



Investigating The “Crowding-Out” Effect of Religious Beliefs on Individuals’ Pro-Environmental Behaviors: A Dual-Pathway Model

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ABSTRACT

This study constructs a theoretical model to explain the relationship between religious belief, environmental perception, network use and individual pro-environmental behavior. The largest comprehensive social survey data in China provides empirical support for our theoretical model. Our empirical results indicate that individual religious belief is negatively related to their pro-environmental behavior in which individual environmental perception and network use play a partial mediating role. Besides, our model explains whether and why religious beliefs exist in individuals' pro-environmental behaviors, which contributes to both theory and practice.

Keywords: Religious belief, Environmental perception, Internet use, Pro-environmental.

1. INTRODUCTION

At present, the global ecological crisis is becoming more and more serious, and the balance between human being and nature is also facing increasingly severe challenges. Human beings should take the responsibility of protecting the environment, as the Rio Declaration declared: solving environmental problems requires the participation of every citizen in the world. Therefore, triggering individual environmental behavior is an important measure to promote the current social and economic sustainable development [10].

Nowadays, the sociological and psychological scholars are actively responding to this urgent challenge and finding out the key factors that trigger the individual pro-environmental behavior. Previous studies on antecedent variables of pro-environmental behavior have focused on individual level mostly, such as personality characteristics, and ignore the broader social and cultural background [6]. In view of the global nature of current environmental problems, it is necessary to explore the role of social culture in influencing personal pro-environmental behavior. Religion is an extremely

important cultural representation in human society, which has an important influence on individual psychology and behavior tendency [5]. Therefore, the first aim of this study is to promote this work by investigating the influence of religious beliefs on individual pro-environmental behaviors.

In fact, scholars have discussed the relationship between religious belief and pro-environmental behavior, which can be summarized as the following two opposing views. The first view is that religion itself encourages believers to carry out environmental behavior [24] [25]. Another view is called natural notification, which proposes that religion plays an important role in predicting individual environmental damage behavior [21] [23]. After reviewing the above literature, we find that this conflicting view may be due to the following two reasons: First, most of the relevant studies promote the environment from the perspective of religion, using whether individuals have religious beliefs as the measurement method, ignoring different levels of individual religious beliefs. Second, previous studies on the relationship between religious belief and individual pro-environmental behavior are mostly data-driven direct effect empirical tests, ignoring the mediating mechanism

between the two variables. Therefore, the second purpose of this study is to solve the above conflicting view by investigating the mediating mechanism of religious belief on individual pro-environmental behavior. Environmental perception and media (e.g. Internet use) are considered to be important predictors of individuals' willingness to implement pro-environmental behaviors [16]. Therefore, this study will take media and perception as two transmission mechanism to explain how religious beliefs affect individual pro-environment behavior.

To sum up, this study constructs a dual-pathway model with individual environmental perception and Internet use as mediating variables to explain whether and how individual religious beliefs inhibit their pro-environmental behavior. The data from the largest comprehensive social survey in China provide empirical support for our theoretical model.

2. THEORY AND HYPOTHESIS

2.1 *Religious Belief and Individuals' Pro-environmental Behavior*

At present, scholars have conducted extensive discussions on the relationship between religion and individuals' pro-environmental behaviors. The discussion on the relationship between religion and human's pro-environmental behavior originates from a paper of White. He argues that the basic doctrine of Christianity is that human beings will eventually defeat nature, which is contrary to pro-environmental values [23]. This study is consistent with White's views. Specifically, we believe that religious beliefs have a negative impact on the individual's pro-environmental behavior. In fact, recent studies show that when a person believes in a God with strong control, his motivation to pursue his goals decreases [14]. Therefore, compared with individuals with lower religious belief level, we believe that people with higher religious belief level have lower support for the environment since they have stronger faith in God.

To sum up, we propose the following hypothesis:

Hypothesis 1: Religious belief has the negative effect on individuals' pro-environmental behaviors.

2.2 *Perception as a Transmission Mechanism: the Mediating Role of Individuals' Environmental Perception*

Environmental perception or evaluation of the consequences of a person's destructive environmental behavior has been regarded as an important predictor of an individual's intention to implement pro-environmental behavior [7] [20]. Therefore, it is of great theoretical significance to study the mediating role of individual environmental perception in the relationship between

religious belief and their pro-environmental behavior. Previous literature shows that individuals with higher religious belief tend to regard God and religious doctrines as the most critical factors, so self-expression of personal beliefs and attitudes is not a priority for religious people [12] [22].

To a certain extent, environmental perception reflects the assessment of individual threat to environmental degradation [1]. According to the theory of protection motivation, individuals who think that events are harmful and that they can deal with threats are more likely to take protective actions [3] [15] [19].

In summary, we propose the following hypothesis:

Hypothesis 2a: Religious belief has the negative effect on individuals' environmental perception.

Hypothesis 2b: Individuals' environmental perception has the positive effect on their pro-environmental behaviors.

Hypothesis 2c: Individuals' environmental perception plays the mediating role between religious belief and their pro-environmental behaviors.

2.3 *Media as a Transmission Mechanism: the Mediating Role of Individuals' Internet Use*

The Internet is becoming more and more popular. It is of great practical significance to understand the role of Internet use between religious belief and individual environmental behavior. We believe that religious belief will have a negative impact on individual Internet use behavior. Individuals with a higher level of religious belief tend to believe in God and religious doctrines [8]. But the Internet is characterized by the flow of religious authority. Therefore, to a certain extent, the Internet threatens the authority of God in religious belief.

Past studies on traditional media have shown that the longer an individual watches the media, the closer his perception of the real world is to the scene constructed by the media [9]. Recent studies have shown that the media is playing an increasingly important role in improving individuals' awareness of environmental change. Individuals can search for environmental knowledge through the Internet to improve their environmental awareness [2] [11]. This has a great effect on promoting individual environmental behavior [13].

In summary, we propose the following hypotheses:

Hypothesis 3a: Religious belief has the negative effect on individuals' Internet use.

Hypothesis 3b: Individuals' Internet use has the positive effect on their pro-environmental behaviors.

Hypothesis 3c: Individuals' Internet use plays the mediating role between religious belief and their pro-environmental behaviors.

The established theoretical model is shown in Figure 1:

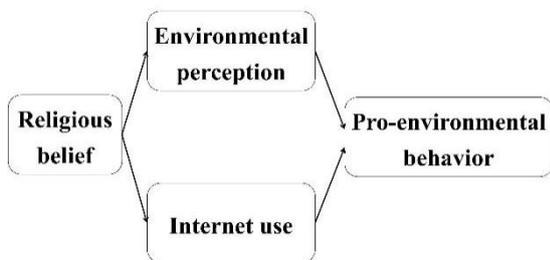


Figure 1: Theoretical model

3. DATA SOURCES AND ANALYTIC STRATE

The data used in this study are from the 2013 China Comprehensive Social Survey (CGSS) jointly conducted by Renmin University of China and Hong Kong University of science and technology. A total of 100 counties (districts) were selected from 28 provinces (municipalities and autonomous regions) in China. A total of 11,438 samples were obtained, which has strong national representativeness. The project survey collected data related to this study, including individual demographic characteristics such as age, gender, education level, household registration, and religious beliefs, Internet use, environmental perception, and environmental behavior of the respondents. After screening invalid samples, we got a total of 6,254 samples.

First, we use OLS regression to test hypotheses 1, 2a, 2b, 3a, and 3b, and further use PROCESS macro to test the mediation effect (hypotheses 2c and 3c).

4. RESULTS

4.1 Common Method Variance

The core variables, such as religious belief, Internet use, environmental perception, and pro-environmental behavior that involved in this article, are all reported by individuals themselves, which means that the empirical results may suffer common method variance. Therefore, the Harman’s single factor method was adapted to examine the common method variance. The test results shown that the percentage of first factor is 22.457% and the total is 53.347%, which meets the requirement that the maximum extracted variance should be less than the 50% of the total explained variance. So, our data will not suffer the common method variance.

4.2 Correlation Analysis

As shown in Table 1, there is a significant correlation between religious belief, Internet use, environmental perception and pro-environmental behavior. In particular, religious belief was significantly negatively correlated with individuals’ Internet use ($r=-0.076, p<0.01$), religious belief was significantly negatively correlated with individuals’ environmental perception ($r=-0.036, p<0.01$), religious belief was significantly negatively correlated with individuals’ pro-environmental behavior ($r=-0.147, p<0.01$), individuals’ Internet use was significantly positively correlated with their pro-environmental behavior ($r=0.019, p<0.01$), individuals’ environmental perception was significantly positively correlated with their pro-environmental behavior ($r=0.253, p<0.01$). Our correlation test results mean that we can proceed to the next regression test.

4.3 Hypothesis Testing

Then we will do a series of regression analysis to test our theoretical hypothesis. First of all, we will test the main effect of this paper, that is, whether religious belief has a significant negative impact on individual pro-environmental behavior. Model 5 in Table 3 is the regression result of this hypothesis.

Table 1: Means, standard deviations, and inter-correlations between the study variables

Variables	Mean	SD	1	2	3	4	5	6	7	8
Gender	1.46	0.50	1.000							
Ethnicity	1.37	1.38	-0.008	1.000						
Hukou	1.67	0.95	0.002	-0.062**	1.000					
City	41.47	28.10	0.012	-0.050**	0.011	1.000				
Religions	1.49	1.46	0.070**	0.167**	-0.050**	-0.051**	1.000			
EP	9.44	3.24	-0.082**	-0.003	0.114**	-0.034**	-0.036**	1.000		
IU	2.22	1.55	-0.042**	-0.051**	0.178**	-0.123**	-0.076**	-0.231**	1.000	
PEB	1.55	0.33	0.013	-0.034**	0.190**	-0.147**	-0.053**	0.253**	0.019**	1

Notes: “EP” indicates Environmental perception, “IU” indicates Internet use, “PEB” indicates pro-environmental behavior; *: $p < 0.05$, **: $p < 0.01$.

Table 2: Regression test of individuals’ environmental perception, Internet use and social interaction

	Environmental perception		Internet use	
	Model 1.1	Model 1.2	Model 2.1	Model 2.2
Gender	-0.082**	-0.080**	-0.041**	-0.036**
Ethnicity	0.002	0.006	-0.047**	-0.036**
Hukou	0.114**	0.113**	0.177**	0.174**
City	-0.034**	-0.035**	-0.127**	-0.130**
Religions		-0.027*		-0.065**
R2	0.021	0.022	0.051	0.055
Adjusted R2	0.020	0.021	0.051	0.055
ΔR2		0.001		0.004
F	33.465	27.711	84.400	73.210
VIF (MAX)	1.006	1.038	1.006	1.038

Notes: VIF indicates variance inflation factor; *: p < 0.05, **: p < 0.01.

Table 3: Regression test of individuals’ pro-environmental behavior

	Pro-environmental behavior					
	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Gender	0.015	0.018	-0.034**	0.037	0.024*	0.027*
Ethnicity	-0.029*	-0.021	0.030*	-0.023*	-0.018	-0.013
Hukou	0.190**	0.188**	-0.163**	0.162**	0.148**	0.147**
City	-	-	0.143**	-0.145**	-0.121**	-0.123**
Religions	0.151**	0.153**		-0.043**		-0.034**
		0.049**				
Environmental perception			0.232**	0.231**		
Internet use					0.236**	0.234**
R2	0.060	0.062	0.112	0.114	0.112	0.113
Adjusted R2	0.059	0.061	0.112	0.113	0.112	0.113
ΔR2		0.002	0.053	0.055	0.053	0.054
F	98.907	82.456	158.314	134.282	158.135	133.248
VIF (MAX)	1.006	1.038	1.021	1.038	1.054	1.059

Notes: VIF indicates variance inflation factor; *: p < 0.05, **: p < 0.01.

Table 4: Bootstrap results for the mediation effect

Direct impact of religions on individuals’ pro-environmental behavior						
	Effect	S.E.	t	p	LLCI	ULCI
Environmental perception	-0.0098	0.0028	-3.5560	0.0004	-0.0152	-0.0044
Internet use	-0.0078	0.0028	-2.8176	0.0049	-0.0132	-0.0024
Indirect impact of religions on individuals’ pro-environmental behavior						
	Effect	Boot SE		Boot LLCI	Boot ULCI	
Environmental perception	-0.0014	0.0007		-0.0029	-0.0001	
Internet use	-0.0035	0.0006		-0.0046	-0.0023	

Note: S.E. indicates Standard error; LLCI and ULCI indicate the minimum and maximum values of the confidence interval; This study uses bootstrap for random sampling 5000 times.

As shown in the table, after adding the control variables, the individual's religious belief can still significantly negatively predict their pro-environmental behavior ($\beta = -0.049$, $P < 0.01$). Furthermore, we test the collinearity of the model. The VIF (variance inflation factor) of Model 5 is 1.038, which is much smaller than the standard requirement of 10. This means that there is no collinearity problem in our regression equation. So far, Hypothesis 1 has been verified.

Second, we will test the mediating effect in the model. Specially, we will examine the mediating role of individuals’ Internet use and environmental perception among the relationship between individuals’ religious belief and pro-environmental behavior. The model 1.1 in Table 2 is the regression result of the control variables on the individual's environmental perception, and the model 1.2 is the regression result after adding religious beliefs. As shown in model 1.2, the individual’s religious beliefs

negatively predict their environmental perception ($\beta = -0.027$, $P < 0.05$). The VIF of Model 1.2 is 1.038, which is much smaller than the standard requirement of 10. This means that there is no collinearity problem in our regression equation. So far, Hypothesis 2a has been verified. Model 6 in Table 3 is the regression result of environmental perception on the individual's pro-environmental behavior. As shown in model 6, environmental perception is positively predicting individual pro-environmental behaviors ($\beta = 0.232$, $P < 0.01$). The VIF of Model 6 is 1.021, which is much smaller than the standard requirement of 10. This means that there is no collinearity problem in our regression equation. So far, Hypothesis 2b has been verified. Model 7 is the regression result of the dependent variable (individuals' pro-environmental behavior) by putting the independent variable (religious belief) and the mediating variable (individual's environmental perception) into the equation at the same time. As shown in model 7, the predictive effects of individual religious beliefs ($\beta = -0.043$, $p < 0.01$) and environmental perception ($\beta = 0.231$, $p < 0.01$) on their pro-environmental behaviors are both significant. At the same time, the predictive value of religious beliefs on pro-environmental behaviors is relatively lower. The VIF of Model 7 is 1.038, which means that there is no collinearity problem in our regression equation. Therefore, Hypothesis 2c has been initially verified.

The model 2.1 in Table 2 is the regression result of the control variables on the individual's Internet use, and the model 2.2 is the regression result after adding religious beliefs. As shown in model 2.2, the individual's religious beliefs negatively predict their Internet use ($\beta = -0.065$, $P < 0.01$). The VIF of Model 2.2 is 1.038, which means that there is no collinearity problem in our regression equation. So far, Hypothesis 3a has been verified. Model 8 in Table 3 is the regression result of Internet use on the individual's pro-environmental behavior. As shown in model 8, Internet use is positively predicting individual pro-environmental behaviors ($\beta = 0.236$, $P < 0.01$). The VIF of Model 8 is 1.054, which is much smaller than the standard requirement of 10. This means that there is no collinearity problem in our regression equation. So far, Hypothesis 3b has been verified. Model 9 is the regression result of the dependent variable (individuals' pro-environmental behavior) by putting the independent variable (religious belief) and the mediating variable (individual's Internet use) into the equation at the same time. As shown in model 9, the predictive effects of individual religious beliefs ($\beta = -0.034$, $p < 0.01$) and Internet use ($\beta = 0.234$, $p < 0.01$) on their pro-environmental behaviors are both significant. At the same time, the predictive value of religious beliefs on pro-environmental behaviors is relatively lower. The VIF of Model 9 is 1.059, which means that there is no collinearity problem in our regression equation. Therefore, Hypothesis 3c has been initially verified.

At last, on the basis of previous studies, we further test the mediating effect according to the bootstrap method. The specific examination results are shown in Table 4. As shown in Table 4, the indirect influence of religion on individuals' pro-environmental behavior through individual environment perception is significant (index = -0.0014 , 95% CI [-0.0029 , -0.0001]). Therefore, hypothesis 2 a, b, and c have been verified again. As shown in Table 4, the indirect influence of religion on individual's Pro environmental behavior through Internet use is also significant (index = -0.0035 , 95% CI [-0.0046 , -0.0023]). Therefore, hypothesis 3 a, b, and c have been verified again.

5. CONCLUSIONS

This research puts forward a dual-pathway model, which helps explain the mediation mechanism between individuals' religious belief and their pro-environmental behavior. Previous studies on the relationship between religious beliefs and individuals' pro-environmental behaviors are mostly data-driven direct effects empirical tests [4]. There is a lack of theoretical support for the above research paradigms, which is the potential reason for the inconsistency of the above research conclusions [18]. In order to solve the above research gap, this study takes media and perception as two communication mechanisms, and constructs a dual path model, which helps to explain how individual religious beliefs inhibit their pro-environmental behavior. Specifically, our research finds that religious beliefs can reduce an individual's environmental perception and thereby further inhibit their pro-environmental behaviors, that is, an individual's environmental perception plays a partial mediating role in the relationship between religious beliefs and pro-environmental behaviors; Secondly, religious belief can reduce the individual's Internet use behavior, and then inhibit their pro-environment behavior, that is, the individual's Internet use plays a mediating role between religious belief and pro-environment behavior. In other words, religious beliefs will inhibit individuals' pro-environmental behaviors through the perception and media dual path. Through the above research, our research further supports the following view: Religious beliefs have a crowding-out effect on individuals' pro-environmental behaviors.

Similar to previous studies, this article also has research deficiencies and limitations. Initially, the data of this study comes from the largest social survey in China. However, previous studies have shown that there may be significant differences in the influence of religious beliefs among countries with different cultural backgrounds [17]. Therefore, future research can collect samples from countries with other cultural backgrounds, and compare with our theoretical model to further verify and expand the universality of our conclusions. Furthermore, our research explains the internal mechanism of religious

belief influencing pro-environmental behavior, but ignores the boundary conditions of the above relationship. However, previous studies have shown that religious beliefs may have different effects on individuals' pro-environmental behaviors under different cultural backgrounds and personality characteristics [6]. Therefore, the future research can make a deep research on the boundary conditions of the relationship between religion and pro-environmental behavior.

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