CHILDREN'S SENSE OF PLACE – CASE STUDY FROM THE BOHEMIAN PARADISE IN CZECHIA

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Abstract

The relationship with place is one of the important areas of geography and environmental education. However, research on the concept of sense of place in primary education has not received significant attention in scholarly literature. The aim of this research is to determine which places within their local region fifth-grade students develop a positive relationship with and the reasons for this relationship. Furthermore, the study explores the students' relationship with their local region (regional identity) and how this relationship correlates with other factors. A mixed research design was chosen for data collection and analysis from 257 fifth-grade students in the Bohemian Paradise Protected Landscape Area, Czechia. The results suggest that there is a relationship between the time students spend in nature and their connection to the local region. Students with a stronger regional identity have a stronger connection to nature and they are more familiar with significant places in

the region compared to students with a weaker regional identity. Students' favourite places predominantly fall into the categories of natural environments, cultural monuments, and home. The study also foregrounds children's voices and highlights the value of listening to how children experience and imagine their favourite places. Research on children's sense of place can aid in the more effective implementation of this concept into education, thereby contributing to the development of students' environmental literacy and their competence in sustainability.

Key words
Sense of place, regional identity, relationship with nature, geography education, environmental education, place-based education.

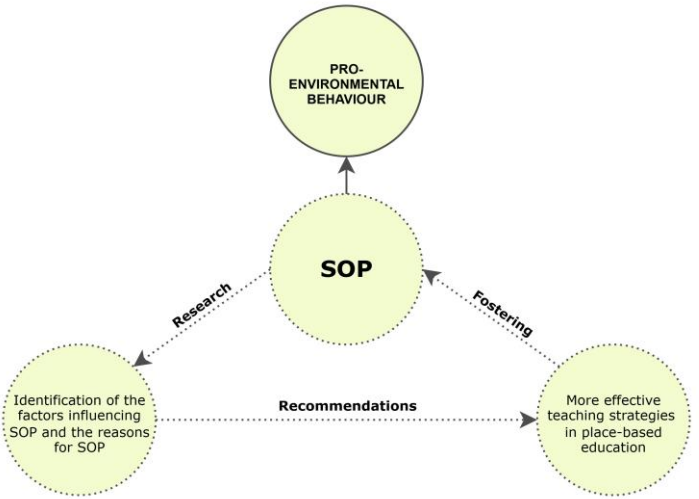
INTRODUCTION

The concept of sense of place (SOP) describes the relationship between people and places. However, research on the concept of SOP in primary education has received limited attention in scholarly literature. Few studies focus on explaining what children's SOP is and how it might matter in education (McInerney et al. 2011), although interest in the topic has been growing recently (see Rubáš et al. 2024b). The relationship with place is a crucial aspect of both geography and environmental education. Numerous studies indicate that SOP fosters pro-environmental behaviour (Cincera et al. 2023; Sedawi et al. 2021; Rioux 2011; Scannell and Gifford 2010) and related attitudes (De Dominicis et al. 2017), which is an important goal of environmental education (Heimlich and Ardoin 2008; Monroe et al. 2008). SOP influences people's desire to stay in a certain place and their attachment to it, motivating them to care for and protect that place (Ramkissoon et al. 2012), which is one of the fundamental assumptions of sustainable behaviour. The importance of engaging with significant places for children is emphasized by Chawla (2007), who highlights that *"people who take action for the environment or choose environmental vocations repeatedly look back to childhood places"* (p. 148).

The need for an internal identification with places is also discussed in the description of the competence *"*Promoting nature*"* within the area of *"*Embodying sustainability values*"* in the document GreenComp: The European Sustainability Competence Framework (Bianchi et al. 2022). A developed relationship with the local region and its places predicts accelerating local-level actions, which is one of the priority action areas of Education for Sustainable Development (UNESCO 2020). Research on the relationship with the local region is closely related to the 11th UNESCO Sustainable Development Goal: Sustainable cities and communities (United Nations 2023).

The above highlights the need to address the concept of SOP in education. Our study presents two possible approaches to its research – through students' favourite places and the reasons for their preferences, and through students' regional identity and the factors influencing it. Identifying these reasons and factors can contribute to the more effective use of teaching strategies in shaping SOP within the framework of place-based education (see Figure 1).

Fig. 1 The importance of SOP research. The diagram illustrates the relationship between SOP and pro-environmental behaviour, highlighting the research process and educational recommendations



Source: Created by the authors

The aim of this article is to identify which places within their local region (Bohemian Paradise in Czechia) fifth-grade students (aged 10–11) develop a positive relationship with and the reasons for this relationship. Another goal is to explore the students' relationship with their local region and to determine how this relationship correlates with other factors, such as their relationship with nature, frequency of going into nature, knowledge of significant places in the landscape, and the students' sex.

These research questions are important because children's favourite places offer valuable insight into how they experience and understand the landscape of their everyday lives. Identifying the places they consider meaningful and the reasons behind these preferences helps clarify how their

relationship with the local region is formed. This knowledge is relevant for geographical and environmental education, as it shows how teachers can meaningfully build on children's experiences. Understanding these relationships supports place-based education, which is most effective when it draws on children's direct encounters with their local environment.

The region for this case study was deliberately selected. The Bohemian Paradise is a unique area within Czechia, characterized by exceptional landscape, natural, and cultural values. It is distinguished by numerous sandstone rock formations and basalt hills of volcanic origin. In 1955, Bohemian Paradise was declared a Protected Landscape Area (PLA), making it the oldest PLA in Czechia. This area is located in northern Bohemia, approximately between the towns of Turnov and Jičín (Figure 2).

Fig. 2 The location of the Bohemian Paradise PLA

Source: Created by the authors using QGIS software

THEORETICAL FRAMEWORK

The research of primary education students' SOP

The concept of SOP refers to the subjective and emotional bonds that people form with places (Cresswell 2004). Tuan (1974) suggests that perceiving the environment is encountering the world through the senses. Perception creates emotional bonds, attitudes, values, meanings, and symbols that help individuals make sense of their surroundings. Although there is still some inconsistency in understanding the concept's significance, and there are multiple approaches to conceptualizing it, our research adheres to the multidimensional and overarching construct of SOP.

As previously mentioned, research on the concept of SOP in primary education is not as prevalent as, for example, among university students. However, there is still a considerable number of studies that focus on this concept in children of primary school age. Derr (2002) found that the developing and fostering of SOP of 10–11 year old children is influenced by togetherness in a place with family and friends, the mental well-being that the place provides to children, and activities enabled by a place. The importance of home, family, community, and neighbours for 6–15 year old children is confirmed by Gillespie (2010). Similarly, Martz et al. (2023) found that for 10–14 year old children, significant factors shaping their SOP include familiarity, entertainment, and significant people associated with a particular place. People with whom children spend time are shown to be pivotal for 6–12 year old children (Ergler et al. 2020; Freeman et al. 2023), as well as for 10–12 year olds (Cumming and Nash 2015; Martz et al. 2023). According to Lim and Barton (2010), environmental understanding (i.e., comprehensive and critical understanding of a place), diverse, strong affective relationships with a place, and environmental competence (i.e., knowing how to navigate and engage in a place) influence this process in 11–13 year old children. The influence of the affective domain (feelings, emotions) on the development of SOP of primary school children is corroborated by Simkins and Thwaites (2008); Grimshaw and Mates (2022). Further studies show that repeated activities in a natural setting at forest school sessions (Harris 2021), creating outdoor play activities (Slingerland et al. 2020), as well as creating virtual digital landscapes (Jones et al. 2003), also affect the formation of primary school children's SOP. Research indicates that 9–11 year old children's SOP is positively influenced by place-knowledge learning, knowledge of a locality's heritage, and participation in heritage-based activities (Severcan 2018), cultural meanings, and specific place characteristics (Li and Shein 2023), and learning about local history (Grimshaw and Mates 2022).

In summary, existing research highlights the active role of children in shaping places: children are not passive recipients of space but active makers of meaning who co-construct places through everyday activities, social relationships, and emotional experiences. Children's agency is reflected in how they interact with places and in the competencies they develop within them – for example, environmental competence (Lim and Barton 2010). At the same time, research shows that children's opportunities to co-construct places are shaped by broader cultural, social, and institutional contexts. SOP can therefore be understood as a process emerging at the intersection of children's personal experiences and the socio-spatial structures in which they live. In this regard, the school environment significantly influences the opportunities children have to explore places, experience them, and develop their SOP. In this context, the authors emphasize the positive impact of outdoor education on shaping students' SOP. For example, Heras et al. (2020) found that nature field trips bring mainly emotional and social benefits to students aged 11 to 12 years old. According to Scott and Boyd (2016), learning through ecological fieldwork has a positive impact on the ability

of 9–11-year-old children to write, and to write about science. Harris (2021) found that forest schools play a significant role in the process of developing a relationship with nature and place for children aged 5–11 in the UK. The positive role of forest schools in shaping a SOP of 10–12-year-old children in Australia was also demonstrated by Cumming and Nash (2015).

In addition to the factors influencing the development process of primary school students' SOP (some of which are described above), research also investigates the effects of developed SOP. Studies indicate that developed SOP is reflected in the cognitive dimension: an increase in 5th-grade students' awareness of the relationship between the place, the community, and the political-economic situation (Sedawi et al. 2021); the thinking of 11-year-old children about their hometown and its sustainability issues in a broader perspective (Li and Shein 2023); environmental awareness of 5th-grade students (Lee and Chiang 2016); in the affective dimension: pro-environmental attitudes of 8–14 year old children (De Dominicis et al. 2017); and also in the behavioural (psychomotor) dimension: environmental behaviours of 5th-grade students (Sedawi et al. 2021); involvement in the community of 5th-grade students (Lee and Chiang 2016); participation in community activities and decision-making of 9–11 year olds (Severcan 2018). According to Kelly (2018), developed SOP influences caring for the coastal environment of 7–11 year old children.

Research also shows that children's SOP is a process that develops over time. Little and Derr (2020) point out that children form an internal working model of place attachment based on their previous bonds with places, which subsequently shapes how they experience new places. Past experiences and already established bonds also contribute to the formation of future attachments (Lim and Barton 2010; Little and Derr 2020). The patterns described in the text above – particularly those illustrating how an established SOP influences the cognitive, affective, and behavioural dimensions – may therefore recur and further strengthen throughout children's lives. This represents an important consideration for those involved in shaping children's SOP, such as teachers within the context of education.

SOP in place-based education

Kudryavtsev (2025) states that educators shape participants' SOP, for example, through place-based education. This has been demonstrated by several evaluative studies focused on environmental programs in place-based learning (Cincera et al. 2015). This form of education grounds learning in the local community and environment (Sobel 2005). Key to this is student participation in choosing the theme for place-based education projects, which is also relevant for primary school students (Cincera et al. 2019). These programs also lead to demonstrably positive changes in the local environment (Johnson et al. 2012). The positive influence of place-based

education on primary education students' SOP has also been demonstrated by Li and Shein (2023); Grimshaw and Mates (2022); Lee and Chiang (2016).

According to Sedawi et al. (2021), one of the goals of place-based education is promoting local cultural and ecological sustainability. In this context, strengthening students' SOP must be one of place-based education's primary goals (Ardoin 2006; Kudryavtsev et al. 2012).

The main theoretical framework of our study is the multidimensional construct of the reasons for SOP, based on the literature review by Rubáš et al. (2024b). This construct draws from the most common conceptual foundations in SOP research within geography and environmental education. It assumes that the reasons for SOP may fall into one or more of the following categories: Ardoin's dimensions; Bloom's dimensions; subconcepts of place dependence, place meaning, and place identity.

The authors utilize Ardoin's dimensions of SOP (Sedawi et al. 2021). According to Ardoin (2006), SOP includes examination of biophysical, socio-cultural, political-economic, and psychological dimensions. The biophysical dimension encompasses specific characteristics of a given landscape and particular places. It describes how certain objective properties of the environment influence people's connections with their surroundings. SOP could not exist without a specific environment. The environment provides context, a stage (Basso 1996). Some places may affect individuals more strongly. Steele (1981), for example, describes "strong" places that evoke similar reactions. They have a strong spirit of place that affects everyone who encounters them. The socio-cultural dimension is related to the community associated with a particular place. This dimension is connected to the social meanings created by family and friends surrounding individuals in that place. It also considers cultural elements, customs, and traditions related to the place. The psychological dimension relates to an individual's experience of the place. It includes processes shaping a person's identity depending on the place, focusing on the internal characteristics of the individual and their relationship with the place, such as feelings of well-being in a certain place or a sense of belongingness to a place (Ardoin et al. 2012). The psychological perspective often focuses on identity.

A further conceptual framework of SOP consists of Bloom's dimensions (Li and Shein 2023), formed by educational theories of psychologist Bloom (1956). His taxonomy consists of cognitive, affective, and psychomotor domains of learning. Cognitive dimension: According to Li and Shein (2023), cognitive knowledge has been further distinguished into observation-based perceptual knowledge and thinking-based constructive knowledge (Raymond et al. 2017). Affective (socio-emotional) dimension: During the development of the affective dimension of SOP, stages such as recognizing a place, belonging to a place, identifying with the place goals, depending on a place, involving in a

place, and rooting in a place have been proposed by theories suggested by Hammitt et al. (2009); Shamai (1991). Psychomotor (behavioural) dimension: The “doing” dimension of SOP also occurs over six developmental stages (Li and Shein 2023; Bybee 2013): observation, identifying problems, planning, systems thinking, acting, and problem-solving.

The most common conceptual frameworks of research on SOP in primary geography and environmental education are the sub-concepts of place attachment, place dependence, place identity, and place meaning. These concepts have been utilized, for example, by Harris (2021); Kelly (2018); Cumming and Nash (2015); Derr (2002); Freeman et al. (2023); Grimshaw and Mates (2022); Martz et al. (2023); De Dominicis et al. (2017); Wang et al. (2023); Lee and Chiang (2016) in their research. Place meaning is understood in literature as the symbolic significance attributed to a place by individuals (Kudryavtsev et al. 2012). Different people attribute different meanings to different places. According to Young (1999), these meanings are socially constructed. The authors conceptualize place attachment as an emotional bond between people and places (Davenport and Anderson, 2005), perceiving it as a sense of belonging that gives meaning to life (Proshansky et al. 1983). Authors who deconstruct place attachment into individual sub-concepts (e.g. Jorgensen and Stedman 2001) delineate place identity, and place dependence, which is a certain potential that a place offers to satisfy an individual's needs. Williams and Vaske (2003, 831) define place identity as *“the symbolic meaning of a place, as a repository of emotions and relationships that give life meaning and purpose.”* Thus, places help individuals understand who they really are. In contrast to place dependence, place identity expresses the individual's emotions more. Originally introduced by Proshansky et al. (1983), place identity expresses the degree of an individual's identification with a specific place. Place identity is a broader concept that encompasses various spatial levels of the relationship to place (from local to global). If the place (which is not spatially limited) were understood as the local region of the students, the concept of place identity could be operationalized as the concept of regional identity. The concept of regional identity has become our second theoretical framework.

Regional identity is one of the specific forms of place identity, which directly pertains to the relationship with a region as a geographical and socio-cultural unit. Regional identity is an integral part of every individual's identity. *“It is understood as a set of elements and attributes that characterise and differentiate a given territory from others”* Matlovičová (2024, p. 69). Authors point out that in the Western world, we are moving towards individualization, and personal identity is becoming increasingly important compared to social belonging (Beck and Beck-Gernsheim 2001). High mobility, information technology, among other factors, may contribute to individuals' feelings of rootlessness, leading them to use space more as tourists. However, the process of globalization paradoxically may lead people to strengthen their identity with geographically smaller regions to

which they have emotional ties. These regions often have a more homogeneous history, landscape, and lifestyle (Salazar 1996). Paasi (2003) highlights that in this process, regional identity may gain significance. Paasi (1986) connects the concept of place with an individual's life history, while the region is associated with the collective history of the territory. He points out, however, that in addition to the regional identity of residents, the region also acquires its own identity – thus, the identity or image of the region is formed. Ross (2005) emphasizes the importance of local social relationships for children in a globalized society.

We do not view these diverse theoretical frameworks as epistemologically competing, but rather as complementary perspectives that allow children's accounts to be interpreted from multiple angles. Tuan's phenomenology of place emphasizes lived experience and the meanings attributed to places, while the concepts of place identity, place dependence, and place meaning – developed primarily within environmental psychology – build on this humanistic tradition and offer a more detailed operationalization of SOP. Bloom's taxonomy highlights the educational dimension of developing SOP, which can be viewed as an affective, cognitive, and behavioural component of learning. Ardoin's model contributes by capturing the broader environmental dimensions of SOP. Taken together, these frameworks provide a dialogical synthesis that enables a more comprehensive interpretation of children's SOP.

We also recognize the contribution of feminist and relational theories of place. Following Massey's (1994) conceptualization, place can be understood as an open and dynamic node of social relations, continuously shaped through their interconnections across multiple spatial scales. Such an understanding emphasizes that children's relationship to place emerges within a context of multilayered social interactions and meanings. Feminist and relational perspectives thus allow SOP to be viewed as a process in which individual experience is intertwined with the broader social relations that constitute a given place.

DATA AND METHODS

Our research was guided by three main research questions (RQ), derived from the objectives outlined above: RQ1: What are children's favourite places in their local region?; RQ2: What are the reasons for sense of children's favourite places?; RQ3: How do selected factors influence children's relationship with their local region?

To answer the research questions, a mixed research design was chosen, combining quantitative (a questionnaire with closed-ended items) and qualitative (qualitative content analysis of student texts, focus groups) methods for data collection and analysis. The following steps were taken to

address the research questions. In the first phase of the research, we conducted a content analysis of all 50 textbooks in the educational area “Humans and Their World” for the 4th and 5th grades of primary schools in Czechia, which had a valid approval clause from the Ministry of Education, Youth and Sports, Czech Republic, as of September 6, 2023. These were, therefore, all approved textbooks used for teaching in Czechia during that period. In the textbooks, we searched for specific places located within the Bohemian Paradise PLA. A total of 21 significant places were identified. Subsequently, these places were photographed to be used in the questionnaire.

In the second part of the research, during the first half of 2024, we conducted field research by visiting nearly all primary schools within the Bohemian Paradise PLA or its immediate vicinity (within 2 km of the PLA boundary) that have fifth-grade classes. This included a total of 17 out of the 19 schools. The research involved 257 students, representing 44% of all fifth-grade students attending schools in the area during this period. The sex distribution was 51.8% girls and 48.2% boys. We collected the data with regard to relational ethics and with the understanding that children are not merely sources of data but active makers of meaning. To support this, we visited each school in person, introduced the study to the children, and explained its purpose, the voluntary nature of participation, and the principles of confidentiality. Our interactions with the pupils during these visits were aimed at creating a collaborative atmosphere in which children could feel that their perspectives and experiences were valued. The research at each of these schools lasted one lesson and was conducted as follows:

1) At the beginning of the lesson, students were informed about the research's objective, and it was emphasized that participation was voluntary and anonymous.

2) Students were given a questionnaire (the items are in Table 1) designed to gather the following information: sex; frequency of going into nature with school (item 1); frequency of their own visits to nature (item 2).

3) Students completed six items related to their regional identity. These items were inspired by the Regional Identity Scale 2 (Asún et al. 2018) and adapted for fifth-grade students. Specifically, the items focused on awareness of regional belonging (items 3, 4), identification with the regional territory (items 5, 6), and identification with the regional culture (items 7, 8). Students expressed their level of agreement with these statements using a five-point smiley-face Likert scale (ranging from “strongly agree” to “strongly disagree”).

4) Students wrote answers to the open question: “Which place in the Bohemian Paradise is your favourite and why?” (item 9).

5) Students were given photographs of 21 significant places in the Bohemian Paradise that were mentioned in the textbooks. Their task was to name these places (this helped us assess their knowledge of significant locations in their local region).

6) Students filled out five items regarding their relationship with nature, based on a comprehensive approach that reflects multiple dimensions (Krajhanzl 2010): need for contact with nature (item 10), adaptation to natural conditions (item 11), ethical attitude towards nature (item 12), aesthetic attitude towards nature (item 13), environmental awareness (item 14). Students rated their agreement with these statements on a five-point smiley-face Likert scale, ranging from "strongly agree" to "strongly disagree". We worked with these items separately in the data analysis, not with the average score of all 5 items.

7) At the end of the lesson, semi-structured interviews with students (focus groups) were conducted, aiming primarily to gain a deeper understanding of their responses to the open question.

8) After the lesson, a semi-structured interview with the teacher followed, one of the aims of which was to determine how often students go into nature as part of their education.

Before using the questionnaire in schools, it was piloted with fifth-grade students from a primary school outside the study area. Some originally proposed items were reformulated based on the pilot results. The research was approved by the Ethics Committee of the Faculty of Education, J. E. Purkyně University in Ústí nad Labem (No. 6/2024/01).

Tab. 1 Questionnaire items

Item 1	How often do you go into nature with your school? *(more than once a week – once a week – once a month – almost never)*
Item 2	How often do you go into nature by yourself, with your family, or with friends? *(almost every day – more than once a week – once a week – once a month)*
Regional identity	*Likert scale: strongly agree – agree – neither agree nor disagree – disagree – strongly disagree*
Item 3	I feel that I am part of the Bohemian Paradise.
Item 4	If I ever had to live outside the Bohemian Paradise, I would like to come back someday.
Item 5	I think the landscape of the Bohemian Paradise is the most beautiful in all of Czechia.
Item 6	When I am away from the Bohemian Paradise for a long time, I start to miss its landscape.
Item 7	I am proud to live in a region with the customs, traditions, and cultural events of the Bohemian Paradise.
Item 8	I feel a connection with the people who live in the Bohemian Paradise.
Favourite place	
Item 9	Which place in the Bohemian Paradise is your favourite, and why?
Relationship with nature	*Likert scale: strongly agree – agree – neither agree nor disagree – disagree – strongly disagree*
Item 10 (Nature I)	I prefer to spend every free moment in nature.
Item 11 (Nature II)	I go into nature even in unfavourable weather conditions (rain, frost, heat, etc.).
Item 12 (Nature III)	I feel sorry when animals are harmed.
Item 13 (Nature IV)	I enjoy experiencing nature through different senses (listening to singing birds, observing the sunset, smelling flowers, etc.).
Item 14 (Nature V)	I sort my waste.

Source: Created by the authors, based on the Regional Identity Scale inspired by Asún et al. (2018) and the Relationship with Nature Scale inspired by Krajhanzl (2010)

Children's responses to the question “Which place in the Bohemian Paradise is your favourite and why?” were analysed using inductive content analysis. From the responses, 12 main categories of children's favourite places emerged (Figure 3). When creating the categorization of place types, we drew inspiration from Freeman et al. (2023), but also considered the specifics of the area of interest (see Chromý et al. 2014 for more details). Subsequently, all favourite places mentioned by children were assigned to one of these categories. The frequencies of individual categories were quantified and expressed using descriptive statistical methods (Figures 3, 4).

Reasons for sense of children's favourite places were evaluated through deductive content analysis. We examined whether the responses included reasons from all main conceptual frameworks of the SOP research in primary education, which were identified through systematic literature review

(Rubáš et al. 2024b): 1. place meaning, place identity, place dependence; 2. socio-cultural dimension, biophysical dimension, psychological dimension; 3. cognitive dimension, socio-emotional (affective) dimension, behavioural (psychomotor) dimension (Figure 5).

Responses of students to closed-ended questions (measuring the level of agreement with given statements) used to assess students' regional identity (6 items) and their relationship with nature (5 items) were analysed using the SPSS software. The questionnaire's reliability for assessing students' regional identity was evaluated using Cronbach's alpha (Cronbach 1951): $\alpha = 0.74$. Items used to examine students' relationship with nature were evaluated individually.

For comparing two groups, a t-test was used, while for comparing multiple groups, ANOVA was employed, followed by the Tukey post-hoc test. Correlations were assessed using Pearson's correlation coefficient calculation.

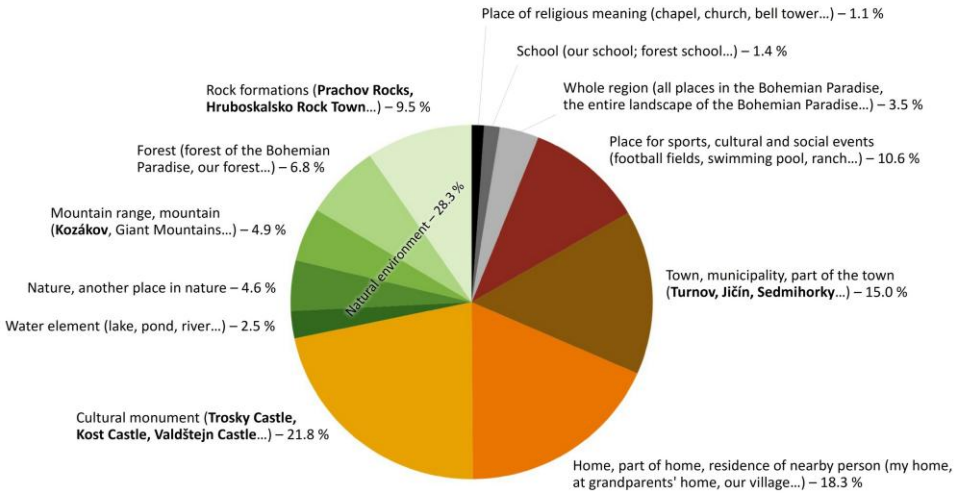
RESULTS

Types of children's favourite places

Overall, students listed 367 favourite places. The representation of each type of place (a total of 12 categories) was quantified (Figure 3). It is evident that the most common favourite places among students are from the category of natural environments. These mainly included rock formations, which are typical for the landscape of Bohemian Paradise. The next category is cultural monument. Among specific places, students most frequently mentioned Trosky Castle and Kost Castle, i.e., the places they knew the most. Another frequent category is home. This is followed by specific towns (most commonly mentioned is Turnov), followed by places of sports, cultural, and social events.

Figure 4 shows that students who go outdoors more frequently (more than once a week; Mmore) report having a greater number of favourite places compared to students who go outdoors less often (once a week or less; Mless). This is true for 7 out of 8 categories of favourite place types, although the differences within individual categories are not significant. Significant differences exist in the total number of students' favourite places (regardless of categories). The following applies: Mmore = 1.54, SD = 1.05; Mless = 1.26, SD = 0.89; t = -2.28; p = 0.012; d = -0.28 (M = average number of favourite places per student; SD = standard deviation; t = test criteria; p = p-value; d = Cohen's d).

Fig. 3 Types of children's favourite places (n = 367). Specific favourite places mentioned most frequently (more than five times) are highlighted in bold and shown in the photographs.




Trosky Castle (29x)


Kost Castle (14x)


Turnov (10x)


Prachov Rocks (10x)


Sedmihorky (9x)


Kozákov (9x)

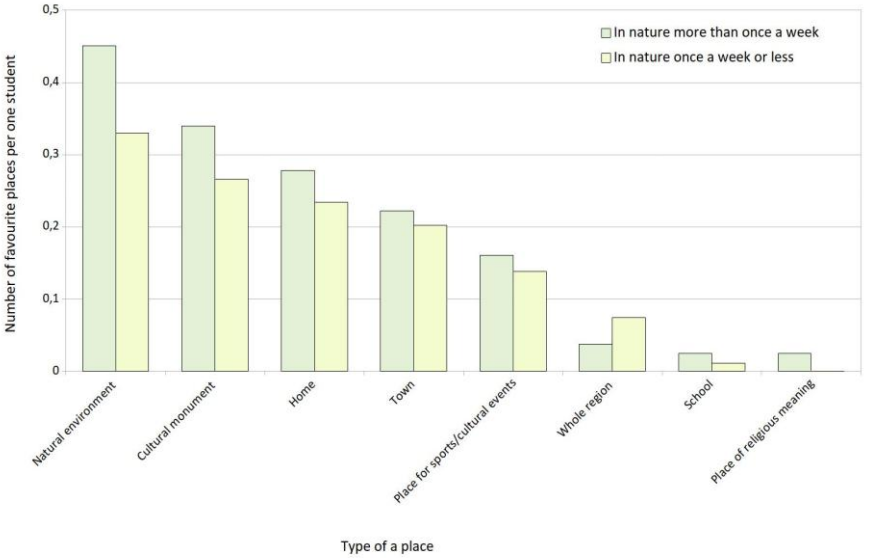

Valdštejn Castle (8x)


Hruboskalsko Rock Town (7x)


Jičín (7x)

Source: Authors' calculations based on research results; photographs by the authors

Fig. 4 The number of favourite places per student depending on the students' frequency of being in nature



Source: Authors' calculations based on research results

Reasons for sense of children's favourite places

The results of the deductive content analysis of students' open responses confirm the multidimensional nature of children's SOP. Reasons for the sense of children's favourite places were found in all categories of the most common conceptual frameworks of SOP, which are: 1. sub-concepts of place dependence, place identity, place meaning; 2. Ardoin's dimensions; 3. Bloom's dimensions – see Figure 5, which is elaborated in the following text.

Fig. 5 Typical examples of reasons for sense of children's favourite places which are related to the individual categories. The sex of the author of the quote is mentioned after the children's statement (B: boy; G: girl)

Source: Authors' calculations based on research results

Reasons from the category of place dependence highlight the importance of places in fulfilling children's needs – places allow children to engage in activities such as pursuing their favourite sport (B: *"Kozákov because the skiing there is great.";* B: *"Žabakor Pond – I enjoy ice skating on it in winter.";* B: *"The Turnov Football Stadium because football is my life."*), going on trips (B: *"In nature, in the forests – I go there for hikes, for trips."*), providing opportunities for refreshments (B: *"Kost Castle because they have good food there."*), or gathering forest fruits (B: *"Besedice Rocks – we go there for blueberry picking; Hruboskalsko – mushrooms grow there."*). Reasons from the category of place meaning emphasize the significance of a particular place, which can be attributed to its prominent position (G: *"Trosky because when I go on trips, I often see Trosky."*; G: *"The Vyskeř Chapel – it is wonderfully visible in a beautiful place."*), its history with a strong story (e.g., the expulsion of Germans from Jabloneček after World War II), or the symbolic meaning ascribed to

the place (G: *"Jičín – the town of fairy tales."*; B: *"Turnov because it is the heart of the Bohemian Paradise."*). Reasons from the category of place identity refer to a child's identification with a place, often stemming from strong memories (G: *"Trosky Castle and its surroundings because it's so nostalgic there."*). It can also involve instances where a child feels good in a place without being able to articulate the reasons (G: *"Turnov, in the park by the pond. I feel comfortable there and have good memories of that place. Often when I walk through that place, I smile even though I don't know why."*). This category closely resembles the psychological dimension. Within this dimension, we identified reasons that encompass processes shaping a person's sense of identity with place (G: *"Turnov – I feel at home and safe there. Not far from there is a tree where I like to rest. It's a place where bad thoughts easily slip away and there's a pleasant silence."*; G: *"Jičín – I always feel good there."*). Reasons from the category of the biophysical dimension describe certain objective properties of the environment that influence a child's connection to the place (B: *"The whole Bohemian Paradise because of its beautiful nature."*; B: *"Probably Branžež because there are beautiful forests, excellent trails and ponds, and there are many animals in the woods."*; G: *"The forest because it is peaceful and constantly surprises me. Many animals live there; it is useful. It is beautiful."*). Within the socio-cultural dimension, children refer to reasons for the popularity of places that are determined by relationships with other people or traditions associated with the place (G: *"The Sedmihorky Rock Town because I experienced a lot of adventures there with my class 5.C and other people from Sedmihorky…"*; G: *"My home: I have family and friends here, and there's an interesting culture."*; G: *"The Sedmihorky Camp because I have had many experiences there, both with my school and with my parents and friends."*; B: *"Alšovice – good people are there."*; B: *"I'm connected to the village Rakousy. There are a lot of acquaintances there who know me and like me."*). Closely related to this dimension is the socio-emotional (affective) dimension, within which respondents refer to the feelings and sensations a child experiences in a place. For example, children mentioned pleasant sounds (G: *"Our forest around the house – the air is pleasant there, and I like the sound there."*), scents (G: *"Forests – I like the smell of the forest."*; G: *"Woods for a walk – I love the scent of the forest."*), or beautiful views (G: *"Trosky because there are beautiful views."*; G: *"Hamštejn Lookout Tower – it is beautiful there, and when the sun is shining, it feels magical."*). Reasons for the popularity of places from the cognitive dimension are linked to the knowledge acquired at or about a place (G: *"Where I live – I know where everything is."*; B: *"Valečov Castle and the surrounding forest because I know this place by heart…"*; G: *"Trosky – when I was little, I learned the letter R there."*). A child might, for instance, favour a medieval castle due to an interest in medieval history (B: *"I like Trosky because I'm interested in their history."*) or a museum because they are interested in the exhibitions (B: *"The museum in Turnov – sometimes I enjoy the exhibitions and the mountaineering museum there."*). Reasons from the category of the behavioural (psychomotor) dimension express how a place influences a child's behaviour and actions (G: *"I*

definitely love our garden. With my family, in spring, summer, winter, and autumn, we take good care of it: we plant flowers, pick apples…"). This dimension also represents what a child can do in a given place (B: *"The forests and rocks of the Bohemian Paradise because there's always something to play with, like soldiers or building little houses and bunkers from sticks."*) or what the child learned in the place in the past – within this dimension, not in terms of knowledge (see the previous dimension), but in terms of psychomotor skills (G: *"The village of Železnice – I learned to ride a bike and to skate there."*). This dimension is closely linked to (and in some cases overlaps with) place dependence, thus closing the conceptual circle of reasons for the popularity of places.

Some children's statements simultaneously reflect multiple dimensions of SOP, further illustrating the interconnectedness and inseparability of these conceptual categories. Examples of such children's quotations are presented in Table 2. This selected quotation aptly illustrates the breadth of meanings that children attribute to places.

Tab. 2 Reasons for sense of children's favourite places – an example of a coding table. An individual child's statement may fall under multiple dimensions, reflecting the multidimensional and overlapping nature of children's SOP. The sex of the author of the quote is mentioned after the children's statement (B: boy; G: girl)

Examples of children's statements	Subconcepts			Ardoin's dimensions			Bloom's dimensions		
	Place dependence	Place meaning	Place identity	Psychological	Biophysical	Socio-cultural	Socio-emotional (affective)	Cognitive	Behavioural (psychomotor)
"Prachov Rocks – I love hiking and I like how densely packed those rocks are." (G)	●				●				
"This school – it's the place where I most often hang out with my friends." (B)	●					●			
"Kozákov Hill because I enjoy searching for semi-precious stones – jaspers, agates, chalcedonies, crystals, and amethysts." (B)	●				●			●	●
"My favourite place in the Bohemian Paradise is Skalák because I used to go there with my school and I know my way around some parts of it and I have nice memories of Skalák." (B)			●	●		●		●	

Source: Authors' calculations based on research results

The factors influencing children's relationship with their local region

Regional identity of students and their relationship with nature and knowledge of significant places in the region

The correlational analysis (Table 3) indicates a significant relationship between students' regional identity and their relationship with nature (a significant relationship was found between regional identity and all five observed dimensions of the relationship with nature). The higher the students' regional identity, the stronger their relationship with nature. However, the observed correlations are relatively weak. Additionally, a weak correlation was found between students' regional identity and their knowledge of significant places in their local region.

Tab. 3 The relationship between students' regional identity, their relationship with nature, and their knowledge of significant places in the region (Pearson correlation coefficient)

	Dimension of relationship with nature					Known places
	Nature I	Nature II	Nature III	Nature IV	Nature V	
Regional identity	0.33	0.16	0.24	0.27	0.17	0.15
	< 0.001	0.012	< 0.001	< 0.001	0.005	0.02

Source: Authors' calculations based on research results

The influence of sex on students' regional identity

Girls exhibit significantly greater regional identity (t-test). The following applies: Mgirls = 4.10, SD = 0.53; Mboys = 3.80, SD = 0.68; t = 3.90; p = < 0.001; d = 0.49 (M = mean; SD = standard deviation; t = test criteria; p = p-value; d = Cohen's d).

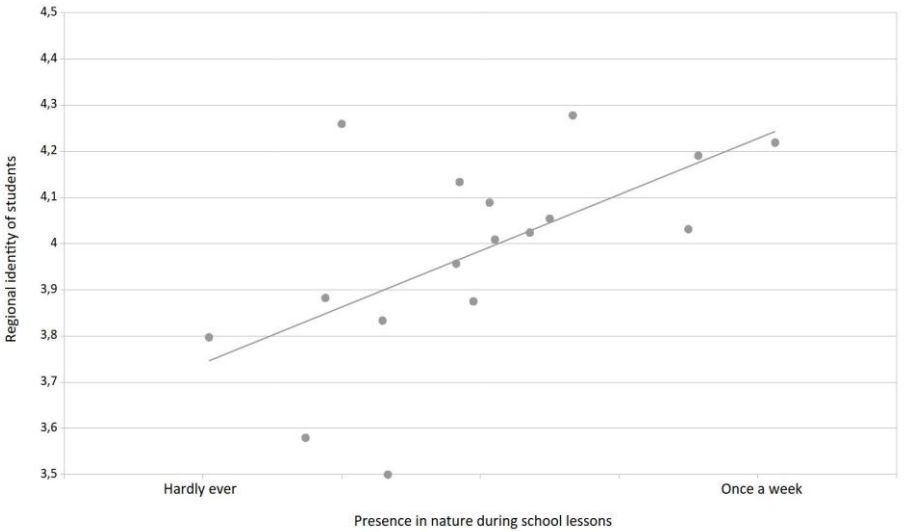
Influence of the frequency of students' presence in nature during their school lessons on their regional identity and their knowledge of significant places in the region

Data on how often students go into nature during their school lessons was related to the average regional identity of students in the given class. The results are displayed in Figure 6. The Pearson correlation analysis indicated a significant large positive relationship between students' presence in nature during their school lessons and their regional identity ($r(15) = .596$, $p = .012$).

Similarly, a relationship was found between students' presence in nature during their school lessons

and their knowledge of significant places in their local region. Results of the Pearson correlation indicated that there is a non-significant medium positive relationship, ($r(15) = .458$, $p = .065$).

Fig. 6 Dependence of the average regional identity of students in individual classes on the frequency of their presence in nature during their school lessons



Source: Authors' calculations based on research results

The influence of students' frequency of being in nature on their knowledge of significant places in the region and their regional identity

Furthermore, we investigated how students' knowledge of significant places in the region and their regional identity depend on the frequency of their presence in nature. Based on a questionnaire survey, students were divided into the following four groups: they go into nature - a) almost every day; b) more than once a week; c) once a week; d) once a month. We found a relationship between the frequency of going into nature and students' knowledge of significant places. The more often students spend time in nature, the more significant places they know in their local region. A more detailed analysis of this relationship is provided in Table 4. Subsequent Tukey's post hoc test demonstrated a significant difference between the group of children who go into nature most frequently and the rest. Specifically (1 = once a month, 2 = once a week, 3 = more than once a week, 4 = almost every day): known places (1:3 $p = 0.035$, 1:4 $p = 0.001$). We did not find a significant effect of the frequency of students' presence in nature on their regional identity.

Tab. 4 The influence of students' frequency of being in nature on their knowledge of significant places in the region and their regional identity. Significant differences (ANOVA) were found in the items highlighted in bold (F = test criteria; p = p-value; Eta2 = effect size)

	F	p	Eta^2
Regional identity	1.34	0.26	0.016
Known places	**5.18**	**0.002**	**0.058**

Source: Authors' calculations based on research results

DISCUSSION

In the research of specific favourite places of students (RQ1), it was found that the majority of these favoured places fall into the categories of natural environment (or into one of its subcategories), cultural monuments, and home or residence of a nearby person. Similar results were also found in the study by Derr (2002), who investigated the favourite places of 10–11-year-old children in New Mexico. She found that these places predominantly belonged to the category of "friends' or families' homes", followed by "natural places". Ergler et al. (2020) explored the SOP of 5–12-year-old Samoan children. The results of their study indicate that the favourite places of these children include locations for sports activities, natural settings, meeting places with peers, and family gatherings. In contrast, according to Martz et al. (2023), the favourite places of children aged 10–14 years include community centres; residences; entertainment venues; food establishments; and travel destinations. It is therefore clear that students' favourite places are influenced by the quality of the local environment in which they grow up. Furthermore, the results of our research show that students' favourite places in the category of cultural monuments often coincide with the places they know the most. Specifically, Trosky Castle was among the most frequently favoured places by students out of all specific locations and was also the most known place (recognized by 87% of students). Moreover, Trosky Castle was the place to which students in their region attributed the greatest significance (Rubáš et al. 2024a).

Answers to RQ2 were not quantified. The aim was to highlight that reasons for children's SOP indeed appear in all categories of the most common conceptual frameworks used in research on SOP in primary education (Rubáš et al. 2024b). This opens up space for research that would quantify the representation of individual reasons. Examples of reasons provided in Figure 5, Table 2 and in the related section illustrate the deep relationships that children form with places. It is important to investigate students' reasons for the popularity of their places also in the context of the results of retrospective research on significant places from childhood (Tani 2016). Chawla (2007)

emphasizes that people who work to protect the environment or educate others about it most often attribute their commitment to environmental protection to special childhood places and people.

In our research, we perceive places as specific spatial entities (which may have varying scales) to which students develop a relationship. On a regional scale, this place is the local region of the students, where they attend school and more or less identify with this region. In contrast, Charlton et al. (2014, p. 169) see *"space as formed by the coming together of different trajectories"*. In this perspective, where place and identity are perceived as processes, identity linked to place is therefore dynamic. Nevertheless, we consider research into the current state of regional identity of students and their relationship with places necessary, as the research reveals factors related to the regional identity of students (RQ3) and which can thus potentially be addressed within the educational process. It shows that students who spend more time in nature have significantly greater knowledge of significant places within the local region than those who spend less time in nature. Students who spend more time in nature also reported more favourite places, in nearly all categories. Previous research suggests that this attachment carries over into adulthood. Mousazadeh (2022) reports that the length of residence in a given place (in his study, the immediate surroundings of the Danube River) strengthens inhabitants' relationship with that place. A deeper connection of 6–11-year-old children with places can, according to Brindal (2023), be effectively supported through the use of nature connection practices in programs that focus on outdoor learning. Our research further shows that there is a significant relationship between the regional identity of students and their relationship with nature. This significant relationship holds for all examined aspects of the relationship with nature. Similarly, De Dominicis et al. (2017) found that SOP fosters pro-environmental attitudes of 8–14-year-old children. According to Lee and Chiang (2016), increased SOP of 5th graders is associated with a higher level of their environmental awareness. Human-nature connectedness is a pathway to sustainability (Barragan-Jason et al. 2022). Within environmental education, it is assumed that the development of students' SOP should be deepened through practical, outdoor learning (Sedawi et al. 2021). The results of our research show that students in classes where outdoor activities are more frequent have a greater regional identity and knowledge of significant places in the region than students who do not go outdoors or do so infrequently as part of their schooling. This finding is in line with the Framework of Nature Education (Kudryavtsev 2025), which assumes that one of the nature education outcomes is SOP. Similarly, De Dominicis et al. (2017) state that field-based environmental education programs have a positive impact on place attachment in primary education students. This finding supports, among other things, a greater implementation of fieldwork into primary education, which is also backed by the results of previous research (Heras et al. 2020; Scott and Boyd 2016; Harris

2021; Cumming and Nash 2015). The result of our research, which shows that students' regional identity increases with the frequency of their presence in nature during school lessons but not with the frequency of their time spent in nature during their free time, aligns with Carson's (1965, p. 45) claim: *"If a child is to keep alive his inborn sense of wonder ... he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement and mystery of the world we live in".*

Furthermore, we found that there is a significant relationship between the regional identity of students and their knowledge of significant places in the region. Thus, there appears to be a correlation between children's SOP and the cognitive domain. Similarly, increased SOP of 6th–8th graders has shown improvement in their science teaching and learning (Lim and Barton 2006). Sedawi et al. (2021) demonstrated that increased SOP of fifth graders increases awareness of the relationship between place, community, and the political-economic situation. Likewise, Li and Shein (2023) found that students with higher SOP think about their hometown and its sustainability issues in a broader perspective.

The results of our study show that 5th-grade girls exhibit significantly greater regional identity than 5th-grade boys. The same finding arises from research conducted on students in Czechia and Slovakia (in preparation for publication). This research involved 8,653 students from 5th to 9th grade. 5th to 6th-grade girls showed greater regional identity than boys of the same age. Interestingly, these values reverse with increasing age. 7th to 9th-grade girls, on the other hand, exhibited lower regional identity than boys of the same age. Similarly, Cincera et al. (2023) revealed in their research that Czech 6th-grade girls showed greater place attachment than 6th-grade boys, but Czech 8th to 9th-grade girls had lower place attachment than boys of the same age. Magalhães and Calheiros (2015) come to the same conclusion. Their research results show that the place identity and place dependence of 11–18-year-old girls are lower than those of boys of the same age. However, the literature addressing sex differences in place attachment is not consistent. Some studies have found no gender differences in this bond (Scannell and Gifford 2010).

LIMITATIONS

This study has several limitations. Although we aimed for comprehensive representation of the entire population of 5th-grade students, complete representation was not achieved, and the sample selection may be a limitation that restricts the interpretative power of the obtained results. Another limitation of the study is that individual dimensions of relationship with nature (Krajhanzl 2010) were represented by only one item each. Furthermore, it should be noted that some questions may have been abstract for students, even though they were reformulated for their age

category. Additionally, it might have been challenging for some students to express the frequency of their visits to nature, and this frequency may also vary depending on the seasons. The categorization of favourite places inspired by Freeman et al. (2023) can also be discussed, as it may not always be straightforward, primarily because places can be hierarchical, meaning that one place comprises multiple sub-places. However, our effort was always to assign a place to the category to which it is most closely related. Similarly, in the case of reasons for sense of children's favourite places, it is evident that many reasons for the popularity of places can be assigned to multiple categories, and the boundaries between them often overlap. This is also why we did not quantify these categories in this case. The aim is to highlight how rich and diverse children's SOP is.

We recognize that children's SOP is not uniform but is shaped by social and gender differences, diverse life experiences, opportunities for mobility within the region, and institutional factors such as the school environment. However, these aspects are only partially captured in our research. In line with recent European studies (e.g. Webber et al. 2024), which demonstrate that children's SOP is sensitive to broader social conditions, these influences represent an important challenge for future research.

We also acknowledge that our approach is predominantly quantitative and may appear positivistic, as children's voices are partially translated into predefined categories. Although we sought to treat the open-ended responses as a dialogical element, our interpretation captures this perspective only to a limited extent. Future research could employ more participatory or co-creative approaches that allow children to play a more active role in co-constructing the interpretation of their relationship to place.

CONCLUSION AND RECOMMENDATIONS

Despite its limitations, the results of our research provide valuable insight into the issue of children's SOP. Addressing students' relationship with their local region and the places within it is more relevant today than ever before. We are living in a time when children face the negative consequences of environmental change, which can adversely affect their well-being (Thompson 2021) and even lead to environmental grief (Cunsolo and Ellis 2018). At the same time, students are confronted with the question of how they can respond to these changes and contribute to sustainable development through their actions (see UNESCO Sustainable Development Goal 11: Sustainable cities and communities; United Nations 2023). In order for students to be willing to act in favour of the environment, it is essential for them to acquire competencies in areas such as "Embodying sustainability values", which includes the competency of "Promoting nature". This requires children to develop meaningful relationships and identify internally with the natural

environment and with specific places (Bianchi et al. 2022). In this context, research on students' relationship with their local region becomes even more significant.

Overall, our research brings important findings in the area of children-environment interaction, which can be applied within place-based education and may enhance the effectiveness of this teaching in the process of shaping students' SOP:

1) Students who spend more time in nature as part of their school activities show a stronger identity with their local region compared to students who go into nature less frequently. Students who go outdoors more often have a greater number of favourite places than those who go outside less often. Based on these findings, we recommend greater implementation of fieldwork in primary education.

2) Students often form deep and meaningful connections with places, and these connections have been identified across all observed dimensions of SOP. Based on this, we recommend that educators comprehensively consider all of these dimensions when planning and implementing place-based education.

3) Places that students are well familiar with are often also their favourite places. Therefore, we recommend that teachers use these places within place-based education to develop students' key competencies.

4) Students with a stronger regional identity have a greater connection to nature, which is also one of the dispositions for pro-environmental behaviour. Based on this, as well as the key findings mentioned above, we recommend that the development of SOP be emphasized in place-based education.

Given that the correlations, although statistically significant, were modest in magnitude, the educational implications outlined above should be interpreted cautiously and viewed as suggestive rather than strongly predictive. Nevertheless, the patterns consistently point toward the importance of outdoor experiences and familiarity with local places in shaping children's regional identity. These findings highlight the nuanced and multifaceted nature of children's SOP and underline the value of providing opportunities for direct and meaningful engagement with local environments.

Beyond curricular implications, the results also remind us that children inhabit their regions through emotions, memories, and imaginative practices. Their attachments are not merely educational outcomes but lived experiences shaped by care, curiosity, and everyday mobility.

Our findings also raise a number of additional questions that future research could focus on (e.g.,

What is the effectiveness of developing SOP when utilizing all or only some dimensions of SOP?). We recommend that greater attention be given to the concept of SOP in primary education, as the SOP concept is one of the effective tools for the development of environmentally responsible behaviour of children, thus contributing to sustainable development as one of the main goals of contemporary education (UNESCO 2020).

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