public" is the largest, so even if they have a significant positive impact on the formation of farmers' willingness to participate, the coefficient of the impact is the smallest. Even if it has a significant positive effect on the formation of farmers' willingness, the coefficient of the effect is the smallest.

H2: The meso-level perception of habitat improvement policies (e.g., toilet revolution, garbage classification, etc.) is transmitted by the government or the grassroots regime, which is closer to farmers, and therefore has a positive impact on the formation of farmers' willingness to improve, with the coefficient of the impact being larger than that of the perception of environmental protection concepts and smaller than that of the perception of the role of improvement. The coefficient of influence is larger than that of environmental protection and smaller than that of remediation.

H3: The microcosmic cognition of remediation, i.e., the cognition of the benefits brought by remediation, contains the largest "private" attribute, and thus has a positive influence on the formation of farmers' willingness. and thus has the most significant positive effect on the formation of farmers' willingness.

4. Data Source, Variable Selection and Model Selection

4.1 Data from the sample situation

The data in this paper comes from the household survey on "rural revitalization" conducted by the research group during the summer vacation in July-August 2021 in various counties of Jiangxi Province. The survey samples were distributed in five prefecture-level cities in Jiangxi Province, namely Pingxiang, Yichun, Jingdezhen, Ji'an, Ganzhou, and Jiujiang, involving 74 natural villages. The survey adopted a stratified random sampling method, and a total of 700 rural households were selected, each of which was in principle surveyed by an adult over the age of 18, with 681 valid questionnaires recovered, representing a validity rate of 97.28%. The content of the survey covers the basic personal information and six dimensions of industrial prosperity, ecological livability, civilized rural culture, effective governance, and affluent life. According to the research purpose of this paper, the survey data of the two dimensions of basic personal situation and ecological livability were selected. After eliminating 34 missing samples, the final sample data used in the study is 647. Table 1 shows the basic characterization of sample farmers.

Table 1: Basic Characterization of Sample Farmers

sports event	Statistical indicators	proportions
Sex	man	55.2%
	women	44.8%
head of the household	Yes	56.6%
	no	43.4%
marital status	married	87.4%
	Other (unmarried, divorced, widowed)	12.6%
age	Under 30 years of age	7.6%
	30-39 years old	9.3%
	40-49 years old	21.0%
	50 to 59 years old	27.1%
	60 and above	35.0%
educational level	Elementary and below	49.5%
	Middle School	32.8%
	HighSchool/Middle School/Technical School	12.3%
	University College	3.4%
	Undergraduate and above	2.0%

Statistical analysis of the sample reveals that the sample has the following three characteristics: (1) The proportion of males is slightly higher than that of females. Men accounted for 55.2% of the sample,

while women accounted for 44.8%. The reason for this is that the survey was conducted mainly on heads of households, and most of the current heads of rural households are men. (2) Middle-aged and elderly people predominate. The majority of the samples were over 50 years old, accounting for 62.1% of the total, with 402 people; 196 people aged 30-49, accounting for 30.3%; and 49 people under 30, accounting for 7.6%. On the one hand, this is consistent with the current situation in rural China, in which young people tend to go out to work and older people tend to work at home in agriculture; on the other hand, the current trend of aging in rural areas further confirms this phenomenon. (3) Educational level is generally low. Those with junior high school education or below accounted for 82.3% of the total, while those with college education or above accounted for only 35, or 5.4%.

4.2 Variable Selection and Model Construction

4.2.1 Variable Selection

The three exogenous latent variables selected in this paper are macro-perception of environmental protection concepts, meso-perception of remediation policies, and micro-perception of remediation effects. Among them, the observed variable of environmental conceptual cognition is farmers' conceptual cognition of global environmental problems such as "PM2.5", ozone hole, greenhouse effect, and low-carbon life, which is the dimension furthest away from the core circle of farmers. As environmental policy perceptions are disseminated by the government or the grassroots, they have a greater impact on farmers' willingness than the conceptual perceptions of environmental protection. The role of remediation is not only related to the farmers themselves, but also the daily life of the farmers' families, so it is the closest to the core circle of the farmers. Therefore, it is the closest to the farmers' core circle and has the greatest influence on the formation of farmers' willingness. Specific variables and descriptive statistics are shown in Table 2.

Table 2: Description of variables and descriptive statistics

latent variable	Definitions and Assignments	Mean value	Standard deviation
Willingness to participate	Rectify willingness to pay: Very reluctant = 1; 2 = Unwilling = 2; Fair = 3; Willing = 4; Very willing = 5	3.78	0.877
	Willingness to persuade others to participate in environmental remediation: Very reluctant = 1; 2 = Unwilling = 2; Fair = 3; Willing = 4; Very willing = 5	3.87	0.747
	Environmental Concept Awareness		
Environmental Concept Awareness	PM2.5: Very uninformed = 1; 2 = uninformed = 2; average = 3; informed = 4; very much so Solution = 5	1.83	1.185
	The ozone hole: Very uninformed = 1; 2 = uninformed = 2; average = 3; informed = 4; very much so Solution = 5	1.69	1.084
	The greenhouse effect: Very uninformed = 1; 2 = uninformed = 2; average = 3; informed = 4; very much so Solution = 5	1.95	1.234
	Low-carbon living: Very uninformed = 1; 2 = uninformed = 2; average = 3; informed = 4; very much so Solution = 5	2.23	1.355
	Remediation Policy Awareness		
Remediation Policy Awareness	Toilet Revolution: Very uninformed = 1; 2 = uninformed = 2; average = 3; informed = 4; very much so Solution = 5	2.72	1.311
	Rubbish sorting: Very uninformed = 1; 2 = uninformed = 2; average = 3; informed = 4; very much so Solution = 5	3.48	1.270
	Habitat for Humanity: Very uninformed = 1; 2 = uninformed = 2; average = 3; informed = 4; very much so Solution = 5	2.66	1.425
	Remediation Role Perception		
Remediation Role Perception	Environmental improvements help promote good health: Very uninformed = 1; 2 = uninformed = 2; average = 3; informed = 4; very much so Solution = 5	4.05	0.735

4.2.2 Modeling

One of the characteristics of Structural Equation Modeling (SEM) is its theoretical a priori nature^[37]. Compared with traditional multivariate statistical methods, SEM integrates various methods such as

regression analysis, factor analysis, path analysis, etc., and transforms the ability to test the relationships of variables from exploratory analysis to validation analysis while dealing with the multiple relationships of variables, and gives strong theoretical support for statistical hypothesis testing. Compared with multivariate statistical methods, structural equation modeling integrates regression analysis, factor analysis, path analysis, and other methods, which deals with multiple interrelationships of variables, changes the ability to test the relationship of variables from exploratory analysis to validation analysis, and provides strong theoretical support for statistical hypothesis testing. Therefore, this paper chooses structural equation modeling as the hypothesis testing model. Therefore, this paper chooses structural equation modeling as the hypothesis testing model.

Structural equation modeling consists of two parts: structural model and measurement model. Among them, the measurement model in structural equation analysis mainly analyzes the relationship between factors and indicators. The measurement model in structural equation analysis mainly analyzes the relationship between factors and indicators, while the structural model mainly analyzes the relationship between factors.

5. Analysis of results

5.1 Overall model fit test

After the reliability and validity test, Amos24.0 was used to construct the theoretical model for the variables, and to test the overall fit of the model, this paper selected GFI, RMSEA, AGFI; TLI, IFI, CFI; X2/DF, PNFI, PG-FI, and PG- FI, based on the Absolute Fitness Index (AFI), Value-added Fit Index (VAFI), and Parsimonious Fit Index (PFI). FI, PNFI, PG- FI, GFI, RMSEA, AGFI, TLI, IFI, CFI; X2/DF, PNFI, PG- FI, and PG- FI. As can be seen from Table 3, the model fitness indicators all meet the ideal value requirements.

Table 3: Structural equation model goodness-of-fit test

goodness-of-fit	Absolute Fit Index			Value-added suitability index			Simplicity Fitness Index		
	GFI	RESEA	AGFI	TLI	IFI	CFI	X ² /DF	PNFI	PGFI
superiority	>0.9	<0.08	>0.9	>0.9	>0.9	>0.9	1<X ² /DF<3	>0.5	>0.5
Exponential	0.972	0.051	0.952	0.972	0.981	0.981	2.653	0.670	0.560
Model	satisfactory	satisfactory	satisfactory	satisfactory	satisfactory	satisfactory	satisfactory	satisfactory	satisfactory

5.2 Analysis of overall sample results

Perception of the role of remediation can significantly and positively influence farmers' willingness to participate, but there are differences in the effects of perception of environmental protection concepts and perception of environmental policies on the willingness to participate (Table 4). Willingness to participate, but there are differences in the effects of environmental concept cognition and environmental policy cognition on willingness to participate (Table 4).

Table 4: Structural model standardized path coefficients

Path relationship	Standardized factor loadings	S.E.	C.R.
Environmental Concept Awareness --> Willingness to Participate	.115	.038	-1.620
Awareness of environmental policy --> willingness to participate	.184**	.026	2.333
Awareness of the role of remediation--->Willingness to participate	.573***	.073	7.187
Awareness of environmental protection concepts-->Awareness of remediation role	.147**	.042	2.025
Perception of Environmental Policy-->Perception of Remediation Role	.234***	.028	2.970

Note: ***, **, * indicate significant at p < 0.001, p < 0.05, and p < 0.1 levels, respectively.

Specifically, the statistically insignificant effect of the perception of environmental protection concepts on the willingness to participate, with a negative sign, may be due to the fact that the environmental protection concepts selected in this paper are global environmental issues, which are both "public affairs" and "public relations" in the "differential order pattern". The reason may be that the concept of environmental protection chosen in this paper is a global environmental issue, which is a

"public matter" in the "differential order pattern", and is far away from the "circle of relationship" of the farmers, so the effect is not significant. At the same time, under the influence of "selfishness", the higher the farmers' knowledge of these environmental concepts, the more they feel that these matters are not their own business and that they can do nothing about them, thus reducing their willingness to participate. Therefore, it reduces the willingness to participate, so the sign is negative. Hypothesis H1 is partially true.

Perceptions of environmental policy have a significant positive effect on willingness to participate at the 5% level, because the disseminator of the policy is either the government or the grassroots power organization, while the sign of the difference is negative. government or grassroots power organization, and the diffusion of "circle" in the differential order pattern is a "from self to home, from home to country, from country to the world," and a "social scope that can be released or withdrawn, stretched or contracted. The CPC is a political party that serves the people with all its heart and soul, and has truly realized the realization of "land for the cultivator" and solved the problem of poverty that has existed in China for thousands of years, and it is a political party that has been embraced by the masses of the people. In order to respond to the policies of the state, farmers here have expanded the circle to the whole "country". Suppose that H2 holds

The effect of the perception of the role of remediation on the willingness to participate is significant at the 1% level, with a positive sign and the largest standardized loadings of 0.573. This is because the role of remediation is not only related to the farmers themselves, but also to the long-term development of their families and future generations. Therefore, it has the most significant effect on the formation of willingness, which is a kind of simple and genuine "utilitarianism". Hypothesis H3 is true.

5.3 A test of the masking effect of the "little self" on the "big self".

Mr. Fei Xiaotong once said that in the traditional society of differential order pattern, it is mentioned that "one can sacrifice his family for himself, his party for his family, his country for his party, and the whole world for his country", that is, he can sacrifice his "big self" for his "little self". "Big I", and this and the "University" in the cultivation of the body and the family, the country and the world "in the principle is common, the difference is only inward and outward route, positive and negative statements", that is, "the world", that is, "the world", that is, "the world", that is, "the world", the extension of the "big self" depends on the egoistic "little self". So is there a path where "environmental conceptualization ---> remediation role perception ---> willingness to participate" is a path of "egoism" and "egoism"? Path I, the "small self" hinders the realization of the "big self"?

In the previous section, we empirically tested that the macro-level perception of environmental protection concepts has no significant effect on the willingness to participate, and the cut-off sign is a negative sign. Thus, before conducting mediation analysis, the question to be clarified is whether the mediation effect should be preconditioned by the coefficient c being significant? Some scholars think that this precondition is unnecessary, which makes many meaningful mediation studies stop at the first step and inhibits the development and application of mediation studies. MacKinnon, Krull et al. think that the sign of the indirect effect (ab) may be the opposite of the sign of the direct effect (c), which makes the total effect (c) insignificant, but the mediation effect still exists; there may be two mediation paths, whose indirect effect sizes are similar to the sign of the indirect effect. There may also be two mediating paths, whose indirect effects are similar in size but opposite in sign, making the total effect insignificant. In other words, even if the total effect is not significant, the indirect effect may still exist. According to Wen Zhonglin's suggestion, "if the coefficient c is not significant, it means that the effect of X on Y is not significant, and it is not reasonable to ask how X affects Y or what is the mechanism of X's effect on Y". At this point, the reasonable question should be "why does X not affect Y". Therefore, it is better to distinguish this situation from the usual mediating effect, which has been called the "masking effect" in the literature.

Table 5: Results of the mediation effect test

Intermediary Path	Indirect effect coefficient	95% confidence interval	
		lower bound	upper bound
Environmental Concept Cognition --> Remediation Role	0.045	0.005	0.097
Awareness --> Willingness to participate			

Based on the above logic, this paper uses Bootstrap analysis to analyze the mediating effect of "perception of environmental concepts ---> perception of remediation role ---> willingness to participate".

Willingness" to mediate the analysis, the confidence interval is 95%, the results are shown in Table 5.

At 95% confidence level, the confidence interval is [0.005,0.097], which does not contain zero, therefore, it is considered that there is a mediating effect of "Perception of environmental protection concepts --> Perception of remediation role --> Willingness to participate". According to the research method of Wen Zhonglin et al, $a*b$ and c' 'iso-sign, then the argument is based on the masking effect^[40], and the amount of the effect is $|ab/c| = 72.6\%$. At this point, the question to be analyzed becomes why there is no significant effect of perception of environmental concepts on willingness to participate. The possible reason is that the masking effect of the "perception of remediation effect" is too large, which leads to the situation that the higher the perception of macro-environmental conceptual cognition, the more reluctant to participate in environmental remediation. One way to understand this is that in a society with a "differential pattern", farmers are confined to their "small selves", believing that global ecological problems such as the ozone hole and the greenhouse effect do not affect their health and lives, and that participation does not bring them any benefits. Therefore, there is no significant effect on the willingness to participate. Therefore, the effect on willingness to participate is not significant.

6. Conclusions and Recommendations

This paper applies structural equation modeling to systematically verify whether the ecological environment conceptual cognition of rural households in rural habitat remediation will exist in a "differential pattern" due to differences in the communicators of the concepts and the meanings embedded in the concepts themselves, which will affect the willingness of rural households to participate in environmental remediation. And thus affect the willingness of farmers to participate in environmental remediation. The following conclusions were drawn.

(1) There is a clear pattern of differential order in farmers' perception of different ecological concepts. On the one hand, the closer and stronger the relationship between the communicator of an ecological concept and the farmer, the more likely it is to increase the willingness of farmers to participate in environmental remediation; on the other hand, the more obvious the attribute of "private" is, the more likely it is to increase the willingness of farmers to participate in environmental remediation. On the other hand, the more obvious the "private" attribute of the ecological concept, the more significant the positive effect on farmers' willingness to participate. On the other hand, if the attribute of "public" is obvious, the positive influence on farmers' willingness to participate will be more significant. On the other hand, the more obvious the "private" attribute of the relevant ecological concept is, the more significant the positive influence on farmers' willingness to participate.

(2) Global ecological concepts, such as the ozone hole and the greenhouse effect, will be overshadowed by the utilitarianism of the "ego" in the process of shaping farmers' willingness to participate, making the "environmental concept cognition --> willingness to participate" more significant. In the process of shaping farmers' willingness to participate, it is overshadowed by "ego" utilitarianism - the perception of remediation effects, making the path of "environmental protection concept cognition -> willingness to participate" insignificant and negative. This reason is rooted in the lagging environmental protection concept and traditional small farmer ideology working together.

Based on the above conclusions, the following recommendations are made: First, the government should continue to strengthen the ties between the government and the farmers, and by broadening the ways of participation in collective public affairs in the villages, strengthen the relationship with the farmers, so as to create a better policy environment for the relevant environmental policies to be embedded in the vernacular societies based on bloodline and geographic boundaries. Secondly, the content and methods of environmental publicity should be adapted to local conditions; thirdly, we should vigorously advocate the sense of "community of human destiny" to deepen farmers' knowledge of global ecological problems and to update their concepts of environmental protection. Finally, it should be pointed out that the shortcoming of this paper is that the sample of this study is mostly middle-aged and old-aged people in rural areas with a low level of education, and it is necessary to further investigate whether the new generation of rural residents has a "differential pattern" of "ecological conceptual cognition". The question of whether there is a "differential pattern" of "ecological conceptual cognition" among the new generation of rural residents needs to be further investigated.

References

[1] Pi Junfeng, Chen Demin. *Practical Experience, Problem Review and Institutional Construction of*

- Rural Habitat Improvement--Taking Chongqing Local Practice as an Entry Perspective [J]. China Administration, 2020, (10):153-155.*
- [2] Shen Lin, Liu Wenchao, Liu Aichou, Zhang Weixiao. *Research on the mechanism of improving farmers' subjective sense of well-being through rural habitat improvement[J]. China Health Care Management, 2021, 38(10):761-765+800.*
- [3] Tang Hongsong. *Research on residents' garbage classification behavior in rural habitat improvement - based on survey data in Sichuan Province[J]. Journal of Southwest University Natural Science, 2020, 42(11): 1-8.*
- [4] Liao Bing. *Livelihood Capital, Habitat Improvement Payment Cognition and Habitat Improvement Payment Behavior of Farming Households: A Case Study of 873 Farming Households in Jiangxi Province [J]. The case of 873 farm households in Jiangxi Province [J]. Journal of Agricultural and Forestry Economics and Management, 2021, 20(05):598-609.*
- [5] Chang Hydrocarbon, Niu Guimin. *Analysis of factors affecting satisfaction and willingness to pay for rural habitat improvement--Based on the survey data of Tianjin questionnaire [J]. Arid Zone Resources and Environment, 2021, 35(01):36-42.*
- [6] Jia Yajuan, Zhao Minjuan. *Research on rural household waste classification and governance incorporating farmers' preferences--an empirical analysis based on the choice experiment method [J]. China Journal of Geological University (Social Science Edition), 2021, 21(06):91- 103.*
- [7] Su Shuyi, Zhou Yuxi, Cai Weixi. *Analysis of farmers' willingness to participate in rural sewage treatment and its influencing factors--Based on research data from 16 municipalities in Shandong [J]. Based on the research data of 16 cities in Shandong [J]. Arid Zone Resources and Environment, 2020, 34(10): 71-77.*
- [8] Fu Wenfeng, Jiang Hai, Fang Juanjuan. *Analysis of farmers' willingness to participate in rural water pollution management and its influencing factors[J]. Journal of Nanjing Agricultural University (Social Science Edition), 2018, 18(04):119- 126+159- 160.*
- [9] Wang Xiaohuan, Li Hua, Zhang Gangrui. *How does livelihood capital affect farmers' pro-environmental behavior? --Based on the mediating effect of value perception[J]. Agricultural and Forestry Economics Journal of Management, 2021, 20(05):610-620.*
- [10] Tang Lin, Luo Xiaofeng, Zhang Junbiao. *Environmental policy and farmers' environmental behavior: administrative constraints or economic incentives: a study based on the research data of farmers in three provinces of Hubei, Jiangxi, and Zhejiang. A study based on the research data of farmers in three provinces of Hubei, Jiangxi and Zhejiang [J]. China Population-Resources and Environment, 2021, 31(06):147- 157.*
- [11] Wang Taixiang, Yang Honghong. *An empirical study on the relationship between social norms, ecological cognition and farmers' willingness to recycle mulch--with environmental regulation as a moderating variable. [J]. Arid Zone Resources and Environment, 2021, 35(03):14-20.*
- [12] Jia Yajuan, Zhao Minjuan. *Effects of environmental concern and institutional trust on farmers' willingness to participate in rural household waste management [J]. Resource Science, 2019, 41(08):1500- 1512.*
- [13] Zhai Xuwei. *The contribution, limitation and theoretical legacy of "differential order pattern"[J]. Chinese Social Sciences, 2009, (03):152- 158.*
- [14] Li Fanny, Zhang Junbiao, He Ke. *The effects of rural households' labor outside the village and village identity on their participation in habitat improvement[J]. China Population-Resources and Environment, 2020, 30(12):185- 192.*
- [15] Li Xiuqing, Li Yahong, Xiao Liming. *Personal values, farmers' willingness and pro-environmental behavioral decision-making - An empirical study based on the questionnaire of farmers in Anze County, Shanxi Province [J]. Forestry Economy, 2021, 43(04):17-29.*
- [16] Lin Shengdong, Cheng Hong, Zhang Zhiyun, Wang Fang, Li Xiaoling. *The role of "differential order pattern" and its boundary conditions in health/safety communication in China[J]. International Journalism, 2021, 43(09):82- 100.*
- [17] Cheng, Kai-Ming. *Characteristics and Applications of Structural Equation Modeling[J]. Statistics and Decision Making, 2006, (10):22-25.*
- [18] Mackinnon, D. P, Krull, J.L, Lockwood, C. M (2000). *Equivalence of the mediation, confounding, and suppression effect. Prevention Science, 1, 173- 181*
- [19] Wen, Z. L., Ye, B. J. *Mediated effects analysis: Methods and model development [J]. Advances in Psychological Science, 2014, 22(05):731-745.*