

Original Research

The Influence Mechanism and Path Effects of Pro-Environmental Behavior: Empirical Study Based on the Structural Equation Modeling

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Abstract

With the rapid development of information technology, pro-environmental behavior (PEB) also presents new features in the practice of environmental governance under big data. According to the value norm theory and expectancy theory of motivation, the influence mechanism and path effects of environmental awareness, environmental attitude, expected performance of public participation for PEB were studied by constructing the structural equation modeling in this paper. The results of empirical study in 31 provinces of China show that: (1) Environmental awareness and environmental attitude will influence PEB through the mediating variable of “expected performance of public participation”. (2) The mediating effect of expected performance of public participation on environmental awareness and PEB is complete mediating. (3) The mediating effect of expected performance of public participation between environmental attitude and PEB is partial mediating. Environmental attitude can either directly affect PEB, or indirectly affect PEB through affecting the expected performance of public participation. Based on the above results, some countermeasures are put forward.

Keywords: pro-environmental behavior, environmental awareness, environmental attitude, expected performance of public participation, structural equation modeling

Research Background

For a long time, China's economic and social development has been faced with the situation of “high cost, high pollution and high energy consumption”, with a relatively low environmental performance index in the world. China's environmental governance is also

considered as a government-dominated “monologue”. In recent years, with the participation of multiple subjects and the development of big data technology and new media platforms, a form of decentered regulation has developed [1-2], and ways for the public to participate have gradually increased, among which online Weibo and WeChat official accounts have become the channels for the public to participate in environmental governance [3-5]. After the implementation of the new Environmental Protection Law, the intensity of government regulation have

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been strengthened with public participation during the environmental governance. The range and quality of public participation in environmental governance have made unprecedented breakthrough and development, and public pro-environmental behavior (PEB) has become more diverse.

With the rapid development of information technology, big data and “the Internet +” have penetrated into all aspects of people’s life. New media represented by the form of Internet communication has increasingly become an important channel for information acquisition and dissemination, which has been encouraged and supported by the government, with a huge impact on public environmental participation. As the rise of civic consciousness, public participation is mainly manifested by all kinds of PEB, such as the implementation of multiple environmental behaviors, the proposal of public appeals, the participation in environmental decision-making and other activities during the environmental governance. Previous studies believe that, PEB is the behavior that consciously seeks to minimize the negative impact of one’s actions on the natural and world sustainable development [6-7]. Environmental behavior can be divided into public sphere PEB and private sphere PEB [8-10]. Private sphere PEB mainly refers to the personal environmental protection habits in daily life or superficial environmental friendly behaviors. Public sphere PEB refers to the corresponding contribution of the public to the public sphere environment through social interaction, which is a high-level environmental behavior based on the superficial behaviors [11]. In the practice of environmental governance, PEB is the main manifestation of public participation in environmental governance. Therefore, it is necessary to comprehensively analyze the current situation, influence mechanism and logical path of PEB, to arouse the public’s enthusiasm for PEB and promote the performance of public participation in environmental governance.

In the past, scholars divided the influencing factors of the pro-environmental behavior into two categories: external environment and individual factors. The external environment mainly includes social economic factors, such as social norms, PEB costs, information exposure, environmental policies and management system [12-14]; individual factors mainly include population statistical characteristics and psychological variables. Such as gender, income level, environmental knowledge, environmental attitude, psychological adaptation [15-18]. In the practice of environmental governance under big data, the increasing frequency of using new media has reduced the cost of the public to access and exchange the information greatly, which has also increased the public’s enthusiasm to participate in the environmental governance. There also exist some difference in the environmental awareness, environmental attitude and behavioral expectations of different groups. An increasing number of people

express their demands, participate in the environmental decision-making through various platforms and media. The public’s environmental awareness is improved, their environmental attitude and behavioral expectations are changing. In this context, it is necessary to analyze the relationship between them and verify their impact on PEB. On the other hand, between public participation and PEB have some intermediary variables, including behavioral will, behavioral expectations. Thus, this paper analyzes the impact path of behavioral expectation as a mediation variable, explore the mediating effect of expected performance of public participation.

Literature Review and Research Hypotheses

Impact of Environmental Awareness on Public Sphere Pro-Environmental Behavior

Environmental awareness includes the concern for the environment, the view on environmental protection behaviors, the understanding of environmental protection knowledge, etc., which is the personal view on environmental protection, that is, the environment cognition of the results of personal behaviors. It reflects the individual belief and subjective understanding of relevant concepts and social norms of environmental protection [19]. Previous studies have shown that the improvement of environmental awareness is closely related to the formation of moral norms and the promotion of social responsibility. The norm-activation theory holds that an individual’s own moral norms once are activated, his or her pro-social behaviors will be strengthened. Personal norms are normative constraints or moral obligations perceived by an individual in implementing or restraining a special behavior [20]. On this basis, Stern et al. have proposed the Value Norm Theory (VBN), to explore the influence of environmental awareness and environmental norms on the behavioral intention [21-22]. It is believed that personal environmental awareness, especially altruistic values, is strongly associated with the implementation of PEB [23-24].

With digital empowerment and technology governance, citizens’ environmental awareness has been improved, who began to pursue more fair system space and free public opinion environment after their basic living conditions have been met. Therefore, their civic consciousness is accelerating, with increasingly strong demands for participating in the environmental governance and improving the environmental quality, the improved concern about environmental pollution and the promotional cognition on the importance of environmental protection. At the same time, laws, regulations and public opinion publicity both revealed the importance and urgency of environmental protection, thus protecting the environment has become the responsibility and obligation of everyone, which

restrain and guide individual behaviors, encourage people to actively participate in environmental protection behaviors, and constantly strengthen the environmental protection attitude. Previous studies have also shown a significant relationship between environmental awareness and PEB that contribute to form social norms and improve the environmental literacy. Therefore, the following research hypothesis:

- H1 Environmental awareness has a positive impact on public sphere pro-environmental behavior.

Impact of Environmental Attitude on Public Sphere Pro-Environmental Behavior

Environmental attitude refers to an emotional and behavior tendency about environmental problems and related activities that people organize and hold, which is a positive or negative evaluation of environmental problems and behaviors [25]. Kaiser et al. have divided environmental attitude into three dimensions: Environmental Knowledge, Environmental Values and Environmental Behavior Intention [26]. In previous literature on public participation in environmental governance, the relationships between attitude and behaviors mentioned were mainly Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB). TRA holds that the individual behavior is caused by the behavior intention, which is jointly determined by two factors: individual attitude towards the behavior and subjective norms about the behavior [27]. Therefore, environmental attitude is an important factor affecting the public sphere PEB. TPB introduces the introduction of perceptual behavioral control (PBC) based on TRA, which expresses the actor's perception of his own ability, available time, policy support, etc.

Generally speaking, the public that protests against environmental pollution will be more positive about participating in environmental governance, then PEB is more likely to occur. China's environmental governance is mainly dominated by the government, involving multiple stakeholders. In the process of participating in environmental governance and implementing various PEB, people will not only be affected by their own environmental attitude, but also by their satisfaction with government governance. If people are more satisfied with the government's environmental governance, and has more confidence on the effects of environmental policy instruments, they will have relatively strong intention to participate in environmental governance, and relatively large possibility to implement PEB as well [28]. Consequently, environmental attitude was divided into citizens' attitude towards environmental protection and public satisfaction with the government's environmental governance in this paper and proposed the following hypothesis:

- H2 Environmental attitude has a positive impact on public sphere pro-environmental behavior.

Impact of Expected Performance on Public Sphere Pro-Environmental Behavior

Expectancy theory holds that the public's expectation on something will affect their behavior intention. In the field of environmental governance, whether the public implements PEB and how to carry out PEB are closely related to predicted behavioral consequences. If the public believes that it is less resistant to implement PEB, and will improve the environmental governance, increase the self and social welfare, PEB is more likely to be implemented. On the contrary, if the public holds poor expectation for environmental behaviors, environmental behaviors will hardly occur. Kiatkawsin et al. integrated Value Norm Theory (VBN) with expectancy theory, to study the influencing factors for environmental behavior intention, and found that the expectation of behavioral effect will affect the behavioral intention [29]. This study believes that if people have high expectations on their private sphere PEB, they will actively carry out environmental protection behaviors in their daily life. And if they have high expectations on others to implement PEB, they will hold high enthusiasm to carry out public sphere PEB. Therefore, this paper divided the expected performance into expected effects of private sphere PEB and expected effects of public sphere PEB, and made the following hypothesis:

- H3 Expected performance has a positive effect on public sphere pro-environmental behavior.

Mediating Effect of Expected Performance on Environmental Awareness and Public Sphere Pro-Environmental Behavior

Environmental awareness reflects the public's perception, feelings and values towards environmental protection, including the importance of environmental protection, the severity of pollution situation, the cognition of environmental knowledge and social norms, and the cognition of the importance of the government's environmental governance. Thus, environmental awareness will influence the expected performance of public participation, and then affect the implementation of public sphere PEB. If the participation has a bad expected effect, even if the public has a strong environmental awareness and environmental literacy, he or she may not really conduct PEB. Conversely, the possibility for the public with enhanced environmental awareness to implement PEB will be enhanced. Therefore, this paper constructed the path of "environmental awareness - expected performance - PEB" and made the following hypotheses:

- H4 Environmental awareness has a significantly positive effect on the expected performance of public participation.
- H5 Expected performance of public participation has a mediating effect in the relationship between environmental awareness and PEB.

Mediating Effect of Expected Performance on Environmental Attitude and Public Sphere Pro-Environmental Behavior

Environmental attitude reflects the public's emotional and behavioral tendency for environmental pollution. Therefore, environmental attitude can also affect the expected performance to a certain extent, and then affect the implementation of public sphere PEB. If the expected effect is not good, even if the public is opposed to environmental pollution, he or she may give up because of concerns. If the effect is expected, the possibility of pro-environment behaviors by the public who are opposed to environmental pollution will increase. Environmental attitude mentioned in this study refers to public satisfaction with the government's environmental governance. In principle, if the public has high satisfaction and trust on the government's environmental governance and life, the expected effect will also be better [30-31]. Therefore, this paper constructed the path of "environmental attitude-expected performance- PEB", and made the following hypotheses:

- H6 Environmental attitude has a significantly positive effect on the expected performance of public participation.
- H7 Expected performance of public participation has a mediating effect in the relationship between environmental attitude and pro-environmental behavior.

The theoretical conceptual model of this study is shown in Fig. 1.

Research Design

Questionnaire Distribution and Data Source

The questionnaire used in this study was derived from the "Analysis and Survey on the Formation Mechanism and Paths of Pro-environmental Behavior in Public Participation in Environmental Governance" revised in August 2021. This questionnaire mainly

consists of five parts: basic personal information, environmental awareness, environmental attitude, expected performance, and PEB. In order to ensure the scientific and reasonable design, the questionnaire design process mainly follows the procedures below: "Literature review and fieldwork → Discussions with experts in this field → Formation of the first draft → Small sample test → Revision and improvement of the questionnaire → Finalization of the questionnaire." To ensure the representativeness, this study mainly used the combined method of non-random sampling and random sampling to obtain the sample capacity of 31 provinces in the Chinese mainland, with a total of 2500 copies of the questionnaire distributed and 2326 of them recovered, accounting for 93.04%.

From the overall situation of samples, the respondents were all adults aged 18-90 years old, fairly even in genders, who can objectively and rationally reflect own emotions and feelings, with an average education between middle schools and senior high schools, which is in line with the actual situation of nine-year compulsory education system in China. The average annual total income of them is 31,805.31 yuan, in line with the data of per capita total income in 2020 released by the Chinese government. Therefore, the respondents can reflect the actual situation of the Chinese public's participation in environmental governance and the implementation of PEB on the whole, namely, the samples are representative and scientific to some extent.

Variable Measurement

In order to ensure the reliability and validity of the measurement scale, this study tried to learn from the recognized mature scales in the existing literature, and repeatedly considered and modified the measurement questions of the scale combined with the characteristics of this study. The measurement problems in this study were formed in the form of internationally accepted Likert 5 scale, with numbers from 1 to 5, which represent the degree getting increasingly higher.

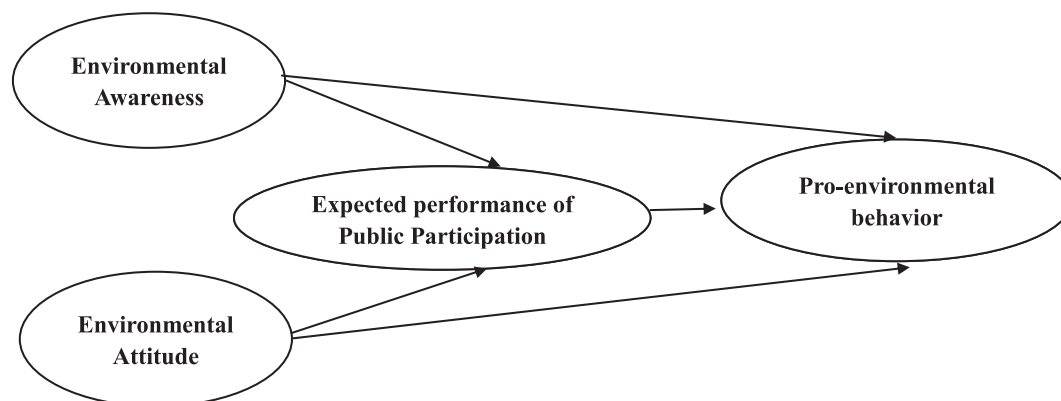


Fig. 1. The conceptual model of this study.

Table 1. Basic characteristics of the surveyed individual.

Measurement questions (variable code)	N	Min	Max	Mean	Standard Deviation
Gender (G1)	2326	1	2	1.53	0.50
Age (A1)	2326	18	98	52.10	16.90
Education degree (ED1)	2326	1	7	3.87	3.11
Personal annual total income (M1)	2326	0	500000	31805.31	205840.55

Specifically, the measurement questions for variables were designed as follows:

(1) Environmental Awareness: In the previous literature, environmental awareness was measured in various ways. Russell et al. developed an environmental concern scale [32]; Dunlap et al. compiled the New Environmental Paradigm (NEP), to measure the public's views on natural balance and ecological and environmental crisis [33-34]. This paper draws lessons from the problems in NEP and modified them to measure the public's awareness of environmental protection, the government's environmental governance and PEB.

(2) Environmental Attitude: The previous research has paid more attention to individual citizens' attitude

towards environmental protection, their resistance to environmental pollution, and the value recognition of PEB [35-36]. This study comprehensively measures the public's attitude towards PEB and the government's environmental governance, including "Do you think it is crucial to protect the environment?", "Will you be very angry to see environmental pollution?", "Are you confident in the government's environmental governance?" .

(3) Expected Performance of Public Participation: Previous studies have shown that in developing country, the expected effect of the public on their environmental behaviors will affect their behavior intention [37]. In this study, the expected effects of public participation in environmental governance were measured from

Table 2. Variables and measurement questions.

Variable	Measurement questions (Code)
Environmental Awareness	Are you concerned about environmental governance? (EAW1)
	Do you agree with that „Human destruction of nature often leads to disastrous consequences”? (EAW2)
	Do you agree with that, At present, human is abusing and destroying the environment”? (EAW3)
	Do you agree with that „If everything continues as it is, we will soon suffer a serious environmental disaster”? (EAW4)
Environmental Attitude	Do you think that environmental protection is critical? (EAT1)
	Do you oppose environmental pollution? (EAT2)
	Will you be very angry to see environmental pollution? (EAT3)
	Do you have full confidence in the government's environmental governance? (EAT4)
Expected performance of Public Participation (EPP)	Overall, do you think the previous behavior is very helpful for the improvement of the environment? (EPP1)
	Did the environmental protection actions you participated in before have „process effectiveness”? (EPP2)
	Did the environmental protection actions you participated in before have „result effectiveness”? (EPP3)
	Your expectation for overall expected effect of public participation in environmental behavior in the future. (EPP4)
	“Your expectation for process effectiveness” in public participation in environmental governance in the future. (EPP5)
	“Your expectation for result effectiveness” in public participation in environmental governance in the future. (EPP6)
Pro-environmental behavior (PEB)	Do you often notice and think about environmental problems? (PEB1)
	Do you often implement environmental behaviors? (PEB2)
	Do you publicly speak in support of environmental protection or join environmental protection organizations? (PEB3)
	Do you encourage others to implement environmental behaviors? (PEB4)

two dimensions, including the evaluation of the current situation and the evaluation of the future. The comprehensive evaluation on the expectations for the overall performance of public sphere PEB, the process effectiveness and the result effectiveness from three levels [38]. It is noted in the questionnaire that the effectiveness of the process refers to the expectations for the government's response speed, disclosure of information, governance speed, etc., the effectiveness of the results refers to the expectations for disposal results, environmental governance results, etc., and the overall effectiveness refers to the expectations for comprehensive results. Furthermore, the public expectations for the effects of participating in environmental governance were comprehensively understood and evaluated.

(4) PEB: During the empirical analysis in this study, PEB as dependent variables include private sphere PEB and public sphere PEB. Among them, private sphere PEB focuses on examining the public's daily environmental behaviors, and public sphere PEB focuses on measuring the environmental behaviors in the public field and the positive impact on others and the society.

The four dimensions of environmental awareness were assigned values from 1 to 5 according to the degree of concern. The greater the value, the higher the degree of concern. And so on, among the four dimensions of

environmental attitude, a greater value indicates the stronger attitude against environmental pollution and supporting PEB, and more satisfaction with the attitude towards the government's environmental governance. Among the six dimensions of the expected effect of public participation, a greater value means the more ideal expected effect. Among four dimensions of PEB, a larger value represents the more frequent behavior. After a descriptive statistical analysis on each studied variable with the SPSS 26 software, the maximum value, the minimum value, the mean, and the standard deviation of each variable and its measurement questions were obtained. The results of Table 3 show that the mean of all the four questions reflecting environmental awareness is between 2.0-2.6, higher than the mean of the four dimensions of environmental attitude. This indicates that although some people's environmental awareness is relatively strong, the protest against environmental pollution is not too strong in practice, and their satisfaction with the government's environmental governance is not too high. Among the six dimensions of the expected effects of public participation in environmental governance, the overall expectation for the current situation is lower than that for the future, and the mean of both is not too high. The expectation for the process is also slightly higher than that for the results, and the expectation for the current situation is also lower than that for the future, suggesting that the public does not evaluate highly of the expected effect of participating in environmental governance behaviors, but it is still confident in the future development. Among the four dimensions of private sphere PEB, the mean of private sphere PEB is higher than that of public sphere PEB, indicating that the frequency of private sphere PEB is higher than that of public sphere PEB. However, overall, all kinds of PEB are not very frequently.

Data Analysis Results

Since the directions of the variables and measurement questions were quite inconsistent, the data were pre-processed before the structural equation modeling construction with AMOS 24.0, to ensure that the direction of the numerical characterization of each question was consistent. In addition, the relationship between the variable model and questions involved in this study is also more complicated, and the analysis on the mediating variable effect is also needed. Therefore, the reliability and validity test is required before building the model to ensure the fitness of the model. The results showed that the overall Cronbach's value was 0.688, suitable for empirical studies.

From Table 4, the Cronbach's of the latent variables of environmental awareness, environmental attitude, effectiveness of public participation and PEB were 0.858, 0.857, 0.852 and 0.868, respectively, indicating the consistency between each measurement index.

Table 3. Descriptive statistical analysis results of variables.

Variable code	Min	Max	Mean	Standard Deviation
EAW1	1	4	2.07	0.408
EAW2	1	4	2.31	0.727
EAW3	1	4	2.27	0.749
EAW4	1	5	2.59	0.836
EAT1	1	5	1.86	0.307
EAT2	1	4	1.78	0.342
EAT3	1	4	1.67	0.305
EAT4	1	3	1.29	0.316
EPP1	1	3	1.08	0.804
EPP2	1	3	1.12	0.719
EPP3	1	3	1.07	0.732
EPP4	1	4	1.22	0.859
EPP5	1	4	1.24	0.841
EPP6	1	3	1.20	0.729
PEB1	1	4	2.19	0.572
PEB2	1	3	1.86	0.602
PEB3	1	3	1.04	0.632
PEB4	1	3	1.01	0.621

Table 4. Reliability and validity test.

Variable	Code	Factor loading	Cronbach's α	Contribution rate (%)	Cumulative contribution rate (%)
Environmental Awareness	EAW1	0.856	0.858	14.024	14.024
	EAW2	0.801			
	EAW3	0.896			
	EAW4	0.866			
Environmental Attitude	EAT1	0.879	0.857	11.661	25.685
	EAT2	0.893			
	EAT3	0.864			
	EAT4	0.808			
Expected performance of Public Participation	EPP1	0.853	0.868	26.847	52.532
	EPP2	0.887			
	EPP3	0.881			
	EPP4	0.863			
	EPP5	0.859			
	EPP6	0.852			
Pro-environmental behavior	PEB1	0.869	0.852	9.513	62.045
	PEB2	0.825			
	PEB3	0.821			
	PEB4	0.885			

In terms of validity test, the latent variables are analyzed by maximum orthogonal rotation of principal component factors, with the variance contribution rate of four main factors of 14.024%, 11.661%, 26.847% and 9.513%, and the cumulative contribution rate of more than 60%. The standard factor load coefficient of the observable variables was greater than 0.6. The overall results reflect a good structural validity of each potential variable, and the structural equation modeling can be constructed.

The studied hypotheses were verified with AMOS 24.0 and the final corrected model fitting results are shown in Table 5. GFI of the model was 0.984, greater than 0.9, RMSEA was 0.045, less than 0.08, NFI was 0.964, greater than 0.9, IFI was 0.964, greater than 0.9, RMR was 0.006, less than 0.05, AGFI was 0.974, greater than 0.9, and CFI was 0.964, greater than 0.9, indicating a good relative fitting of the model. The results showed that: (1) Environmental awareness did not directly have a significantly positive impact on PEB, with a full mediating effect, rejects hypothesis H1. The reasons will be further explained below; (2) Environmental attitude has a significantly positive impact on PEB, with the normalized path coefficient of 0.264, This supports H2; (3) The expected performance of public participation (EPP) has a significantly positive impact on PEB, with the normalized path coefficient of 0.389, supporting hypothesis H3; (4) Environmental awareness has a significantly positive impact on

the expected effect of public participation, with the normalized path coefficient of 0.153, supporting hypothesis H4; (5) Environmental attitude has a significantly positive impact on the expected effect of public participation, with the normalized path coefficient of 0.371, This supports hypothesis H6.

As can be seen from the conceptual model of this study, the effects of environmental awareness and environmental attitude on environmental behaviors include the impact on direct path, as well as the indirect path affecting environmental behaviors through influencing the expected effect of public participation (mediating variables). Therefore, the model effects were decomposed to more clearly illustrate the influencing paths of variables while verifying the mediating effects in the model. The traditional methods to study mediating effects are B-K test and sobel test, but the causal test used by B-K test is the least feasible method of tests [39], while sobel test used the z-test to verify the significance of the model, but the mediating effects generally do not meet the normal distribution, so the Z value calculated by this method is biased [40]. This paper used Bootstrap in the trust interval method. Bootstrap can be divided into percentile bootstrap CI method (PC) and bias corrected percentile bootstrap CI method (BC). BC corrected the problem that the median value of PC sequence was not necessarily equal to the estimated value of mediation effect calculated from the original sample data. When using Amos operation, if the upper and lower bounds of

Table 5. The fitting results of the structural equation model.

Path		Path coefficient	S.E.	C.R.	P value	Standardization path coefficient	Result
PEB←Environmental awareness		0.010	0.012	0.850	0.395	0.004	rejects H1
PEB←Environmental attitude		0.067	0.011	9.825	***	0.264	supports H2
PEB←EPP		0.361	0.005	74.358	***	0.389	supports H3
EPPP←Environmental awareness		0.151	0.009	17.017	***	0.153	supports H4
EPPP←Environmental attitude		1.093	0.009	124.674	***	0.371	supports H6
Fit indicator	GFI	0.984	IFI	0.964	CFI	0.964	
	RMSEA	0.045	RMR	0.006			
	NFI	0.964	AGFI	0.974			

Table 6. The Decomposition Results of model effect based on Bootstrap method.

Variable	Model effect	Path	Estimate	P	PC		BC	
					Lower bound	Upper Bound	Lower bound	Upper Bound
Environmental awareness	Direct effect	Environmental awareness→PEB	0.010	0.395	0	0	0	0
	Indirect effect	Environmental awareness→EPP→PEB	0.395	0.001***	0.383	0.407	0.382	0.407
	Total effect		0.405	0.001***				
Environmental attitude	Direct effect	Environmental attitude→PEB	0.067	0.001***	0.042	0.092	0.041	0.092
	Indirect effect	Environmental attitude→EPP→PEB	0.054	0.001***	0.047	0.062	0.047	0.061
	Total effect		0.121	0.001***				

the indirect effect obtained through the analysis did not contain 0, there was a mediating effect, and vice versa. If the mediating effect was present, the direct effect was further analyzed, and if the upper and lower bounds did not include 0, the direct effect was partial, and vice versa, which is complete.

Table 6 shows the model effect decomposition results based on Bootstrap, indicating that: (1) The indirect effect of environmental awareness on pro-environment behavior ways including 0 in the upper and lower bounds of PC and BC indicates a mediating effect, and the direct effect including 0 in the upper and lower bounds of PC and BC indicates no direct effect, which is a complete mediating effect. Specifically, the total effect, direct effect and indirect effect were 0.405 ($p<0.01$), 0.01 (not significant) and 0.395 ($p<0.01$), respectively, supporting hypothesis H5. (2) The indirect effect of environmental attitude affecting environmental behavioral ways not including 0 in the upper and lower bounds of PC and BC indicates a mediating effect. Specifically, the total effect, direct effect and indirect effect were 0.121 ($p<0.01$), 0.067 ($p<0.01$) and 0.054 ($p<0.01$), indicating that environmental attitude has a positive effect on PEB, partly by affecting the expected performance of public participation(EPP), thus affecting PEB, supporting hypothesis H7.

Conclusions

By constructing an equation model, the influence mechanism and action paths of potential variables such as environmental awareness, environmental attitude and public participation were studied. The main conclusions are as follows:

(1) Environmental awareness and environmental attitude are both important factors affecting PEB. Therefore, it is necessary to strengthen environmental education, improve the public's environmental literacy, make the public realize the importance of participating in environmental governance and implementing PEB, to establish a correct environmental view. At a mean time, the public should be guided to enhance their trust and satisfaction with the government's environmental governance, and form a cooperative governance model with the government.

(2) Environmental awareness and environmental attitude influence PEB through the mediating variable of "expected effect of public participation". Moreover, the mediating effect of environmental attitude and PEB is partial mediating, that is, environmental attitude has a direct impact on PEB, and also has an indirect impact on PEB through public participation. The mediating effect of environmental awareness and PEB is complete

mediating, that is, the improvement of environmental awareness does not directly affect PEB, but by improving the expected effect of public participation, thus further promote the implementation of PEB. The two conduction paths are different.

Countermeasures and Suggestions

In a centralized country as China, the public's satisfaction and result expectation of the government's environmental governance will have a very strong impact on their behavior intention in the public participation in environmental governance and the implementation of PEB. Therefore, when the public has a certain environmental awareness, they will not necessarily change the environmental awareness into pro-environment behaviors. Only when the environmental awareness is relatively strong and the expected effect is ideal, PEB will be actively implemented. Since this study explored the public attitude towards the government's environmental governance when measuring the public's environmental attitude, it was found that environmental attitude can directly affect and indirectly affect the implementation of PEB by affecting the expected effects.

In practice, the improvement of the public's environmental awareness will guide them to pay attention to the government's environmental governance behaviors, understand a series of environmental policies, laws and regulations. When they see environmental pollution, they will trust the government more, and the expected performance of public participation will be better, improving the enthusiasm of environmental behaviors. In this study, the public's environmental attitude means both the protest against environmental pollution and the improvement of the government's satisfaction and confidence in environmental governance. Therefore, environmental attitude can affect both the expected effects of public participation and the frequency of PEB implementation. In the actual governance process, there are different conduction paths of environmental awareness and environmental attitude, but both of which will affect the enthusiasm of the public to implement PEB by affecting the expected effects. Therefore, we propose the following countermeasures:

(1) The mediating effect of expected effect of public participation is partly mediating on environmental attitude and PEB, both of which act together on PEB. Therefore, it is necessary to fully realize the impact of environmental attitude and the expected effect of public participation on PEB, and pay attention to improve the public's satisfaction with the government's environmental governance while cultivating correct environmental attitude and values, to improve the public's effect expectations for PEB, and then enhance their behavior intention.

(2) Although the simple cultivation of environmental awareness will not directly promote the public to implement PEB, it will indirectly affect PEB by affecting the expected effect of public participation. Therefore, the government should carry out extensive and diversified environmental education to enhance the credibility of the government while enhancing the public's environmental knowledge and environmental literacy. In the mean time, attention should be paid to distinguish the different characteristics of private and public sphere PEB, and to encourage the public to carry out various forms of PEB.

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Conflicts of Interest

The authors declare no conflicts of interest.

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