Validation of a scale on the perceptions of the socioeconomic impact of nature sports tourism

Validación de una escala sobre las percepciones del impacto socioeconómico del turismo deportivo de naturaleza

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Abstract:

The impact that tourists have on the destination community modifies their behavior and can be a key factor guiding both their perceptions and their intention to revisit the destination. However, the perceptions of tourists have been little analyzed in the scientific literature. The objective of this study is to explore the psychometric properties and validity of a questionnaire aimed at assessing tourists' perceptions of the socioeconomic impact of sports activities in the natural environment. The sample consisted of 1184 sports tourists who traveled to the Valle del Jerte (Extremadura, Spain). Both an exploratory factor analysis and a confirmatory factor analysis were carried out, as well as an analysis of the reliability of the instrument. The results showed a final structure of 8 items divided into two factors with satisfactory reliability values and indicators of the goodness of fit. Therefore, this research provides a quick, free and easy-to-use tool to assess the perceptions of sports tourists about the socio-economic impact generated by the activities they practice.

Keywords:

Instrument; economic impact; active tourism; nature; psychometric properties

Resumen:

El impacto que los turistas tienen en la comunidad del destino modifica su comportamiento y puede ser un factor clave que guíe tanto sus percepciones como su intención de volver a visitar el destino. Sin embargo, las percepciones de los turistas han sido poco analizadas en la literatura científica. El objetivo de este estudio es explorar las propiedades psicométricas y la validez de un cuestionario destinado a evaluar las percepciones de los turistas sobre el impacto socioeconómico de las actividades deportivas en el medio natural. La muestra estuvo formada por 1184 turistas deportivos que viajaron al Valle del Jerte (Extremadura, España). Se realizó un análisis factorial exploratorio y un análisis factorial confirmatorio, así como un análisis de fiabilidad del instrumento. Los resultados mostraron una estructura final de 8 ítems divididos en dos factores con satisfactorios valores de fiabilidad e indicadores de la bondad del ajuste. Por lo tanto, esta investigación proporciona una herramienta rápida, gratuita y fácil de usar para evaluar las percepciones de los turistas deportivos sobre el impacto socioeconómico generado por las actividades que practican.

Palabras claves:

Instrumento; impacto económico; turismo activo; naturaleza; propiedades psicométricas

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Introduction

Interest in nature activities like skiing, rock climbing or kayaking has progressively grown over the past 20 years (Brymer & Schweitzer, 2017). Despite the decline or stagnation in participation in many traditional organized sports, a larger variety of nature-based sports have seen increased appeal (Melo & Gomes, 2017a). In addition, cities are becoming epicenters for chronic, non-communicable physical and mental health disorders, making urbanization one of the most significant global health issues of the twenty-first century (Dye, 2008), making these types of activities even more important. However, although parks, forests, and beaches have been directly linked to health promotion for decades (Thompson, 2011), their benefits and ability to promote regular outdoor physical activity has only recently, and systematically, been studied (Hunter et al., 2015). In this line, natural environments have been related to both better physical health (self-perceived health, longevity or cardiovascular disease) (de Vries et al., 2013; White et al., 2013) and better mental health (psychological well-being, anxiety or depression) (Beyer et al., 2014; Richardson et al., 2013). Also, natural settings present chances for casual or incidental physical activity among those who are reluctant to engage in organized sports or gym-related activities due to a lack of time, money, or confidence (Withall et al., 2011).

The term "nature sports" refers to a category of sports that are developed and practiced in natural or rural environments, with formal and unofficial rules, that can support local sustainability, and that can be practiced in the air, land or water (Melo & Gomes, 2017b). Likewise, both natural environments and nature sports are components of tourism since most of these activities take place in places far from the participants' homes, requiring travel and tourism to natural and/or rural areas (Hall & Page, 2014). Sport tourism can be defined as leisure-based travel that takes individuals temporarily outside of their home communities to participate in physical activities, to watch physical activities, or to venerate attractions associated with physical activities (Gibson, 1998). The growing attention that the tourism and sports industries are giving the sport tourism sector, and nature sports in particular, is evidence of its significance, as is the development of a variety of academic works (Gibson, 2017), which show an extensive and significant area of shared interest between sports management and tourism development (Jiménez-García et al., 2020). In this sense, the market for nature-based tourism, which includes both soft (like trekking) and hard nature sports (like kayaking), is frequently touted as the tourism industry's fastest-growing sector, with an increase of between 10% and 30% every year (Marques et al., 2010), generating a great economic impact on tourist destinations (Melo et al., 2020).

Conversely, on order to better understand how tourism may be most advantageous for all parties involved, tourism research has paid a lot of attention to how locals view tourist affects and support tourism development within a place (Su et al., 2018). However, the scientific literature has not focused on how tourists think about the impact their activity has on the destination (Joo et al., 2019), although some initial research has shown that tourists may become emotionally attached to (Cardinale et al., 2016) or identify with the destination (Su & Swanson, 2017). Therefore, tourist behavior and travel patterns in the tourism industry are functions of perceptions (Font & Hindley, 2017), which can be defined as a person's ability to select, arrange, and interpret stimuli into a meaningful and cogent knowledge of the world (Schiffman y Kanuk, 2004). In this line, to engage visitors in the execution of management solutions and so help avoid and possibly prevent undesirable effects, current

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thinking suggests that a deeper understanding of how visitors view their own impact be pursued (Diamantopoulou & Voudouris, 2008). For example, Cheung and Jim (2013) analyzed the preferences and perceptions held by visitors to various areas of Hong Kong, finding that the selection of ecotourism products was characterized by good quality information and low ecological impact. Also, Su and Swanson (2017) confirmed that visitors are less likely to return if they observe mostly negative effects of tourism at the site, as visitors' attitudes and perceptions guide their behavior. Hence, tourism administrators shouldn't ignore the possibility that visitors may have their own opinions about how tourism affects a particular location (Kaplanidou et al., 2012).

Another issue that has generated controversy among experts in the field is the validity and reliability of the different scales used to analyze tourists' perception of the impact of their activity on the destination community. Most studies have focused on analyzing models in order to obtain how different psychosocial aspects influence others (Fan et al., 2012; Ranjbarian & Pool, 2015) or focus on different tools that assess the perceptions held in relation to risk or safety issues (Bird, 2009; Fuchs & Reichel, 2006), which have little to do with the impact of tourism. However, according to the authors' knowledge, there are no validated scales to evaluate the perceptions of tourists about the socioeconomic impact of their activity in the destination area. Therefore, the aim of this study is to explore the psychometric properties as well as validity and reliability issues of a questionnaire oriented to measure visitors' perceptions of their socioeconomic impact on the destination community, in tourists who traveled to an area of Extremadura (Spain) to carry out sports activities in the natural environment.

Methods

Participants

The sample consisted of 1184 tourists who visited the Valle del Jerte (Extremadura) for sports activities in the natural environment. The sociodemographic details of the participants, all of whom were chosen using a convenience sampling method, are shown in Table 1.

TABLE 1

Sample characterization

Variables	Categories	N	%
Gender	Male	554	46.8
	Female	630	53.2
Age	Under 20	2	0.2
	Between 20 and 29	359	30.3
	Between 30 and 39	509	43.0
	Between 40 and 49	255	21.5
	Over 50	59	5.0
Nationality	Spanish	1167	98.6
	Foreign	17	1.4

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Variables	Categories	N	%
Nature Activities	Hiking	87	7.3
	Canyoning	379	32.0
	Kayaking	124	10.5
	Stand Up Paddle	77	6.5
	Caving	90	7.6
	Rafting	91	7.7
	4x4 Routes	124	10.5
	Horseback Riding	97	8.2
	Others	108	9.1

Ethical concerns

The use of these data did not require approval from an accredited ethics committee, as they are not covered by data protection principles, i.e., they are non-identifiable, anonymous data collected through an anonymous survey for teachers. In addition, based on Regulation (EU) 2016/679 of the European Parliament and of the Council on 27 April 2016 on the protection of individuals concerning the processing of personal data and on the free movement of such data (which entered into force on 25 May 2016 and has been compulsory since 25 May 2018), data protection principles do not need to be applied to anonymous information (i.e., information related to an identifiable natural person, nor to data of a subject that is not, or is no longer, identifiable). Consequently, the Regulation does not affect the processing of our information. Even for statistical or research purposes, its use does not require the approval of an accredited ethics committee**.**

Instruments

Initially, a questionnaire was provided that analyzed different sociodemographic variables such as gender, age, nationality and nature activities practiced during the trip.

Later, a questionnaire composed of nine items was administered to assess the perceptions of tourists on the socio-economic impact of nature activities in the Valle del Jerte, being based on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). This questionnaire was initially developed by Ramírez-Hurtado et al. (2007) as two different 10-point Likert scales to evaluate, on the one hand, the induced economic effects (IEE) (5 items) and, on the other hand, the external effects (EE) (6 items), which are related to the development of sports activities or events as a benefit for a social environment. According to these authors, they define the induced economic effects as the positive impact produced by new investments in infrastructure and tourism revenues. Also, External effects are benefits that are not channeled through the market, which are generally passed on to the residents of the locality organizing the event. Later, Jiménez-Naranjo et al. (2017) adapted and reduced these scales in terms of score (5-point Likert scale) and length (9 items in total), eliminating very general items, to parameterize the socioeconomic impact of one of the largest international sporting events (World Paddle Tour) at the time of its celebration in Extremadura. The 9 items that make up the

questionnaire are listed below: 1) “Increased recognition and promotion of the destination” (EE); 2) “It represents an element of pride and satisfaction” (EE); 3) “Generates a traffic and safety problem” (EE); 4) “Disrupts the usual rhythm and impairs other activities” (EE); 5) “Number of overnight stays increases” (IEE); 6) “Employment increases” (IEE); 7) “It entails economic losses because the investment is greater than the benefits obtained” (IEE); 8) “Economic advantages are concentrated in the hands of a few companies and individuals” (IEE); and 9) “Public spending is necessary for the development of this type of sports” (IEE). Finally, the items that evaluated the socioeconomic impact negatively were reversed to analyze the domain in the same way. Likewise, no modifications or adaptations were made despite changing the context (from paddle tennis to nature tourism) since the scale analyzes benefits associated with the development of sports activities or events.

Procedure

Active tourism businesses in the Valle del Jerte (Extremadura, Spain) were asked to collaborate in order to access the sample. A member of the research team visited those who consented to participate in the study to explain the process and method of sample selection. The method devised was as follows: each group of participants who had engaged in outdoor sports activities with the participating businesses and who opted to work on the project would take part in a drawing for a piece of paper from a drum. After accepting the informed consent, the user whose paper had an X put on it was requested to participate in the survey. Then, they were provided with a QR code to access the survey, which they had to scan with their mobile device to go immediately to a Google Forms tool-created form. For their participation in the study, the SOPRODEVAJE Rural Development Group donated a reusable metal bottle for each group member. All information was gathered and handled anonymously. The form was filled out in an average of 3 minutes.

Since all responses were automatically gathered in one database regardless of the company with which the survey was conducted, it was decided to use an electronic questionnaire because of all the benefits it provides (de Rada Igúzquiza, 2010). It also facilitated a higher response rate because it was thought easy for participants to access the URL through a QR code. Information was gathered between March and October of 2022.

Participants had to be of legal age, have engaged in outdoor sporting activities with a partner active tourism business, and own a cell phone to access the survey in order to meet the inclusion criteria.

Statistical Analysis

The exploratory factor analysis (EFA) were performed using the free statistical program FACTOR v.10.10.02 (Rovira I Virgili University: Tarragona, Spain), which took into consideration the ordinal nature of the data collected using a 5-point Likert scale. The robust unweighted least squares (RULS) approach with Promin rotation (Lorenzo-Seva & Ferrando, 2019) was used to extract the factors under the assumption that there is a correlation between the dimensions. A polychoric correlation matrix was used to determine the properties of the data, and a parallel analysis (Lim & Jahng, 2019) was used to establish the proper number of dimensions. After, Direct Oblimin was selected as the rotation technique for defining factor simplicity and structure. As indicators of sampling adequacy, the Kaiser-Meyer-Olkin (KMO) test and Bartlett’s test of sphericity were utilized (Ul Hadi et al., 2016).

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The confirmatory factor analysis (CFA) was then performed using the AMOS v.26.0.0 software (IBM Corporation, Wexford, PA, USA). Items having communalities lower than .30, loads lower than .60 and crossloads higher than .40 were removed (Brown, 2015). The root mean square error of approximation (RMSEA), the root mean square of residuals (RMSR), the non-normed fit index (NFI), the comparative fit index (CFI), the chi-squared probability ($p > .05$), and the chi-square per degree of freedom ratio (CMIN/DF) were used to evaluate the model's goodness of fit (Marcoulides, 1990). Cronbach's alpha coefficient and McDonald's omega were used as reliability metrics to evaluate the questionnaire's final design (Kalkbrenner, 2021).

Results

Considering the scores obtained, the positive items (item 1, 2, 5 and 6) show perceptions that can be considered good. Similarly, nature sports tourists do not perceive nature activities as having a negative impact on the community (items 3, 4, 7 and 8), all of them showing values below 3 points. The descriptive statistics of the tourists' responses to the items in the questionnaire are shown in Table 2.

TABLE 2

Descriptive statistics of the items that make up the questionnaire

Items	*M*	*SD*
1. Increased recognition and promotion of the destination	3.86	1.38
2. It represents an element of pride and satisfaction	3.68	1.60
3. Generates a traffic and safety problem	1.82	1.01
4. Disrupts the usual rhythm and impairs other activities	2.14	1.10
5. Number of overnight stays increases	3.31	1.56
6. Employment increases	3.61	1.58
7. It entails economic losses because the investment is greater than the benefits obtained	1.89	1.04
8. Economic advantages are concentrated in the hands of a few companies and individuals	2.40	1.15
9. Public spending is necessary for the development of this type of sports	2.65	1.50

Nota. *M*: Mean; *SD*: Standard Deviation.

The eigenvalue-based explained variance (Larsen & Warne, 2010) and the validity of expected a posteriori scores (EAP) (Ferrando-Piera & Lorenzo-Seva, 2016), allowed the RULS technique with Promin rotation to determine that the questionnaire had a structure consisting of two factors in the first half of the sample. The EFA was carried out since the sample adequacy indices produced positive results (Bartlett test = 4041.8; df = 28; $p < .001$; and KMO test = .79.

The Direct Oblimin rotation method was selected once the number of dimensions was determined since the degree of kurtosis (kurtosis = 24.89; $p < .001$) called for non-parametric approaches. Table 3 displays the rotational loading matrix for 9 variables and 2 factors.

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TABLE 3

Rotated loading matrix through Direct Oblimin.

Items	Factor 1	Factor 2
1. Increased recognition and promotion of the destination	.89	.05
2. It represents an element of pride and satisfaction	.98	-.03
3. Generates a traffic and safety problem	.04	.66
4. Disrupts the usual rhythm and impairs other activities	-.11	.64
5. Number of overnight stays increases	.89	-.05
6. Employment increases	.99	.03
7. It entails economic losses because the investment is greater than the benefits obtained	.17	.66
8. Economic advantages are concentrated in the hands of a few companies and individuals	-.12	.61
9. Public spending is necessary for the development of this type of sports	-.38	.28

The rotated loading matrix reveals that there are nine elements, distributed throughout the two previously mentioned components, all of which have loadings larger than .60, except item 9. Therefore, this item was eliminated from the scale because it did not meet the criteria of factor loading (<.60) and communality (<.30). Table 4 presents the polychoric correlation matrix composed of eight remaining items.

TABLE 4

Polychoric correlation matrix obtained from the EFA.

Item	1	2	3	4	5	6	7	8
1	1							
2	.89	1						
3	.04	.01	1					
4	-.12	-.18	.57	1				
5	.77	.86	-.06	-.29	1			
6	.86	.93	.02	-.12	.90	1		
7	.10	.09	.32	.39	.10	.16	1	
8	-.13	-.21	.31	.34	-.11	-.19	.52	1

Consequently, we obtained a factorial solution of 2 intercorrelated factors (-.08) encompassing each of them four items: 1) positive perceptions (items 1, 2, 5 and 6); and 2) negative perceptions (items 3, 4, 7 and 8). Table 5 displays the composition and factor loadings of each item.

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TABLE 5

Factorial solution of the questionnaire.

Items	Factor 1	Factor 2
1. Increased recognition and promotion of the destination	.89	
2. It represents an element of pride and satisfaction	.97	
3. Generates a traffic and safety problem		.64
4. Disrupts the usual rhythm and impairs other activities		.71
5. Number of overnight stays increases	.90	
6. Employment increases	.98	
7. It entails economic losses because the investment is greater than the benefits obtained		.66
8. Economic advantages are concentrated in the hands of a few companies and individuals		.64

Following the definition of the questionnaire's design, CFA was used with the remaining half of the sample to create a conclusive model (Figure 1).

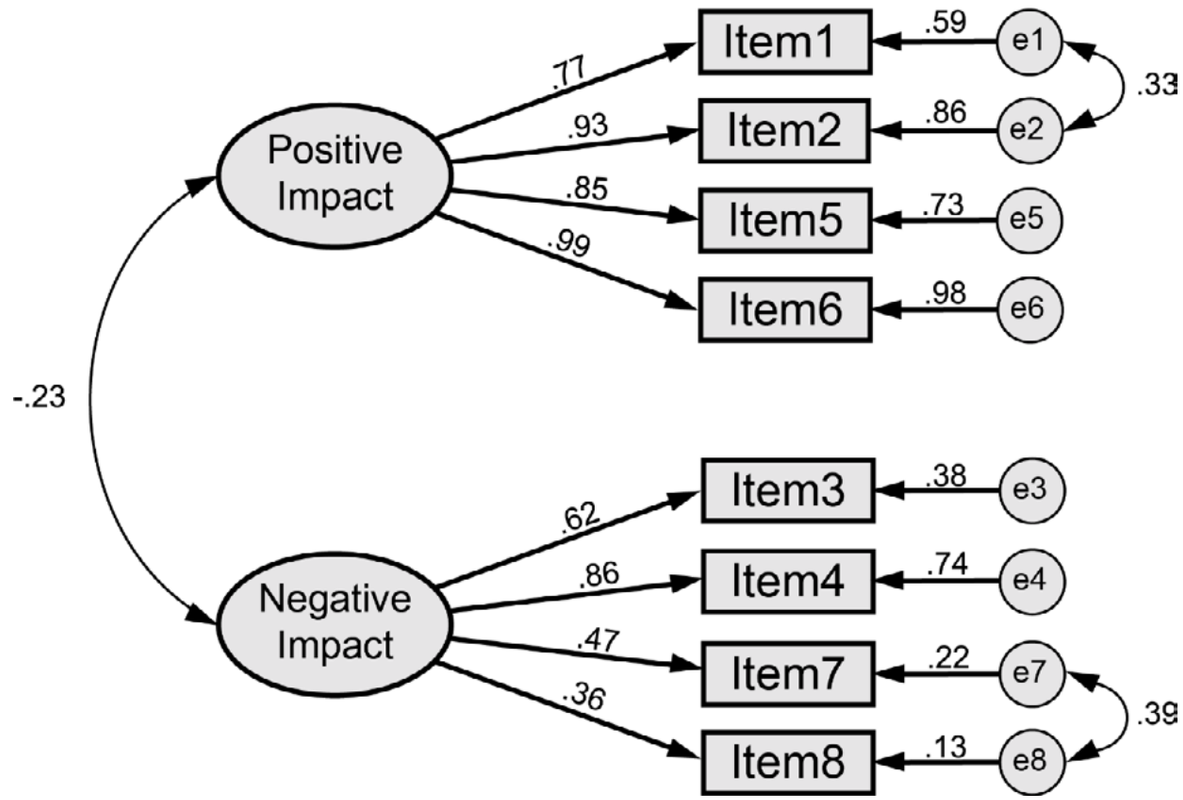

Figure 1. Final scale model.

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The final structure of the questionnaire, which had eight items split into two components, is shown in Figure 1. The numbers shown in the image (from left to right) are the correlation between factors, standardized regression weights, squared multiple correlations of each variable, and correlations between exogenous variables.

The scale goodness-of-fit indices are shown in Table 6 after the CFA, suggesting a satisfactory match between the model and the data (Schumacker & Lomax, 2016).The RMSEA is within the predetermined range (.01-.05), and an RMSR of less than .08 can be considered extraordinary. A nearly perfect fit to the model is shown by NNFI and CFI over .90. Finally, both the CMIN/DF index, which must be below 5 for a proper model fit, and the chi-squared probability exhibit great results because of non-significant values.

TABLE 6

Goodness-of-fit indices extracted from the CFA

Indices	Value
RMSEA	.048
RMSR	.078
CFI	.979
NNFI	.973
P (χ2)	.156
CMIN/DF	4.781

RMSEA: root mean square error of approximation; RMSR: root mean square of residuals; CFI: comparative fit index; NNFI: non-normed fit index; P (χ^2): chi-squared probability; CMIN/DF: minimum discrepancy per degree of freedom.

Table 7 shows the explained variance for each factor as well as the Cronbach's Alpha and McDonald's Omega reliability indices for the questionnaire dimensions. The explained variance was defined as the proportion of the variance in the responses that was not attributed to hazard but rather to each of the model's components (residual values).

TABLE 7

Questionnaire internal consistency indicators

Indices	Factor 1	Factor 2
McDonald's Omega	.94	.72
Cronbach's Alpha	.94	.71
Eigenvalue	3.72	2.20

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Discussion

The main purpose of this research was to explore the psychometric properties, as well as the reliability and validity criteria, of a questionnaire to assess tourists' perceptions of the socioeconomic impact of sports activities in the natural environment. The results of this study yielded a factorial structure composed of two interrelated factors and eight items, showing satisfactory goodness-of-fit indices. Likewise, the values of both Cronbach's Alpha and McDonald's Omega show scores above .70, so they can be considered as acceptable. Some years ago, this scale was used in one of the largest sporting events hosted in Extremadura (Jiménez Naranjo et al., 2017), the World Paddle Tour, being originally developed by Ramírez-Hurtado et al. (2007) as two different scales to assess the perceptions of both social and economic effects perceived by those attending a tennis event in Andalucía, however, in none of these works was an initial validation of the scale/scales carried out. Similarly, and more recently, Agorreta-Lumbreras et al. (2020) attempted to carry out an initial psychometric exploration of the current scale in participants of sporting events in the Valle del Jerte, but both the sample analyzed, and the reliability indicators were considered precarious to validate the instrument.

Following the most recent trend of scientific studies (Gao et al., 2017; Joo et al., 2019), it would be logical and meaningful to ask tourists about their perception of the impact of tourism on the destination and what contributes to more positive attitudes towards tourism development, especially in natural environments where the impact of tourism activities can produce insurmountable consequences (Han, 2021). Gao et al. (2017) conducted research in two world heritage destinations in China, showing that tourists' perceptions of the negative impact of tourism were positively related to tourists' assumption of responsibility, which in turn was positively associated with tourists' perceptions of responsibility. In this line, Cheng & Wu (2015) explored a structural model to promote sustainable tourism in several island destinations in Taiwan, finding that the more positive tourists' perceptions of the environment and place were, the more they developed environmentally responsible behaviors. Similarly, Chiu et al. (2014) found that the perceived value of the trip, satisfaction and participation in outdoor activities encourage environmentally responsible behavior.

On the other hand, the economic impacts of tourism have historically received the most attention because of the positive effects they can have on destinations and communities, both directly and indirectly, and their relative ease of evaluation (Comerio & Strozzi, 2019). In this context, Parra-Camacho et al. (2016) found that both residents' and tourists' perceptions of the economic benefits of a small-scale maritime sporting event were positive but showed significant differences in favor of tourists, with a direct effect on their intention to revisit or participate in the event the following year. Similarly, Vergara-Ferri (2022) found very positive perceptions from tourists and residents regarding the economic impact of Spain's largest professional cycling event. Another study carried out in the Valle del Jerte area found excellent perceptions by tourists about the socio-economic impact of kayaking activities in the natural environment, with women being more positive in general terms than men (Rojo-Ramos et al., 2023).

By contrast, several studies have shown that there is a relationship between increased tourism and detrimental effects on social and environmental structures (Dunets et al., 2019), although tourism can improve the economy by creating jobs and income, it also often has a negative impact on the environment and local populations. However, this trend seems to be reversed in sporting activities

or events in rural areas as indicated by Zhou & Kaplanidou (2018), who point out that closer contact between participants and the local community generates greater benefits in the short and long term. This idea was confirmed by Hautbois et al. (2020) who compared the social benefits of marathons in the communities that organized them, finding that both participants and spectators benefited, although there were differences depending on whether the event allowed open registration or required a certain level of professionalism. According to Taks (2013), compared to large-scale events, small-scale events have fewer negative effects. As a result, this analysis demonstrates that the event had few adverse effects, such as issues with traffic and safety or changes to the locality's routine and activities.

Limitations and Future Lines of Research

This study has certain limitations as any other study. In the first place, the sample was mainly composed of national tourists, with a minimal number of participants of other nationalities, so that perceptions could be influenced by sociocultural issues. Likewise, the majority of tourists carried out adventure sports activities, which is another bias to be taken into account. Also, there is little scientific literature analyzing the perceptions of tourists, the main reason for validating this scale, which makes it difficult to interpret the results and relate them to previous studies. Furthermore, due to the nature of the study, no measures of the temporal stability of the instrument were carried out, nor were tests to certify the criterion validity with other measures with a similar focus. Finally, the final confirmatory model required the correlation between the errors of items 1 and 2, as well as between the errors of items 7 and 8.

As future lines of research, it is proposed to incorporate into the analysis all sports activities that take place in the natural environment and take place in the Valle del Jerte area, and later extend it to the entire Extremadura. Similarly, it would be interesting to analyze the perceptions of attendees and participants in various sporting events, as already attempted in previous works, so that tourism and organization companies can work in a coordinated manner.

Practical Implications

Understanding the relevance of tourist's perceptions about their impact on the destination, this is the first research that offers a valid and reliable tool to analyze the perceptions they have about the socioeconomic impact of sport activities in the natural environment. Also, because tourists' experiences and views are likely to worsen if they feel unwelcome or emotionally distant from people and see unfavorable results from their travels, tourism businesses and environs play a crucial role in psychologically welcoming tourists. Therefore, public and private organizations must adopt various strategies aimed at improving the tourist's perceptions of the impact of the activities they carry out, adapting these strategies to different tourism contexts as well as to the sociodemographic characteristics of the tourists themselves. Finally, it should be noted that increasingly all lines of improvement and development that are implemented in tourism, being even more relevant in this study because of its rural and nature context, must follow a sustainable pattern to ensure the 'preservation of the environments in which different activities are practiced whether sports or not.

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Conclusions

This research has explored the psychometric properties of a scale to analyze the perceptions of tourists on the socioeconomic impact of sports activities in the natural environment, showing good results both in terms of reliability and validity. Therefore, public and private entities have a fast, reliable and free tool to evaluate these perceptions. The CFA revealed a final structure of eight items divided into two single dimensions, each of them separately encompassing positive and negative perceptions.

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Conflicts of interest

The authors declare no conflict of interest.

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