

Article



Levels of Sustainability Awareness in Spanish University Students of Nautical Activities as Future Managers of Sports and Active Tourism Programmes

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Abstract: University students will play an important role in making decisions that will affect the environment, as future leaders of our society. Their level of sensitivity and environmental knowledge will play an important role in adequately facing future challenges. This article aims to measure the sustainability awareness of a sample of future graduates in Physical Activity and Sport Sciences in Spain. The literature supports that the sensitivity of these students can be estimated by using the Spanish adaptation of the SCQ-S. This allows for establishing the level of knowledge, attitudes and behaviour pertaining to sustainability in three dimensions: environmental, social and economic. The sample consisted of 170 students (58.8% males; 41.2% females) with a mean age of 20.5 years (± 4.039). The overall Cronbach's alpha showed a fairly good value ($\alpha = 0.836$). The same was true for the Kaiser–Meyer–Olkin test values (KMO = 0.816) and Bartlett's sphericity test (p < 0.001). The knowledge construct (4.56 ± 0.53) was the highest descriptive, followed by attitude (4.12 ± 0.59). The lowest value was behaviour (3.79 ± 0.66). By gender, girls obtained the highest sensitivity indexes. In addition, the place of habitual residence and physical activity in the natural environment were related to the overall behaviour of the university students. It is concluded that being in active contact with the natural environment allows us to have a higher level of awareness.

Keywords: SCQ-S; environment; attitude; behaviour; knowledge; physical activity; college students; leisure

1. Introduction

The growth of tourism in recent years has positioned it as one of the main sectors of the world economy [1]. The multiplier effect that it causes contributes to economic progress in the places where it is most developed [2].

However, despite millions of tourist arrivals annually in all parts of the world that contribute to the global economy, not everything that surrounds this activity is linked to success. Mass tourism can lead to an over-utilisation of natural environments in certain destinations [3,4]. For instance, some studies have confirmed innumerable environmental damages caused by poor access to natural areas and excessive and bad practices in the exploitation of their resources [5,6].

In addition to a disproportionate tourism development strategy, this has led to negative environmental impacts. Therefore, in recent years, a current concern has been raised in society about the harmful effects of tourism on the environment [7–9], thus giving birth to sustainable tourism to balance it out.

1.1. The Potential of Nautical Activity within Sustainable Tourism

Active tourism is one of the main attractions and incentives for free time and leisure nowadays, having a notable weight in the Gross Domestic Product of countries [10]. Of



Citation: Morales-Baños, V.; Borrego-Balsalobre, F.J.; Díaz-Suárez, A.; López-Gullón, J.M. Levels of Sustainability Awareness in Spanish University Students of Nautical Activities as Future Managers of Sports and Active Tourism Programmes. *Sustainability* 2023, *15*, 2733. https://doi.org/10.3390/ su15032733

Academic Editor: Xuesong (Andy) Gao

Received: 30 December 2022 Revised: 27 January 2023 Accepted: 31 January 2023 Published: 2 February 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). particular importance within this area are aquatic activities, especially. Sports and leisure activities take place in the maritime environment during the summer, when there is the greatest concentration of days to rest and carry out all kinds of activities that are more difficult to put into practice during the winter [11].

In this way, destinations of great international importance, such as those bordering the Mediterranean Sea, have ideal characteristics to de-seasonalize the supply and demand of this type of activity. These include climate, the natural wealth of its coastline and the wide range of activities, products and services that are attractive to potential consumers. Nautical products and services stand out for their contribution to its positioning as one of the world's most popular tourist destinations [12].

Activities carried out in the natural environment, especially in the marine environment, have experienced increased growth in recent years, as they are one of the most effective means for the integral development of the individual. Numerous studies have reported on the beneficial effects of contact with nature on human health [13–15]. In parallel, these activities have a high educational potential for society, as a consequence of their social character, the interaction with species and natural habitats and the uncertainty of the environment in which they take place [16]. This is particularly attractive to consumers, not only because of the pleasure and enjoyment derived from active leisure activities, the improvement of their health or the activity itself but also because it gives them access to new experiences, knowledge and to education in values. All this, from an educational point of view, arouses a special interest to provide resources and train future professionals in the sector [17]. As a result, the area of Physical Activity and Sport, due to its multidisciplinary nature, is positioned as a key ally to highlight the great virtues of this type of activities practised in marine environments and to develop this type of industry, which generates so much interest and benefit within current tourism [18].

1.2. The Framework for University Training of Future Professionals in the Field of Sustainability

Universities are the main institutions providing education for a sustainable environment. However, the existing curricula in several universities are not sufficient to raise the environmental awareness of future graduates [19].

Higher education institutions are considered to have an enormous responsibility, as they must train responsible citizens and future professionals, each in their sector, for the society in which we live. Thus, higher education must implement sustainable practices and policies to promote ecological attitudes, favour sustainable management and educate in values [20]. In this respect, the Bologna Plan encourages university teaching methodologies to include the development of sustainability competencies in their curricula [21].

In these words, some authors emphasise the development of some dimensions to establish the new relationships that nature needs between humans and the environment. These include spiritual, equity and global ethics, environmental awareness, development cooperation and global environmental policies [22]. In this line of environmental education, before transmitting knowledge, environmental sensitivity must be promoted. To this end, it is necessary to know that environmental sensitivity develops inherently from experiences with nature, correlating in a significant and positive way the time an individual spends in contact with nature with the relationship and attitude towards it [23].

Several authors have measured environmental sensitivity and awareness using or even designing different tools [24,25]. Responsible environmental behaviour is related to knowledge of environmental problems, appropriate action strategies, as well as the development of skills to transfer these to the field, to obtain efficient results. In this sense, the university is established as a key institution to lay the foundations in terms of environmental awareness and knowledge, due to the impact that the professional activity of its future graduates can have on society. Thus, previous studies have found that if future graduates had high levels of environmental knowledge, they expressed positive attitudes towards the environment and a high degree of concern for its problems. This could lead to the application of sustainable strategies in their professional performance [26]. They also argued that, in this acquisition of values for future professional practice, the influence of the environmental knowledge of their teachers was decisive so that university students could become environmentally literate, developing positive attitudes towards nature and showing concern for it.

In this respect, universities are expected to prepare students to develop the capacity to integrate sustainability effectively into society in the face of emerging environmental needs [27]. The incorporation of this as part of the training of university students is vital if they are to become future agents of change [28].

This is particularly important in those professions which, on the one hand, carry out part of their activity in sectors which have a significant impact on world economies, such as tourism. However, we must also consider those professions that can reach large masses of the population so that change has the widest possible extension regarding knowledge and sensitivity acquired by society, as is the case of the educator or teacher.

The Role of Future Graduates in Sport Sciences

Among the main professional opportunities for the future graduate in sports science, defined as a physical sports educator, are teaching, sports management, physical activity for health and leisure, and recreation activities. The multidisciplinary nature of their profile places them in a favourable position to be able to leave their mark on society with their good professional work, which also implies an important responsibility [29,30].

Therefore, in line with what has been established in this study, the role that can be played in compulsory education by the subject of Physical Education (PE) in schools is particularly important. The fact that it is compulsory to carry out blocks of content on activities in the natural environment allows the development of sustainable values and practices with young people and adolescents in secondary schools. PE contributes to the achievement of the Sustainable Development Goals [31]. As a consequence, the intrinsic characteristics of PE facilitate the creation of an ideal context for promoting environmental care [32]. From an environmental point of view, the practice of physical and sporting activity is essentially carried out through human movement, understood as one of the main sustainable tools for access to spaces and daily activity, either to move around or to carry out daily activities and obligations. It also has an important social component, as it favours the creation of egalitarian contexts that favour participation and cooperation [33]. Finally, it is related to health benefits for society, which is attributed to lower government spending [34].

However, it is also necessary to consider the role they can play as managers of facilities, public or private services and programmes of physical activities and sports, some of which are aimed at potential users whose main objective is health, while others seek the more touristic elements, active leisure, recreation or even a combination of all of them [35]. To this effect, the professional activity of the future graduate in Sports Sciences that may have the greatest repercussion in terms of sustainability is that related to the management of programmes and activities developed in natural environments, as well as packages and services offered to attract consumers of tourism and active leisure, due to the important weight that physical-sporting activity has within the tourism industry. In this line, there is a large body of work that concludes that human experiences with nature contribute to favouring people's interest and concern for nature [36,37], the Sports Science graduate plays a significant role in the experiences that people can have with the environment, whether in their compulsory education stage or in stages where they make use of their free time to consume leisure and active tourism packages in nature [36]. This situation reinforces the idea that environmental training for future graduates is vital for the proper implementation of these programmes and, as a consequence, balanced access to the natural areas where they are intended to be carried out [38].

From what has been established above, it is easy to justify that training plans in Sports Science should address the development of the concepts of active tourism and ecological leisure. These concepts, associated with the topic of outdoor recreation, have become one of the most popular occupations in recent years, attracting all kinds of people and consumers. To this effect, making specific reference to sustainable leisure in nature implies the implementation of a set of activities and experiences without degrading or damaging the environment. Hence, a balance must be struck between supply and demand. The natural environment must also be properly cared for and protected since user satisfaction is linked to its preservation, its value and its charm, which is lost if the ecosystem is modified. It is, therefore, necessary for professionals in the sector to build integrated models of programmes for the development of leisure activities in nature. The individual and the consumer are to adopt sustainable lifestyles and practices which do not conflict with the interests of people and nature, achieving an acceptable quality of life where leisure, mainly physical and sporting, plays an important role [39].

1.3. Predictors of Sustainable Behaviour

To know the state of individuals' sensitivity to environmental awareness, the literature suggests that its assessment is a prerequisite for addressing environmental problems. To this end, determining the levels of environmental awareness and sensitivity of university students can help develop positive attitudes and behaviours towards the environment.

Several scales can be used to assess this level of sensitivity. For example, the New Environmental Paradigm [40] is related to the theory of planned behaviour, the emphasised existence of ecological limits to growth, the importance of maintaining the balance of nature and the rejection of the notion that nature exists primarily for human use. Many researchers have been using it in their work in combination with other scales such as the Dominant Social Paradigm [41], or even complement it with a series of qualitative variables.

Another scale used in the literature is the Environmental Scale (2-MEV), which is presented in two dimensions, biocentric and anthropocentric. The first refers to the intention to preserve the environment through three factors, the intention to support, care for resources, and enjoyment of nature. The second refers to the use of the environment through two factors: human dominance and the alteration of nature [42].

Scales based on the concept of sustainable development through the analysis of its environmental, economic and social dimensions have also been used [43]. The SCQ scale is of particular interest for the present study as it has been used in previous work with students to measure their level of knowledge, attitudes and favourable behaviours on sustainable development known as the three constructs that make up the SCQ [44].

1.4. Gap in the Literature, Aim and Novelty and Originality Aspects Brought by This Paper

The research gap in sustainability levels among university students in sports science refers to the difference between the knowledge and understanding that university students in sports science have about sustainable development and their ability to apply that knowledge in their specific field. Although sustainable development is an increasingly important topic in the world of sports, there is still a lack of research on how it can be applied in sports science. For example, the research could focus on how to reduce carbon emissions at sporting events, how to use resources more efficiently in sports facilities, and how to promote active and healthy lifestyles sustainably. To address this gap, it is important to promote research in this area and provide university students in sports science with opportunities to apply their acquired knowledge in practical projects related to sustainability.

In this sense, the following research question is posed:

- How is the level of environmental sensitivity among students in sports science measured and how is it related to their practices related to the environment?
- What factors influence the development of environmental sensitivity among students in sports science?
- How can environmental sensitivity be applied in the education and practice of sports science to promote sustainability in sports?

For that reason, this study aimed to analyse the level of sustainability awareness of a sample of future Sport Science graduates who studied physical-sport activities in marine environments.

The present research is novel and relevant for several reasons:

- Describing sustainability consciousness allows for understanding the level of sensitivity of university students in Sports Sciences towards sustainable development, which is important for the design of educational programs and the promotion of sustainable practices in this field.
- Analysing the relationships between different constructs of SCQ and their factors provides valuable information on how students' perceptions and attitudes are related to their sustainable behaviour.
- Exploring the possible influence of certain descriptive characteristics and qualitative variables on the level of sustainability consciousness of future graduates allows for identifying key factors that contribute to the formation of sustainability consciousness and can be used to improve education on this topic.

It is thus established as an underlying assumption that students' awareness and level of sensitivity, through their knowledge and attitudes, predict students' sustainable behaviour. Assuming this assumption to be true, it is expected that students who are more aware, sensitive and knowledgeable about their environment are more likely to adopt more sustainable behaviour.

1.5. Hypothesis

- **Hypothesis 1:** to describe the awareness of sustainability of university students in Sport Sciences through the three dimensions of sustainable development, environmental, social and economic, revealing the level of sensitivity of future graduates;
- **Hypothesis 2:** to analyse the relationships between the different constructs of the SCQ, which allows us to know the predominant relationships of factors of the college students;
- **Hypothesis 3:** to explore a series of qualitative questions related to their way of acting or thinking, that allows us to know the possible influence of certain descriptive characteristics of students on each other;
- **Hypothesis 4:** to explore a series of qualitative questions related to their way of acting or thinking, that allows knowing the possible influence of certain descriptive characteristics of students on the level of sustainability awareness of future graduates.

1.6. Research Development

The analysis of the collected data, as well as the interpretation of the same and the complete writing of this work were carried out within the framework of the re-search stay at the University of Alicante by the professors at the University of Murcia FJBB and VMB called Active tourism on the coast and management of nautical companies, management of their facilities and web spaces with study licenses granted with secure verification codes RUxFMgXo-FOVmOQ4e-or4YVnIB-PQGj8iw7 y RUxFMr+m-Xi5J3slp-fYgTfSsQ-U7BOVcQu.

2. Materials and Methods

2.1. Sample and Procedure

An a priori power analysis was conducted using G*Power version 3.1.9.7 [45] to determine the minimum sample size required to test the study hypothesis. Results indicated that the required sample size to achieve 80% power for detecting a medium effect (f = 0.25), at a significance criterion of α = 0.05, was N = 159 for the ANOVA statistical test. At the same time, the results indicated the required sample size to achieve power (1- β) = 0.95, at a significance criterion of α = 0.05 and correlation p H1 = 0.3, was N = 138 for the Correlation Bivariate normal model statistical test.

The sample consisted of 170 future professionals in Sports Science (58.8% men and 41.2% women) with a mean age of 20.5 years (\pm 4.039). All were students enrolled in the

subjects Fundamentals of Canoeing and Sports Specialisations 3 (in their Canoeing option) and 4 (in their Sailing option) of the Degree in Physical Activity and Sport Sciences (PASS) and double Degree in Nutrition and PASS of the University of Murcia in Spain. The three subjects belonged to the 2nd semester of the 1st academic year of the two degrees in the case of Fundamentals and the 4th year in the case of Specialisations.

This sample was chosen intentionally, initially giving the option of participating to all 176 students enrolled in the three subjects, with only 6 students for whom it was not possible to collect information. All the data were collected during the second and third weeks of class, using the first 20 min of the practical sessions, as the first week was used only for the presentation of the subjects in the theoretical session. As attendance at these sessions was not compulsory (as per University of Murcia regulations), attendance at the practical sessions was compulsory; this ensured a high percentage of participation. Before data collection, students were informed about the objectives of the research, the procedure, anonymity and the voluntary nature of their participation. They were informed that it was possible to withdraw participation at any time. All participants gave their informed consent on the same instrument used for data collection. This was approved by the Research Ethics Commission of the University of Murcia (Spain) (number ID: 4288/2022) and was conducted by the Declaration of Helsinki.

2.2. Measure

For data collection, a specific instrument was developed for this work. Google Forms was used to administer and collect data in an instant, efficient and sustainable way without the use of paper. The tool consisted of two parts. In the first part, questions were added to obtain socio-demographic data (age and gender) and data relating to a series of qualitative variables related to the subject that the students were going to study in the Degree courses and which could influence their level of environmental awareness, as used in previous studies [19,46]. These variables included the following: the place where the student usually lived (urban area; interurban area; orchard, field or forest; protected natural space), whether they had received any previous training in environmental sustainability, whether they practised physical sports activities (PSA) in the natural environment in terms of frequency, whether they practised natural activities in terms of frequency, whether they practised in the integrity of habitats and species in natural environments (in terms of preference for marine environments, inland, both equally or neither) and the types of active tourism they were in favour of (coastal PSA, inland PSA, coastal or inland PSA equally; social, cultural or gastronomic; no active tourism).

The second part consisted of the 27-item version of the Sustainability Consciousness Questionnaire (SCQ-S) (Appendix A) [47], adapted and validated in Spanish [48]. This questionnaire covers the three environmental, social and economic dimensions, through which it aims to measure 3 constructs for sustainable development through a series of questions answered on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). These are knowledge (items K1 to K9), attitudes (items A1 to A9) and behaviour (items B1 to B9). The necessary characteristics of sustainable development are thus established, structuring the SCQ-S into nine subsections or factors based on each of the 3 dimensions within each of the 3 constructs: environmental, social and economic knowledge; environmental, social and economic behaviour.

2.3. Statistical Analysis

The data were analysed using non-parametric statistical tests because they did not conform to a normal distribution. For this purpose, the Kolmogorov–Smirnov normality test was used. A bivariate correlation was performed using Spearman's Rho test between the different constructs and factors that made up the SCQ-S tool in the sample under study. Likewise, using the chi-square test, we attempted to determine the relationship between the different nominal categorical variables added to the tool. Independent samples mean analysis was also performed using the Mann–Whitney U-test when the number of groups was 2 and the Kruskal–Wallis test when the number of groups was greater than 2. In addition, exploratory factor analysis was performed using principal axis factoring and Varimax rotation based on a fixed number of 9 factors to be extracted, determined by a previous thorough literature review. The adequacy of the sample and the reliability of the factor models were assessed using Kaiser–Meyer–Olkin and Cronbach's alpha. Descriptive data on means and standard deviations of the numerical variables included in the study were also obtained. Data analysis was carried out with Statistical Package for Social Science[®] software, version 28 (SPSS[®], Chicago, IL, USA). The level of statistical significance was p < 0.05. For those cases where significance was obtained, effect size and statistical power were analysed using G*Power 3.1.9.7.

3. Results

The descriptive analysis of frequencies for the different factors and the total constructs showed that, as can be seen in Table 1, all the means of the nine factors were above 4, except for the factors ENA (3.89), ENB (3.77) and ECB (3.53), the latter two exerting a negative influence on the TB construct, which, with a value of 3.79, was the one with the lowest mean of the three total factors. On the other hand, the construct with the highest value was TK with 4.56, influenced by its factors ENK (4.55), SK (4.65) and ECK (4.48), which obtained the three highest means among the nine factors that made up the level of environmental sensitivity of the sample.

Table 1. Descriptive of total frequencies, according to gender and according to previous training in environmental sustainability (own elaboration).

	Total	Ger	nder	Prior Training in Environmental Sustainability			
		Male	Female	Yes	No		
	Average (SD)	Average (SD)	Average (SD)	Average (SD)	Average (SD)		
ENK	4.55 (0.65)	4.36 (0.73)	4.83 (0.38)	4.67 (0.52)	4.5 (0.7)		
SK	4.65 (0.52)	4.53 (0.58)	4.84 (0.36)	4.69 (0.42)	4.64 (0.57)		
ECK	4.48 (0.68)	4.34 (0.73)	4.69 (0.54)	4.52 (0.69)	4.47 (0.67)		
ENA	3.89 (0.69)	3.83 (0.64)	3.98 (0.76)	3.9 (0.67)	3.89 (0.7)		
SA	4.35 (0.76)	4.26 (0.85)	4.5 (0.58)	4.42 (0.62)	4.32 (0.81)		
ECA	4.12 (0.76)	4 (0.83)	4.28 (0.62)	4.14 (0.7)	4.1 (0.79)		
ENB	3.77 (0.9)	3.68 (0.9)	3.9 (0.89)	3.67 (0.88)	3.82 (0.91)		
SB	4.07 0.73)	4 (0.67)	4.16 (0.8)	4.02 (0.85)	4.09 (0.66)		
ECB	3.53 (0.92)	3.52 (0.9)	3.55 (0.97)	3.52 (0.87)	3.54 (0.95)		
TK	4.56 (0.53)	4.41 (0.57)	4.79 (0.36)	4.62 (0.43)	4.54 (0.57)		
TA	4.12 (0.59)	4.03 (0.62)	4.25 (0.53)	4.15 (0.55)	4.11 (0.61)		
ТВ	3.79 (0.66)	3.74 (0.64)	3.87 (0.69)	3.74 (0.59)	3.82 (0.7)		

See Appendix B to consult abbreviations.

Regarding gender, girls showed higher means than boys for the three constructs TK (4.79 vs. 4.41), TA (4.25 vs. 4.03) and TB (3.87 vs. 3.74), influenced by the fact that for all nine factors, all the means were higher for girls than for boys. On the other hand, in terms of whether they had received any prior training in biodiversity and environmental sustainability, the means were higher for those who had training versus those who had not about the total constructs of TK (4.62 vs. 4.54) and TA (4.15 vs. 4.11). The same was not true for the TB construct, where no respondents had a mean value of 3.82, higher than yes respondents with a mean value of 3.74. This was mainly influenced by the ENB factor, where the values were more disparate between yes and no than for the other two factors SB and ECB.

Table 2 also shows the frequencies by percentages of the sample under study according to the categorical variables collected. The proportion of boys (58.8%) was higher than that of girls (41.2%). Similarly, the number of students who had not received any previous

training in environmental sustainability was higher, with 67.6% compared to 32.4% who had. As for the place of habitual residence, those from urban areas predominated over the rest with a value of 73.5%, with only 1.8% living in protected areas. Regarding the variable carrying out PA in a natural environment, more than half of them did so weekly (54.7%), with only 2.4% never having done so before (2.4%). On the other hand, when asked about the practice of nautical activities, only 8.8% practiced them weekly, compared to 23.5% and 33.5% who did so on holidays or rarely, respectively. Furthermore, 34.1% had never practiced them before. Furthermore, with interest in the integrity of natural habitats and species, the option of both was equally predominant with 74.1% compared to the rest. It is worth noting that among those who chose one over the other, students interested in the coastline predominated over those interested in the inland, with 15.3% compared to 5.3%. Finally, about interest in active tourism, 70.6% chose ecotourism, compared to 27.1% who opted for a type of social, cultural and gastronomic tourism and 2.4% who opted directly

	Frequency	Percentage
Gender		
male female	100 70	58.8% 41.2%
Prior training in environmental sustainability		
yes no	55 115	32.4% 67.6%
Habitual residence		
urban area interurban area orchard, field or forest protected natural area	125 29 13 3	73.5% 17.1% 7.6% 1.8%
Carry out PA in a natural environment		
more than once a week 1 to 4 times a week during holiday times rarely never	51 42 26 47 4	30% 24.7% 15.3% 27.6% 2.4%
Carry out Nautical Activities		
more than once a week 1 to 4 times a week during holiday times rarely never	8 7 40 57 58	4.7% 4.1% 23.5% 33.5% 34.1%
Interest in integrity		
of marine habitats and species above all else of inland habitats and species above all else of both equally I do not care, it is the responsibility of others	26 9 126 9	15.3% 5.3% 74.1% 5.3%
Interest in active tourism		
Yes, I prefer to do it in coastal wilderness areas Yes, I prefer to do it in natural inland areas Yes, I prefer to do it in coastal and inland areas alike Yes, but I prefer social, cultural and gastronomic tourism to ecotourism	47 20 53 46	27.6% 11.8% 31.2% 27.1%
No, I prefer other, more passive forms of leisure activities	4	2.4%
Total	170	100%

Table 2. Frequency table of percentages by nominal categorical variables (own elaboration).

for a passive type of tourism.

3.1. Reliability and Exploratory Factor Analysis of the SCQ-S in the Study Sample

To analyse the reliability of the SCQ-S through Cronbach's alpha, the statistic was run four times. The first was used for the total of the 27 items that made up the measurement instrument, to ascertain the overall reliability of the instrument. The other three were used

for each of the nine items that separately make up the three constructs of the SCQ-S. As can be seen in Table 3, the total instrument yielded a good internal consistency value ($\alpha = 0.836$). The same was true for the TK construct, where even the alpha value was higher than that of the total ($\alpha = 0.839$). In contrast, the two constructs TA and TB showed lower values ($\alpha = 0.706$ and $\alpha = 0.716$ respectively), but with an acceptable reliability assessment [49].

	Cronbach's Alpha	N of Items
Total SCQ-S	0.836	27
ТК	0.839	9
ТА	0.706	9
ТВ	0.716	9

Table 3. Reliability statistics for SCQ-S (own elaboration).

See Appendix B to consult abbreviations.

On the other hand, the KMO and Bartlett's test yielded a Kaiser–Meyer–Olkin measure of sampling adequacy of 0.816 and Bartlett's sphericity with a p < 0.001, indicating the suitability of the data for exploratory factor analysis.

Table 4 shows the anti-image correlation matrix with the sign-changed partial correlation coefficients. On the diagonal of the matrix, it can be seen that the measures of sampling adequacy for each variable are mostly above values of 0.8 close to 1 (with none below 0.5). Similarly, the rest of the values that are outside the diagonal are small, showing that the factor model chosen is adequate to explain the data.

Furthermore, when extracting the nine factors, the eigenvalue passing through eigenvalue 1 occurred between component 8 (total eigenvalue = 1.026) and 9 (total eigenvalue = 0.911), with the total variance explained for the nine components presenting a value of 70.16% of the accumulated variance.

	K1	K2	K3	K4	K5	K6	K7	K8	К9	A1	A2	A3	A4	A5	A6	A7	A8	A9	B1	B2	B3	B4	B5	B6	B7	B8	B9
K1 K2	0.776 ^a -0.42	0.773 ^a	0 755 a																								
K4 K5	0.02	-0.1	-0.28	0.830 a	0.885.4																						
K6 K7	0.02	0	-0.25	0.15	-0.17	0.875 a	0 845 a																				
K8 K9	-0.07	-0.05	0.11	-0.3	0.03	-0.19	-0.17	0.807 a	0 826 a																		
A1 A2	-0.04	0.09	-0.17	-0.1	0.01	0.07	0.11	-0.06	0.16	0.557 ^a	0.802 a																
A3 A4	0.08 0.04	0.06	-0.08 -0.09	-0.08 0.02	-0.21 -0.11	0.21	0.05	-0.18	0.05	0.2	-0.38	0.803 ^a -0.08	0.736 ^a														
A5 A6	-0.09	0.2	0.11	0.1	-0.06	-0.14	-0.26	-0.14 -0.11	0.11	-0.09	0.04	-0.03	-0.2	0.817 a -0.42	0 801 a												
A7 A8	-0.09 -0.02	-0.02 0.03	0.06 0.14	0.02	-0.19 0.06	-0.08 0.02	0.04 -0.12	0 0.21	0.03	-0.03 0.03	0.02	-0.13 0.08	-0.12 0.06	-0.2 -0.14	-0.07 -0.48	0.902 a -0.25	0.781 ^a										
A9 B1	0.04 0.08	-0.02 0.09	-0.04 -0.02	0.16 0.07	0.07 0.11	-0.01 -0.09	$-0.04 \\ -0.05$	-0.11 0.11	-0.06 0.08	-0.45 -0.05	0.09 -0.2	-0.05 -0.1	-0.29 0.11	0.08 0.07	$0.1 \\ -0.05$	-0.06 0.01	-0.13 0.01	0.638 ^a -0.05	0.658 ^a								
B2 B3	$-0.08 \\ -0.1$	-0.11 0.06	$0.1 \\ -0.18$	-0.03 0.02	$-0.08 \\ -0.03$	$-0.04 \\ -0.02$	$0.03 \\ -0.01$	0.01 0.11	$-0.07 \\ -0.14$	-0.02 0.01	$0.17 \\ -0.12$	$-0.1 \\ -0.11$	0.05 0.07	-0.17 0.02	0.14 0.1	$0.09 \\ -0.14$	-0.09 0.01	0.02 0.06	-0.66 0.03	0.681 ^a -0.02	0.731 ^a						
B4 B5	$-0.02 \\ -0.04$	-0.1 0	$0.11 \\ -0.08$	0.11 0.04	-0.23 -0.05	0 0.16	-0.11 0.12	-0.02 -0.16	-0.02 -0.01	0.01 0.01	-0.17 0.05	0.01 0.2	-0.01 -0.07	0.23 -0.02	-0.04 -0.08	$0.11 \\ -0.01$	-0.24 0.02	$0 \\ -0.01$	-0.12 -0.1	$0.14 \\ -0.09$	0.07 -0.12	0.782 ^a -0.12	0.724 ^a				
B6 B7	-0.02 -0.12	-0.01 0.25	0.07 - 0.17	-0.2 -0.09	-0.05 0	-0.06 -0.05	-0.03 -0.07	0.09 - 0.1	-0.08 -0.04	-0.03 0.08	$0.23 \\ -0.03$	-0.06 0.12	-0.1 0.12	-0.18 0.08	-0.11 0.01	-0.02 -0.15	0.21 0.1	-0.02 -0.17	-0.17 -0.06	0.04 - 0.12	-0.09 0.14	$-0.42 \\ -0.09$	$0.09 \\ -0.13$	0.779 ^a -0.07	0.736 ^a		
B8 B9	0.23	-0.22 -0.23	0.06	-0.02 -0.14	-0.09 -0.01	-0.04 0.07	0.11 0.04	0.26 0.13	-0.18 -0.08	-0.01 -0.09	-0.09 0.09	-0.07 -0.09	-0.08 -0.12	-0.13 -0.19	0.11 -0.05	-0.03 0.12	-0.05 0.15	-0.09 0.01	-0.1 -0.15	-0.01 -0.06	-0.07 -0.21	-0.07 -0.13	-0.18 -0.04	0.07	-0.31 -0.23	0.528 a 0.03	0.690 ^a

Table 4. Diagonal of the anti-image matrix relative to the anti-image correlation of the 27 items in the SCQ-S (own elaboration).

^a Medidas de adecuación de muestreo (MSA).

3.2. Interaction of Nominal Variables with Each Other

From the relationship established between the different categorical variables, it is worth noting that gender did not correlate significantly with the rest of the variables, and neither did having received any previous training in biodiversity and environmental sensitivity. However, the variable "Interest in active tourism" did correlate with "Carry out NA" ($\chi 2 = 34.473$; p = 0.005), with a predominance of those who carry out NA rarely (n = 40), on holidays (n = 57) or never (n = 58), as can be seen in Table 5. The same occurred when relating the variable Interest in active tourism with Carry out PA in a natural environment ($\chi 2 = 25.853$; p = 0.046), with a predominance of those who carry out PA more than once a week (n = 51) and between one and four times a month (n = 47). Furthermore, regarding the variable "Interest in active tourism", those who obtained the lowest scores in the count were those who only preferred it indoors (n = 20) or those who were not interested in active tourism (n = 4).

Table 5. Cross table variable count Interest in active tourism with Carry out NA and Carry out PA in a natural environment (own elaboration).

				Interest in A	ctive Tourism		
		a Count	b Count	c Count	d Count	e Count	Total Count
	А	5	0	1	1	1	8
	В	2	3	2	0	0	7
Carry out NA	С	17	1	15	7	0	40
	D	17	7	16	15	2	57
	Е	6	9	19	23	1	58
	А	12	5	21	13	0	51
Carry out PA	В	10	8	16	13	0	47
in a natural	С	11	3	6	4	2	26
environment	D	14	4	9	13	2	42
	Е	0	0	1	3	0	4
Total		47	20	53	46	4	170

A: More than once a week; B: 1 to 4 times a week; C: rarely; D: During holiday times; E: Never; a: Yes, I prefer to do it in coastal wilderness areas; b: Yes, I prefer to do it in natural inland areas; c: Yes, I prefer to do it in coastal and inland areas alike; d: Yes, but I prefer social, cultural and gastronomic tourism to ecotourism; e: No, I prefer other, more passive forms of leisure activities.

There was also significance when establishing relationships between the variable "Interest in integrity" with "Carry out NA" ($\chi 2 = 20.149$; p = 0.044), with "Carry out PA in a natural environment" ($\chi 2 = 22.075$; p = 0.037) and with "Interest in active tourism" ($\chi 2 = 30.857$; p = 0.002), with a predominance of those who expressed interest in the coastline, habitats and marine species above all (n = 26) and especially those who expressed interest in both equally (n = 126) as can be seen in Table 6.

Table 6. Cross table variable count Interest in integrity with Carry out NA, Carry out PA in a natural environment and Interest in active tourism (own elaboration).

		Interest in Integrity									
		a Count	b Count	c Count	d Count	Total Count					
	А	2	0	6	0	8					
	В	1	2	4	0	7					
Carry out NA	С	11	1	28	0	40					
	D	5	4	44	4	57					
	Е	7	2	44	5	58					

]	Interest in Integrity	у	
		a Count	b Count	c Count	d Count	Total Count
	А	15	3	33	0	51
Carry out PA in	В	3	3	35	1	42
a natural	С	4	2	17	3	26
environment	D	4	1	37	5	47
	E	0	0	4	0	4
	А	15	1	30	1	47
T	В	1	2	13	4	20
Interest in	С	7	2	43	1	53
active tourism	D	3	4	37	2	46
	Е	0	0	3	1	4
Total		26	9	126	9	170

Table 6. Cont.

A: More than once a week; B: 1 to 4 times a week; C: rarely; D: During holiday times; E: Never; a: of marine habitats and species above all else; b: of inland habitats and species above all else; c: of both equally; d: I do not care, it is the responsibility of others.

3.3. SCQ-S Independent Samples Means Analysis

3.3.1. By Gender and Prior Training in Biodiversity or Environmental Sustainability

As to the SCQ-S mean analysis, depending on whether or not the study sample had received prior training in environmental sustainability, there were no significant differences for any of the nine factors, nor were there significant differences for any of the three total constructs that made up the 9 SCQ-S factors. However, according to gender, there were differences in the factors ENK (p < 0.001) with a higher value in girls (4.83 ± 0.38) compared to boys (4.36 ± 0.73), SK (p < 0.001) with a higher value in girls (4.84 ± 0.36) compared to boys (4.53 ± 0.58), ECK (p = 0.001) being higher in girls (4.69 ± 0.54) versus boys (4.34 ± 0.73), ECA (p = 0.039) being higher in girls (4.28 ± 0.62) versus boys (4 ± 0.83) and SB (p = 0.038) being higher in girls (4.16 ± 0.8) versus boys (4 ± 0.67). Likewise, there were differences in the total constructs TK (p < 0.001) with the value being higher in girls (4.25 ± 0.53) compared to boys (4.41 ± 0.57) and TA (p < 0.032) with the value being higher in girls (4.25 ± 0.53) compared to boys (4.03 ± 0.62), as can be seen in the table below 0.62), as can be seen in Table 7. In addition, the effect size of the TK construct (d = 0.801) and its statistical power ($1-\beta = 0.998$) showed high values, as a consequence of the values obtained by the three factors of which it was composed.

Table 7. Analysis of SCQ-S means by gender (own elaboration).

	U	W	Ζ	р	d	1-β	Gender	Ν	AR	A (SD)
ENK	2044.5	7094.5	-5.024	< 0.001	0.808	0.998	1 2	100 70	70.95 106.29	4.36 (0.73) 4.83 (0.38)
SK	2257.5	7307.5	-4.338	<0.001	0.642	0.979	1 2	100 70	73.08 103.25	4.53 (0.58) 4.84 (0.36)
ECK	2504.5	7554.5	-3.357	0.001	0.545	0.925	1 2	100 70	75.55 99.72	4.34 (0.73) 4.69 (0.54)
ENA	3097	8147	-1.311	0.19			1 2	100 70	81.47 91.26	3.83 (0.64) 3.98 (0.76)
SA	2968	8018	-1.743	0.081			1 2	100 70	80.18 93.1	4.26 (0.85) 4.5 (0.58)
ECA	2859	7909	-2.059	0.039	0.382	0.663	1 2	100 70	79.09 94.66	4 (0.83) 4.28 (0.62)

	U	W	Z	р	d	1-β	Gender	Ν	AR	A (SD)
ENIP	2008	0010	1 601	0.100			1	100	80.48	3.68 (0.9)
EIND	2998	0040	-1.001	0.109			2	70	92.67	3.9 (0.89)
CD	2050	7009	2 077	0.029	0.217	0 272	1	100	79.08	4 (0.67)
50	2000	7908	-2.077	0.038	0.217	0.272	2	70	94.67	4.16 (0.8)
ECP	2451 F	9E01 E	0 155	0.877			1	100	85.02	3.52 (0.9)
ECD	5431.5	6501.5	-0.155	0.877			2	70	86.19	3.55 (0.97)
ΤV	1012	6062	5 117	<0.001	0.901	0.009	1	100	69.63	4.41 (0.57)
	1915	0903	-5.117	<0.001	0.001	0.998	2	70	108.17	4.79 (0.36)
T۸	2026	7076	2 14	0.022	0 201	0.662	1	100	78.76	4.03 (0.62)
IA	2020	7676	-2.14	0.032	0.361	0.062	2	70	95.13	4.25 (0.53)
тр	2057	8107	1 405	0.16			1	100	81.07	3.74 (0.64)
1 D	3037	6107	-1.405	0.10			2	70	91.83	3.87 (0.69)

Table 7. Cont.

See Appendix B to consult abbreviations; 1: Male; 2: Female.

3.3.2. By Interest in Active Tourism, Interest in the Integrity and Habitual Residence

Regarding the analysis of means of the SCQ-S, according to the variables interest in active tourism and interest in integrity, there were no significant differences for any of the nine factors, nor were there significant differences for any of the three total constructs that made up the nine SCQ-S factors. However, Table 8 shows that, according to the usual residence variable, there was significance between groups in the ENB factor (p = 0.001) and the total TB construct (p = 0.014) with medium effect sizes (f ≥ 0.25) and high statistical power values.

Table 8. Analysis of SCQ-S means by habitual residence (own elaboration).

			Habitual	Residence		
	Н	df	р	η^2	f	1-β
ENK	3.392	3	0.335			
SK	3.469	3	0.325			
ECK	2.604	3	0.457			
ENA	3.868	3	0.276			
SA	5.284	3	0.152			
ECA	6.46	3	0.091			
ENB	15.452	3	0.001	0.075	0.285	0.883
SB	4.703	3	0.195			
ECB	4.065	3	0.255			
TK	5.737	3	0.125			
TA	7.244	3	0.065			
ТВ	13.687	3	0.014	0.064	0.262	0.82

See Appendix B to consult abbreviations.

3.3.3. By Carry Out NA and Carry Out PA in a Natural Environment

When analysing the means of the SCQ-S according to the variable carry out NA, Table 9 shows that the factors were significance SK (p = 0.007) and ECK (p = 0.016). As a consequence, the TK construct also showed significance (p = 0.014). For all three cases, this occurred with medium effect sizes as $f \ge 0.25$ and acceptable statistical power. On the other hand, according to the variable Carry out PA in a natural environment, the statistical significances produced in the factors SK (p = 0.038), SB (p = 0.033) and ECB (p = 0.052), as well as in the construct TB (p = 0.029), were obtained with small effect sizes due to f < 0.25 and average statistical powers.

			Carry (Out NA			Carry Out PA in a Natural Environment								
	Н	df	р	η ²	f	1-β	Н	df	р	η^2	f	1-β			
ENK	6.772	4	0.148				6.205	4	0.184						
SK	14.03	4	0.007	0.061	0.255	0.751	10.161	4	0.038	0.037	0.196	0.495			
ECK	13.524	4	0.016	0.058	0.25	0.724	5.061	4	0.281						
ENA	7.292	4	0.121				5.15	4	0.272						
SA	2.677	4	0.613				2.969	4	0.563						
ECA	6.135	4	0.189				5.392	4	0.249						
ENB	3.927	4	0.416				2.255	4	0.689						
SB	0.562	4	0.967				9.44	4	0.05	0.033	0.185	0.444			
ECB	5.929	4	0.205				12.597	4	0.013	0.052	0.234	0.666			
TK	13.665	4	0.014	0.059	0.251	0.728	5.976	4	0.201						
TA	3.037	4	0.552				4.378	4	0.357						
TB	4.098	4	0.393				10.76	4	0.029	0.041	0.206	0.544			

Table 9. Analysis of SCQ-S means by variables carry out NA and carry out PA in a natural environment (own elaboration).

See Appendix **B** to consult abbreviations.

3.4. Bivariate Correlation between the Different Factors and Constructs of the SCQ-S in the Study Sample

From the correlation established between the nine factors that make up the SCQ-S and the three total constructs that make up these nine factors, it can be seen in Table 10 that significance was present between all the items. It should be noted that for both the TA and TB constructs, all correlations were highly significant (p < 0.001). The same situation occurred with the TK construct, showing correlations with high values of p < 0.001, except for three, which showed values of p = 0.001. Likewise, the elements whose correlations showed Spearman's Rho coefficients close to 1 were precisely the three factors that made up each of the total constructs with their respective constructs. Thus, for the TK construct, the ENK factor had a coefficient value of R = 0.803, the SK an R = 0.728 and the ECK an R = 0.768 and the ECA an R = 0.861. Furthermore, for the TB construct, the ENB factor showed an R = 0.793, the SB an R = 0.747 and the ECB an R = 0.778. In this sense, all the remaining Spearman's Rho coefficients were below 0.5, except those between ENK and SK (R = 0.55), between ECK and SK (R = 0.613) and between ECA and SA (R = 0.547).

Table 10. Bivariate correlation of the SCQ-S (own elaboration).

		ENK	SK	ECK	ENA	SA	ECA	ENB	SB	ECB	ТК	TA	ТВ
ENK	R	1											
CIV	p		1										
SK	K	0.55 **	1										
ECK	R	0.492 **	0.613 **	1									
	р	< 0.001	< 0.001										
ENA	Ŕ	0.339 **	0.213 **	0.169 *	1								
C A	р	< 0.001	0.005	0.027	0.00 **								
SA	K	0.188 *	0.317 **	0.273 **	0.33 **	1							
FCΔ	p R	0.014	<0.001	<0.001 0.335 **	<0.001 0.476 **	0 547 **	1						
Len	v	0.002	<0.001	< 0.001	<0.001	<0.001	1						
ENB	Ŕ	0.317 **	0.222 **	0.223 **	0.280 **	0.181 *	0.251 **	1					
	р	< 0.001	0.004	0.003	< 0.001	0.018	0.001						
SB	R	0.318 **	0.352 **	0.386 **	0.149 *	0.326 **	0.358 **	0.429 **	1				
FCB	p R	<0.001	<0.001	<0.001	0.05	<0.001	<0.001	<0.001	0.45 **	1			
LCD	n	0.006	0.002	0.003	0.004	<0.001	<0.001	<0.001	<0.001	1			
TK	Ŕ	0.803 **	0.788 **	0.841 **	0.252 **	0.242 **	0.287 **	0.290 **	0.386 **	0.244 **	1		
	р	< 0.001	< 0.001	< 0.001	0.001	0.001	< 0.001	< 0.001	< 0.001	0.001			
TA	R	0.283 **	0.352 **	0.314 **	0.724 **	0.768 **	0.861 **	0.298 **	0.361 **	0.337 **	0.302 **	1	
тр	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	< 0.001	<0.001	0 427 **	1
1 D	n n	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1
	P	\$5.001	\$0.001	\$0.001	\$0.001	\$0.001	\$0.001	\$0.001	\$0.001	\$0.001	\$0.001	\$0.001	

See Appendix B to consult abbreviations. * p < 0.05, ** p < 0.01.

4. Discussion

To achieve the objectives initially set out in this work, a careful treatment of the layout of the tool used and a final interpretation were carried out to ensure the equivalent metric properties of the measuring instrument [50]. Based on the original structure [47], internal reliability and construct validity were analysed. Thus, good internal consistency values were obtained in the present study, being higher for the TK with an $\alpha = 0.839$ compared to the value of α = 0.70 obtained by Gericke, lower for the TA with an α = 0.706 compared to Gericke's $\alpha = 0.78$, and practically equivalent for the TB with an $\alpha = 0.716$ compared to Gericke's $\alpha = 0.72$ [47]. This was also the case when compared with other works, where Cronbach's alpha values of the three total constructs in the present research were still similar to or higher than those obtained by other authors [48,51]. In addition, the overall Cronbach's alpha showed a fairly good value ($\alpha = 0.836$). The same occurred with the Kaiser–Meyer–Olkin test values where KMO = 0.816 and Bartlett's sphericity was p < 0.001with values higher than those obtained by other authors in previous works [48]. On the other hand, the present work added an exploratory factor analysis that was not performed by Michalos on the long version of the SCQ (SCQ-L) [43], nor by Gericke on the short version of the SCQ (SCQ-S) [47]. This factor analysis aimed to determine the value of the total variance explained for the nine factors that made up the SCQ-S (70.16%). Likewise, through the anti-image matrix, we sought to obtain the measures of sampling adequacy of the different items, to find out whether the 27 had a good fit without the need to consider the exclusion of any of them from the measurement instrument.

The results of the present study showed that the sample of future graduates in Physical Activity and Sport Sciences who were taking nautical subjects had high environmental sensitivity indexes with values above 4 out of 5 in six of the nine factors of the SCQ-S, with TB being the construct that had the least weight with a value of 3.79, coinciding with what has been established in previous studies [48,51,52]. Likewise, the one with the highest weight was TK with a value of 4.56, as obtained by other authors [52]. On the other hand, of the three dimensions, environmental, social and economic, the one that obtained the highest value the others was the social dimension (SK = 4.65; SA = 4.35; SB = 4.07) and the lowest value was the economic dimension (ECK = 4.48; ECA = 4.12; ECB = 3.53), in the same way as was obtained in previous research [48,53].

In addition, this study established a relationship between a series of categorical variables linked to the nautical subjects that the students were going to study, to establish a profile of interest in natural environments and the activities and impacts generated around them. Likewise, the aim was to find out the practice habits of these students in these spaces. Once this profile had been defined with a series of descriptive data, the aim was to find out how these variables affected each other, and subsequently to establish how they could influence the SCQ-S values obtained in the sample under study, in the same way as had been done in previous work with students [19,54,55]. There was also a significant relationship between the variable "Interest in integrity" with "Carry out NA" (p = 0.044), with "Carry out PA in a natural environment" (p = 0.037) and with "Interest in active tourism" (p = 0.005) and "Carry out PA in a natural environment" (p = 0.046).

On the other hand, there was no significant relationship between the place of habitual residence and the other nominal variables. Nor was there any significant relationship between the variable and having received some kind of previous training in biodiversity, and neither was there any significant relationship between the gender variable and the rest of the variables. On the other hand, when analysing the SCQ-S means according to gender, there were significant differences in the sample under study in all the factors, except for the attitude factor that was related to the social dimension (SA = 0.081) and the attitude and behaviour factor, which was related to the economic dimension (ENA = 0.19; ENB = 0.109). The opposite was true for Merino's study [48] and previous studies, which found differences in favour of the female gender [56,57]. In this line, it was precisely the total TK construct that showed the highest significance values with a p < 0.001 (d = 0.801;

 $1-\beta = 0.998$). However, when analysing whether there were significant differences between the means of the sample under study according to whether they had received any prior training in sustainability, there were no significant differences, meaning that this was not a determining variable in the level of sensitivity of the students in the sample, contrary to what was found in previous research where the degree of knowledge of the SDGs was assessed [58]. On the other hand, although the place of habitual residence did not correlate with the rest of the nominal variables, there were significant differences in the means of TB with a p = 0.014 (f = 0.262; $1-\beta = 0.82$) when relating them according to where they lived, suggesting that this variable could influence the total behaviour of the future graduates. In addition, the variable "Carry out PA in a natural environment" also had a significant influence on the means obtained from TB with a p = 0.029 (f = 0.206; $1-\beta = 0.544$), which could be understood as another determinant variable of the total behaviour of the students. The same case occurred with the variable "Carry out NA", but for the TK construct with a p = 0.014 (f = 0.251; $1-\beta = 0.728$), which was understood as a determinant variable for the total level of knowledge of future PASS graduates.

Finally, the analysis of the bivariate correlation between the different constructs showed that they all showed significant correlations with each other, in agreement with previous findings [57]. To this effect, the most significant constructs were TA and TB with values of p < 0.001 for all cases. This implied that those students who had high attitudinal scores had better attitudinal behaviours than those who did not.

Likewise, although with a lower level of significance, there were also significant differences between the TK and TA constructs, indicating that those who had a satisfactory level of environmental knowledge were those who tended to have favourable attitudes towards the environment, coinciding with the findings of other authors [48]. This contrasts with the finding that it was not significant whether they had received any prior training in sustainability. In this sense, this contrast suggests investigating in future work on the type of training received and its impact on the degree of sensitivity. In addition, there are studies in the literature that also corroborate this theory [59].

Moreover, there was a significant relationship between the different factors that made up the TK and those of the TB, in the same way as in previous studies [48]. This indicates that the level of knowledge also influenced the level of environmental behaviour, which suggested that it was also necessary to investigate the type of training they had received, since when analysing this variable of previous training outside the SCQ-S (understood as acquired knowledge), it was found that there were no significant differences for the level of sensitivity of the students.

5. Conclusions

This work was carried out as part of a research stay on active tourism, nautical activities and management of services and spaces where the offer is directed, in which future graduates in Physical Activity and Sport Sciences have an important professional opportunity. It is, therefore, necessary to know their level of environmental awareness, to find out how it may influence their future professional activity. From the results obtained, it can be concluded that:

- About hypothesis 1, which was established to describe the awareness of sustainability
 of university students in Sport Sciences through the three dimensions of sustainable
 development, the future graduates presented a high level of sensitivity in its three
 dimensions, environmental, social and economic. The highest dimension was the
 social one and the lowest was the economic one.
- About hypothesis 2, which was instituted to analyse the relationships between the different constructs of the SCQ, the results concluded that those students who had high levels of environmental knowledge tended to have high levels of environmental knowledge in the attitude and behavioural constructs, and vice versa. Likewise, those who were rated highly in attitude tended to be rated highly in behaviour and vice versa.

- Hypothesis 3 was established to explore a series of qualitative questions related to the ways of acting or thinking in college. Among the variables defining the profile of the university student, they related "Interest in integrity" with "Carry out NA", with "Carry out PA in the natural environment" and with "Interest in active tourism". This led to the conclusion that, for the sample under study, carrying out physical activity inland or in coastal natural environments or having an interest in active tourism was related to having an interest in the conservation of the habitats and spaces where they were carried out.
- As for hypothesis 4, which was also established to explore a series of qualitative questions related to their way of acting or thinking students, the sample was made up of more boys than girls, but girls tended to have higher levels of environmental sensitivity. In this sense, although, like gender, the usual residence variable was not significantly related to the rest of the nominal variables, the place where they lived did have an impact on total behaviour when relating this variable to the SCQ-S constructs. However, some variables did correlate with each other; "Carry out PA in a natural environment" was also related to the total behaviour of the university students, and "Carry out NA" to total knowledge. Of special note was the variable having received prior training in biodiversity and environmental sustainability, which did not correlate with any of the three SCQ-S constructs. However, knowing did correlate with attitude and behaviour, which made it necessary to know what type of training they had received and on which specific subjects. For future work, it would be interesting to establish training programmes with controlled content on sustainability through access to natural spaces for physical sports and active leisure activities, to measure how they can influence the level of environmental awareness developed, which can be used for the good professional practice of future PASS graduates.

It is therefore concluded that high levels of environmental sensitivity in sports science students can have several practical implications. Some of them are:

- Adoption of sustainable practices in sports: students with high levels of environmental sensitivity may be more likely to seek ways to reduce the environmental impact of sports activities. They may promote the use of recycled materials in the manufacture of sports equipment, the use of renewable energy in sports facilities or sustainable access to natural spaces for sports practice.
- Participation in environmental initiatives: students with high levels of environmental sensitivity may be more likely to participate in environmental initiatives, such as cleaning campaigns or reforestation projects.
- Environmental education: students with high levels of environmental sensitivity may be more likely to share their environmental knowledge and skills with others, whether through formal or informal education. They may organize workshops or talks on environmental topics in their sports community.
- Change in consumer behaviour: students with high levels of environmental sensitivity may be more likely to make informed purchasing decisions, choosing products and services that have a reduced environmental impact.
- Research: students with high levels of environmental sensitivity may be more motivated to research and develop sustainable solutions for sports and the environment.

6. Limitations and Future Research

One of the limitations was that sustainability awareness was analysed with a nonprobabilistic sample. In addition, another limitation was that it was applied in a local context. Both factors do not allow the conclusions to be extrapolated to other contexts. Likewise, another limitation was that both the interest and the practice habits of the students were considered, both in the natural environment in general and in the marine environment. In this sense, the sample under study only contained university students who were taking nautical subjects, which could cause a bias. For future research, it could be interesting to expand the sample with future graduates who take courses only in the natural environment and compare it with those who study the marine environment. Furthermore, it is suggested that a larger number of future graduates from other universities, even from other countries, could be included, as has been carried out by other authors using the same measurement instrument [52], to be able to draw more solid conclusions. Furthermore, it is suggested to investigate what kind of knowledge they have acquired in terms of sustainability, since from what has been extracted in the present work, previous training does not have an influence, but the level of knowledge they had does, although the latter is a finding that corroborates with some previous works, while with others it is not. It would therefore be interesting to be able to delve further into this aspect to elucidate it. In this sense, it would be interesting to conduct prior training programmes in environmental knowledge through the implementation of physical sports activities on the coast with the students, establishing a control group to see to what extent this programme can influence the level of awareness through a pre-test and post-test. This could also help to focus on a possible reformulation of the study plans of future graduates, something that has already been proposed in previous studies on environmental awareness among university students [19,60].

Author Contributions: Conceptualization, F.J.B.-B. and V.M.-B.; methodology, F.J.B.-B.; software, A.D.-S.; validation, V.M.-B., A.D.-S. and J.M.L.-G.; formal analysis, F.J.B.-B.; investigation, F.J.B.-B. and V.M.-B.; resources, A.D.-S. and J.M.L.-G.; data curation, F.J.B.-B.; writing—original draft preparation, F.J.B.-B.; writing—review and editing, V.M.-B.; visualization, J.M.L.-G.; supervision, A.D.-S. and J.M.L.-G.; project administration, A.D.-S. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted by the Declaration of Helsinki, and approved by the Ethics Committee of the University of Murcia (Spain) (protocol code 4288/2022).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The dataset can be made available upon request.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

 Table A1. Original short version of Sustainability Consciousness Questionnaire (SCQ-S) (own elaboration).

]	Likert Scale Ra	nging from 1 "Absolutely Disagree" to 5 "Strongly Agree"	1	2	3	4	5
		Sustainability Knowledge					
Environmental	K1	Reducing water consumption is necessary for sustainable development					
	K2	Preserving the variety of living creatures is necessary for sustainable development (preserving biological diversity)					
	K3	For sustainable development, people need to be educated on how to protect themselves against natural disasters					
Social	K4	A culture where conflicts are resolved peacefully through discussion is necessary for sustainable development					
	K5	Respecting human rights is necessary for sustainable development					
	K6	To achieve sustainable development, all the people in the world must have access to good education					
Economic	K7	Sustainable development requires that companies act responsibly towards their employees, customers and suppliers					
	K8	Sustainable development requires a fair distribution of goods and services among people in the world					
	K9	Wiping out poverty in the world is necessary for sustainable development					

I	Likert Scale Ra	nging from 1 "Absolutely Disagree" to 5 "Strongly Agree"	1	2	3	4	5
		Sustainability Attitudes					
_ Environmental _	A1	I think that using more natural resources than we need does not threaten the health and well-being of people in the future					
	A2	I think that we need stricter laws and regulations to protect the environment					
	A3	I think that it is important to take measures against problems which have to do with climate change					
Social	A4	I think that everyone ought to be allowed to acquire the knowledge, values and skills that are necessary to live sustainably					
	A5	I think that we who are living now should make sure that people in the future enjoy the same quality of life as we do today					
	A6	I think that women and men throughout the world must be given the same opportunities for education and employment					
	A7	I think that companies have a responsibility to reduce the use of packaging and disposable articles					
Economic	A8	I think it is important to reduce poverty					
-	A9	I think that companies in rich countries should give employees in poor nations the same conditions as in rich countries					
		Sustainability Behavior					
	B1	I recycle as much as I can					
- Environmental -	B2	I always separate food waste before putting out the rubbish when I have the chance					
	В3	I have changed my personal lifestyle to reduce waste (e.g., throwing away less food or not wasting materials)					
Social –	B4	When I use a computer or mobile to chat, text, play games and so on, I always treat others as respectfully as I would in real life					
	B5	I support an aid organization or environmental group					
	B6	I show the same respect to men and women, boys and girls					
Economic	B7	I do things which help poor people					
	B8	I often purchase second-hand goods over the internet or in a shop					
	В9	I avoid buying goods from companies with a bad reputation for looking after their employees and the environment					

Table A1. Cont.

Appendix B

 Table A2.
 Abbreviations (own elaboration).

1-β: Statistical Power	
A: Average	
AR: Average range	
d: Effect size d	
df: degrees of freedom;	
ECA: economic attitude	
ECB: economic behaviour	
ECK: economic knowledge	
ENA: environmental attitude	
ENB: environmental behaviour	
ENK: environmental knowledge	
f: Effect size f	
H: Kruskal–Wallis H;	
NA: nautical activities	
<i>p</i> : Bilateral asymptotic significance	
PASS: Degree in Physical Activity and Sport Sciences	
PSA: physical sports activities	
R: Spearman's Rho correlation coefficient	
-	

SA: social attitude	
SB: social behaviour	
SCQ-S: short version of the Sustainability Consciousness Questionnaire	
SD: standard deviation	
SK: social knowledge	
TA: total attitude	
TB: total behaviour	
TK: total knowledge	
U: Mann–Whitney U test	
W: Wilcoxon's W	
α: Cronbach's alpha	
η2: Tomczak's eta-squared;	
χ^2 : chi-square	

Table A2. Cont.

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