

Leisure Time in Natural Environment as a Promoter of Emotional Connection with Nature. An Environmental Study with Teenagers in Pontevedra (Galicia-Spain)

El ocio en el medio natural como promotor de la conexión emocional con la naturaleza. Un estudio en clave ambiental con adolescentes pontevedreses (Galicia-España)

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Abstract

Young people spend progressively less leisure time in contact with nature. This situation is closely related to the awakening of environmental awareness, since leisure time in natural environments fosters a greater emotional connection with nature, which influences pro-environmental attitudes and behaviors. The objective of this research is to analyze the influence of leisure experiences in natural spaces on the degree of emotional connection with nature among a group of secondary education students in Pontevedra (Galicia, Spain). The role of variables such as place of residence and gender in this emotional connection will also be analyzed. An ad hoc questionnaire was applied based on cross-sectional quota sampling, obtaining a total of 683 valid cases. The data obtained shows that those teenagers who have more leisure experiences in natural environments have a higher degree of emotional connection with nature. Likewise, the place of residence influences the degree of connection with nature, with the highest values being for students from rural areas. In addition, female students have significantly higher connectivity. In conclusion, it is necessary to enhance these leisure experiences in nature among the youngest students as a strategy to restore harmony between human beings and nature.

Keywords: connection with nature, environmental education, leisure, teenagers.

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Resumen

Los jóvenes cada vez tienen menos ocio en la naturaleza. Esta realidad se vincula con el despertar de la conciencia ambiental, pues el ocio en estos entornos promueve una mayor conexión emocional con la naturaleza, lo que influye en las actitudes y comportamientos proambientales. El objetivo del presente trabajo fue analizar la influencia que ejerce la experiencia de ocio en espacios naturales en el grado de conexión emocional con la naturaleza en una muestra de alumnos de educación secundaria de la provincia de Pontevedra (Galicia, España). Asimismo, se estudió el rol de variables como el lugar de residencia y el género. A partir de un muestreo por cuotas cruzadas se aplicó un cuestionario elaborado ad hoc con 683 casos válidos. Los datos informan que los adolescentes que tienen más experiencias de ocio en entornos naturales presentan un mayor grado de conectividad; el alumnado del ámbito rural muestra valores más elevados; y que son las estudiantes las que presentan una conectividad más alta. En conclusión, se subraya la necesidad de potenciar en los más jóvenes el ocio en entornos naturales como estrategia para restituir la armonía entre el ser humano y la naturaleza.

Palabras clave: adolescencia, conexión con la naturaleza, educación ambiental, ocio.

Introduction

Scientific literature published in recent years shows that less leisure time in childhood and adolescence is spent in natural surroundings than in previous generations (Clements, 2004; Henderson & Bialeschki, 2008; Karsten, 2005; Louv, 2018; Soga, Gaston, Yamaura, Kurisu, & Hanaki, 2016). Rather than being simply a social perception, various studies have demonstrated this fact. For example, in the United States, between 1993 and 1997, there was a 50% decrease in outdoor leisure activities such as walking, fishing, playing on the beach, etc. among children between 9 and 12 years of age; in turn, their free time declined by more than seven hours a week between 1981 and 1997 (Hofferth & Sandberg, 2001). Similarly, between 1997 and 2003, that free time was reduced by an additional two hours (Hofferth & Curtin, 2006), which implies that children's free time has decreased by a total of nine hours in a period of 20 years. Likewise, in Spain and the other European countries, since the 1970s the time that children spend playing independently has fallen by 90% and their free time has been reduced by around 15 hours per week. It should also be added that only 29% of boys and girls currently experience time playing outdoors, as opposed to 70% of them 20 years ago (Freire, 2012).

In light of this situation—which is the consequence of our social context—various studies mention the existence of a new type of childhood (Karsten, 2005), which is characterized by spending less time in contact with nature than at any other time in history. For this reason, the current generations have new needs due to the lack of outdoor leisure experiences, less socialization in public spaces, a sedentary lifestyle, and a greater relationship with the virtual world than with the real one, factors which negatively affect their development as individuals and as members of society. But, what are the reasons for this situation? Review of the existing literature points to processes of anthropization of spaces (Cox, Shanahan, Hudson, Fuller, & Gaston, 2018), the proliferation of information and communication technologies (Zaradic & Pergams, 2007), excessive parental concern for the safety of their children (Clements, 2004), the perception of nearby natural areas as unsafe (Larson et al., 2018), the overloaded schedules of children and young people (Honoré, 2010), and the predominance of values such as individualism, consumerism, and competitiveness (Freire, 2011). Among other things, these are responsible for current social changes and are the determining factors in this lack of contact with the outdoors and nature among the youngest members of society.

Although this situation may seem irrelevant a priori, the truth is that research confirms that this absence of contact has significant consequences in two aspects. On the one hand, for well-being in the fullest sense of the term, that is, physical (Louv, 2011), psychological (Kaplan & Kaplan, 1989; Louv, 2019), and social (Priego, 2011) well-being, and, on the other, for the conservation of the environment itself (Rosa & Collado, 2019).

It is particularly the latter notion that takes on special relevance at a time in history when the environmental crisis is one of the major challenges on the planet (Evans, 2019). It may seem casual or even anecdotal, but the reality is that it is not a coincidence that this crisis has become more evident as our disconnection with nature has advanced (United Nations Environment Program, UNEP, 2007), this being “symptomatic of a fundamental rupture of human emotional and spiritual relationship with the natural world” (Kellert, 1993, p. 26). This is because, from the time that human beings settled in cities and began to feel that nature was not essential for their subsistence—reducing it to being a mere facilitator of resources and raw materials—the limits of our planet began to become clearly visible. In light of this, society was forced to become aware that nature was much more than a space that provided infinite goods and that, therefore, the system of exploitation to which it was being exposed was unsustainable. Thus, midway through the last century, the first strategies emerged to try to change course, one of the most significant being environmental education.

Theoretical Framework

The experience of leisure time in nature: implications for environmental education

The traditional approach has considered that environmental knowledge is a determining factor in promoting pro-environmental behavior (Durán, Alzate, López, & Sabucedo, 2007; Sánchez & De la Garza, 2015), thus subordinating action to people’s cognitive dimension. This linear and cause-and-effect approach is based on the idea that greater environmental knowledge leads to favorable attitudes towards the environment, which in turn implies specific behavior to protect it. However, years ago it was observed that this correlation between knowledge, attitudes, and behavior is generally low, which enables us to conclude, on the one hand, that a high level of environmental knowledge does not necessarily imply ecological behavior (Hungerford & Volk, 1990; Steg & Vlek, 2009), and, on the other, does not automatically mean having positive attitudes towards the environment either (Collado & Corraliza, 2016).

Therefore, without denying the importance of scientific research that has shown that environmental knowledge is a relevant factor (Bradley, Waliczek, & Zajicek, 1999; Cheng & Monroe, 2012), all the evidence seems to indicate that knowledge alone does not lead to pro-environmental attitudes and behaviors (Barazarte, Neaman, Vallejo, & García, 2014; Collado & Corraliza, 2016; Hungerford & Volk, 1990; Sánchez & De la Garza, 2015), particularly in the case of childhood (Sobel, 2013), and that humans are much more complex and are influenced by other factors (Álvarez & Vega, 2009). The level of knowledge is just one more factor—and it does not seem to be the most important—in the development of pro-environmental behaviors (Corraliza & Collado, 2019).

For this reason, other models emerge in the scientific literature that include a range of personal and situational variables that are considered to influence environmental behavior. However, what many of them have in common is that they focus on cognitive factors, ignoring the existence of another fundamental dimension in human behavior: emotion (Duerden & Witt, 2010; Durán et al., 2007), because it is here where affective components have their place. For example, it has been found that people’s affective attitudes towards nature play an important role in decision-making regarding the conservation of biodiversity (De Pinho, Grilo, Boone, Galvin, & Snodgrass, 2014; Soga et al., 2016).

In this respect, various studies in recent years have focused on this dimension of the individual as a factor that promotes environmental awareness, a prerequisite for pro-environmental behavior to occur (Hungerford & Volk, 1990). Other very similar concepts such as emotional affinity towards nature (Kals, Schumacher, & Montada, 1999) or connection with nature (Stephan Mayer & McPherson Frantz, 2004) have been used to define the “affective, experiential relationship to the natural world” (p. 504), referring to the need for people to feel connected to these environments to perceive themselves as responsible for them and, in consequence, to care about their conservation and protection.

From this perspective, authors such as Corraliza and Collado (2019) stress the importance that environmental education programs consider the affective viewpoint as a key factor, since they promote emotional connection with the environment. Most of these programs are essentially based on the transmission of information about environmental issues, thus focusing on the person's cognitive sphere (Rickinson, 2001). Even the approach to school environmental education tends to focus on content rather than emotional aspects (Freire, 2011; Sobel, 2013).

In light of the above, review of the literature demonstrates that one of the main factors that seems to contribute to connection to nature is the frequency of contact and enjoyment of the natural world during childhood and adolescence (Chawla & Derr, 2012; Cheng & Monroe, 2012; Louv, 2018; Wells & Lekies, 2006). Therefore, and based on this premise, it is clear that the progressive disengagement of the youngest people with natural environments is closely related to pro-environmental attitudes and behaviors (Evans, Otto, & Kaiser, 2018), in such a way that social distancing from nature could lead to negative consequences for the environment (Evans, 2019).

Because of this, if the scientific literature has shown that theoretical knowledge is not sufficient on its own for the development of pro-environmental behaviors and that, in order to achieve them, it is also necessary to educate people in terms of the affective and emotional, we have to find tools that assist us in this endeavor. In this respect, leisure appears to us to be a resource of extraordinary potential. In line with what is stated in the International Charter for Leisure Education (World, Leisure and Recreation, WLRA, 1994), or with what is stated by Cuenca (2014), we understand leisure as a complex human experience, closely related to responsible autonomy, satisfaction, enjoyment, and happiness. A valuable resource for personal and community development (Maroñas, Martínez, & Gradañlle, 2019) with important effects on the well-being and quality of life not only of humans, but of the planet, because the contexts in which these experiences take place are also affected, either positively or negatively (Arruti, 2011).

Of particular interest on this subject is the so-called environmental-ecological dimension of leisure (Cuenca, 2014), as, instead of emphasizing the experience (recreational, supportive, festive, or creative), it stresses the context in which it takes place. From this perspective, having leisure experiences in nature implies having advantages that do not occur in other types of artificial environments, since “natural spaces contain their own qualities, we would say ontological, that present them as privileged spaces for leisure” (Ried, 2015, p. 506). It should also be noted that these advantages go beyond the benefits for human well-being (physical, psychological, and social) and also include awakening environmental awareness (emotional affinity with nature). However, it should also be underlined that the starting point and goal of such leisure experiences should always be sustainability, particularly when they take place in protected environments. With this we refer to the development of what is known as sustainable leisure (Tirone & Halpenny, 2017), that is to say, leisure imbued not only with values of enjoyment, pleasure, and well-being, but which also carries the principles of “shared responsibility, of sustainability, of protection and conservation of nature” (Arruti, 1996, p. 93).

On the basis of these theoretical approaches, this paper examines the degree of emotional connection with nature in a sample of adolescents from the province of Pontevedra¹ and its relationship with their leisure experiences in natural environments. We also study the influence of other factors on this connection, such as their place of residence and gender.

Methodology

This study is based on the quantitative approach, as we used the survey technique with a questionnaire as our chosen instrument. We outline the instrument and its validation process below, as well as the items on which the research was done, the population studied, and selection of the sample.

The instrument and validation process

The data collection instrument was an ad hoc questionnaire that was subjected to an exhaustive assessment to analyze the validity of its content. We used expert judgment to do this, specifically applying the individual aggregate method (Corral, 2009). In total, 10 judges were selected who offered an assessment, both qualitative and quantitative, of the questionnaire. In the case of the latter, the relevance and accuracy of the items were analyzed statistically.

In terms of relevance, the index of agreement between the judges was calculated, with the degree of agreement indicating the reliability of the judgments and, therefore, their validity. To do this we used the Lawshe model (1975), modified by Tristán-López (2008), which consists of the independent assessment of each of the items based on three possibilities: essential, useful but not essential, and not necessary.

Once the judges had assessed each item in accordance with this triple scale, we determined the number of coincidences of the “essential” items, seeking broad agreement between them. In order to establish this consensus, Lawshe (1975) proposes the content validity ratio (CVR). So, after applying the model modified by Tristán-López (2008)², all items reached the required minimum content validity (0.58). A score of 0.94 (or 94%) was obtained for the overall validity of the instrument, so we can conclude that it, as a whole, is relevant as it amply exceeded the minimum of 0.58.

With regard to the accuracy of each item, for the statistical analysis, like other authors (see, for example, Sanz-Arazuri, Alonso-Ruíz, Valdemoros-San-Emeterio, & Ponce-de-León-Elizondo, 2013), we proceeded to calculate the descriptives. We thus established the mean and the standard deviation of the assessments of each judge for each of the items. These could range from 1 = *not at all accurate* to 4 = *very accurate*. Based on this,

1. Pontevedra is one of the four provinces in the Autonomous Community of Galicia (Spain). It has a population of 942,665 (Instituto Galego de Estatística, 2019), of whom over 40% are concentrated in the cities of Vigo (population 295,364, the largest in Galicia) and Pontevedra (population 83,029). The territory covers an area of 4,495 km² and it has numerous areas recognized as natural spaces with different degrees of protection, both on the coast and in the interior of the province.
2. The Lawshe (1975) model suffers from two fundamental problems: a) it is not designed for fewer than five judges and b) the minimum values required for CVR are affected by the number of judges, being highly demanding when there are only few of them (CVR = 0.99 with five judges) and excessively lax when there is a large number of them (CVR = 0.29 for 40 judges) (Tristán-López, 2008). In order to solve this problem, we proposed to use the modification suggested by Tristán-López (2008). Based on a correction of the minimum CVR value established by Lawshe (1975), Tristán-López normalized the population of judges, making the CVR alternative, or CVR', constant, regardless of the number of judges, which not only solves the problem of the size effect, but also the interpretation of the agreement in the content validity relationship. As CVR' does not depend on N, when N tends to 8, the CVR' remains constant at 0.5823, which leads to equal levels of requirement in all cases, regardless of the number of judges (Tristán-López, 2008).

we set a minimum cut-off point, which was established at three points (quite accurate) so as to avoid being obliged to reformulate it. After the analysis, we found that all of the items reached the minimum established cut-off point (the lowest score was 3.40) and the instrument as a whole produced an average score of 3.81, so the instrument could be considered to be accurate.

The qualitative suggestions made by the judges were also taken into account and, in order to test their functionality, the questionnaire was subjected to a pilot or pre-test that allowed us to ensure its quality and proper functioning.

Items under study

After validation of the instrument, we proceeded to the final design, which was comprised by five blocks. We outline the items for two of them below:

- The first block, called “identification data”, from which those related to gender (boy and girl) and the habitual place of residence (village, town, or city) were taken.
- The third block, called “leisure and contact with nature”, for which questions 7 and 8 were analyzed, specifically items 7.1 and 7.2 and 8.1 and 8.2. In these, the students were asked to identify the frequency with which they had carried out certain leisure activities in direct, indirect, and vicarious contact with nature over the last 12 months. In order to do this, we proposed a Likert scale with five levels: *never*, *almost never*, *sometimes*, *almost always*, and *always*. The only difference between the two questions is that 7 was focused on school days (Monday to Friday) and 8 on non-school days (Saturday and Sunday). Specifically, items 7.1 and 8.1 referred to the frequency of enjoying some direct leisure experience in a natural space (countryside, forest, mountain, river, etc.), on school and non-school days, respectively, while items 7.2 and 8.2 referred to the frequency of going to see and/or photograph animals and/or landscapes in the outdoors, also on school days and non-school days.

Likewise, in this block we used question 9, a scale of emotional connection with the natural environment. To prepare this, we used the work of Cheng and Monroe (2012) as a reference, which presents an index of connectivity with nature for children. However, this index was not used—as it focuses on the infancy stage—but instead we used an adaptation based on the steps that the authors followed for its construction, which was subjected to an analysis of reliability and internal consistency. To do this, we used Cronbach's alpha coefficient (α), establishing 0.70 as the minimum required value, as suggested by certain authors, such as Hernández, Fernández, and Baptista (2014). Finally, our scale produced a score of 0.798, thus ensuring its reliability.

The scale consisted of 10 items with four response intervals (*strongly disagree*, *disagree*, *agree*, and *strongly agree*). After applying the questionnaire, this scale was translated into numerical scores, in such a way that we could calculate the mean of emotional connection with nature. The following scores were awarded: *strongly disagree* = 1 point, *disagree* = 2, *agree* = 3, and *strongly agree* = 4 points. Therefore, the maximum score would be 40 points and the minimum 10. After obtaining the mean scores for all the students, we applied the following ranges to determine the degree of emotional connection: from 1 to 2 points = null or very low connection; 2.1 to 2.5 = low; 2.6 to 3 = neutral; 3.1 to 3.5 = high; and 3.6 to 4 = very high. To establish these ranges, we referred to the aforementioned study by Cheng and Monroe (2012).

Population and sample

After validating the questionnaire, we applied it to a sample of students in compulsory and post-compulsory secondary education (baccalaureate) in Pontevedra province. Once the size of the population in the 2016-2017 academic year (46,857) was taken as a reference, we established a margin of error of 3.8% and a confidence level

of 95%, given the assumption that $p = q = 0.5$, meaning a minimum sample of 652 subjects had to be covered. To achieve this, we chose to carry out non-probabilistic sampling using cross-sectional quotas with proportional allocation for each of the stratification levels established, which are the following:

- a) Degree of urbanity of the town councils of the province of Pontevedra determined by the Galician Statistics Institute (IGE) for 2016 (Densely Populated Area: DPA; Intermediate Populated Area: IPA; and Sparsely Populated Area: SPA)
- b) Education level (compulsory secondary education and baccalaureate). In both stages we worked with the odd courses; that is: 1st of CSE, 3rd of CPE, and 1st of BAC.

As regards the latter, we did not consider applying the questionnaire to all of the courses in order to avoid overburdening the schools when requesting their collaboration, in addition to the difficulty of accessing the 2nd year BAC students. However, we consider that this selection provided us with an adequate overview of both educational stages, since the classes had students of all ages (from 11-12 to 17-18 years of age). Likewise, and in order to minimize the biases, the choice of classrooms in each school was carried out randomly whenever possible. We also selected the schools based on their coastal-interior location, to guarantee the representation of schoolchildren from both areas, as well as public and private/subsidized schools, thus respecting the proportion in the Autonomous Community of Galicia (approximately two of every three schools are public).

After the fieldwork—which met all the criteria set out above—we obtained the definitive sample, which turned out to be somewhat higher (683 subjects) than the established theoretical sample (652). This meant that the sampling error was slightly lower than that expected initially (3.7% vs. 3.8%). In this respect, we estimated that it was similar to what was stated, retaining adequate proportionality, so no weighting factor was applied to take the small imbalances into account.

The questionnaires were applied in 2017 and the students were guided in the classroom during a class session, in order to guarantee the anonymity of the participating students at all times.

For the statistical analysis of the data we used the program SPSS Statistics, version 22 for Windows (2013). We used non-parametric tests. Specifically, we used the Mann-Whitney U test for the comparison between independent samples (boys/girls); for the comparison between three independent samples (village/town/city) we used the Kruskal-Wallis test; and for the degree of linear association (positive and negative) between two variables, we used the Spearman correlation coefficient.

Results and Discussion

We began by examining how the adolescents were connected to nature according to the scale explained above (Figure 1). As we can observe, the highest percentages are at a degree that we identify as neutral (36.9%)—neither connected nor disconnected—and high (35.5%). Only just over a tenth of the sample (11.1%) showed a very high connection, while 16.5% showed a very low or low connection. We can therefore observe that a considerable proportion of the sample had a high or very high emotional connection with nature, although the percentage of those who were classed as a neutral was also high. Those with a low or very low connection were a minority, although this was not a negligible percentage, which means that this situation should be considered, since there are many studies that suggest that an emotional connection with the natural environment is related to pro-environmental attitudes and behaviors (Cheng & Monroe, 2012; Durón-Ramos, Collado, García-Vázquez, & Bello-Echevarría, 2020; Otto & Pensini, 2017; Whitburn, Linklater, & Abrahamse, 2019).

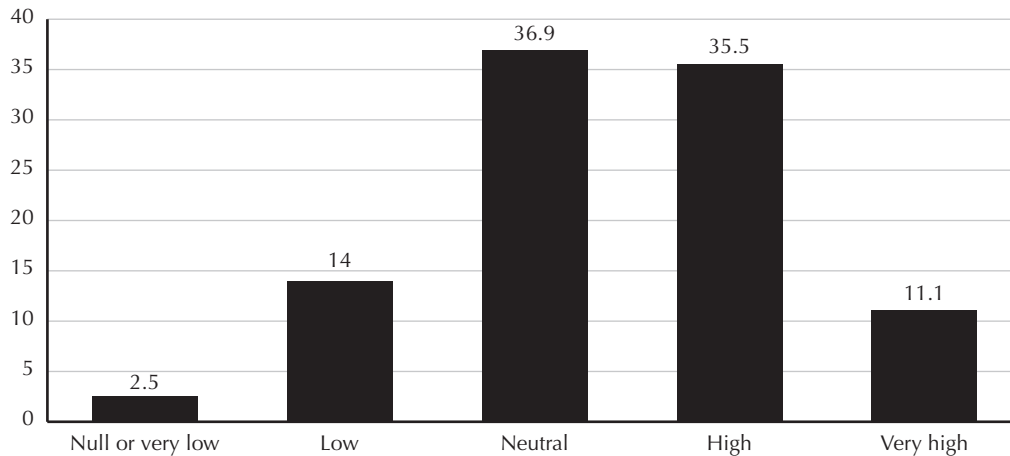


Figure 1. Degree of emotional connection of adolescents with nature (%).
Source: Prepared by the authors.

From this perspective, one of the factors that appear to have the greatest influence on the emotional connection with nature is enjoyment through gratifying experiences (Cagle, 2018; Gray & Pygott, 2018; Kals et al., 1999; Rosa, Cabicieri, & Collado, 2018). For this reason, we studied whether the frequency of direct leisure experiences in nature on the part of the adolescents surveyed was related to their degree of emotional connection. To do this we applied the Spearman correlation coefficient (Table 1).

Table 1
Correlation between direct experiences of leisure in contact with nature and degree of emotional connection with nature (Spearman's r)

Frequency of direct experiences of contract with nature	Degree of emotional connection with nature	
	R	R
Spending leisure time in natural spaces (countryside, forests, etc.).	Midweek	0.295***
	Weekends	0.414***
Going to see and/or photograph animals, outdoor landscapes	Midweek	0.319***
	Weekends	0.391***

*** $p < 0.001$.

Source: Prepared by the authors.

From the data we can see that both experiences of direct contact during the week and at weekends showed a highly significant positive correlation ($p < 0.001$) with the degree of emotional connection with nature: as the frequency of direct experiences in the natural environment increased, the degree of connection also increased. Therefore, the greater the amount of leisure time that adolescents spent in with these types of environments, the greater their connection with them. These data support those in other studies that have confirmed the same trend (Cheng & Monroe, 2012; Collado & Corraliza, 2016; Durón-Ramos et al., 2020; Giusti, Svane, Raymond, & Beery, 2018; Lumber, Richardson, & Sheffield, 2017), demonstrating the importance of leisure experiences in nature from an environmental perspective (Ried, 2015; Rosa & Collado, 2019).

Similarly, although the data show that the adolescents surveyed are relatively well connected with nature, we should remember that 16.4% of them display a very low or low emotional connection. There is, therefore, a group of young people who have no interest in the natural environment and have no connection with it, and these may be people who have biophobic traits. In order to verify this, we analyzed the specific item on the scale that referred to the consideration of nature as an uncomfortable and/or unpleasant space (Figure 2).

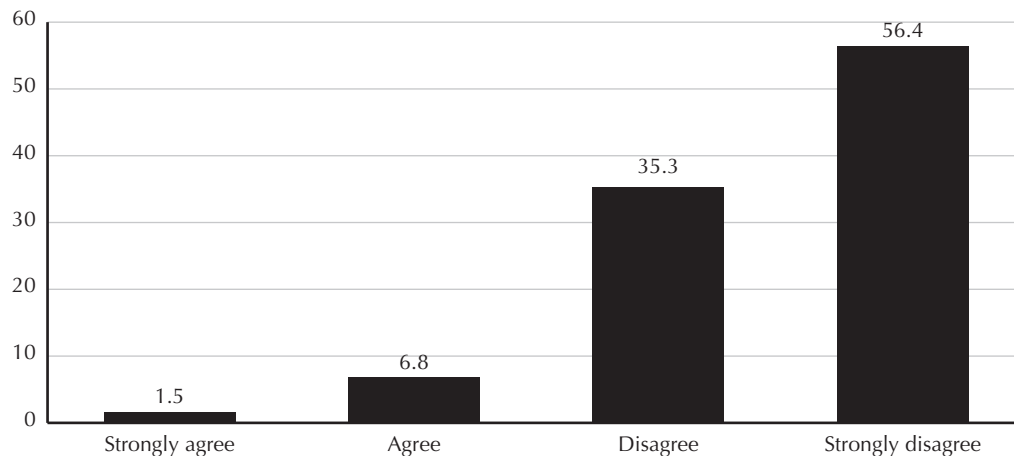


Figure 2. Degree of agreement with the statement “being in natural environments is uncomfortable and/or unpleasant” (%).

Source: Prepared by the authors.

As Figure 2 shows, the vast majority of the adolescents surveyed strongly disagreed or disagreed (91.7%) with this statement, so only one in 10 adolescents would display biophobic traits. This trend supports the conclusions of various studies that contend that human beings generally have an innate interest and inclination towards nature (Herzog, Maguire, & Nebel, 2003; Ulrich, 1993), alluding, on the one hand, to the biophilia hypothesis (Kellert & Wilson, 1993) and, on the other, to the restorative qualities that these environments have and which stimulate human attraction to them (Kaplan & Kaplan, 1989; Collado & Corraliza, 2016). However, the literature reveals that this instinctual tendency is usually low and is susceptible to being shaped by learning and culture, creating feelings that can range from attraction and indifference to aversion; that is, one can shift from biophilic feelings to biophobic feelings (Kellert, 1993).

Considering these data, it is interesting to examine whether the biophobic trait that we studied was associated with a lower emotional connection to nature. We applied the Spearman correlation coefficient to do this, confirming the existence of a highly significant negative association ($r = -0.350$; $p < 0.001$). That is, the more a student agreed with the statement that nature was an uncomfortable and/or unpleasant environment, the lower the degree of connectivity they had with it. Biophobic feelings therefore make it difficult to relate to the natural environment, with the consequences that this has on pro-environmental attitudes, since people with an aversion to nature also benefit from its resources, without carrying out actions to protect it (Hueso, 2017).

For this reason—and based on the fact that greater frequency of enjoyment and contact with nature is linked to a greater connection, as we have observed previously—it would seem reasonable to consider the place of residence of the adolescents surveyed as an influential factor in their degree of connection, since there are differing possibilities of direct experiences with nature in cities and rural areas. In fact, urban environments are

spaces in which the relationship with green areas is much more limited compared with rural contexts (Gifford & Nilson, 2014; Priego, 2011). From this perspective, we applied the Kruskal-Wallis test and it did indeed confirm the existence of highly significant differences (Table 2).

Table 2
Comparison between the degree of emotional connection with nature and the place of residence (Kruskal Wallis test)

Emotional connection with nature	Place of residence	N	Average range	X^2
Degree of emotional connection with nature	Village	185	383.42	15.740***
	Town	273	320.00	
	City	216	320.29	

*** $p < 0.001$.

Source: Prepared by the authors.

In the comparison between pairs of categories, the Mann-Whitney U test confirmed that there were significant differences between village and town ($Z = -3.549$; $p < 0.001$) and village and city ($Z = -3.476$; $p < 0.01$), which reveals, according to the average ranges, that the degree of emotional connection was significantly higher in adolescents living in rural areas than in urban or suburban areas, which is consistent with the findings of other researchers (Durón-Ramos et al., 2020; Hinds & Sparks, 2008). This allows us to infer that living in an environment that offers greater opportunities for direct contact with nature contributes to people having experiences of this type more frequently, which, in turn, promotes a greater connection with nature.

However, other authors such as Müller, Kals, and Pansa (2009) have not found these significant differences and have even observed the opposite (Broom, 2017), alluding to the fact that, despite the opportunities offered by the rural environment, the influence of factors such as the relationship that people establish with nature can make a difference (Collado & Corraliza, 2016). It seems that the experiences that generate affinity must be positive and related to enjoyment (Evans et al., 2018), which does not always happen in rural areas where it is common for contact with nature to be associated with work.

The gender variable merits a separate mention. After applying the Mann-Whitney U test, we found that there were highly significant differences between boys and girls ($Z = -5.119$; $p < 0.001$), where the girls showed greater emotional connectivity to the natural environment than the boys (Figure 3). This has also been observed in other studies (Broom, 2017; Duarte, Escario, & Sanagustín, 2017; Durón-Ramos et al., 2020; Müller et al., 2009), which is an additional contribution to the literature that addresses gender differences in relation to pro-environmental attitudes.

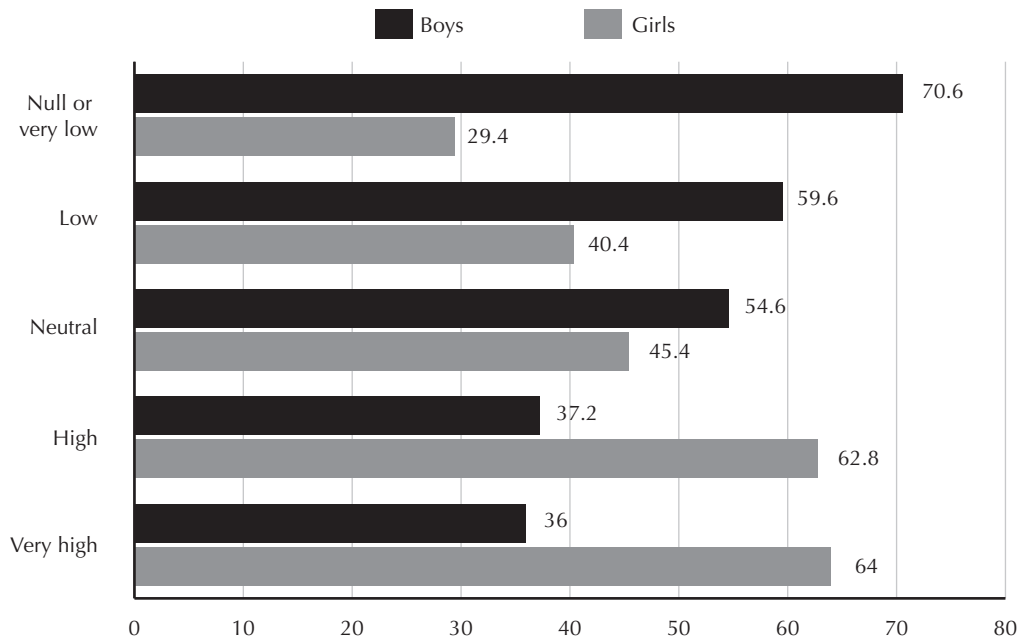


Figure 3. Comparison between the degree of emotional connection with nature and gender (%).
Source: Prepared by the authors.

The reasons that might justify this situation are unclear (Durón-Ramos et al., 2020). However, some authors such as McCright (2010) suggest that one explanation could be gender socialization, since the social values and expectations conferred on boys and girls are different, with girls being the ones who tend to be educated more extensively in altruism, attachment, empathy, and concern for others, including the environment.

Conclusions

In recent decades, there has been a sociocultural transformation in terms of the use of leisure time among children and adolescents, a change in which outdoor spaces are being progressively replaced by indoor ones. Environments are becoming increasingly urbanized, cities are becoming larger, and the freedom and autonomy of childhood and adolescence are severely limited as a result of parental fears about safety. In addition, experiences of free play are being replaced by sedentary activities and primary experiences with the real world, with nature, have progressively been replaced by other vicarious experiences, many of them via multiple electronic devices, neglecting the fact that the natural world is the most powerful context of sensory stimulation.

This situation is particularly notorious in urban settings, where opportunities for leisure activities linked to nature are much more limited than in rural settings. Furthermore, these types of experiences tend to persist in the latter due to the greater presence of open and unstructured spaces, although this is also because a more traditional culture of play has been maintained, which coexists with digital recreation.

Although, a priori, this new social reality may not seem so relevant, the consequences in terms of human and environmental well-being have already been documented in the literature. In fact, and in relation to the latter, in this paper it has been confirmed how more leisure time in natural environments is strongly correlated with a greater emotional connection with nature, which highlights the importance of more young people enjoying recreational experiences in green areas due to the benefits that this generates from an environmental perspective.

From this perspective, one of the fundamental pillars of approaches to environmental education, both in school and out of school, should be the emotional and affective components of individuals, particularly during childhood, so that, based on these and at appropriate ages, work can begin to be done on environmental problems in which more cognitive issues can be involved (intellectual perspective). In this approach—which combines the emotion-reason binomial—the natural environment has great educational potential, as it offers various opportunities for exploration and recreation, which is recognized as “the context for learning and not just the focus of learning” (Kelly & White, 2013, p. 6). Therefore, the ideal would be to promote environmental education that takes place in the environment itself (Palmer, 1998), that is, an environmental education in the outdoors.

In attempting to achieve this goal, leisure education and, more specifically, the education of the ecological dimension of leisure, is presented as an accessory to take into account, as it facilitates the development of interests, values, and hobbies that can contribute to the generation of rewarding experiences in natural environments that promote an emotional connection with the environment. In this endeavor, schools, families, the associative fabric, community institutions, etc. have a challenge, since all of them have to facilitate times and conditions so that children and adolescents can responsibly enjoy valuable leisure experiences in nature.

However, it should be noted that despite the fact that contact with the natural environment appears to influence pro-environmental attitudes, the processes behind this relationship are unclear (Wells & Lekies, 2006). There is evidence that, in some way, this contact—particularly free, unstructured, and enjoyable contact—has an influence, although it is not known with certainty in what way and to what extent. Nevertheless, one of the factors that seems to play an important role as a mediator is related to the emotional connection with nature (Rosa et al., 2018), which, as has been shown throughout this paper, is closely related to the enjoyment of natural environments. In light of this, this study is an additional contribution to literature on the relationship between leisure time in the natural environment and the emotional connection to nature.

Based on this evidence, we believe that the importance of restoring leisure time in outdoor spaces and natural environment for the population in general and children and young people in particular is beyond doubt, since not only will this contribute to their well-being, but we will also be promoting a society that is more committed to finding solutions to the global environmental crisis.

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