



## THE ROLE OF ENVIRONMENTAL CONCERN IN MEDIATING THE EFFECT OF PERSONAL ENVIRONMENTAL NORMS ON THE INTENTION TO PURCHASE GREEN PRODUCTS: A CASE STUDY ON OUTDOOR ATHLETES<sup>1</sup>

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**Objective:** The aim of this study was to determine the role of environmental concern in mediating the relationship between outdoor athletes' personal environmental norms and their intention to purchase green products.

**Method:** In the study, The Structural Equation Model (SEM) was used. The study group of the research consisted of licensed outdoor athletes (n=396) in Turkey. The SPSS 25.0 software program was used for the descriptive data, and the AMOS 24.0 software program was used for the confirmatory factor analysis and structural model test.

**Results:** The results of the analysis revealed that the outdoor athletes' personal environmental norms had a positive effect on their environmental concerns and intention to purchase green products. That is, the outdoor athletes' personal environmental norms increased their environmental concerns and green purchase intention. Moreover, it was seen that the outdoor athletes' environmental concerns had a positive effect on their green purchase intention and that they had a significant role in mediating the relationship between personal environmental norms and green purchase intention.

**Theoretical contributions:** In conclusion, it is thought that outdoor sports can be used as a mean of strengthening consumers' personal environmental norms and environmental concerns in order to encourage green consumption.

**Originality:** Among the sample groups of studies conducted on the subject of green consumption, the fact that no study can be found that examines consumption behaviours of outdoor athletes, who represent the assumption that since they do outdoor sports, they can be closely involved with the natural environment, makes it important to determine outdoor athletes' green purchase intentions. Therefore, the current study differs in this respect from other conducted studies.

**Keywords:** Outdoor Athletes. Green Purchase Intention. Personal Environmental Norm. Environmental Concern.

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## 1 Introduction

Since environmental problems such as climate change and the disappearance of bio-productive areas and biological diversity are of vital importance for the sustainability of human life in the 21st century, these problems are likely to become the main driving forces for the protection of the environment (Stoeglehner, 2020). The effect of industrialisation and urbanisation on the present-day manifestation and proliferation of such environmental problems, which humanity has encountered throughout history, is very high. (Dunlap & Jorgenson, 2012). With the urban development of society, environmental problems have begun to attract more and more attention (Long *et al.*, 2021), and the rapid economic growth in the world in recent years has increased energy consumption and environmental problems (Wang, 2019). The emission of toxic and gaseous pollutants into nature as a result of the continuous burning of fossil fuels; wastewater discharged into natural water resources by factories, rendering water unusable and destroying aquatic life; urbanisation, which causes deforestation and therefore decreases air quality; and the damage caused by plastic waste to soil fertility are just a few of these (Ajibade *et al.*, 2021). Therefore, excessive consumption of natural resources and deposition into nature of wastes generated as a result of the products produced are the main causes of environmental problems.

The fact that environmental problems are due to excessive production and consumption show that important duties are naturally placed on the producer and consumer for solving these problems. In this context, environmentally friendly consumption, known as green consumption, has become an important concept. Green consumption is a form of consumption that is compatible with environmental protection for present and future generations (Testa *et al.*, 2020). In other words, it is the consumption of green products, known as environmentally friendly products that cause less harm to the environment, which are manufactured by using recyclable or recycled content, reduced packaging or less toxic substances in order to reduce the impact on the natural environment (Chen & Chai, 2010). Green consumers are defined as individuals who engage in a series of pro-environmental behaviours, such as recycling and reducing household waste, due to environmental problems (Barbarossa & De Pelsmacker, 2016).

For the aforementioned green consumption behaviours to be realised, the green products produced must be adopted by the consumer, and the target population must have environmental consciousness and be aware of environmental problems; in short, a positive attitude towards the environment must be displayed. For exhibiting positive attitudes towards the environment,

education related to the environment and time spent in nature become important. This is because being connected with nature has a significant impact on influencing pro-environmental behaviour (Hoover, 2020). Therefore, physical activities performed in nature, such as open-air recreation, which pioneer the realisation of environmentally sustainable practices (Brymer *et al.*, 2009), with their rich content enabling outdoor education and by providing participants with direct experience, have become an effective area of study for fostering environmental consciousness and developing environmental commitment (Berns & Simpson, 2009).

Since situations such as the environmental awareness and environmental commitment acquired as a result of physical activities performed in nature have an impact on consumers' product preferences and purchasing processes over time (Aracıoğlu & Tatlıdil, 2009), the importance of outdoor sports that enable participants to commune with nature is increasing. Participation in these sports provides participants with the opportunity to become more familiar with the environment due to the bond and unity with nature established during the practices. Outdoor sports, which are defined as physical activities performed by manpower in natural or non-urban environments, give participants the opportunity to establish connections with nature, with other people, and with themselves. Moreover, it is seen that besides the psychosocial, psychological, physical and spiritual benefits of outdoor sports, they are also very important in terms of green marketing or green consumption by fostering environmental consciousness (Eigenschenk *et al.*, 2019; Dickson *et al.*, 2008; Fresque & Plummer, 2009), since various values and trends of society related to environmental protection behaviours are affected by these types of recreational physical activities performed in nature (Larson *et al.*, 2011). Therefore, it is thought that in terms of the outcomes they achieve, outdoor sports can be associated with environmental consciousness and the use of environmental products, which are effective in consumer preferences.

In studies conducted on outdoor sports and their relationship with the environment, it is reported that there is a relationship between participation in outdoor sports and personal norms (Heywood, 1996; Williams *et al.*, 1991), in other words, that participation in outdoor sports increases an individual's norms related to the environment. In a study carried out with recreational divers, Ong and Musa (2011) stated that the direct effect of personal norms on environmentally responsible behaviour was greater than that of subjective norms, and that direct experiences in a marine environment could affect divers' awareness related to protecting the seas (environmental behaviour). Another variable that are closely associated with outdoor sports, is environmental concern. There are various studies revealing that environmental

concern is a factor increasing participation in outdoor sports. For example, while Bjerke *et al.* (2006) revealed that environmental concern was highly correlated with numerous recreational activities performed in nature, Teisl and O'Brien (2002) and Satchabut (2013) obtained similar results to the effect that environmental concern was correlated with participation in outdoor sports. Moreover, in studies conducted with different sample groups than outdoor athletes, it was seen that personal environmental norms and environmental concern affected the intention to purchase green products (Han, 2020; Quoquab *et al.*, 2020; Fabiola & Mayangsari, 2020; Yue *et al.*, 2020; Shen & Chen, 2020; Wang *et al.*, 2020; Prakash & Pathak, 2017).

Among the sample groups of studies conducted on the subject of green consumption, the fact that no study can be found that examines consumption behaviours of outdoor athletes, who represent the assumption that since they do outdoor sports, they can be closely involved with the natural environment, makes it important to determine outdoor athletes' green purchase intentions. Therefore, the current study differs in this respect from other conducted studies. Moreover, the fact that the mediating effect of environmental concern in the relationship between personal environmental norms and green purchase intentions has not previously been examined in studies of consumer behaviours, either specific to outdoor athletes or in a general sense, is another factor that increases the original value of this research. As a result, in this study, the answer to the question "Does environmental concern have a mediating role between the personal environmental norms of outdoor athletes and their intention to buy green products?" is sought. Following a literature review, a research model was created aimed at determining the role of environmental concerns in mediating the relationship between personal environmental norms and green purchase intentions. The next section includes the literature information and research hypotheses related to the variables included in the research model.

## 2 Literature review and hypotheses

### 2.1. Green Purchase Intention

Intention is an individual's desire to perform a certain behaviour (Önel, 2017). Purchasing intention, on the other hand, refers to the possibility that consumers plan to purchase a certain good or service in the future or are willing to buy it (Wu *et al.*, 2011). If consumers have a positive purchase intention, this intention will encourage purchasing behaviour (Martins *et al.*, 2018). If the customer has a positive attitude towards the product and a positive purchase intention, he or she will eventually buy the product and brand love will increase in the mind of the customer (Hameed *et al.*, 2021). In many studies, the intention to purchase green products,

which has a significant impact on green consumer behaviour (Rausch & Kopplin, 2021; Djaelani, Negari & Cuaca, 2020; Zahan *et al.*, 2020; Önel, 2017), can be defined as a person's likelihood or desire to choose products that have environmentally friendly characteristics rather than choosing traditional products with regard to purchasing them (Mei *et al.*, 2012).

## 2.2. Personal environmental norms and green purchase intention

Personal norms, which are a premise of the research model, are personal expectations based on internalised values. Personal norms express commitment to internalised values and are experienced as a sense of personal obligation to be occupied with a certain behaviour (Schwartz, 1977). In other words, personal norms reflect an individual's moral obligation with regard to carrying out certain actions or refraining from these. Personal norms are activated when individuals are aware that there is a problem originating from their own behaviours, and feel that they are responsible and can solve this problem by taking action (Keizer *et al.*, 2019). That is, personal norms emerge as an individual's feelings of moral responsibility (Roggenbuck *et al.*, 1991). Responsible behaviours towards the environment are associated both with subjective and personal norms, but experimental studies have shown that when environmental behaviours are in question, personal norms are more determinant (Thøgersen, 2006). In studies conducted in various areas, such as the purchase of hybrid or electric vehicles, the purchase of environmentally friendly products or organic products, and types of transport, it is seen that personal norms are directly correlated with environmental behaviour (Joanes, 2019). Moreover, it is known that personal norms are the most important indicator of environmental behaviour and environmentally friendly purchasing behaviour (Casper & Pfahl, 2012; Thøgersen & Ölander, 2006; He & Zhan, 2018). When the literature specific to outdoor sports is examined, it is seen that there are no studies investigating the effect of personal norms on green purchase intention. In the single study accessed that deals only with personal environmental norms (Ong & Musa, 2011), the relationship of norms with green purchase intention was not examined, and it was stated only that experiences in a marine environment could affect divers' awareness related to protecting the seas (environmental behaviour). Therefore, based on the assumption that since outdoor athletes are in constant interaction with the environment, they may be able to form a tendency to show sensitivity towards the environment, it was considered that this sensitivity could affect the intention to purchase green products, and so the first hypothesis of the research was designed as follows:

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**H<sup>1</sup>:** The personal environmental norms of outdoor athletes are positively associated with their green purchase intention.

### 2.3. *The mediating role of environmental concern*

Concern means worried thinking. Environmental concern expresses consumers' general attitude towards the environment reflecting the worry they feel about threats to the environment (Lee *et al.* 2014). Environmental concern is a specific approach towards the environment that is associated with a more comprehensive value-oriented behaviour (Fransson & Gärling, 1999). Environmental concern, which means an individual's general orientation towards the environment, is an important determinant of a number of environmentally friendly behaviours from recycling behaviour to green purchasing behaviour (Kim & Choi, 2005).

Although not very common, studies can be found in the literature which examine the relationship between environmental concern and personal environmental norms included in the research model. People's values and environmental concern that reflect the importance they give to their common benefits and living areas are especially associated with personal norms (Steg *et al.*, 2011). While the most important factor that activates norms are personal values (Stern, 2000), the most important factor that creates environmental concern is belief in environmental problems (Kilbourne & Pickett, 2008). That is, for environmental concern to develop, an individual must first believe that environmental problems exist. The connection between values and environmentalism is mediated by certain beliefs (Stern, 2000). Considering the relationship of beliefs and values with personal norms, it is likely that environmental concern will be affected by personal norms. Furthermore, in a study by Gifford and Nilsson (2014), in which they compiled the factors affecting environmental concern and environmental behaviour, personal and social factors, which also included norms, came to the fore. Therefore, it is possible to establish a relationship between personal norms and environmental concern. Again, when the literature specific to outdoor athletes was examined, no environmental study could be found which examined the relationship between personal environmental norms and concerns about the environment in outdoor athletes. In line with this, the second hypothesis of the research is defined below:

**H<sup>2</sup>:** The personal environmental norms of outdoor athletes are positively associated with their environmental concern.

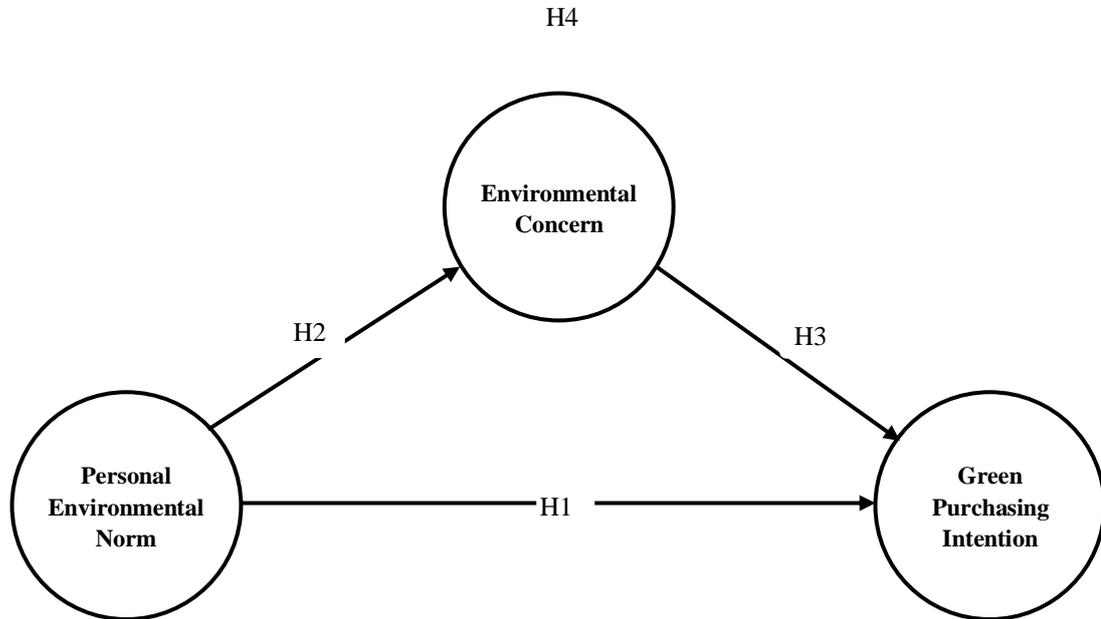
Environmental concern generally expresses the extent to which individuals are concerned about environmental problems and the fact that they are willing to make an effort to solve these problems. The conducted studies reveal that consumers who have many environmental concerns show more intentions and behaviours towards purchasing green products than consumers who have few environmental concerns (Chuah, *et al.*, 2020). When examining the results obtained in studies conducted in different fields that examine environmental concerns and green purchase intentions, it is seen that consumers who have environmental concerns try to make ecologically correct decisions in their purchasing behaviour, and that in order to lead a life more in balance with nature, they choose products that create less pollution, make an effort for recycling, and try to restrict the number of products they obtain from scarce resources (Roberts & Bacon, 1997). In a study by Wu *et al.* (2019), in which they examined the role of environmental concern in the acceptance of autonomous electric vehicles by the public, it was concluded that environmental concern had a direct and indirect effect on behavioural intention. Moreover, it is revealed in the conducted studies that environmental concern has a positive effect on green purchase intention (Yue *et al.*, 2020; Fauzan & Azhar, 2019; Onurlubaş, 2018; Koenig-Lewis *et al.*, 2014). In conclusion, it is seen that there is a relationship between environmental concern and green purchase intention. Therefore, the hypotheses that will test the effect of outdoor athletes' environmental concerns on their green purchase intention, and the role of environmental concerns in mediating the relationship between their personal environmental norms and green purchase intention are as follows:

**H<sup>3</sup>:** The environmental concerns of outdoor athletes are positively associated with their green purchase intention.

**H<sup>4</sup>:** The environmental concerns of outdoor athletes play a mediating role between their personal environmental norms and green purchase intention.

**Figure 1**

*Research Model*



The model created by considering the information in the literature is shown in Figure 1. In line with the model, it is hypothesised that outdoor athletes' personal environmental norms affect their environmental concerns and green purchase intention, and that their environmental concerns affect their green purchase intention. Moreover, it is hypothesised that outdoor athletes' environmental concerns have a mediating effect on the relationship between their personal environmental norms and green purchase intention.

### 3 Methods

#### 3.1. Measurement

A questionnaire method including closed-ended questions was used as data collection in the research. The questionnaires were administered to the participants face-to-face and via email. For the personal environmental norm dimension of the study, the scale originally developed by Minton and Rose (1997) and later adapted to Turkish by Tekin (2020) was used. The eight-item Personal Environmental Norm Scale (PENS) is scored from 1 (no personal obligation) to 9 (very strong personal obligation) according to the degree of importance felt. For the environmental concern dimension of the study, the Environmental Concern Scale (ECS) originally developed by Schultz (2001) and later adapted to Turkish by Tekin (2020), and

consisting of 9 items in two subdimensions (Personal Concerns and Universal Concerns) were used. Each question in the scale is scored from 1 (not important) to 7 (very important). To measure the green purchase intention dimension of the research, the Green Purchase Intention Scale (GPIC) originally developed by Schwepker Jr. and Cornwell (1991) and later adapted to Turkish by Tekin (2020) and consisting of 5 items was used. The scale is of the five-point Likert type and is scored from 1 (strongly disagree) to 5 (strongly agree).

### 3.2. Data collection and sample

The population of the study consisted of licensed outdoor athletes in Turkey. The basic criterion for defining the population is which sports constitute outdoor sports. At this point, the classification of outdoor sports made by Demirhan (2003) was utilised. According to this classification, outdoor sports are split into the subdisciplines of mountaineering, rock climbing, orienteering, potholing (caving), mountain biking, rowing, swimming (in the sea, lakes or streams), surfing, diving, sailing, rafting, alpine skiing, Nordic skiing, cross-country skiing, snowboarding, parachuting, hang-gliding, cliff jumping and paragliding. In Turkey, the number of athletes who are licensed in the relevant branches of these sports that have federations are 190,810 (<http://sgm.gsb.gov.tr/>, Date of Access:11.10.2018). For the main implementation, the “n” sample size corresponding to the population size was determined as 382 according to Krejcie and Morgan (1970). For the model test stage, the scale was administered to a total of 455 people, and from the questionnaires obtained, 59 inappropriate questionnaires were removed from the study and excluded from the analysis. The rate of returned questionnaires was 87%, and the number of answered questionnaires was 396.

**Table 1**

*General Information*

<b>Athlete</b>	<b>f</b>	<b>%</b>	<b>Athlete</b>	<b>f</b>	<b>%</b>
<b>Gender</b>			<b>Participation frequency</b>		
Female	117	29.5	Once a week	111	28
Male	279	70.5	Once a month	121	30.6
<b>Education level</b>			Once in 3 months	73	18.4
Primary school	2	0.5	Once in 6 months	91	23
High school	75	18.9	<b>Federation affiliated to</b>		
Bachelor's	295	74.5	Turkish Orienteering F.	32	8.1
Postgraduate	24	6.1	Turkish Underwater Sports F.	29	7.3
<b>Income level (TL)</b>			Turkish Sailing F.	27	6.8
- < 2300	240	60.6	Turkish Mountaineering F.	85	21.5
2300 -3500	62	15.7	Turkish Cycling F.	53	13.4
3501-4500	34	8.6	Turkish Canoeing F.	24	6.1
4501 < -	60	15.2	Turkish Scouting F.	47	11.9
<b>Competition level</b>			Turkish Skiing F.	42	10.6
Local	141	35.6	Turkish Air Sports F.	20	5.1
Regional	76	19.2	Turkish Rafting F.	16	4
National	68	17.2	Turkish Rowing F.	21	5.3
International	111	28			

As seen in Table 1, 29.5% (n=117) of the outdoor athletes were female, while 70.5% were male (n=279), 74.5% (n=295) were university graduates and 60.6% (n=240) had incomes below 2300 TL. It can be understood that the highest athlete participation rate was 21.5% (n=85) in the Turkish Mountaineering Federation, that 35.6% (n=141) of participation in competitions was at local level, and that 28% (n=111) was at international level. It is seen that 28% (n=111) of athletes took part in the activities of federations that they were affiliated to once a week, and that 30.6% (n=121) participated in these once a month.

**Table 2**

*Arithmetic Means and Standard Deviation Values Related to age and Licence Duration of Outdoor Athletes*

	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>	<b>SD</b>	<b>N</b>
Age	26.64	18	63	11.32	396
Licence Duration (years)	5.50	1	43	5.3	396

When Table 2 is examined, it can be seen that the mean age of the athletes was  $\bar{x}=26.64$ , the youngest age was 18, the oldest age was 63, the mean licence duration was  $\bar{x}=5.50$  years, the shortest licence duration was 1 year, and the longest licence duration was 43 years.

### 3.3. Data analysis

For constructing the research model suggested in this study and for the analyses related to the model, the principles of Structural Equation Modelling (SEM), which has become a popular method in social sciences (Gau, 2010) were utilised. The Structural Equation model is a multivariate statistical structure used for complex relationships between multiple variables. In terms of testing correlations between observed or unobserved variables and taking measurement errors into account, SEM is a more effective method than classic methods of analysis (He *et al.*, 2012). For analysing and testing the model presented and projected in the research, the SPSS 25.0 and AMOS 24.0 software programs were used. For the validity analyses of the scale questions used in the study, confirmatory factor analysis was performed. For the reliability analyses of the items, the Cronbach alpha coefficients were examined.

## 4 Results

### 4.1. Confirmatory factor analysis

For the confirmatory factor analysis, to test the scales used in the study and the measurement structure of the conceptual model, the AMOS program was used. In SEM-based analyses, before the structural models are tested, the measurement model is tested (Mulaik & Millsap, 2000). For testing the measurement model, a covariance matrix was created using the maximum likelihood method of calculation. For the Goodness of Fit Indices (*GFI*),  $X^2$  and the related  $X^2/df$ , CFI, SRMR and RMSEA values were considered (Kline, 2016; Jackson *et al.*, 2009; Hu & Bentler, 1998). As a result of the analyses that were performed, GFI were calculated as ( $X^2=717.411$ ;  $df=204$ ;  $X^2/df=3.517$ ;  $RMSEA=.08$ ;  $SRMR=.0588$ ; and  $CFI=.901$ ). It was seen that all factor loadings ranged between 0.503 and 0.873 and were significant at  $p<.001$  level. Data related to the scales used in the study are presented in Table 3. When the table is examined, it is seen that all Cronbach's alpha values of the scales are greater than 0.70, that is, the scales are reliable (Nunnally, 1978).

**Table 3**

*Evaluation of the Measurement Model*

Construct	Items	Std. loadings	t-value	Cronbach's alpha
Personal Environmental Norm	1. Do you feel a personal, moral obligation to buy products made by companies known for being environmentally responsible?	0,710	-	0,919
	2. Do you feel a personal, moral obligation to read and compare package labels for environmentally safe ingredients when you shop?	0,843	15,944	
	3. Do you feel a personal, moral obligation to buy products made with recycled ingredients?	0,846	16,092	
	4. Do you feel a personal, moral obligation to pay attention to advertisements about products which are safe for the environment?	0,799	15,230	
	5. Do you feel a personal, moral obligation to buy larger size products in order to reduce waste?	0,703	13,413	
	6. Do you feel a personal, moral obligation to buy environmentally friendly products for your household?	0,779	14,852	
	7. Do you feel a personal, moral obligation to recycle household waste?	0,694	13,163	
	8. Do you feel a personal, moral obligation to do whatever you can to help improve the environment?	0,729	13,753	
Environmental Concern	1. I am concerned about environmental problems because of the consequences for marine life.	0,705	-	0,897
	2. I am concerned about environmental problems because of the consequences for birds.	0,704	13,253	
	3. I am concerned about environmental problems because of the consequences for future generations.	0,787	14,748	
	4. I am concerned about environmental problems because of the consequences for animals.	0,858	15,994	
	5. I am concerned about environmental problems because of the consequences for plants.	0,825	15,426	
	6. I am concerned about environmental problems because of the consequences for people in my country .	0,638	12,857	
	7. I am concerned about environmental problems because of the consequences for me.	0,573	10,824	
	8. I am concerned about environmental problems because of the consequences for my health.	0,548	10,359	
	9. I am concerned about environmental problems because of the consequences for my future.	0,685	12,891	
Green Purchasing Intention	1. I would purchase a product in a recyclable package before purchasing a similar product in a package which is not recyclable.	0,654	-	0,825
	2. I would purchase a less attractively packaged product if I knew that all unnecessary plastic and or paper covering had been eliminated.	0,802	12,322	
	3. I would purchase a product with an untraditional package design (for example, round where most are square) if it meant creating less solid waste.	0,813	12,379	
	4. I would purchase a product in a biodegradable package before purchasing a similar product in a nonbiodegradable package.	0,658	12,728	
	5. I would be willing to purchase some products (now bought in smaller sizes) in larger packages with less frequency.	0,538	9,139	

It is seen that the composite reliability (CR) value varies between 834 and 920, and that the average variance extracted (AVE) value ranges between 0.505 and 0.592 (Table 4). The value of AVE should be greater than 0.5 and the square root of AVE measures should be greater than the correlation between structures (Fornell & Larcker, 1981). In addition, the correlation between structures should be less than 0.90 (Kline, 2016). When Table 4 is examined, it is seen that the correlation between the structures is less than 0.603. All data show that both convergent and discriminant validity are established.

**Table 4**

*Square Root of the Average Variance Extracted (AVE) and Correlations Matrix*

	CR	AVE	MSV	MaxR(H)	Environmental Concern	Green Purchasing Intention	Personal Environmental Norm
<b>Environmental Concern</b>	0,902	0,511	0,317	0,917	<b>0,715</b>		
<b>Green Purchasing Intention</b>	0,834	0,505	0,364	0,846	0,486***	<b>0,711</b>	
<b>Personal Environmental Norm</b>	0,920	0,592	0,364	0,924	0,563***	0,603***	<b>0,769</b>

AVE=Average Variance Extracted; CR = Composite Reliability; MSV= Maximum Shared Variance; MaxR(H)= McDonald Construct Reliability; \*\*\* p < 0.001

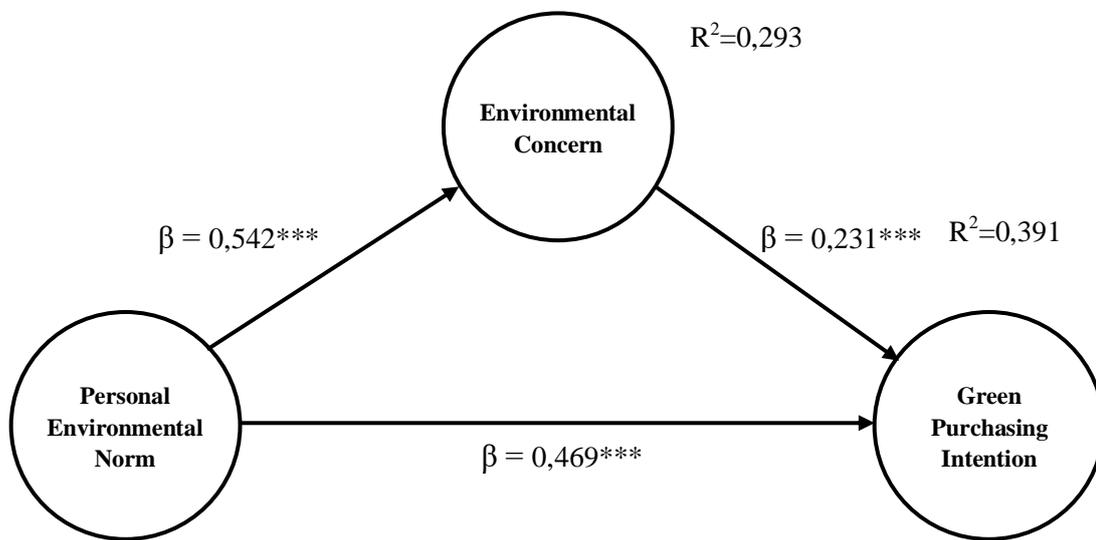
4.2. *Structural equation modelling*

The covariance matrix was created using the maximum likelihood (ML) method of calculation. For GFI, X<sup>2</sup> and the related X<sup>2</sup>/df, CFI, SRMR and RMSEA values were taken into account (Kline, 2016; Jackson *et al.*, 2009; Hu & Bentler, 1998). The structural model consisting of the Personal Environmental Norm, Environmental Concern and Green Purchase Intention variables was tested (Fig. 1). The GFI obtained from the analysis show that the validity of the model was confirmed (X<sup>2</sup>= 673.639, X<sup>2</sup>/sd=3.318, RMSEA=0.77, SRMR=0.0636 and CFI=0.909). In the path diagram, it was determined that personal environmental norms had a significant positive effect on green purchase intention (β= 0.469,

$p < 0.001$ ), that personal environmental norms significantly positively affected environmental concerns ( $\beta = 0.542$ ,  $p < 0.001$ ), and that environmental concerns had a significant positive impact on green purchase intention ( $\beta = 0.231$ ,  $p < 0.001$ ) (Table 4). Therefore, **Hypothesis 1**, **Hypothesis 2** and **Hypothesis 3** were supported. When the  $R^2$  values are examined, it is seen that personal environmental norms explain 29% of the variance in environmental concerns, while personal environmental norms and environmental concerns together explain 39% of the variance in green purchase intention.

**Figure 2**

*Standardised Path Coefficients*



**Notes:**  $\beta$  = Standardised regression weights;  $R^2$  = explained variance; \*\*\* $p < 0.001$

**Table 4**

*Standardised Parameter Estimates for Structural Model*

		Standardized Estimate	t-value	Hypothesis
H1	Personal Environmental Norms → Green Purchasing Intention	.307	8.881	<b>Supported</b>
H2	Personal Environmental Norms → Environmental Concerns	.169	7.010	<b>Supported</b>
H3	Environmental Concerns → Green Purchasing Intention	.147	3.827	<b>Supported</b>
<b>Goodness-of-fit statistics:</b> $X^2 = 673.639$ , $X^2/sd = 3.318$ , $RMSEA = 0.77$ , $SRMR = 0.0636$ and $CFI = 0.909$				
<b>Notes 1:</b> *** $p < 0,001$				
<b>Notes 2:</b> $RMSEA$ = Root Mean Square Error of Approximation, $SRMR$ = Standardised Root Mean Square Residual, $CFI$ = Comparative Fit Index				

### 4.3. Mediating role of environmental concerns

In order to test the mediating effects, the mediating effect analysis was tested with the Bootstrap (5000) resampling technique at a 95% confidence interval. In the event that the confidence interval does not include zero (0), then an indirect effect can be mentioned (Yzerbyt *et al.*, 2018; Hayes, 2018). The analysis results are included in Table 5. As a result of the conducted analysis, it was determined that the indirect effect of personal environmental norms on green purchase intention through the medium of environmental concerns did not include the zero value (effects=0.125, SE= 0,024), and was included between the lowest value and highest value (bias-corrected 95% CI= 0.063 to 0.202; percentile 95% CI= 0.059 to 0.198). In addition, when Environmental Concern was added to the model as a mediating effect, the direct effect of Personal Environmental Norms on the Intention to Purchase Green Products decreased from 0.601 to 0.469. Therefore, these results indicate that there was a mediating effect of environmental concerns in the relationship between personal environmental norms and green purchase intention. In this case, **Hypothesis 4** was supported.

**Table 5**

*Results of the Mediating Effect Analysis*

Path	Effects	Estimates	SE	Z-values	Bootstrapping			
					Bias-Corrected 95% CI		Percentile 95% CI	
					Lower	Upper	Lower	Upper
	Total effects	0.595	0.035	8.881	0.502	0.687	0.497	0.681
PEN-EC-GPI	Indirect effects	0.125	0.024	7.010	0.063	0.202	0.059	0.198
	Direct effects	0.469	0.038	3.827	0.350	0.589	0.346	0.586

**Note:** PEN: personal environmental norms; EC: environmental concerns; GPI: green purchasing intention.

## 5 Discussion and conclusion

This study aimed to reveal how outdoor athletes' personal environmental norms and environmental concerns increased their intention to purchase green products. The analysis results of the obtained data revealed that personal environmental norms affected their green purchase intention to a significant extent, in other words, that outdoor athletes with high personal environmental norms had a greater intention to purchase green products. Similarly, outdoor athletes' environmental concerns also affected their green purchase intention and

played a mediating role in the effect of personal environmental norms on green purchase intention. This situation reveals that green purchase intention can be realised by the reinforcing of consumers' concerns about environmental problems.

The findings obtained from this study, which was primarily conducted with outdoor athletes, extends the research carried out in the field of green consumption in terms of the sample group that was studied. That is to say, although studies conducted with different sample groups exist in the literature dealing with green purchase intention, no study could be found related to outdoor athletes, whose green consumption behaviours we believe it is important to examine due to the time that they spend in nature and the sporting activities that they perform. Moreover, the examination of the mediating role of environmental concerns in the relationship between personal environmental norms and green purchase intention also adds novelty to the field. Therefore, in the sense that this study is the first to evaluate the relationship between personal environmental norms and green purchase intention from the perspective of outdoor athletes, it serves as a guide for future studies in this field.

First of all, the relationship between green purchase intention and personal environmental norms was focused on in the study. In previous studies carried out with different sample groups, a positive effect of personal norms on purchase intentions was generally seen. The fact that personal norms assist in increasing behavioural intention (Kim & Hwang, 2020) is the reason why this variable has been the subject of many studies. In different studies conducted in the literature, findings were obtained to the effect that personal norms generally had a positive effect on green purchase intention (Youn *et al.*, 2020; Koklic *et al.*, 2019; Kim & Seock, 2019; Shin *et al.*, 2018; He & Zhan, 2018). In this study, too, it was concluded that outdoor athletes' personal environmental norms increased their green purchase intention. The fact that outdoor athletes' personal environmental norms had a positive impact on their green purchase intention shows parallelism with the previous studies. In other words, the outdoor athletes showed similar characteristics to green consumers. This finding may mean that consumers with high personal environmental norms will have greater intentions to purchase green products. The fact that participation in outdoor sports increases personal environmental norms reveals that outdoor sports can be associated with green consumption.

In the second hypothesis, the effect of outdoor athletes' personal environmental norms on their environmental concerns was tested, and the results were found to be significant. In studies conducted previously, findings were obtained to the effect that environmental concerns affected personal norms (Koklic *et al.*, 2019; Song *et al.*, 2019; Gardner & Abraham, 2010). In

this study, however, it was found that personal environmental norms affected environmental concerns. Therefore, the fact that in the current study, the relationship between these variables differs from previous studies shows that more studies need to be conducted on different sample groups. In conclusion, the obtained data which show that outdoor athletes' personal environmental norms increased their environmental concerns differ from previous studies and add a different dimension to the relationship that will be established between these two variables in studies to be conducted in the future.

The third hypothesis is related to the effect of environmental concerns on green purchase intention. It is known that environmental concerns increase due to participation in outdoor sports (Bjerke *et al.*, 2006; Teisl & O'Brien, 2002; Satchabut, 2013). In this study, too, the finding that outdoor athletes' environmental concerns were high supports recent studies conducted in this field. Based on these data, it can be said that participation in outdoor sports increases environmental concerns. Environmental concern was also the subject of studies related to green purchase intention in areas other than outdoor sports, and it was generally seen that environmental concern had an effect on green purchase intention (Yue, *et al.*, 2020; Wu *et al.*, 2019; Prakash & Pathak, 2017; Yadav & Pathak, 2016). As a result of this study, too, it was seen that outdoor athletes' environmental concerns affected their intention to purchase green products. The fact that participation in outdoor sports affected environmental concerns and that outdoor athletes' environmental concerns affected their green purchase intention can be interpreted to mean that participation in outdoor sports can have an effect on green purchase intention.

Finally, when the mediating role of environmental concern in the relationship between outdoor athletes' personal environmental norms and their green purchase intention was evaluated, the fact that the results were significant revealed the existence of the mediating effect of environmental concern in the model. An increase in environmental concern will increase the intention to purchase green products. Yue *et al.* (2020) also concluded that environmental concerns had a mediating role in the relationship between environmental responsibility and green purchase intention. It is thought that in future studies aimed at outdoor athletes and green consumption behaviour, the data related to this hypothesis will contribute to the literature in terms of giving ideas to researchers about the direct and mediating effect of environmental concern on green purchase intention.

In conclusion, the obtained findings reveal that outdoor athletes' personal environmental norms had a positive effect on their environmental concerns and green purchase intention. In

other words, outdoor athletes' personal environmental norms increased their environmental concerns and green purchase intention. Moreover, it was seen that the outdoor athletes' environmental concerns positively affected their green purchase intention and that the mediating role of their environmental concerns in the relationship between their personal environmental norms and green purchase intention was significant. Therefore, it is thought that outdoor sports can be used as a means of strengthening consumers' personal environmental norms and environmental concerns in order to encourage their green consumption. For this reason, companies that produce green products can develop incentive strategies that will enable their target audiences to participate in outdoor sports and activities in order to create environmental awareness in consumers and to raise awareness of green product consumption.

## 6 Limitations and future research directions

This study, in which an attempt was made to determine outdoor athletes' green purchase intention, is limited to qualified outdoor athletes affiliated to eleven sports federations in Turkey. Therefore, in order to compare and generalise the research results, there is a need to conduct further similar studies with outdoor athletes from different cultures. Moreover, the fact that similar results were revealed in previous studies on sample groups whose association with outdoor sports was not known makes it necessary for the difference between groups who are and who are not outdoor athletes to be revealed, in order to obtain more definite results. Therefore, by conducting a study on sample groups who do outdoor sports and who have never done outdoor sports, it will be possible to investigate which group the difference is in favour of. Similarly, with reference to the previous studies, studies can be made that compare the consumption habits of green consumers and outdoor athletes since they show similar characteristics.

**Declaration of conflicting interests**

The authors declare that they have no conflicts of interest regarding the authorship and/or publication of this article.

**Authors' contribution**

Contribution	Tekin, N.	Çoknaz, D.
Conceptualization	X	X
Methodology	X	X
Software	X	---
Validation	X	X
Formal analysis	X	---
Investigation	X	---
Resources	X	X
Data Curation	X	X
Writing -Original Draft	X	X
Writing -Review & Editing	X	X
Visualization	X	---
Supervision	---	X
Project administration	X	X
Funding acquisition	---	---

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