

Factors Affecting the Aesthetic Behavior of Villagers towards the Natural Environment: The Case of Kermanshah Province, Iran

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ABSTRACT

The natural environmental beauty preservation has become one of the most important human concerns in the present century, so that visual pollution is considered as a major obstacle to achievement of peace of mind and optimal perfection. In this respect, rural people have a major role in preserving the beauty of the natural environment. The purpose of this study was to analyze factors affecting the aesthetic behavior of Iranian villagers towards the natural environment. This study was descriptive-correlational and causal-relational and was conducted through a survey technique. Statistical population of this study consisted of all villagers in Kermanshah Province (as an indicator example of Iran) (N= 517,786). By using Krejcie and Morgan's sample size table and stratified random sampling method, 385 people were selected as a sample. Research instrument included a questionnaire with approved validity by a panel of experts in the field of agricultural extension and education; and reliability of its items was obtained by a pilot study and calculation of Cronbach's alpha ($0.64 \leq \alpha \leq 0.82$). Based on the findings, the causal model of factors affecting the aesthetic behavior of villagers was drawn. Results of this causal analysis indicated that 'place attachment' ($\beta = 0.275$) and 'environmental aesthetic attitudes' ($\beta = 0.260$) had highest effects on villagers' environmental aesthetic behavior, respectively. Therefore, by focusing on these two variables, the villagers' aesthetic behavior can be enhanced.

Keywords: Aesthetic, Causal analysis, Place attachment, Rural people.

INTRODUCTION

Humans have a mutual relationship with the nature; their welfare or lack of welfare depends on their interaction with the nature and natural environment (Azizi Khalkheili *et al.*, 2012; Zelenski and Nisbet, 2014; Athari *et al.*, 2017; Valizadeh *et al.*, 2018b). In the same way, passing time in the nature causes gratification of needs and promotion of welfare among people, being deprived of it also may result in maladaptive mental functions (Noorollah-noorivandi *et al.*, 2009; Mosavi *et al.*, 2017; Sabzali Parikhani *et al.*, 2018). Accordingly, considering the close relationship between humans and the nature and human behaviors

affecting the environment, studying the relationships with nature can be an important step to understand people's interaction with the nature (Duffy and Verges, 2010; Yazdanpanah *et al.*, 2014; Raeisi *et al.*, 2018). Extensive evidence suggests that human behaviors are the root of many environmental problems. Meanwhile, attempts for improving environmental quality through altering behavior can be very effective (Gifford *et al.*, 2011; Shiri *et al.*, 2011; Yazdanpanah *et al.*, 2014; Bijani *et al.*, 2017). Further, analyzing the human behavior with the nature is complex, where the ever increasing devastation and pollution of the environment in spite of 300 international documents regarding protection of its beauties

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confirms this complexity (Najafi Alamdarlo *et al.*, 2014; Abedi-Sarvestani, 2016; Abbasian *et al.*, 2017; Valizadeh *et al.*, 2018a; Mohammadzadeh *et al.*, 2016). In other words, part of this attention and understanding the dimensions of its risks is related to pollution and transgression to one of the superior needs of the human called “natural environment aesthetics”. In this regard, environmental aesthetics has a direct relationship with the human health, especially their mental and psychological health, and for this reason, it is of great value and importance in psychological and environmental research (Frank *et al.*, 2013). In other words, it can be said that the environmental health is associated with environmental aesthetics (Svabo and Ekelund, 2015).

In rural areas, the environment has direct effects on the nature due to closer proximity to the nature. Due to its affectability by nature, it is considered as one of the vulnerable dimensions in villages (Bijani and Hayati, 2011; Ahmadi-Shapourabadi *et al.*, 2013). Indeed, rural houses, herd of sheep, and even the landscape of the village are beautiful and attractive in their own right (Svabo and Ekelund, 2015). On the other hand, the value of landscapes, especially in their variety, beauty, and uniqueness has developed a ground for human entertainment in the nature. Landscapes are an important and influential factor in gratifying artistic taste, playing a significant role in management of leisure time and prosperity of tourism, which has attracted a great deal of attention in recent decades as one of the branches of economy (Gruehn and Roth, 2010). Accordingly, as one of the manifestations of natural resources, landscapes are important both in the environment and in terms of economy. Further, the quality and beauty of landscapes can be important in recreational, residential, rural, and touristic regions as well as even human health. As around 26% of Iranian people live in rural areas and agricultural environments (Statistical Center of Iran, 2016), the necessity of noticing the altered behavior of farmers to pay more attention to environmental aesthetics in villages becomes important. Accordingly, this study aimed to analyze the factors affecting aesthetic behavior of Iranian villagers towards the environment. Since the environment consists of natural and artificial (human made) types, modification of “the

environment” in this research indeed means “changing its natural type”.

MATERIALS AND METHODS

Theoretical Background

Today, landscape aesthetics is considered as one of the most important issues in natural environment (Danaci, 2015). In 1987, UNESCO and UNEP held an international congress of the environment and education in Moscow, emphasizing the relationship between humans and the environment across economic, social, cultural, environmental, and aesthetic dimensions (Salehi Emran and Aghamohammadi, 2008; Salehi *et al.*, 2018; Najafi Alamdarlo, 2018). Environmental aesthetics is one of the three or four new and important branches of aesthetics, emerging as an important study area in recent years, dealing with aesthetic evaluation of natural and artificial environments (Rahdoost, 2008). The literature of environmental aesthetics gives priority to aesthetics. In this literature, attempts are made to cite a number of psychological reasons to indicate why humans prefer a beautiful and specific landscape to other places (Prior, 2017). Overall, environmental aesthetics is a result of relationship with daily aesthetics following description and understanding of all aesthetic dimensions of the daily life (Svabo and Ekelund, 2015). Currently, it has been dealing with important environmental values (Brady, 2006).

In analyzing environmental aesthetic behavior, those environmental psychologists who were in favor of environmental characteristics in terms of aesthetic emotions of people examined the subject through Berlyne- Wohlwill Approach and Kaplan approach (Kaplan and Talbot, 1983; Porteous, 2013). Berlyne-Wohlwill Approach is based on experiencing Berlyne Theory called contrast, stimulation, and curiosity. Berlyne was less interested in aesthetics in comparison to exploratory activities. To make this theory more practical, a wide range of verbal, behavioral, and psychological criteria have been used, in order to record aesthetic responses (Porteous, 2013).

Considering recognition of factors affecting the human’s aesthetic behavior towards the environment, a number of the studies have been

provided in Table 1. Based on the results of this table, the theoretical framework of the research was presented according to Figure 1. As can be seen in Table 1, to analyze the aesthetic behavior, different sociological and psychological theories and models including “Maslow’s Hierarchy of Needs Theory”, “Stern’s Value–Belief–Norm (VBN) Theory”, “Ajzen and Fishbein’s Theory of Reasoned Action (TRA)”, “Theory of Planned Behavior (TPB)”, “Sensitization Model of Well-Being”, and “Norm Activation Model (NAM) Theory” have been used.

According to Figure 1, the environmental aesthetic behavior of villagers is influenced by their environmental aesthetic attitude, which itself is affected by aesthetic awareness toward environment, environmental cultural habits, and place attachment. The natural environmental aesthetic behavior is also influenced by environmental cultural habits of the villagers, who are themselves affected by psychological needs and environmental responsibility. Place attachment, which is directly affected by relationship with environment and environmental responsibility, affects the aesthetic behavior. Relationship with the nature is another variable directly influencing aesthetic behavior. This variable itself is affected by the environmental aesthetic awareness of the villagers.

Research Design

In terms of nature, this research is of quantitative research type. Also, in terms of the extent of controlling variables, it is of non-experimental type and, finally, in terms of objective, it is an applied research, since its results can be used for planners and stakeholders in agriculture. Considering data collection, it is of survey type, and given the subject, the selected method is descriptive-correlational and causative-relational.

Study Area

This research was performed in Kermanshah Province, Iran (Figure 2). This province has an area of about 24,640 km², accounting for 1.5% of the entire area of Iran. It is located between Eastern 45° 20’ 39’’ to 48° 1’ 58’’ and latitude of N 33° 37’ 8’’ to 35° 17’ 8’’. It is surrounded by Kurdistan (N), Lorestan and Ilam (S), Hamedan (E) Provinces, and Iraq (W).

Statistical Population and the Sampling Method

The statistical population consisted of all villagers in Kermanshah Province in Iran

Table 1. A summary of literature review.

No.	Researcher(s)	The studied variables	Theory / Model
1	Valizadeh and Bijani (2017b)	Environment, environmental awareness and knowledge, environmental attitude	Maslow's Needs Theory
2	Menatizadeh <i>et al.</i> (2015)	Environmentally friendly values, adhering to subjective norms, Environmental responsibility	Value-Belief-Norm (VBN) Theory
3	Navah and Forotankia (2012)	Aesthetic behavior, environment, spirituality, and ethics	Ajzen and Fishbein's Theory of Reasoned Action (TRA)
4	Price and Leviston (2014)	Contextual factors, self-concept, value, social and Environmental attitude and norms	VBN Theory Theory of Planned Behavior (TPB)
5	Zhang <i>et al.</i> (2014)	Type of mental and psychological relationship with the nature	Sensitization Model of Well-being
6	Porteous and Dearden (2013)	Socioeconomic or population variables (subjective), familiarity and acquaintance, cultural variables	----
7	Ramkissoon <i>et al.</i> (2012)	Place attachment, place bond, place identity, satisfaction with place, place effect, sustainable management and environmentally friendly behavioral intentions	----
8	Howley (2011)	Social norm, indifference to the environment	----
9	Scannell and Gifford (2010)	Urban or rural, duration of residence	----
10	Gosling and Williams (2010)	Relationship with nature, place attachment, environmental concerns and concern for human welfare	----
11	Fielding <i>et al.</i> (2008)	Public attitude, mental norms, perceived behavioral control, similarity, group membership, decision-making	TPB
12	Barr (2007)	Psychological variables, behavioral intention	----
13	Clark <i>et al.</i> (2003)	Participation, philanthropic attitudes, Environmental attitudes, income, and standard social characteristics	Norm Activation Model Theory (NAM)

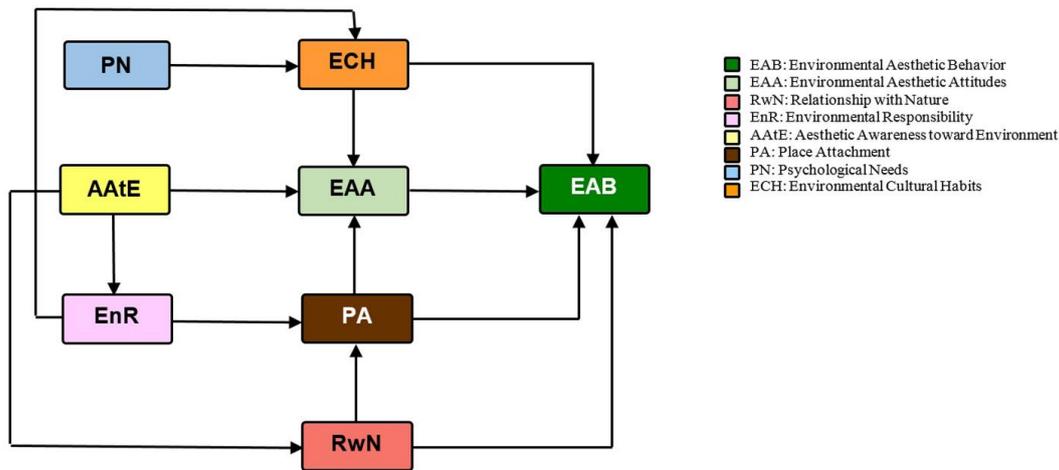


Figure 1. Theoretical framework of the study.

(N= 1,725,956) (Management and Planning Organization of Kermanshah Province, 2016). The sample volume was estimated to be 385 according to Krejcie and Morgan sampling Table (n= 385) (Krejcie and Morgan, 1970). Random proportionate stratification sampling method was used. In this regard, the strata included the townships (14 cases) in Kermanshah Province (Figure 2).

The survey instrument

To investigate and analyze the environmental

aesthetic behavior, a survey research was used. The research tool was a self-administered questionnaire, whose validity was confirmed through a panel of agricultural extension and education experts. To determine the reliability, Cronbach Alpha coefficient was employed. For this purpose, 30 questionnaires were completed at a pilot study in Sanandaj Township, Kurdistan Province (outside the investigated population). Table 1 represents the research variables and Cronbach Alpha coefficients for each of them. After the pilot study and performing the required modifications in the research instrument, the questionnaire was prepared for the main survey

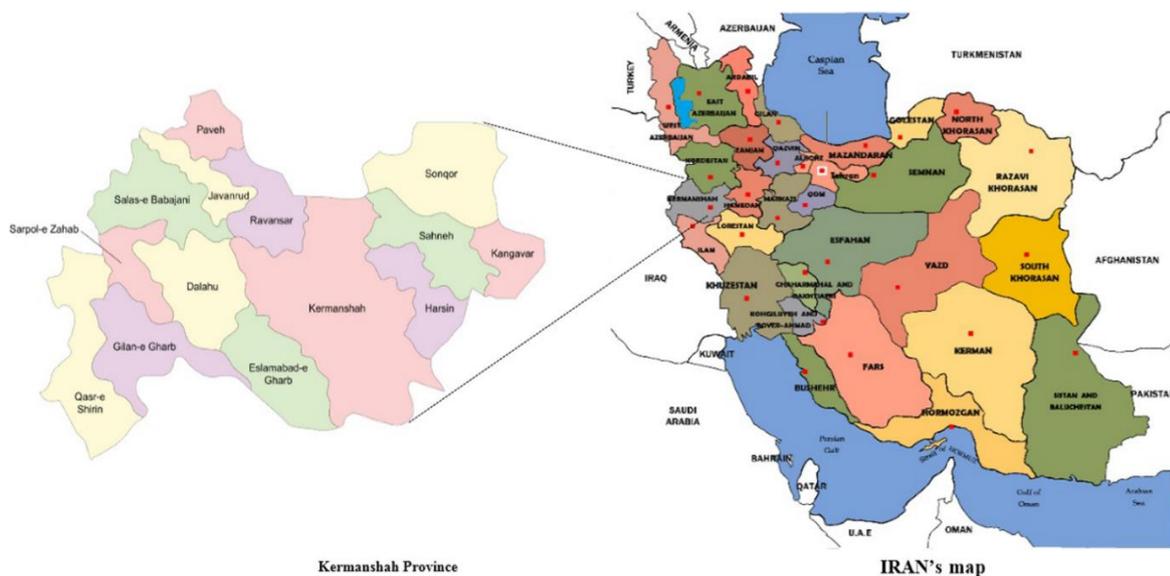


Figure 2. A general map of Iran illustrating the location of the study area

stage. This questionnaire consisted of three sections: the first section dealt with introducing the title and objective of the research. The second section defined the main variables present in the theoretical framework (Figure 1) and the items of interest for measuring each of them (Table 1). Finally, the third section was related to the demographic characteristics of the respondents. Conceptual definitions and the operationalization of each of the research variables are presented as follows:

- **Environmental Aesthetic Behavior (EAB):** It is a type of behavior and functions that a person manifests for natural environmental aesthetics. It is in line with achieving or helping achievement of collective objectives of the rural community (other people in the society). To measure this variable, eight items made by the researcher were used.

- **Relationship with Nature (RwN):** It is mutual affectability as well as deep and positive emotions that are developed in the person through relationship with the nature. To measure and operationalize this variable, four items were used.

- **Environmental Aesthetic Attitudes (EAA):** It refers to positive or negative attitudes a person presents in response to the beauties of natural environment. To operationalize this variable, four items were used.

- **Environmental Responsibility (ER):** To measure this variable, eight researcher-made items were used.

- **Aesthetic Awareness toward Environment (AAtE):** It refers to the level of information villagers have regarding environmental aesthetics. To measure this variable, four items were used based on background research.

- **Place Attachment (PA):** It is attachment to a place, where the space for a person changes into place. This is because one group or person when establishing relationship with the place, gives meaning to it and in this process they develop their relationship with the others (Rubinstein and Parmelee, 1992). In this research, the mentioned variable has been cited in three sections using 13 items.

- **Psychological Needs (PN):** Considering Maslow's needs hierarchy, this variable consisted of five indicators including physiological needs, security needs, social needs, need to respect, and aesthetics needs. To measure

this variable, attempts were made to extract the items of interest according to background research. Further, this variable was operationalized as 23 items.

- **Environmental Cultural Habits (ECH):** Culture consists of habits and rituals; habits that have been developed over time, and people behave according to them (Robinson and Elliott, 2011). This variable was measured from the viewpoint of villagers as 12 items.

The scale used for measuring the above variables was a 5-level Likert scale, ranging between 1 (absolutely disagree) to 5 (absolutely agree). The items of each of the mentioned dimensions are presented in Table 2.

Data collection and analysis

The research data were collected using an open-ended and closed-end questionnaire along with in-person interviews with the villagers. As the studied area and population were very wide, consisting of people with different cultures, languages, rituals, and customs, before data collection, an interviewer group was formed. This group consisted of individuals who fully knew the culture, language, rituals and customs of the people of the region. Following a briefing session with the interviewers, the research data were collected. At the end of data collection, 385 distributed questionnaires were analyzed. Next, SPSS₂₃ was used for data analysis.

RESULTS AND DISCUSSION

The respondents were 25-51 years old, and the mean age was about 38 years (SD= 13.12). A total of 328 subjects (85.2%) were male, while 57 (14.8%) were female. In terms of marital status, 331 (86%) were married and 54 (14%) were single. The number of household members was 4-8 individuals, with a mean of about 6 (SD= 1.70). In terms of residence, 353 (91.7%) and 32 (8.3%) had permanent residence and seasonal residence, respectively. Also, 224 (58.2%) respondents had educational level below middle school, 113 (29.4%) between middle school and high school graduate, and 48 (12.4%) had higher education. Agricultural work experience of the respondents was at least one



Table 2. Survey items and Cronbach's Alpha coefficients.

Var.	Items	Source
Environmental Aesthetic Behavior ($\alpha= 0.82$)		
EAB	1 I keep the area around my place of residence clean	Self-administrated
	2 In front of my house, I allocate part of it to cultivate flowers and plants.	Self-administrated
	3 To increase the beauty of the farm, I cultivate various crops	Self-administrated
	4 In the space in the yard of my house, I allocate part of it to cultivate flowers and plants.	Self-administrated
	5 In designing and constructing roads passing around the farm and village, I act such that no damage occurs to the environmental beauty	Self-administrated
	6 For beautifying my surrounding nature as much as possible, I cultivate ornamental flowers.	Self-administrated
	7 In the design and construction of house, I act such that no damage occurs to the environmental beauty.	Self-administrated
	8 I cultivate trees regularly around the farm	Self-administrated
Relationship with Nature ($\alpha= 0.67$)		
RwN	1 As part of the nature, I am not separate from it.	Gregory and Leo (2003); Gosling and Williams (2010)
	2 I have a good feeling by being in touch with the natural environment (animals and plants).	Self-administrated
	3 When I am in touch with my natural surrounding environment, I have more peace when compared to my peers	Self-administrated
	4 I think about beauties of nature in all regards.	Zhang <i>et al.</i> (2014)
Environmental Aesthetic Attitudes ($\alpha= 0.81$)		
EAA	1 If the disregard to natural beauty continues this way, we will soon witness the complications resulting from this type of landscape contamination in the human society	Nordlund and Garvill (2002)
	2 Major land owners cause more dramatic changes in losing the beauty of natural landscapes.	Walker and Ryan (2008)
	3 Knowing about the management of farms is essential to care for natural beauty	Price and Leviston (2014)
	4 Attempts should be made to aesthetic behavior grow to protect habitats (the wildlife and vegetation)	Gregory and Leo (2003)
Environmental Responsibility ($\alpha= 0.72$)		
EnR	1 Destructing the natural beauties by any person is betrayal to the future generations	Self-administrated
	2 Preserving the natural beauties is our religious and national duty.	Self-administrated
	3 We are all responsible for the bestows of nature's beauty	Self-administrated
	4 Our responsibility for the environment	Self-administrated
	5 Anyone has their own share in environmental cleanness.	Self-administrated
Aesthetic Awareness toward Environment ($\alpha= 0.65$)		
AAAtE	1 Environmental beauty is one of the principles of individual and social flourishing.	Self-administrated
	2 Observation of natural environments including mountains, plains, and rivers causes peace in humans.	Valizadeh and Bijani (2017a)
	3 Observation of natural environments including mountains, plains, and rivers mitigates sense of fatigue.	Valizadeh and Bijani (2017a)
	4 One of the principles for environmental sustainability is caring for and focusing on the natural environment.	Self-administrated
Natural features ($\alpha= 0.67$)		
	1 I become happy by seeing rivers, lakes, farms, and wildlife.	Walker and Ryan (2008)
	2 To rest, I prefer beautiful natural landscapes (trees and plants)	Howley (2011)
	3 The verdure around the village is enjoyable and enlivening.	Self-administrated
	4 Those who are interested in natural sites should try to preserve their beauty.	Walker and Ryan (2008)
Social-cultural features ($\alpha= 0.66$)		
PA	1 If attention is paid to beauty of the village environment, people no longer tend to move to cities.	Self-administrated
	2 Caring for the beauty of holy and cultural places in the village is very important.	Self-administrated
	3 Traditional customs including language and dialect have been preserved in the village	Self-administrated
	4 Life in village helps me have more friends and longer relationships	Self-administrated
Satisfaction from the place ($\alpha= 0.79$)		
	1 I feel the village is part of my existence.	Gosling and Williams (2010)
	2 The village environment is enjoyable and peaceful with outstanding and beautiful sceneries	Self-administrated
	3 I am satisfied with the village environment aesthetically.	Self-administrated
	4 I prefer living in the beautiful nature of the village to the city.	Self-administrated
	5 I am happy with living in the village and inhaling its clean climate	Self-administrated

Continues...

Continues of Table 2. Survey items and Cronbach's alpha coefficients

	Physiological needs ($\alpha= 0.77$)	
	1 I have no limitation in terms of providing essential needs like water.	Self-administrated
	2 I have no problem regarding provision of my life services	Self-administrated
	3 I can developednonagricultural jobsfor myselfand my family.	Self-administrated
	4 In terms of meetings needs like clothes for myself and my family, I have no problem.	Zhang <i>et al.</i> (2014)
	5 The health of me and my family is dependent on environmental quality.	Self-administrated
	Safety needs ($\alpha= 0.65$)	
	1 I have no concern over provision of housing for myself and my family.	Self-administrated
	2 I feel secure about living in village.	Self-administrated
	3 One should seriously understand all problems threatening the environmental beauty.	Dagher & Itani (2014)
	4 In the society I live, no special risk threatens my life security.	Self-administrated
	5 The current green space cannot be responsive to meet human safety needs.	Self-administrated
	Social needs ($\alpha= 0.64$)	
PN	1 I support environmental organizations to improve the beauty of my surrounding environment.	Gregory & Leo (2003)
	2 I am only responsible for myself and my family, not the beauty of my surrounding environment.	Clark <i>et al.</i> (2003)
	3 Paying attention to the beauties of nature should start from the family and school.	Nordlund & Garvill (2002)
	4 I can participate actively in environmental activities to care for environmental beauty.	Self-administrated
	5 I encourage cooperation among my friends to express their beliefs and ideas about environmental aesthetic issues.	Paille, & Boiral (2013)
	Need to be respected ($\alpha= 0.66$)	
	1 Others should care for environmental beauty of the village as much as I do.	Valizadeh & Bijani (2017a)
	2 I believe that in village beautification activities, my ideas can be useful and valuable to the rural community.	Valizadeh & Bijani (2017a)
	3 I expect my family to use my ideas in different affairs related to beautification of life space.	Valizadeh & Bijani (2017a)
	4 All of us should respect the beauty of our environment.	Clark <i>et al.</i> (2003)
	Need for beauty ($\alpha= 0.78$)	
	1 Although meeting the needs like food and housing is important, caring for life beauties is more important.	Self-administrated
	2 Although meeting the essential needs like food and housing is important, understanding the rules governing the environment is more important.	Self-administrated
	3 I believe I can engage in activities for beautification of the village environment.	Self-administrated
	4 Life is valuable to me only when I am able to beautify my surrounding as much as possible	Zhang <i>et al.</i> (2014)
	Legitimacy ($\alpha= 0.67$)	
	1 The rules of environmental protection force people to keep the nature beautiful.	Nordlund & Garvill (2002)
	2 Law plays an important role in the attention of people to preservation of environmental beauty.	Self-administrated
	3 Heavy fines should be considered for people who release garbage into the nature.	Self-administrated
	4 All of us should be law-abiding to keep the environmental beauty.	Self-administrated
	Cultural orientation ($\alpha= 0.72$)	
ECH	1 The culture of any society reflects the attention of that society's people to the natural beauties of the village environment.	Self-administrated
	2 Caring for natural environmental beauties of villages should be promoted in the society.	Nordlund & Garvill (2002)
	3 Media and cultural custodians should attempt for developing the culture of keeping the environment of villages clean.	Self-administrated
	4 I believe that the society should more emphasize the issues related to natural environmental beauties in villages.	Howley (2011)
	Participation in environmental activities ($\alpha= 0.79$)	
	1 I am interested in cooperation for cleaning the nature and preserving the green space.	Gregory & Leo (2003)
	2 I take part in environmental associations voluntarily.	Paille, & Boiral (2013)
	3 I participate in collective activities of the village performed for environmental cleanness.	Self-administrated
	4 Solving the environmental problems requires public support and participation.	Self-administrated



year and at most 51 years. The mean agricultural experience was around 16 years ($SD=10.03$). The respondent villagers had 1-40 hectares of farming lands. The mean value of agricultural lands was 6.84 hectares ($SD=5.37$). In terms of system of farming, 305 (79.2%) had traditional, 39 (10.1%) semi-mechanized, and 41 (10.7%) mechanized farming. In terms of land ownership, 288 (74.8%) managed their lands as property, 52 (13.5%) as rental, and 45 (11.7%) rental property, respectively.

Table 3 represents the descriptive statistics of the variables presented in the theoretical framework, shown in Figure 1 and Table 2. The results showed that respondents had an acceptable EnR level (4.31 out of 5 on average). Further, considering EAB, RnW, EAA, AAtE, PA, PN, and ECH variables, the means were above a medium level (3). Also, the *SD* values suggest approximate homogeneity among the respondents.

To determine the relationships among variables, Pearson correlation test was used (Table 4). Considering the theoretical framework

of the research, there was a direct relationship between the variable of environmental aesthetic behavior and intervening variables. The results obtained from correlation coefficient suggested that AAtE ($r= 0.348$; $P< 0.000$), PN ($r= 0.362$; $P<0.000$), ECH ($r=0.406$; $P< 0.000$), EAA ($r= 0.444$; $P< 0.000$), PA ($r=0.491$; $P< 0.000$), and Rwn ($r= 0.405$; $P<0.000$) had a positive and significant correlation with environmental aesthetic behavior. Meanwhile, the values of correlation coefficients of the variables of place attachment, environmental attitudes, and environmental cultural habits were larger than those of the three other variables. This can suggest that, probably, these three variables have a greater ability, compared to the other two variables, in interpreting the environmental aesthetic behavior of villagers.

In this research, to investigate the relationships among the influential variables on the environmental aesthetic behavior of villagers, causal analysis was used by applying linear regression. For this purpose, first, the direct effects of each of the variables on the dependent variable (EAB) were measured, where PA and

Table 3. Descriptive statistics of variables in theoretical framework.

Variable	Mean	SD	Range	Items / Questions
EAB	4.14	0.81	1-5	8
Rwn	4.2	0.81	1-5	4
EAA	4.03	3.7	1-5	4
EnR	4.31	0.78	1-5	5
AAtE	4.24	3.15	1-5	4
PA	4.16	2.53	1-5	13
PN	3.59	1.12	0-5	23
ECH	3.93	1.69	1-5	12

Table 4. Correlation matrix of the theoretical framework variables.

	EAB	AAtE	PN	ECH	EAA	PA	Rwn
EAB	1						
AAtE	0.348**	1					
PN	0.362**	0.356**	1				
ECH	0.406**	0.371**	0.555**	1			
EAA	0.444**	0.345**	0.204**	0.342**	1		
PA	0.491**	0.388**	0.446**	0.309**	0.204**	1	
Rwn	0.405**	0.450**	0.350**	0.343**	0.264**	0.431**	1

* Sig. level: 0.05 error; ** Sig. level: 0.01 error

EAB: Environmental Aesthetic Behavior, **EAA:** Environmental Aesthetic Attitudes, **Rwn:** Relationship with Nature, **EnR:** Environmental Responsibility, **AAtE:** Aesthetic Awareness toward Environment, **PA:** Place Attachment, **PN:** Psychological Needs, **ECH:** Environmental Cultural Habits.

ECH variables had the maximum and minimum direct effect on EAB variable. The results obtained from causal analysis were summarized in six steps. In the first step, first EAB variable was analyzed as the dependent variable, while other variables were introduced as the independent variables. The results showed that RwN ($\beta= 0.153$; $P< 0.002$), ECH ($\beta= 0.140$; $P< 0.007$), PA ($\beta= 0.25$; $P< 0.000$), and EAA ($\beta= 0.260$; $P< 0.000$) directly and significantly affect EAB. Further, the results of multiple regression analysis indicated that the causal model of the research was able to account for 37.8% of EAB changes (Table 5). This means that the higher PA, EAA, RwN, and ECH values result in improved EAB of villagers. Next, in the second stage, EAA variable was introduced into the analysis as dependent variable. The results showed that ECH ($\beta= 0.023$; $P< 0.000$), PA ($\beta= 0.160$; $P< 0.005$), AAtE ($\beta= 0.070$; $P< 0.001$) were able to account for 18.7% of changes in variance of EAA. In this regard, as the obtained β of ECH was lower than 0.050, this value cannot be acceptable statistically as the path coefficient (Mansourfar, 2006). For this reason, it

has been demonstrated as dotted line in Figure 3. In the third stage, PA variable was introduced into analyses as dependent variable, while others were independent variables. The results showed that EnR ($\beta= 0.156$; $P< 0.002$) and RwN ($\beta= 0.211$; $P< 0.000$) were able to account for 31.6% of changes of variance related to PA. In the fourth stage, ECH variable was analyzed as dependent variable, while EnR ($\beta= 0.097$; $P< 0.046$) and PN ($\beta= 0.447$; $P< 0.000$) were analyzed as independent variables. In the fifth stage, RwN was considered the dependent variable, while AAtE ($\beta= 0.327$; $P< 0.000$) was analyzed as independent variable. In the sixth stage, EnR was considered the dependent variable, while AAtE ($\beta= 0.327$; $P< 0.000$) was analyzed as independent variable.

The results of this analysis are shown in Figure 3. This figure represents confirmation with the proposed theoretical framework (Figure 1).

To develop a suitable ground for understanding the causal relations and mechanisms among the main variables of the research, correlation values (r) and standardized regression coefficients (β) were used (Table 6).

Table 5. Calculation of direct effects on EAB, EAA, PA, ECH, RwN, and EnR.

Direct effect(s) on:	Independent variables	B	Beta (β)	t	Sig. t
EAB	Constant	10.292	---	6.336	0.000
	RwN	0.238	0.153	3.135	0.002
	ECH	0.075	0.140	2.713	0.007
	PA	0.160	0.275	5.546	0.000
	EAA	0.348	0.260	5.772	0.000
	Sig. F = 0.000	F= 34.320	$R^2_{Adi} = 0.378$	$R^2 = 0.389$	R= 0.624
EAA	Constant	3.738	---	2.724	0.007
	ECH	0.097	0.023	4.196	0.000
	PA	0.069	0.160	2.851	0.005
	AAtE	0.234	0.070	3.325	0.001
	Sig. F = 0.000	F= 15.748	$R^2_{Adi} = 0.187$	$R^2 = 0.200$	R= 0.447
PA	Constant	19.040	---	6.987	0.000
	EnR	0.369	0.156	3.097	0.002
	RwN	0.563	0.211	4.222	0.000
	Sig. F = 0.000	F= 36.534	$R^2_{Adi} = 0.316$	$R^2 = 0.325$	R= 0.570
ECH	Constant	11.217	---	3.994	0.000
	EnR	0.249	0.097	1.998	0.046
	PN	0.239	0.447	9.878	0.000
	Sig. F = 0.000	F= 53.1777	$R^2_{Adi} = 0.352$	$R^2 = 0.359$	R= 0.599
RwN	Constant	5.778	---	5.967	0.000
	AAtE	0.351	0.327	6.555	0.000
	Sig. F = 0.000	F= 66.186	$R^2_{Adi} = 0.253$	$R^2 = 0.257$	R= 0.507
EnR	Constant	12.002	---	12.859	0.000
	AAtE	0.564	0.467	10.346	0.000
	Sig. F = 0.000	F= 107.035	$R^2_{Adi} = 0.216$	$R^2 = 0.218$	R= 0.467

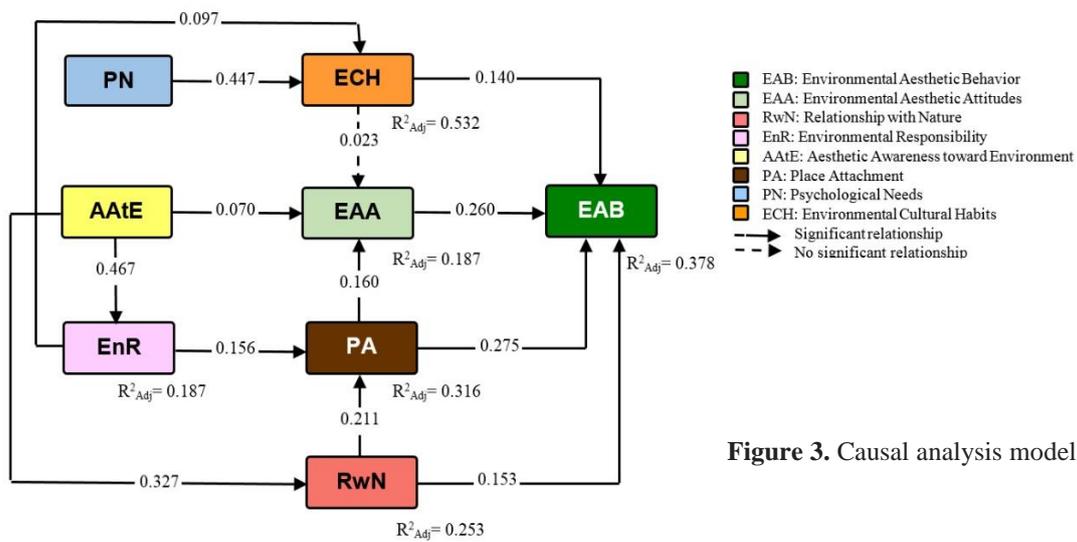


Figure 3. Causal analysis model

Table 6. Analysis of direct, indirect, and total (causative) effects* of the variables on EAB.

No	Variables	Direct effects	Indirect effects	Total effects	Model compliance with the theoretical framework
1	RwN	0.153	0.066	0.219	✓
2	ECH	0.140	0.006	0.146	✗ (Direct effects) ✓ (Indirect effects)
3	PA	0.275	0.041	0.316	✓
4	EAA	0.260	---	0.260	✓
5	EnR	---	0.062	0.062	✓
6	AAtE	---	0.090	0.090	✓
7	PN	---	0.065	0.065	✓

✓ Compliance with the theoretical framework

✗ Non-compliance with the theoretical framework

* The indirect effect of each variable is the multiplication of all indirect coefficients. The total effect is the sum of the direct and indirect effects.

In this regard, RwN, ECH, PA, and EAA influenced EAB directly. In addition, some variables had an indirect effect on environmental behavior as follows. RwN had indirect effect 0.066 $[(0.211 \times 0.275) + (0.211 \times 0.160 \times 0.260)]$, ECH had indirect effect of 0.006 (0.023×0.260) , PA had indirect effect of 0.041 (0.160×0.260) , PN had indirect effect of 0.065 $[(0.447 \times 0.140) + (0.447 \times 0.023 \times 0.260)]$, AAtE had indirect effect of 0.090 $[(0.07 \times 0.260 + (0.467 \times 0.156 \times 0.275) + (0.467 \times 0.156 \times 0.160 \times 0.260) + (0.327 \times 0.153)]$, and EnR variable had indirect effect of 0.062 $[(0.156 \times 0.275 \times 0.275) + (0.156 \times 0.160 \times 0.260) + (0.097 \times 0.140)]$ on environmental aesthetic behavior.

Investigation of the general causal effects also suggested that the variables of PA (0.316), EAA

(0.260), RwN (0.219), and ECH (0.146) had the maximum values of cause and effects, in order. On the other hand, considering the results of the correlation table (Table 4), the better the relationship between the individuals and the environment, the more suitable environmentalist behaviors contribute to nature beauty. These results indicate a positive and significant ($P < 0.1$) relationship and are in line with the findings by Zhang *et al.* (2014). The obtained findings indicated that ECH had a positive and significant ($P < 0.1$) relationship with EAB. These findings are in line with the results of Howley (2011), Fielding *et al.* (2008), and Stern (2000). Further, there was a positive and significant relationship between PA and EAB. This result was in line with the findings by Ramkissoon *et al.* (2012) and Han (2015). The results also indicated that

elevating the level of aesthetic attitude of villagers would result in a better aesthetic behavior by them. This result has been confirmed by the findings of Barr (2007) and Price and Leviston (2014). Accordingly, a positive insignificant correlation existed between AAtE and EAA, and with increased Aesthetic Awareness toward Environment (AAtE), the villagers will have a more suitable aesthetic behavior, which is congruent with the results of Valizadeh and Bijani (2017a), while it is incongruent with the findings of Frick *et al.* (2004). On the other hand, a positive correlation existed between PN and EAB, which was in line with the results of Ramkissoon *et al.* (2012), while it disagreed with the results obtained by Scannell and Gifford (2010) and Gosling and Williams (2010). Investigation of the relationship between ECH and EAA using Pearson correlation coefficient indicated a statistical relationship between these two variables, in agreement with the findings of Howley (2011), Dagher and Itani (2014), and Menatizadeh *et al.* (2015), who recognized a significant relationship between these variables. In their research, Navah and Forotankia (2012) and Price and Leviston (2014) pointed out a positive relationship between EAA and EAB. On the other hand, PA and EAB showed a positive relationship with the findings of Han (2015) and Ramkissoon *et al.* (2012), while showing negative relationship with the results of Uzzell and Badenas (2002) and Gosling and Williams (2010). Finally, EnR had a positive and significant relationship with EAB at 1% error level, which agreed with the results of Uzzell and Badenas (2002) and Barr (2007).

Based on these findings, it can be concluded that variables such as EnR, AAtE, and PN did not directly affect EAB based on the theoretical background and framework presented in this research, and the total effect of them suggests their significant effect on incidents and interpretation of such a behavior.

CONCLUSIONS

By identifying the factors influencing environmental aesthetic behavior of villagers, this research attempted to present causal analysis of these factors. In this regard, after identification of the mentioned factors based on theoretical

literature, causal framework was outlined and tested using field data. Overall, in comparison of different levels of training needs, villagers have claimed the minimum level of aesthetic needs. The intangibility and unimportance of aesthetic sense in the rural community is one of the reasons of this issue. Based on the findings, PA variable has the greatest total causal effect on EAB. The results of correlation between variables also suggested a good relationship between this variable and EAB as well as other research variables. Accordingly, paying attention to spiritual welfare facilities and infrastructure of villages causes the people to have a sense of place attachment in the village, and care more for the beauty of their environment. Following PA, EAA has the greatest causal effect on EAB. This variable has also an acceptable correlation with other research variables. Therefore, it is suggested that the people's attitude should change towards behaviors that result in both preservation of the environment and its beauty. In this regard, mass media, family, and school have undeniable roles. It seems that the greater the awareness of people about environmental beauty and its effect on the life and spirit of people, caring for the beauty of the environment will also grow. Therefore, promotion of agriculture to enhance people's awareness can be directly and indirectly effective in enhancing happiness and quality of life by holding promotional classes and playing educational videos regarding the effect of beauty on the spirit of individuals. In addition, by presenting information about environmental beauty of the village and mentioning the damaging effects of throwing garbage and remaining of toxic material in the environment of the village, one can set the ground for development and attention to aesthetic behaviors for the villagers. The third variable with the greatest total causal effect on EAB was Rwn. Correlation of this variable with other variables is also significant. Having relationship with nature ratifies the aesthetic needs of human and causes development of positive attitude in the human. It also increases humans' responsibility to preserve the nature and its beauties. ECH was the next influential variable on EAB. It seems that strengthening religious, cultural, social, and economic beliefs of people can be effective in ethical judgments and their attention to beauty of the environment.



The higher ECH in the form of paying attention to participation of people and group cooperation, and the more environmental rules and regulations are cared for and respected, the greater the attention of villagers to the beauty of environment will be. Although other variables (AAtE, PN, and EnR) have had a relationship with EAB and other studied variables, they had no serious causal effect on EAB in the presence of other variables, though this effect has become significant.

It is likely that under different conditions, one can consider other factors and variables involved in natural environmental aesthetic behavior. What has been presented in this research can be generalized in many cases, especially under condition similar to Iran. Evidently, application of the results of this research in cases similar to it is considered an important step for stability of natural environment of villagers.

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عوامل مؤثر بر رفتار زیبایی‌شناسی روستاییان نسبت به محیط‌زیست طبیعی (مورد مطالعه: استان کرمانشاه، ایران)

ص. محمدی‌مهر، م. بیژنی، و ع. عباسی

چکیده

حفظ زیبایی محیط‌زیست طبیعی یکی از دغدغه‌های مهم انسان در قرن حاضر می‌باشد. آلودگی دبداری (بصری) به عنوان یکی از موارد مهم آلودگی زیست‌محیطی، مانعی مهم بر سر راه رسیدن به آرامش و کمال مطلوب قلمداد می‌شود. در این میان، روستاییان سهم عمده‌ای در حفظ زیبایی محیط‌زیست طبیعی دارند. هدف این پژوهش "تحلیل عوامل مؤثر بر رفتار زیبایی‌شناسی روستاییان ایرانی نسبت به محیط‌زیست طبیعی" بود. این پژوهش از نوع تحقیقات توصیفی-همسنگی و علی-رابطه‌ای است که با استفاده از فن پیمایش انجام گرفت. جامعه آماری پژوهش شامل کلیه روستاییان استان کرمانشاه (به عنوان نمونه‌ای شاخص از ایران) ($N=517786$) بود که تعداد 385 نفر از آن‌ها با بهره‌گیری از جدول نمونه‌گیری کرجسی و مورگان و روش نمونه‌گیری تصادفی طبقه‌ای با انتساب متناسب، انتخاب شدند. ابزار پژوهش، پرسشنامه‌ای بود که روایی آن توسط پانلی از متخصصان ترویج و آموزش کشاورزی مورد تأیید قرار گرفت و پایایی دسته‌گویه‌های آن هم با استفاده از یک مطالعه راهنما و محاسبه آلفای کرونباخ ($0.82 \leq \alpha \leq 0.94$) محقق گردید. بر اساس یافته‌ها، الگوی علی عوامل مؤثر بر رفتار زیبایی‌شناسی روستاییان ترسیم گردید. نتایج حاصل از این تحلیل علی نشان داد که "دلبستگی مکانی" ($\beta=0.275$) و "نگرش‌های زیست‌محیطی" ($\beta=0.260$) به ترتیب بیشترین اثر را بر رفتار زیبایی‌شناسی زیست‌محیطی روستاییان دارند. بنابراین، با تمرکز بر این دو متغیر، می‌توان رفتار زیبایی‌شناسی روستاییان را تقویت نمود.