Study on the influence mechanism of recycling behavior on Pro-environmental behavior

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Abstract. The spillover effect between Pro-environmental behaviors is not enough studied, which is of great significance to understand the dynamic behavior of consumers as a whole. Based on a questionnaire survey and empirical analysis based on structural equation model, this paper reveals the spillover effect of consumer recycling behavior on Pro-environmental behavior, and examines the influence mechanism from the psychological perspective of emotion and environmental identity. The results show that recycling efforts positively affect Pro-environmental behavior through the mediating mechanism of pride and environmental identity.

1 Introduction

There is no substitute for the ecological environment, so it is hard to use it without being aware of it. Sustainable development has become an important issue, and environmental problems cannot be separated from the joint efforts of mankind. Practicing Pro-environmental behavior is conducive to slow down environmental problems. One of the most important is the recycling behavior, which helps to alleviate the problem of garbage pollution, reduce the waste of resources, and contribute to the regeneration of resources.

At present, although domestic and foreign scholars have conducted in-depth discussion on the influencing factors and a promotion mechanism of Pro-environmental behavior[1], there are few studies on the spillover effect mechanism of recycling efforts on Pro-environmental behavior. In order to explore the spillover effect mechanism of recycling efforts on Pro-environmental behavior, this study explored the following questions through a questionnaire survey: what impact will people's recycling activities have on their future Pro-environmental behavior? If so, what is its internal mechanism? Through questionnaire survey and emotional mediating variables, this study deeply explores the impact of recycling efforts on Residents' Pro-environmental behavior, further explores its internal impact mechanism, and expands the research on the impact mechanism of recycling efforts on Pro-environmental behavior, so as to provide theoretical basis and practical guidance for promoting residents' Pro-environmental behavior in China.

2 Theoretical basis and research hypothesis

2.1 Moral reinforcement effect and moral permission effect

The current moral behavior will have an impact on the subsequent moral behavior, showing consistency or inconsistency. This dynamic change is called "moral self-regulation". The consistence of successive moral behaviors is called moral reinforcement, that is, previous moral behaviors promote subsequent moral behaviors^[2] on the contrary, if you have done moral behavior before and allow yourself to reduce moral behavior or engage in immoral behavior later, it is called moral permission. In the research, we first introduced the research of moral permission effect into the field of prosocial behavior^[3], and found that the fluctuation of moral level of people's daily behavior conforms to the law of moral permission effect.

2.2 Spillover effects of recycling efforts on Pro-environmental behavior

Recycling behavior is a kind of Pro-environmental behavior. Recycling effort is the number of individuals practicing recycling behavior objectively, without subjectivity and enthusiasm. Such as: individual purchase of recyclable items, garbage classification and so on. These recycling behaviors have a certain spillover effect on subsequent Pro-environmental behaviors. Research shows that human behavior is consistent^[4]. When people make the previous choice, they will guide the subsequent choice. The choice of the first project will affect the individual's subsequent choice, so as to achieve the best experience of self-set goals. When people engage in

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wasteful behavior, they will produce negative emotions such as guilt, shame and embarrassment. In order to reduce the negative emotions caused by this wasteful behavior, some scholars introduce two mechanisms, pride and environmental identity. Pride is a kind of positive emotion, which often occurs when people engage in Pro-environment behavior or achieve certain achievements. When the individual engaged in Pro-environmental behavior, believe that their behavior is moral, will be proud of their behavior. Recycling behavior is beneficial to the society and friendly to the environment. Therefore, when individuals engage in Pro-environmental behavior such as recycling behavior, they will think that they have made some contribution to environmental protection, and then increase the generation of pride. The research of moral certificate points out that engaging in behaviors considered as good moral will improve self-concept and increase positive emotions, that is, after making recycling efforts, individuals will think that they are a person with environmental awareness, so as to improve self-concept and generate a sense of environmental identity. Based on the previous research on the spillover effect of recycling behavior^[5], this paper puts forward the following assumptions.

H1a: Recycling efforts have a positive impact on pride.

H1b: Recycling efforts positively affect environmental identity.

Existing empirical studies show that positive emotions (such as happiness and pride) have a positive relationship with self-concept. Therefore, after practicing Pro-environmental behaviors such as recycling behavior, individuals feel that they have made contributions to the environment, which makes them feel proud, improves their positive self-concept as environmentalists, and affects the formation of environmental identity. Therefore, this paper puts forward a hypothesis.

H1c: Pride has a positive impact on environmental identity.

Pro-environmental behavior, also known as environmental friendly behavior, environmental responsibility behavior, sustainable behavior, etc., usually refers to the behavior that can reduce the harm to the environment or be beneficial to the environment as much as possible. From the perspective of environmental behavior science, Pro-environmental behavior is divided into Pro-environmental behavior in public domain (such as becoming an active environmental citizen, supporting environmental protection policies, joining environmental protection organizations, etc.) and Pro-environmental behavior in private domain (such as individuals or families purchasing, using and handling environmentally beneficial products or services, etc.)^[6]. When people

practice Pro-environmental behavior, according to the moral permission effect, in the context of consumer behavior, the former Pro-environmental behavior activates and promotes the positive self-concept (Environmental identity), reduces their negative emotions, and permits their subsequent more indulgent behavior. Therefore, recycling efforts may activate environmental self-identity and negatively affect Pro-environmental behavior. In addition, some studies have pointed out that the positive emotions generated when individuals practice recycling behavior will reduce the negative emotions in the waste of resources. Pride, as a positive emotion, can make individuals feel better than others^[7]. Therefore, this paper puts forward the following hypotheses:

H2a: Pride negatively affects Pro-environmental behavior in the public domain.

H2b: Pride negatively affects private Pro-environmental behavior.

H3a: Environmental identity negatively affects Pro-environmental behavior in public domain.

H3b: Environmental identity negatively affects private Pro-environmental behavior.

In conclusion, combined with previous studies, this paper puts forward the model diagram of recycling effort spillover effect, as shown in Figure 1.

Fig. 1. The spillover effect model of recycling effort

3 Empirical research

3.1 Sample measurement

The research object is consumers who have recycling behavior. 263 questionnaires are obtained through the sample service of questionnaire star, among which 248 are valid and the effective rate is 94%. There were 166 females, accounting for 66.93%. In terms of age, most of the samples were 18-25 years old, accounting for 81.75%. Most of them are full-time students. The five constructs in the questionnaire: recycling effort, environmental identity, pride, recycling cost and Pro-environmental behavior were measured with the existing mature scale. This paper analyzes the reliability and validity of the questionnaire, and the results are shown in Table 2, the results are good.

Table 1. Construct measurement and factor load

Construction	Gauge	Factor load
Recycling efforts Cronbach's Alpha=0.889 C.R=0.923 AVE= 0.751	I usually sort and dispose of all recyclable materials	0.883
	I am highly involved in recycling activities	0.865
	I tend to buy products that can be recycled in the future	0.822
	I insist on sorting and disposing recyclable materials	0.894
Environmental identity Cronbach's Alpha=0.933 C.R=0.949 AVE=0.789	I think of myself as an environmentally friendly person	0.914
	I think I am a person who is very concerned about environmental issues	0.899
	If I have an environment-friendly lifestyle in the eyes of others, I will be very happy	0.924

	I want my family and friends to think that I am a caring person	0.867
	I think everyone should contribute to environmental protection	0.829
Sense of pride Cronbach's Alpha=0.981 C.R=0.987 AVE= 0.963	I'm proud of my recycling behavior	0.979
	My recycling behavior makes me feel good	0.983
	My recycling behavior makes me feel proud	0.983
	Garbage sorting	0.804
Private Pro-environmental behavior Cronbach's Alpha=0.862 C.R=0.901 AVE= 0.646	Discuss environmental issues with your relatives and friends	0.739
	Bring your own shopping basket (bag) when purchasing daily necessities	0.764
	Reuse of plastic bags	0.864
	Take the initiative to pay attention to the environmental problems and environmental protection information reported by the media or we media	0.843
Public Pro-environmental behavior Cronbach's Alpha=0.835 C.R=0.884 AVE=0.604	Contribute to environmental protection	0.699
	Actively participate in environmental publicity and education activities of social organizations	0.811
	Actively participate in environmental protection activities organized by non-governmental environmental protection organizations	0.816
	Conservation of forest or green space	0.744
	Actively participate in the complaints and appeals for solving environmental problems	0.811

3.2 Hypothesis testing and analysis

Using the software Smartpls 3.0 and the relevant theory of structural equation model, this paper makes an exploratory analysis on the spillover effect of Pro-environmental behavior. The hypothesis test results are shown in Table 2 below.

From the results, recycling efforts have a positive impact on pride ($b = 0.521$, $t = 9.675$, $P = 0.000 < 0.001$, significant), hypothesis H1a is verified. Recycling efforts had a positive impact on environmental identity ($b = 0.139$, $t = 2.329$, $P = 0.020 < 0.05$), and hypothesis H1B was

verified. Pride has a positive effect on environmental identity ($b = 0.557$, $t = 8.865$, $P = 0.000 < 0.001$, significant). Hypothesis H1C is verified. Pride has a significant positive impact on public domain Pro-environmental behavior ($b = 0.216$, $t = 2.350$, $P = 0.019 < 0.05$, significant) and private domain Pro-environmental behavior ($b = 0.248$, $t = 3.185$, $P = 0.001 < 0.01$, significant). Hypothesis H2A and H2B are verified. Environmental identity has a significant positive impact on public domain Pro-environmental behavior ($b = 0.427$, $t = 4.866$, $P = 0.000 < 0.001$, significant) and private domain Pro-environmental behavior ($b = 0.468$, $t = 6.019$, $P = 0.000 < 0.001$, significant). Hypothesis h3a and H3B are verified.

Table 2. Hypothesis test of spillover effect of recycling effort

	b	R ²	t	P
Recycling efforts → Sense of pride	0.521	0.271	9.675	0.000
Recycling efforts → Environmental identity	0.139	0.410	2.329	0.020
Sense of pride → Environmental identity	0.557	0.410	8.865	0.000
Sense of pride → Public Pro-environmental behavior	0.216	0.346	2.350	0.019
Sense of pride → Private Pro-environmental behavior	0.248	0.427	3.185	0.001
Environmental identity → Public Pro-environmental behavior	0.427	0.346	4.866	0.000
Environmental identity → Private Pro-environmental behavior	0.468	0.427	6.019	0.000

SPSS was used to test the mediating effect. The results are shown in Table 3, only ind 1 is not verified.

In order to express the influence path of mediating effect more vividly, figure 2 integrates the estimation

results of structural equation model and the test results of mediating effect.

Table 3. Results of mediating effect test

Dependent variable		Effect	BootSE	BootLLCI	BootULCI	Relative mediating effect	P
Public Pro-environmental behavior	Total indirect effect	0.162	0.042	0.086	0.251	41.82%	Significance
	Ind1: Recycling efforts → Sense of pride → Public Pro-environmental behavior	0.038	0.037	-0.033	0.112	9.77%	No significance
	Ind2: Recycling efforts → Environmental identity → Public Pro-environmental behavior	0.04	0.022	0.006	0.089	10.41%	Significance
	Ind3: Recycling efforts → Sense of pride → Environmental identity → Public Pro-environmental behavior	0.084	0.024	0.042	0.136	21.64%	Significance
	Total indirect effect	0.213	0.048	0.122	0.309	58.68%	Significance
Private Pro-environmental behavior	Ind1: Recycling efforts → Sense of pride → Private Pro-environmental behavior	0.068	0.037	0.001	0.149	18.73%	Significance
	Ind2: Recycling efforts → Environmental identity → Private Pro-environmental behavior	0.047	0.023	0.006	0.096	12.98%	Significance

Fig. 2. Chain mediation diagram
Note:* means P < 0.05, ** means P < 0.01, *** means P < 0.001

4 Conclusion and discussion

Firstly, this paper reveals the mediating effect of pride and environmental identity on recycling effort influencing Pro-environmental behavior, which can help to understand the psychological mechanism of the interaction between different Pro-environmental behaviors. In addition, public and private Pro-environmental behaviors are positively affected by recycling efforts and mediating variables, and there is no significant difference. Pride and environmental identity have a positive impact on Pro-environmental behavior and play a mediating role. It provides evidence for the positive spillover of recycling behavior and its mechanism: recycling efforts positively promote the willingness of Pro-environmental behavior through the mediation of pride and environmental identity, which is contrary to the prediction based on moral permission effect, which means that the consistency principle is more suitable to explain the problems raised in this study; at present, there is no research focusing on the relationship between recycling behavior and Pro-environmental behavior, so this study enriches the empirical research in the field of consumer behavior and Pro-environmental behavior; Secondly, it verifies the mediating effect of pride and environmental identity. Deepen the understanding of recycling behavior. Third, this paper provides a reference for the government to formulate policies. On the one hand, the policy design should provide convenience for the implementation of recycling behavior and reduce the difficulty of recycling; On the other hand, the government should improve the voluntary nature of recycling behavior through publicity and education and spiritual incentives.

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