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The effects of environmental value and ecological worldview on eco-recreative attitude: an application in Turkey

O efeito do valor ambiental e visão de mundo ecológica na atitude eco-recreativa: um estudo na Turquia

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Abstract

This study aims to investigate the effects of environmental value and ecological worldview on eco-recreative attitudes. In recent years, human-related pollution has seriously increased. Therefore, it is critical to explain the eco-recreative attitudes of participants with an emphasis on how these attitudes support natural life. Another indicator of the significance of this study is that it explains the premises of the attitude. Environmental value in the proposed model was examined as three sub-factors: biospheric, altruistic, and egoistic. Also, an eco-recreative attitude has three sub-factors, which are affective, cognitive and behavioural. The study population consisted of individuals who participated in eco-recreation activities in Turkey. The data were collected through a questionnaire form using the convenience sampling method. The analyses were conducted using SmartPLS. The findings showed that biospheric (positive) and egoistic value (negative) had an effect on ecological worldview, while ecological worldview had a positive effect on affective, cognitive and behavioural attitude. Also, the altruistic value did not significantly affect the ecological worldview.

Keywords: Eco-reaction, Environmental Value, Ecological Worldview, Eco-recreative Attitude, Recreation, Tourism.

Resumo

Este estudo tem como objetivo investigar os efeitos do valor ambiental e da visão ecológica nas atitudes eco-recreativas. Nos últimos anos, a poluição relacionada com os seres humanos aumentou gravemente. Por isso, é crucial explicar as atitudes eco-recreativas dos participantes, com ênfase em como essas atitudes suportam a vida natural. Outro indicador da importância deste estudo é que ele explica as premissas da atitude. O valor ambiental foi examinado em três subfatores: biosférico, altruísta e egoísta. Além disso, a atitude eco-recreativa tem três subfatores, que são afetivo, cognitivo e comportamental. A população de estudo consistiu em indivíduos que participaram em atividades eco-recreativas na Turquia. Os dados foram recolhidos através de um questionário utilizando o método de amostragem por conveniência. As análises foram realizadas utilizando o SmartPLS. Os resultados mostraram que o valor biosférico (positivo) e o valor egoísta (negativo) tiveram um efeito na visão ecológica, enquanto a visão ecológica teve um efeito positivo na atitude afetiva, cognitiva e comportamental. Além disso, o valor altruísta não teve um efeito significativo na visão ecológica.

Palavras-chave: Ecoreação, Valor Ambiental, Visão de Mundo Ecológica, Atitude Eco-recreativa, Recreação, Turismo.

1. Introduction

Eco-recreation is a perspective based on ecology that investigates environmental sciences and human-related environmental problems. It also aims to create awareness of the conscious use of natural resources. According to Karaküçük and Akgül (2016), the foundation of eco-recreation is engaging in recreational activities with an emphasis on "protecting the environment" and "sustainability." The authors suggest that eco-recreation can increase environmental awareness. Therefore, eco-recreation refers to "recreational activities that are not commercially motivated and are aimed at providing entertainment and rest for people who voluntarily participate while respecting the environment and promoting the sustainability of natural areas."

Eco-recreation places a strong emphasis on sustainability. Sustainability enables the balanced use of social and economic resources and the passing on of these resources to future generations (Fennell & Cooper, 2020). The term gained popularity due to human intervention in the environment, revealing how essential it is to take the initiative in solving environmental problems. Eco-recreation can also include ecotourism activities. Ecotourism involves a special interest in pristine natural areas, focusing on original cultural experiences in tourist destinations, protecting flora and fauna diversity, and sightseeing in unique natural areas (Fennell, 2021). Like eco-recreation, ecotourism is also based on the idea of protecting the environment (Bricker & Kerstetter, 2020). Based on protecting the values of nature for the sake of our planet, ecocentrism is one of the primary foundations of ecotourism (Önder, 2003). Environmental protection approach and ecocentrism are common characteristics of eco-recreation and ecotourism. Another similarity is that eco-recreation is based on physical, cognitive, and emotional rejuvenation (Kement,

2019b), while ecotourism focuses on cultural experiences and special interests. Responsible tourism can also be discussed within eco-recreational behaviour by respecting the ethical rules of tourism, protecting natural and cultural heritage, and increasing host communities' social and economic welfare. Responsible tourists pay attention to their water and electricity consumption, abide by ethical rules, avoid littering, collect information regarding the destination's history, culture, and natural heritage, and are sensitive to local and natural aspects (Güneş, 2020).

It is evident how important it is to develop eco-recreational activities that help people improve themselves at a time when COVID-19 is significantly affecting our everyday lives. Therefore, explaining the eco-recreational attitudes of individuals with an ecological worldview and environmental values is significant. It is also important to investigate the eco-recreational attitudes of people to ensure that eco-recreational activities support natural life instead of being commercialised. In addition to contributing to achieving sustainability, eco-recreational activities can also help regional development and provide a competitive advantage in tourism and recreational activities. To turn a nature-friendly thought into a life philosophy, finding ways to change attitudes is important. This can be possible by explaining the premises of an attitude. This study aims to investigate the effect of environmental value and ecological worldview on the eco-recreational attitude. Eco-recreational attitude is a scale that has been recently introduced into the literature, and one can evaluate eco-recreational activities using this scale. Therefore, this study is original and contributes to the literature by explaining individuals' environmental values and ecological worldview concerning eco-recreational activities.

2. Conceptual framework

2.1 The concept of ecology and eco-recreation

Not following ecological principles when using natural resources could lead to natural disasters, which may result in a catastrophe given the increasing population and amount of free time people have today. Eco-recreation emerged as an ecological recreational movement combining eco and recreation. Due to the environmental sensitivity of certain groups, the terms eco-recreation and ecotourism came into being. Yaşar and Şenel (2018) stated that there are many eco-recreational activities and defined eco-recreation as a conscious and aware perception of the environment regarding leisure activities. There are numerous examples of eco-recreational activities in nature, and recreational activities that do not occur in nature can fit the definition of eco-recreation if carried out in line with environmental consciousness. Miller (1991) categorised walking and cycling as eco-recreational and tourism activities. Being one of the first, this categorisation only covers activities that take place in nature.

Additionally, the activities of someone who spends leisure time indoors can also be considered within eco-recreation if that person is ecologically sensitive even when their recreational activities do not take place in nature. Although Karaküçük and Akgül (2016) investigated this subject based on nature in their book "Eco-recreation, Recreation and Environment" in Turkish literature, given that this concept came to the fore as a result of people who spent their leisure time in nature and harmed it, it is undeniable that nature is at the centre of this issue. Emphasising the importance of environmental education, Rybka and Szpytma (2012) stated that managing natural resources and recycling are critical for maintaining the quality of life. Within this scope, Rybka and Szpytma (2012) emphasised the significance of eco-education and eco-recreation. For a community with a high level of education and environmental awareness, the extent to which they harm the environment or separate trash will be in line with the education they receive. Although ecotourism is expected to include environmentalist behaviours, some behaviours contradict eco-recreational attitudes, such as uncontrolled growth (Swarbrooke, 1999), disrespect toward cultural elements (Carrier & Mcleod, 2005), animal cruelty, causing habitat loss, and using environmental sensitivity for the environment "opportunism." The way to eliminate this problem is to adopt an understanding of sustainable ecotourism, in which the development of controlled ecotourism is projected using basic datasets through indicators (Çalık, 2019). Kement (2019b) emphasised in his eco-recreation definition that eco-recreational activities have no commercial concerns and support natural life. Herein, the "sustainable tourism pedagogy" proposal by Jamal, Taillon, and Dredge (2011) is considered important as it focuses on tourism's socio-cultural and environmental aspects rather than its economic aspect. They have emphasised the importance of increasing technical, analytical, ecological, intercultural, ethical, and political literacy among stakeholders and focusing on the sociological aspects of tourism and travel.

2.2 Environmental attitude and behaviour

Attitude is defined as a tendency to react towards or against a subject, individual, institution, or situation. The primary aspect of attitudes is their pleasant or non-pleasant nature, which can result in advantages or disadvantages. Attitude is one of the primary factors affecting behaviour. Examples of basic tendencies include elements such as smoking, alcohol consumption, ethnic groups, races, nuclear power, energy consumption, and political parties. The attitude towards behaviour is the positive or negative evaluation of the realisation of a behaviour (Erten, 2002). In other words, the attitude towards behaviour is an individual's positive or negative feelings about a behaviour (Fishbein & Ajzen, 1981). The attitude towards behaviour includes evaluations regarding the belief that the behaviour will have specific and desired outcomes. According to Ajzen and Fishbein (1977), attitudinal and behavioural phenomena consist of four elements: the type of behaviour, the purpose of the behaviour, the context, and the time.

In recent years, the level of concern about environmental disasters has increased, leading people to prefer "Environmentally Friendly Activities" (EFA). These concerns have caused differences in attitudes and behaviours (Su, Hsu & Boostrom, 2020; Han, 2021; Yenidogan, Gurcaylilar-Yenidogan and Tetik, 2021; He et al., 2022; Pekerşen & Canöz, 2022). Kalafatis et al. (1999) found that while people acknowledge the personal discomfort of EFA (such as recycling or environmentally-friendly purchasing), those who perceive the importance of EFA concerning ecological issues are actively involved in such behaviours. These individuals are willing to change their behaviour in a more ecologically appropriate way (e.g. by avoiding disposable products) and to act in an environmentally friendly way in their daily lives (e.g. through recycling). As a result, they adopt different behaviours, such as compromising convenience, accepting lower performance levels in environmentally friendly products, and even paying extra for certain products (Su et al., 2020; He et al., 2022). Individuals who do not participate in EFA tend to feel they can solve environmental problems independently.

In contrast, environmentally friendly individuals are often worried about severe environmental problems and strongly believe they should take action to protect nature (Kement & Bükey, 2020). Due to their concerns about environmental problems, these individuals are likely to exhibit eco-recreational attitudes and behaviours. They are aware of environmental problems and believe in the effectiveness of green behaviours. Thus, they engage in environmentally friendly activities in their daily lives and actively seek services provided by ecologically and socially responsible enterprises (Chiu, Lee & Chen, 2014). Furthermore, environmentally friendly individuals often believe that the ecological situation is facing serious problems and strongly feel that something must be done to protect the environment (Wu et al., 2022).

Stern, Dietz, and Guagnano (1995) proposed the value belief norm theory (VBN), in which values follow environmental beliefs. According to the theory, general beliefs are related to the human-environment relationship and refer to public beliefs about the environment (Stern, 2000). Most studies use the new environmental paradigm (NEP) of Dunlap and Van Liere (1978) to measure general beliefs. According to Kilbourne and Pickett (2008), specific environmental beliefs are beliefs about the existence of environmental problems, such as water scarcity, ozone depletion, and global warming. They also argued that there would be no concerns unless environmental problems precede environmental beliefs. Additionally, they argued that an individual could believe in a human-environment relationship characterised by ecological beliefs without any concern that problems exist. According to Stern et al. (1995) and Dietz et al. (1998), certain beliefs and attitudes are preceded by intentions and behaviours. Stern (2000) also suggested that the connection between values and environmentalism mediates beliefs because individual values activate norms.

2.3 Environmental value and ecological worldview

The norm activation model (NAM) (Schwartz, 1977) and the value belief norm theory (Stern, 2000) explain environmentally sensitive behaviour. According to NAM, normative explanations emphasise cognitive processes and decision-making in contrast to emotional stimulation. Here, the focus is on meeting expectations rather than stimulating emotions. The NAM also suggests that individuals' expectations will be activated through norms supporting internalised values (Schwartz, 1977). Although the NAM was originally used to study altruistic intentions and behaviour in social areas, it has also been used to investigate environmentally friendly behaviours (Kement, 2019a).

Value is defined as the main criteria that develop, maintain and guide individuals' attitudes towards objects and situations (Stern & Dietz, 1994). In the context of environmental protection and the VBN model, the values are biospheric (being one with nature, protecting the environment, the importance of the environment and biosphere), altruistic (benefiting others, moral responsibilities) (Schwartz, 1977) and egoistic (protecting the environment due to personal reasons) (Stern & Dietz, 1994). The VBN theory was inspired by the value taxonomy created by Schwartz (1994). The value taxonomy defines value types such as openness to change (self-management, stimulation and hedonism), self-enhancement (power and success), self-transcendence (universalism and benevolence) and conservation (security, tradition and conformity) (Schwartz, 1994). In the VBN theory, values that emphasise one's benefit (egoistic), prioritise the benefit of other people (altruistic) and focus on the benefit of living things and the biosphere (biospheric) have been created using the value taxonomy (Dervişoğlu et al., 2009). Altruistic value includes the motivation to increase the well-being of others, while the primary motivation of a person with an egoistic value is to increase their benefit and well-being (Batson & Shaw, 1991). In egoistic value, individuals defend the protection of the environment in situations that directly affect themselves, while they can be against environmental protection when they perceive that their personal benefit is at stake (Stern & Dietz, 1994). Another variable that explains the causes of behaviour in the VBN model is the NEP or "Ecological Worldview" (EW) paradigm defined by Dunlap and Van Liere (1978). The NEP by Dunlap and Liere is regarded as the opposite of the "Dominant Social Paradigm (DSP)" by Pirages and Ehrlich (1974). According to the DSP, people in their communities have a dominant social paradigm that consists of elements such as values, habits, beliefs, institutions, and people interpret their social lives based on this paradigm (Milbrath & Fisher, 1984). This situation leads to the establishment of dominant groups in societies. Then, the institutions and phenomena that serve the interests of these groups are legitimised through social and political activities. Ultimately, the DSP dominates the whole society (Kilbourne, 2006) and is accepted as the truth regardless of its accuracy and legitimacy.

NEP, one of the belief variables in the VBN model, focuses on the detrimental environmental consequences of human activities (Dervişoğlu et al., 2009). NEP comprises beliefs in protecting nature, the necessity for growth limitations, and people's involvement in nature-related decisions (Dunlap et al., 2000). According to the VBN theory, a structure reflects the general beliefs regarding the perceived relationship between humans and the environment, which precedes the measurements of beliefs and norms. This structure, represented by NEP, refers to more general trends that are not specific to a particular area, unlike the norms (Stern et al., 1995).

3. Theoretical framework

3.1 The relationship among environmental value, ecological worldview, and attitude

Schwartz (1992) defined value as "a goal beyond the desired situation that serves as a guiding principle in the lives of social beings." In other words, values are the fundamental orientations or guiding principles that underpin the beliefs and attitudes of an individual and direct individual behaviour (Ellis & Thompson, 1997). Values not only represent the central cultural characteristics of a community (Hofstede, 2001; Schwartz, 2004), but they are also fundamental factors that influence people's worldviews, attitudes, beliefs, norms and behaviours (Stern, 2000; Stern & Dietz, 1994). As environmental issues have become a concern for all sectors of life, it has become increasingly important to comprehend people's environmental worldviews (Zhang et al., 2014). The New Environmental Paradigm (Dunlap et al., 2000) measures a general ecological worldview that directly impacts the awareness of the consequences. This ecological worldview is founded on the belief that people disrupt the natural balance, natural resources are limited, and people let nature be exploited (Han, 2015). The most important study explaining the value and the NEP is the value-belief-norm (VBN) theory developed by Stern et al. (1999). VBN is an extended version of the NAM that explains environmentalist intention and behaviour. VBN has been designed specifically to analyse environmentally friendly behaviour and includes several basic environmentalist concepts (values and ecological worldview) (Stern, 2000). VBN emphasises the role of values and the ecological worldview (Han, 2015). According to the theory, biospheric, altruistic and egoistic values are directly related to the ecological worldview. Biospheric value is associated with nature and the biosphere, altruistic value is about the well-being of others, and egoistic value focuses on maximising the benefits of individuals. Many researchers (Lin et al., 2022; Loureiro, Guerreiro & Han, 2022; Chua et al., 2016) have similarly examined the value system to explain pro-environmental behaviour.

In their study, which investigated the environmentally friendly behaviours and intentions of visitors using the VBN theory and the theory of planned behaviour (TPB), Han (2015) found that biospheric values influence the ecological worldview. Using the VBN theory, Zhang et al. (2014) conducted a study on the environmentally friendly behaviours of individuals and found a positive relationship between altruistic values and environmentally friendly attitudes. De Groot and Steg (2007) conducted a study with 112 participants in the Groningen province in the Netherlands and found that biospheric and altruistic values have a positive effect on the ecological worldview. Chua et al. (2016) conducted a similar study with 277 participants in Malaysia and also found a significant relationship between biospheric-altruistic values and the ecological worldview. Wu and Zhu (2021) suggested that while biospheric and altruistic values contribute to the ecological worldview, egoistic values hinder it. Steg et al. (2011) similarly found that egoistic values have a negative effect on the ecological worldview. Based on this information, the following hypotheses were developed.

H1: The altruistic value positively affects the ecological worldview.

H2: The egoistic value negatively affects the ecological worldview.

H3: The biospheric value positively affects the ecological worldview.

It is important to understand how individual attitudes and beliefs affect environmental decisions and how environmental concern is shaped (Cajiao et al., 2022). Trying to understand the reasons and consequences of this ecological worldview, the ideas about human-nature relationships and what people think about the environment have been popular research topics in the literature (Fauzi, Hanafiah & Kunjuraman, 2022; Moghimehfar, Halpenny & Harshaw, 2020). Ecological worldviews are beliefs regarding the value people give to the environment and their relationships with it. EW tries to explain how people evaluate the dangers caused by human activities and how they react to them (Castro, 2006; Dunlap et al., 2000; Kement, 2019a). Previous research has shown that if people have an environmental worldview, they are more likely to take action to tackle environmental problems (Xiao, Dunlap & Hong, 2019) and that people with fewer environmental concerns have less of an environmental attitude (Kement et al., 2021; Kement, 2019a). Putu (2017) conducted a study to determine the ecological worldviews of people who participated in environmental education courses in Indonesia using the Ecological Paradigm Scale. Putu determined that individuals with an EW have higher ecological attitudes and behaviors compared to others. In a study conducted in Iran using the Ecological Paradigm Scale, Hosseinnezhad (2017) found that people perceive the environment as a valuable part of their lives, and those individuals have high levels of environmental attitudes. According to Hosseinnezhad (2017), this result reflects how individuals have a protective attitude towards the environment, and they share the idea that humans are not the only species in the world; they can be compared to plants and animals. In a study conducted in Saudi Arabia, Cruz,

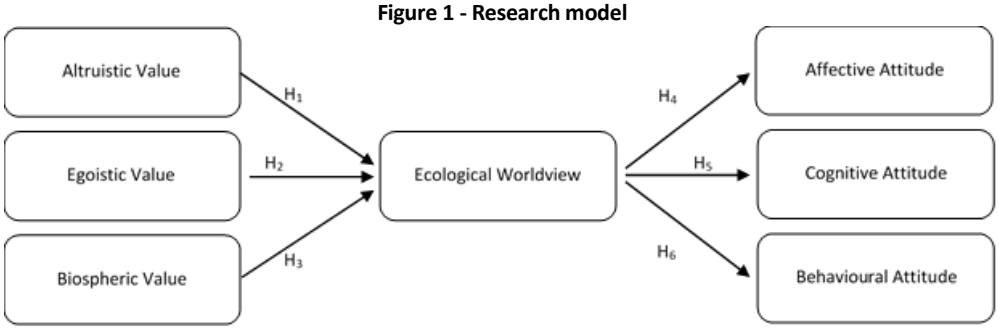
Alshammari, and Felicilda-Reynaldo (2018) found that individuals with an ecological worldview have a more environmentally friendly attitude. In contrast, those without such a worldview have weaker attitudes. Investigating the relationship between basic values and NEP, Stern et al. (1995) argued that EW is highly related to beliefs about environmental issues' consequences, which are directly related to attitudes and behaviours. Based on the information above, the following hypotheses have been developed.

H4: The ecological worldview positively affects the eco-recreative affective attitude.

H5: The ecological worldview positively affects the eco-recreative cognitive attitude.

H6: The ecological worldview positively affects the eco-recreative behavioural attitude.

Figure 1 - Research model



4. Methodology

The study population consisted of individuals who participated in three different eco-recreational activities (water-based, land-based, and air-based) in Turkey. No data were available regarding the number of participants in the eco-recreational activities. As the study population was too large to reach, a sample group was chosen to represent the population. A set of factors had to be considered to determine the sample size that could represent the population (Ural & Kılıç, 2005). With these factors in mind, various formulas are available in the literature to calculate the sample size (Sekaran, 2003). Populations with fewer than 10,000 units (subjects) are finite, while those with more than 10,000 are infinite (Ural & Kılıç, 2005). Since the population size was over 10,000 for all three eco-recreational activities, it was determined that 384 participants would be sufficient, according to the table prepared by Ural and Kılıç (2005). However, we managed to reach 450 participants. The data were collected in 2020. Some of the data were collected face-to-face, while the rest were collected by phone. The reason for remote data collection was Covid-19 restrictions.

Table 1 presents the detailed demographics of the participants. Of the participants, 57.3% were male, and 42.7% were female. Regarding the age distribution of the participants, the majority (24.4%) were between 45 and 54 years old. Around 24% of the participants had an undergraduate degree. In terms of income status, 26.4% of the individuals had a high-income level.

Table 1 - Demographics of the participants

Categories		n	%
Gender	Female	192	42.7
	Male	258	57.3
Age	Under 18	31	6.9
	18-24	45	10.0
	25-34	68	15.1
	35-44	90	20.0
	45-54	110	24.4
	55-64	73	16,2
	65 and over	33	7.3
Education	Primary School	57	12.7
	High school	58	12,9
	Associate Degree	63	14.0
	Bachelor's Degree	108	24.0
	Master's Degree	88	19.6
	PhD	76	16.9
Income Status	Very Low	57	12.7
	Low	81	18.0
	Medium	103	22.9
	High	119	26.4
	Very high	90	20.0

The questionnaire method from quantitative data collection techniques were used in this study. The questionnaire form consisted of two parts. The first part included the demographics of the participants, while the second part includes 10 statements (Dietz et al., 1998) for ecological worldview, 12 (Stern, 2000; Stern & Dietz, 1994; Stern et al., 1999) for

environmental value (altruistic, egoistic and biospheric) and 22 statements (Kement et al., 2021) for the eco-recreational attitude scale (affective, cognitive, behavioural).

Before testing the research model, both the measurement model and the structural model were analysed. The measurement model has two different types: reflective and formative. In a reflective measurement model, the flow is from the construct to the indicators, while in a formative measurement model, it is the opposite. The analyses and the values to be interpreted differ depending on whether the model is reflective or formative (Sönmez Çakır, 2020). Therefore, it is necessary to determine the measurement model first. Confirmatory Tetrad Analysis (CTA) was conducted for the measurement model (Gudergan et al., 2008). CTA is used to ensure that researchers use the correct measurement model (Hair et al., 2017). According to Hair, Ringle, and Sarstedt (2011), Smart PLS allows researchers to predict complex models through many structures, indicator variables, and structural paths without presuming data distribution. Unlike other methods, PLS does not require the assumption of normality. PLS-SEM can also work with a newer sampling method that is stronger than classic tests, such as the Sobel test and is recommended for indirect effect analyses (Hair et al., 2011; Ali et al., 2018).

For CTA analysis, it is required to have a minimum of four indicators (Gudergan et al., 2008). This study examined the lower (adj. CI Low) and upper limits (adj. CI Up) of the adjective confidence interval. If all lower and upper limits are negative for all indicators, or if all lower and upper bounds are positive, then the "Formal" measurement model is used. On the other hand, if the lower limit is negative for one or more indicators and the upper limit is positive, then the "reflective" measurement model is applied (Sönmez Çakır, 2020).

Table 2 - Confirmatory tetrad analysis

Measures	adj. CI Low	adj. CI Up	Results
Altruistic Value			Reflective
1: OD1,OD2,OD3,OD4	-0.072	0.194	
2: OD1,OD2,OD4,OD3	-0.118	0.160	
Egoistic Value			Reflective
1: ED1, ED2, ED3, ED4	-0.042	0.250	
2: ED1,ED2, ED4, ED3	-0.057	0.251	
Biospheric Value			Reflective
1: BD1,BD2,BD3,BD4	-0.061	0.182	
2: BD1,BD2,BD4,BD3	-0.115	0.201	
Ecological Worldview			Reflective
1: EDG1,EDG2,EDG3,EDG4	-0.025	0.325	
2: EDG1,EDG2,EDG4,EDG3	-0.063	0.390	
Affective Attitude			Reflective
1: EET1,EET2,EET4,EET3	-0.023	0.285	
2: EET1,EET2,EET3,EET5	-0.102	0.299	
Cognitive Attitude			Reflective
1: EBT1,EBT10,EBT11,EBT2	-0.189	0.354	
2: EBT1,EBT10,EBT2,EBT11	-0.450	0.225	
Behavioural Attitude			Reflective
1: EDT1, EDT10, EDT11, EDT12	-0.076	0.209	
2: EDT1, EDT10, EDT12, EDT11	-0.231	0.151	

The analyses indicated that the measurement model had a reflective structure. Internal consistency reliability, convergent validity, and discriminant validity analyses were used to evaluate the PLS measurement model. Cronbach Alpha (α), composite reliability (rho_c), and (rho_a) were used for internal consistency reliability analysis. Outer loadings (λ) and Average Variance Extracted (AVE) were used for convergent validity analysis, while the Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio (HTMT) were used for discriminant validity. In evaluating the structural model, InnerVIF, determination coefficient (R2), predictive power analysis (Q2), effect size analysis (f2), PLSpredict analysis, and path analysis were conducted.

Although the scales used in the study were not obtained from a single source (Schaarschmidt et al., 2015; Anwar et al., 2022), common method bias was examined, as suggested by Kock (2015). Principal component factor analysis was applied to all factors, and Harman's single-factor test was performed (Fuller et al., 2016). It was concluded that a single factor (42.258%) did not explain the 50% variance threshold for all items, and therefore, there was no common method bias in the present study. In addition, a multicollinearity test was performed using the variance inflation factor (VIF) on the outer model. Since the outer VIF values of the items were below 3.0, it was concluded that there was no multicollinearity problem between the items (Kock & Lynn, 2012; Hair et al., 2017).

5. Results

5.1. Measurement Model Assessment

To test the measurement model, the SmartPLS program was used, and the bootstrapping technique was applied to test the study hypotheses. The results showed that the α, rho_c, and rho_a values of the measures in the model were above 0.70, which indicates good internal consistency and reliability (Fornell & Larcker, 1981; Hair et al., 2019).

Table 3 - Reliability and Validity

Measures		λ	*t-statistics*	rho_c	rho_a	AVE
Altruistic Value (AVal) (α=0.88)				0.88	0.88	0.64
1	*AVal1*	0.807	27.537			
2	AVal2	0.794	28.632			
3	*AVal3*	0.812	28.084			
4	*AVal4*	0.805	32.082			
Egoist Value (EVal) (α=0.89)				0.89	0.89	0.67
1	*EVal1*	0.823	27.690			
2	*EVal2*	0.778	25.629			
3	*EVal3*	0.837	32.024			
4	*EVal4*	0.842	32.024			
Biospheric Value (BVal) (α=0.86)				0.86	0.86	0.61
1	*BVal1*	0.778	22.972			
2	*BVal2*	0.741	19.682			
3	*BVal3*	0.809	26.239			
4	*BVal4*	0.815	29.289			
Ecological Worldview (EW) (α=0.82)				0.81	0.82	0.53
1	*EDG1*	0.782	24.214			
2	*EDG2*	0.709	19.963			
3	*EDG3*	0.692	18.928			
4	*EDG4*	0.729	20.224			
Affective Attitude (AAt) (α=0.90)				0.90	0.90	0.65
1	*AAt1*	0.831	32.217			
2	*AAt2*	0.832	32.037			
3	*AAt3*	0.766	24.721			
4	*AAt4*	0.822	31.146			
5	*AAt5*	0.795	29.966			
Cognitive Attitude (CAt) (α=0.90)				0.90	0.90	0.58
1	*CAt1*	0.715	21.002			
2	*CAt2*	0.787	27.152			
3	*CAt3*	0.775	25.945			
4	*CAt4*	0.774	26.047			
5	*CAt5*	0.761	22.963			
6	*CAt6*	0.770	23.363			
7	*CAt7*	0.750	22.103			
Behavioural Attitude (BAt) (α=0.92)				0.92	0.92	0.56
1	*BAt1*	0.764	22.937			
2	*BAt2*	0.723	20.080			
3	*BAt3*	0.747	23.891			
4	*BAt4*	0.727	22.426			
5	*BAt5*	0.731	21.250			
6	*BAt6*	0.753	25.374			
7	*BAt7*	0.769	24.759			
8	*BAt8*	0.761	22.144			
9	*BAt9*	0.736	21.275			
10	*BAt10*	0.793	25.100			
NFI=0,87, SRMR=0,034 X^2=1736.208, d_G=XXXX, d_ULS=XXX, GoF=XXX						

Note: ***** *λ=Outer loadings, rho_c and rho_a=composite reliability, AVE=Averaged variance extracted, α=Cronbach Alpha.*

AVE values were calculated to determine the convergent validity. AVE values (Hair et al., 2019) were above 0.50. Thus, the research model had convergent validity. Also, the outer loadings of the items were above 0.50 (Kaiser, 1974). Thus, the research model had construct validity (see Table 3).

Table 4 - Discriminant validity

Measures	AVal	EVal	BVal	EW	AAt	CAt	BAt
Fornell Larcker Criterion							
AVal	***0,805***						
EVal	0,759	***0,820***					
BVal	0,769	0,710	***0,787***				
EW	0,669	0,617	0,640	***0,729***			
AAt	0,753	0,745	0,689	0,648	***0,810***		
CAt	0,694	0,712	0,746	0,612	0,671	***0,762***	
BAt	0,691	0,691	0,725	0,695	0,609	0,659	***0,751***
Heterotrait-Monotrait Ratio (HTMT)							
AVal							
EVal	0,859						
BVal	0,868	0,821					
EW	0,766	0,823	0,839				
AAt	0,753	0,745	0,789	0,747			
CAt	0,794	0,811	0,845	0,811	0,772		
BAt	0,791	0,791	0,825	0,794	0,809	0,859	

Note: The values in italics and bold represent the square root of the average variance extracted (√AVE).
AVal: Altruistic Value, EVal: Egoist Value, BVal: Biospheric Value, EW: Ecological Worldview, AAt: Affective Attitude, CAt: Cognitive Attitude, BAt: Behavioral Attitude

To determine the discriminant validity of the research model, the Fornell-Larcker criterion was used by comparing the correlation loadings between measures. The Fornell-Larcker criterion was met as the square root of the AVE of each construct was higher than its correlation with any other construct (Fornell & Larcker, 1981) (see Table 4). To further confirm discriminant validity, the Heterotrait-Monotrait Ratio (HTMT) value was examined and was found to be below 0.9 (Henseler, Ringle & Sinkovics, 2009) (see Table 4). Therefore, the measurement model has discriminant validity.

The goodness of fit values was examined using SmartPLS. The results showed that the normed fit index (NFI) was over 0.80 (Arı & Yılmaz, 2020), and the standardised root mean square residual (SRMR) was below 0.080 (Hu & Bentler, 1999). d_ULS and d_G values are higher than 0.05 (Dijkstra & Henseler, 2015). Finally, the goodness of fit (GoF) value was higher than 0.36 (0.63) (Tenenhaus et al., 2005). Thus, it was confirmed that the measurement model has an acceptable goodness of fit. The measurement model tests were completed as a result of all these analyses.

5.2 Structural model assessment

InnerVIF values were examined to determine that the research model's two or more latent variables were not in a multicollinearity problem and did not increase the variance. InnerVIF was lower than 5, and no multicollinearity problem was found (Smith, White-McNeil & Ali, 2020) (see Table 7). To find the predictive power of the model, R2 values were examined. R2 is a coefficient that shows to what extent the exogenous variables explain the endogenous variables. R2 coefficient to be 0.25 and above is considered weak; 0.50 and above is average; 0.75 and above is considered a strong explanation rate (Hair et al. 2011). The results suggest that the predictive power of the model for EW (0,76), AAt (0,56), CAt (0,66), and BAt (0,63) are generally on a medium level (see Table 7). To determine the predictive power of endogenous variables on exogenous variables, a Q2 analysis was conducted. The obtained values are over 0, showing that the structural model accurately predicts endogenous variables (Hair et al. 2019) (see Table 7).

The effect size was evaluated using the f2 analysis in the structural model. The effect size coefficient to be 0.02 and higher is low; 0.15 and higher is medium, and 0.35 and higher is high (Cohen, 1988). The results suggest the values be on a medium level (see Table 7). Hair et al. (2019) stated that the PLSpredict analysis should also be performed because the R2 value alone is insufficient to determine the structural model's predictive power. The results of the PLSpredict analysis were performed to determine the out-of-sample predictive power. The PLS-MV values being higher than LM-MV values and the Q2 values being below 0 shows that the model's predictive power is high.

The hypotheses were analysed by structural equation modelling. According to the results, the biospheric value positively affects (ßBVal-EW=0.556, t=5.090, p<0.001) and egoistic value negatively affects (ßEVal-EW=-0.480, t=5.211) on ecological worldview. Hence, the H3 and H2 hypotheses have been accepted. However, altruistic value has not positively affected (ßAVal-EW=-0.127, t=0.996) on ecological worldview. Thus H1 hypothesis has not been accepted (see Table 5).

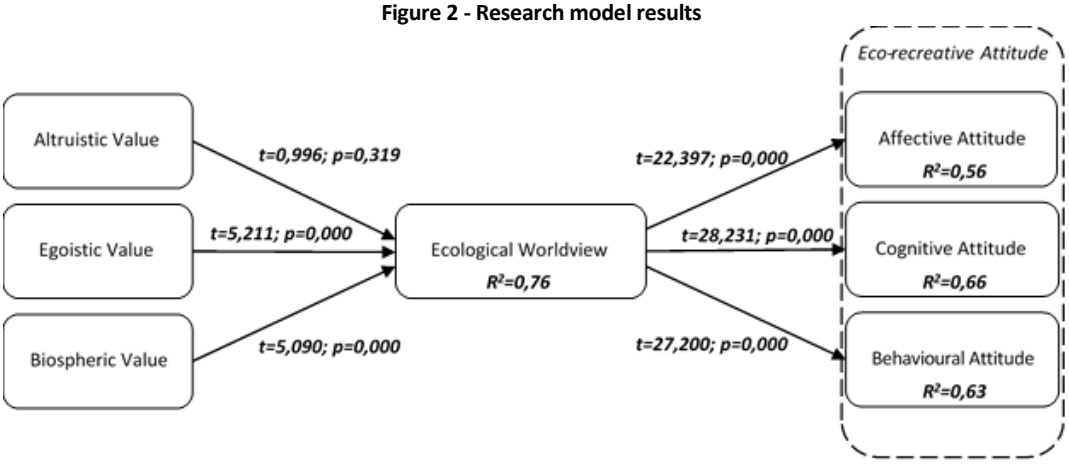
Table 5 - The structural equation model and structural model scores

Hypotheses		*Standardised ß*	*SDEV*	*t-statistics*	*p-value*	*InnerVIF*	f^2	Q^2	R^2
H_1	**AVal>>>EW**	-0.127	0.128	0.996	0.319	*5.562*	*0.012*		*0.76*
H_2	**EVal >>>EW**	-0.480	0.092	5.211	0.000***	*4.173*	*0.238*		
H_3	**BVal>>>EW**	0.556	0.109	5.090	0.000***	*4.456*	*0.297*	*0.37*	
H_4	**EW>>>AAt**	0.749	0.033	22.397	0.000***	*1.000*	*1.273*	*0.29*	*0.56*
H_5	**EW>>>CAt**	0.812	0.029	28.231	0.000***	*1.000*	*1.942*	*0.31*	*0.66*
H_6	**EW>>>BAt**	0.795	0.029	27.200	0.000***	*1.000*	*1.723*	*0.28*	*0.63*

p=<0.001***
InnerVIF=Variance inflation factor, AVal: Altruistic Value, EVal: Egoist Value, BVal: Biospheric Value, EW: Ecological Worldview, AAt: Affective Attitude, CAt: Cognitive Attitude, BAt: Behavioral Attitude

EW was found to have a positive effect on affective (ßEW-AAt=0.749, t=22.397, p<0.001), cognitive (ßEW-CAt=0.812, t=28.231, p<0.001) and behavioural (ßEW-BAt=0.795, t=27.200, p<0.001) attitudes. Hence H4, H5, and H6 hypotheses have been accepted.

Figure 2 - Research model results



6. Discussion and Conclusion

This study examined the effects of environmental values and ecological worldviews on eco-recreational attitudes within the value-belief-norm theory. The results show that the biospheric value positively affects the ecological worldview. A study conducted by Gupta and Sharma (2019) on adventure tourists also revealed a positive relationship between biospheric values and ecological worldviews. Kement (2019a), who conducted a study on the environmentally friendly behaviour of consumers participating in ecotourism activities, found that biospheric value positively affects the ecological worldview, similar to this study. Another study on university students in Jiangsu, China, showed that biospheric values positively influence the ecological worldview (Wu & Zhu, 2021). Perkins and Brown (2016) conducted a study on tourists visiting the Australian city of Gold Coast and found that tourists with stronger biospheric values attach more importance to nature and cultural options in their travels. These tourists supported green accreditation systems and preferred green products and services. The tourists in the study with stronger biospheric values were more interested in ecotourism activities, historical places, museums and different cultures. Landon, Woosnam and Boley (2018) examined the internal characteristics of American tourists that led them to support sustainable tourism and revealed a positive relationship between biospheric values and ecological worldviews.

According to the research results, it has been determined that egoistic values have a negative impact on the ecological worldview. It is evident that individuals who place low value on nature also exhibit low ecological worldviews. This finding is in line with previous studies on environmental attitudes in the literature (see Sadiq, Adil & Paul, 2022; Wong-Parodi & Rubin, 2022; Wyss, Knoch & Berger, 2022). Moreover, Abd-Rahman, Rahman, and Yahya (2022) suggested that the impact of egoistic values differs based on gender in their study conducted with 357 participants selected from environmental volunteers in the Klang Valley in Malaysia. Additionally, Tamar et al. (2020) found that egoistic values weaken the relationship between environmental attitudes and behaviour.

According to the research results, it was concluded that altruistic value does not affect the ecological worldview. Even if the research sample group behaves altruistically, it was determined that this behaviour was not related to the formation of an environmentalist view. In other words, it was determined in this study that altruistic value was not an antecedent to the ecological worldview, unlike other studies (see Kim & Stepchenkova, 2020; Shao, Mahmood & Han, 2021). This may be because people's thoughts about being altruistic are not high, and they cannot associate social justice with forming an ecological worldview.

This study also examined how ecological worldview affects eco-recreational affective, cognitive, and behavioural attitudes. The results show a positive relationship between ecological worldview and eco-recreational affective attitude, cognitive attitude, and behavioural attitude. Moghimehfar et al. (2020) investigated the effect of the ecological worldview and cognitive, affective, and behavioural attitudes of campers in Canada on their environmentally friendly behavioural intentions. According to the results of their study, the ecological worldview indirectly has a positive effect on ecological affective attitudes. This result is consistent with the results of this study. Liu, Ouyang, and Miao (2010) explored the attitudes and environmental beliefs of tourism stakeholders at the Jinyun Mountain Protected Area in China within the context of the NEP. The NEP scores used to determine the environmental attitudes of the stakeholders differed significantly between the stakeholder groups. While the environmental attitudes of public servants were at the highest level, the environmental attitudes of operators remained at the lowest level. Balador et al. (2021) measured the environmental attitudes of different stakeholders in New Zealand and found that construction materials manufacturers and suppliers have a low environmental attitude level.

Practical Implications

The results of this research reveal some managerial implications. First, according to the research results, the ecological worldview positively affects the eco-recreational attitudes of the visitors. It can be said that visitors whose eco-recreative attitudes develop positively will naturally expect ecological awareness from the stakeholders in the process. Therefore, managers and policymakers who consider such environmentally sensitive attitudes of the visitors will provide a competitive advantage and protect the future of society.

The ecological worldview seeks to explain how people evaluate and respond to environmental dangers. The research revealed that the ecological worldview of visitors with high biosphere values, who perceive the importance of the environment and the biosphere, is formed positively. It can be said that these visitors, whose attitudes are towards environmental protection, will seek ecologically and socially responsible businesses and administrations. Therefore, managers may choose to design appropriate ecotourism activities (Huang & Liu, 2017) to understand consumers' environmental concerns and increase their awareness of protecting the natural environment.

The increasing biospheric value and environmental attitudes in tourism areas can decrease tourism's negative effects on destinations and, therefore, promote sustainable tourism. To mitigate the environmental impacts of tourism, it is necessary to increase the biospheric value among tourists and design tourism activities that are focused on the ecosystem. This will enable tourists to develop responsible environmental attitudes (Lee & Jan, 2015). Benckendorff, Moscardo, and Murphy (2012) emphasise the importance of understanding the environmental attitudes of young people who participate widely in ecotourism activities.

One suggestion is to emphasise pedagogical studies to develop the environmental values and attitudes of primary school, middle school, and university students. Jamal et al. (2011) suggest a sustainable tourism pedagogy that involves the experiences of critical participants, people, time, and place. Additionally, they emphasise the importance of technical, analytical, ecological, intercultural, ethical, and political literacy related to tourism.

Theoretical Implications

We believe that these findings will contribute to the ecotourism and eco-recreation literature. This research emphasises that environmental values and ecological worldview explain the eco-recreational attitudes of individuals. In this respect, it should be noted that the research is theoretically original. Focusing on tourism's socio-cultural and environmental dimensions rather than its economic dimension and adopting environmentally friendly thinking as a philosophy of life are among the basic features of the eco-recreational attitude. Therefore, the visitors exhibiting responsible tourist attitudes in touristic and recreational activities, which do not have commercial concerns, reveal the importance of the eco-recreational attitude, as supported by the research results.

Searching for ways to change attitudes and explaining the antecedents of attitudes are among the original aspects of this research. The eco-recreational attitude that respects the ethical rules of tourism protects natural and cultural heritage, and supports natural life will contribute to understanding and adopting the philosophy of sustainability in tourism. As a result, this research deals with the idea of protecting the environment, ecocentrism, and eco-recreational attitude supported by a holistic understanding of ecotourism. Additionally, the study presents a framework that explains how altruistic value, egoistic value, and biospheric value affect the ecological worldview of visitors and the effects of ecological worldview on eco-recreational affective, cognitive, and behavioural attitudes.

Limitations and Future Research

This study collected data from individuals who engage in outdoor recreational activities involving air, water, and land. Individuals engaged in indoor recreational activities were not included as they were outside the scope of the study. Furthermore, only the environmental value and ecological worldview scales were used in this research. In future research, the eco-recreative attitude scale can be examined based on different theories, such as the Theory of Planned Behavior. Eco-recreative attitude can be explained using scales such as environmental sensitivity or environmental knowledge or theories such as the Values-Beliefs-Norms (VBN) theory or the Technology Acceptance Model (TAM). It is anticipated that the findings obtained from this research will serve as a foundation for eco-recreation activities.

Credit author statement

All authors have contributed equally. All authors have read and agreed to the published version of the manuscript.

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