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This is the final peer-reviewed author's accepted manuscript (postprint) of the following publication:

Published Version:

Russo, G., Ceciliani, A. (2024). Exploring the involvement of Italian primary and secondary school teachers in related Outdoor Education and Scouting activities: Findings from a Survey. JOURNAL OF ADVENTURE EDUCATION AND OUTDOOR LEARNING, 24(4), 671-684 [10.1080/14729679.2023.2211279].

Availability:

This version is available at: <https://hdl.handle.net/11585/924781> since: 2024-03-05

Published:

DOI: <http://doi.org/10.1080/14729679.2023.2211279>

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Journal:	<i>Journal of Adventure Education & Outdoor Learning</i>
Manuscript ID	RAOL-2022-0088.R2
Manuscript Type:	Original Article
Keywords:	questionnaire, teaching methodology, teaching style, outdoor learning, exploratory factor analysis

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Exploring the involvement of Italian primary and secondary school teachers in related
Outdoor Education and Scouting activities: Findings from a Survey

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Abstract

Outdoor education is an important part of school curricula. However, in some countries, teachers express fears and perplexities regarding its implementation, as they do not feel ready. Outdoor activities, which are related to the Scouting movement in some countries, provide some benefits: psychophysiological, psychosocial, social, and pedagogical. This paper investigates whether Italian preschool and primary school teachers are involved in Outdoor Education and Scouting activities, in what way school teachers employ such activities, and how they are associated with student cooperation and personal care. We hypothesized that preschool teachers would be more willing to become involved in Outdoor Education and Scouting activities than primary school teachers. In addition, when the sample was divided into Outdoor Education and Regular Teachers, we hypothesized that scores for the former would be higher regarding all the survey items, compared with those for the latter group (see Table 2). Results did not reveal differences between the preschool and primary school teachers in all survey items. However, our results did indicate differences between Outdoor Education and Regular Teachers in each item except for item 11. When teachers receive appropriate instruction and teaching tools from their universities, their students' schooling experiences and skills are likely to improve.

Keywords: questionnaire; teaching methodology; teaching style; outdoor learning; exploratory factor analysis

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Introduction

Outdoor activities have been included in the school curriculum for many years in European countries (e.g., Norway, Scotland, Finland, and Sweden), and now, in Italy too, this practice is increasingly being seen as essential for pupils’ entire development (Frost and Sutterby, 2017; Marchant et al., 2019). In countries which are fairly new to this type of activity, such as Italy, the implementation of outdoor education (OE) sparks enthusiasm, but also creates fears and perplexities; teachers feel attracted to the strategies promoted by OE, but are not completely ready to engage in them (Antonietti et al., 2020; Guerra et al., 2020). This was especially true during and immediately after the COVID-19 pandemic period when physical distancing and outdoor activities were essential for the mitigation of infection (Papaioannou et al., 2020; Quay et al., 2020).

OE developed in several countries for a variety of reasons. In Scandinavian countries, as well as in Scotland, OE was encouraged for geographical and political reasons, in order to increase wealth and improve the leisure time of the people (Higgins, 2002). Lately, OE, as a type of out-of-school learning, has become part of students’ learning processes in several Scandinavian countries (i.e., Fägerstam, 2014). In Anglo-Saxon countries as well as in Italy (Vescovi, 2012), OE grew from the Scout movement (SCT, Ashby [1987]). Scouting activities usually engage participants in adventurous activities with the goal of enhancing their social skills such as respect, caring for themselves and others, and caring for the environment (Lugg, 2004; Fägerstam, 2014). Programs developed according to the principles of OE and SCT appear to provide benefits in the psychological context (e.g., attention, memory, and reflection), the social context (e.g., self-sufficiency, self-esteem, self-confidence), and the educational context (e.g., general knowledge and academic achievement), offering considerable opportunities for child development (Agostini et al., 2018; Becker et al., 2017; Monti et al., 2017; Purc-Stephenson et al., 2019; Raney et al.,

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2019; Raustorp et al., 2012; Waite et al., 2016; Fägerstam, 2014). Additionally, OE activities could promote healthy behavior. Children who are given the opportunity to practice OE are more physically active and this could consequently lead to an improvement in physiological aspects such as blood pressure, cholesterol levels, and bone density, and to a reduction in obesity (Kneeshaw-Price et al., 2013). In the past three decades, in order to better understand the cause-and-effect relationship between OE and a plethora of outcomes such as psycho-social skills, physical skills, and academic achievement, a series of reviews and systematic reviews has been carried out (Becker et al., 2017; Bowen and Neill, 2013; Cason and Gillis, 1994; Gillis and Speelman, 2008; Gustafsson et al., 2012; Nielsen et al., 2016). Two of the most recent (i.e., Becker et al., 2017; Purc-Stephenson et al., 2019) highlighted an improvement in several skills such as outdoor living, personal and leadership qualities, self-confidence, self-esteem, a sense of community, gaining new environmental knowledge, and having fun. In addition, a recent scoping review performed by Remmen and Iversen (2022) analyzed the development of outdoor education in northern countries (e.g., Norway, Sweden, Denmark, and Finland) from several points of view (e.g., teachers' perspective, well-being, and cognitive learning). Even though the reported investigations are mainly qualitative and or quasi-experimental, teachers report positive experiences in terms of communication and relationship with students (see Barfod and Bentsen 2018, 2018; Fägerstam 2014, 2014 and Mygind et al. 2019, 2019). These findings provide interesting insight into the need to develop school programs integrated with outdoor education activities in which different school subjects such as physical education, mathematics, science, and arts are performed in natural and cultural landscapes (Fägerstam, 2014; Bentsen et al., 2009; North et al., 2022). Examples of these curricula are "English Schooling", the "Forest School", and "Education Outside the Class" known as "*udeskole*" in Scandinavian countries (e.g., Denmark, Finland, and Sweden; Norðdahl and Einarsdóttir, 2015; North et al., 2022; Remmen and Iversen, 2022; Williams-Siegfriedsen, 2017). However, in some European countries (e.g., Spain, Hungary, Serbia, and Croatia),

even if teachers believe in the importance and effectiveness of outdoor activities, they usually encounter obstacles, such as lack of knowledge, lack of time, lack of funding, and the lack of suitable places to develop these outdoor activities (Borsos et al., 2022, 2018; Cengelci, 2013; Zink and Boyes, 2006). A similar situation occurs in Italy, where teachers are not fully prepared to employ these practices while attempting to maintain a vertical continuity from preschool to elementary school (Ceciliani, 2018). Thus, if, on the one hand, national policy-makers and teachers understand the importance of OE activities, but on the other hand they acknowledge the difficulty in organizing this type of activity, this means that, in some countries (e.g., Italy), OE is only marginally employed in pedagogical programs.

The present study

The present study investigates how Italian preschool and primary school teachers employ OE and SCT activities, in what way teachers get involved in OE and SCT, and how these activities are associated with students’ cooperation and personal care. We hypothesized a greater willingness on behalf of Italian preschool teachers compared with Italian primary school teachers to employ OE and SCT activities. We assumed that this would be due to the different environments in which preschool and primary school teachers operate. The preschool environment is usually more open, and activities are less organized compared with those within the primary school environment. Consequently, the teacher’s personal qualities such as character, knowledge, and training background provide the possibility to operate differently. Thus, we hypothesized that preschool teachers would score more points in each question of the questionnaire compared to primary school teachers (see Table 2). In addition, we hypothesized that, regardless of the environment of activity (preschool or primary school), teachers who reported that they were aware of, and regularly used, OE and SCT methods would be more willing to employ less structured activities (e.g., free and spontaneous play) and more outdoor activities (e.g., outings into

the woods). Furthermore, given the greater resourcefulness of OE Teachers, we hypothesized that they would be more engaged in the promotion of activities in partnership with local authorities, the promotion of students' personal care and personal hygiene, and the involvement of student-oriented methodologies, in contrast with teachers who are not keen to employ such inclusive and collaborative methods (see Table 2 for a complete view of the questionnaire items).

At the same time, given the novelty of the questionnaire, we conducted an Exploratory Factor Analysis (EFA) to uncover possible latent variables to be employed in the data analysis and in possible future research, and to analyze the consistency of the questionnaire.

Methods

Participants

A total of 173 participants filled out the survey. However, five participants did not reply to certain items that were also essential to categorize the teacher (i.e., items 1, 2, 3, or 4 or a combination of them); therefore, they were removed from the analysis. The preschool teachers numbered 93, while 75 primary school teachers participated. Participants were invited to fill out the questionnaire electronically (e.g., through text message, VoIP, and/or email). The age reported by 85 of the participants ranged between 24 and 64 years old. The teaching experience was reported by 76 participants: 21 participants reported having fewer than 5 years of teaching experience; 13 participants reported having teaching experience of 5 to 10 years; 15 participants reported having taught for between 11 and 15 years, while 27 participants reported more than 15 years of teaching experience. Ninety-four participants revealed the region where they were teaching. The majority of them were in the Emilia-Romagna region (73 participants; see Table 1 for detailed information about the sample). The research was approved by the bioethics committee of the University of Bologna, and conducted in accordance with the principles

outlined in the Declaration of Helsinki.

Survey

We created a survey to analyze some aspects of OE and SCT related to teachers’ and schoolchildren’s behavior (see Table 2). Items 1, 2, 3, and 4 investigated whether the teachers were familiar with OE and SCT. Furthermore, it served to divide the sample in order to analyze the possible differences between OE Teachers (OET) and Regular Teachers (RT). Items 5, 6, 7, and 8 were related to teachers’ behavior in terms of organizing outdoor activities, while items 9, 10, and 11 were related to the cooperation among children and to the involvement of student-oriented teaching methodologies (Mygind, 2007) and/or Learner-Initiated Styles (Mosston and Ashworth, 1986). The questionnaire was developed through Microsoft Forms, and was made available on the same platform. Each participant filled out the questionnaire individually by clicking on the link provided by the researchers. Participants were asked to respond to each item on a 5-point Likert scale from "not at all" to "a lot".

Procedure

Prior to the commencement of the survey, participants read an information sheet detailing the study objectives and signed an informed consent form. Subsequently, participants replied to some personal questions such as their date of birth (not compulsory), their gender (compulsory), the type of school in which they taught (i.e., preschool or primary school), how many years they had been teaching (not compulsory), and the region to which they belonged (not compulsory).

Data analyses

Data analyses were performed through R Software (R Core Team, 2021) using the RStudio framework (RStudio Team, 2020). Descriptive analysis, such as correlations among survey items, was performed to analyze the interdependence among the variables.

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We also computed Cronbach's α , through "ltm" package (Rizopoulos, 2006), to measure the internal consistency and reliability of the survey. We also performed an Exploratory Factor Analysis (EFA, "psych" package, Revelle, 2022) to analyze possible latent variables of the questionnaire and determine whether the variables were suitable to explain our aims. We checked the feasibility of EFA by analyzing the correlation matrix (see Table 3), computing the Kaiser-Meyer-Olkin (KMO) and the Bartlett sphericity test. Altogether, two EFAs were performed; the first EFA encompassed all items; the second EFA was run without items 1, 2, 3, and 4. MANOVAs for non-parametric data were computed, using the "NPMV" package (Burchett et al., 2017), to analyze the differences between preschool and primary school teachers (the "school teacher" factor), and between OE teachers and regular teachers (the "teacher" factor). In the former analysis, the possible differences between preschool and primary school teachers in each item were analyzed, and for each factor that emerged from the EFA. In the latter analysis, the possible differences between OETs and RTs were analyzed from items 5 to 13 and the factors identified from EFA. For each factor, the sums of each component item were calculated and used as dependent variables. Moreover, to divide the sample into OET and RT, the sum of the first four survey items was totaled. Then, participants were divided according to the median (Median = 11 points). Teachers with a score above the median were considered OET; those with a lower score, RT. Whenever necessary, non-parametric post-hoc analyses were performed by means of the Kruskal-Wallis test to locate significant differences between the groups.

Results

Cronbach's α test

Cronbach's α was computed on the 168 responses, revealing a high internal consistency ($\alpha = .82$) and reliability among the survey items ($n = 13$).

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Correlation analysis

A Pearson correlation analysis was performed to analyze the correlation among the survey items (see Table 3; the magnitude of the correlation is also indicated visually using a gray scale; the darker the gray, the higher the correlation). The correlation analysis indicated that item 2 was well correlated with items 3, 4, 5, 6, 7, and 8. A small correlation was found when item 2 was correlated with items 9, 10, 11, 12, and 13. Item 2 showed a strong correlation with items 4, 5, 6, 7, 8, and 10. However, the correlation of item 2 with items 1, 3, 9, 11, 12, and 13 was small. Item 3 was well correlated with items 4, 5, 7, 12, and 13. Moreover, the analysis showed that item 3 was correlated with items 6, 8, 9, 10, and 11. Item 4 correlated well with items 1, 2, 3, 5, 6, 7, 8, 10, and 12; however, the correlation coefficient of item 4 with items 9, 11, and 13 was small. Item 5 was well correlated with items 1, 2, 4, 6, 7, 8, 9, and 10, whereas the correlation was small with items 2, 11, 12, and 13. Item 6 was well associated with items 11, 3, 4, 5, 7, 8, 9, 10, 12, and 13; however, only a small correlation was found between item 6 and item 11. A robust association was found when item 7 was correlated with items 1, 2, 4, 5, 6, 8, 9, 10, 12, and 13. The association was small between items 7 and 3, and between items 7 and 11. Item 8 showed a good linear relationship with items 5, 6, 7, 9, 10, and 12. However, the coefficient correlation was small when item 8 was correlated with items 11 and 12. Item 9 was well correlated with items 2, 4, 5, 6, 7, 8, 10, 11, 12, and 13. However, the association was small when correlated with items 1 and 2. Item 10 showed a good correlation with items 2, 4, 5, 6, 7, 8, 9, 11, 12, and 13, whereas the correlation was small with items 1 and 3. The analysis revealed that item 11 correlated only with items 9 and 12, but the coefficient was small. However, item 12 was correlated with items 3, 4, 6, 7, 8, 9, 10, 11, and 13. Item 13 was correlated with items 3, 6, 7, 8, 9, and 12. With the remaining items, item 13 revealed a small correlation. The correlation analyses revealed a reasonable correlation among items 1, 2, 3, and 4. Furthermore, the analysis reported satisfactory correlations among all questionnaire items except for items 9, 11, 12, and 13. However, the results showed that

these items might not necessarily be related to OE and SCT.

Exploratory Factor Analysis

EFA on 13 Items. Before performing the KMO test, we checked the matrix correlations and none of the correlations were more than 0.80 (see Table 3). Thus, all items were included in the subsequent analyses. The KMO analysis revealed that the Measure of Sampling Adequacy (MSA) was middling (MSA = .79; see Table 4 to check the MSA for each item). Furthermore, the Bartlett sphericity test rejected the null hypothesis ($\chi^2(78) = 722.20, p < .0001$) which meant that the items of the questionnaire were uncorrelated with each other. Therefore, it was possible to identify the latent structures within the questionnaire items. The Eigenvalues and the Parallel analyses suggested that the number of factors to take into account was 3. Accordingly, we conducted a factor analysis with three factors and with a *promax* rotation. The analysis revealed that three factors were not sufficient to explain all items of the questionnaire ($\chi^2(42) = 70.34, p = .004$). So we ran the EFA with four factors and the results demonstrated that these were sufficient to explain the items of the questionnaire ($\chi^2(23) = 21.81, p > .05$). In Table 4 the EFA results, such as "uniqueness", for each item are also reported. According to the latter EFA, Factor 1 loaded items 1, 2, 5, 6, 7, and 8; Factor 2 loaded items 3 and 4; Factor 3, meanwhile, loaded items 9, 11, 12, 10, and 13. Figure 1 shows the results of the EFA. Furthermore, Cronbach's alpha was computed for each factor to test its internal consistency. Cronbach's alpha for Factor 1 was $\alpha = 0.80$, for Factor 2 it was $\alpha = 0.86$, while for Factor 3 the Cronbach's alpha was $\alpha = .059$. It was not possible to compute Cronbach's alpha for Factor 4 because it loaded only one item. The EFA indicated that Factor 1 encompasses the items related to activities performed outdoors and the employment of OE activities (e.g., free and spontaneous play outdoors, outings into the woods); Factor 2 is related to the Scouting movement, Factor 3 is related to teachers' educational approaches and to students' personal care and hygiene; Factor 4 is related to

the knowledge of OE principles. Given the results of the present EFA, and in order to analyze the difference between OETs and RTs, in the next section, we performed another EFA, removing items 1, 2, 3, and 4.

EFA on 9 Items. We performed an EFA that excluded items 1, 2, 3, and 4. The Measure of Sampling Adequacy performed through the KMO test was meritorious (MSA = .82; see Table 5 to check the MSA for each item). Even in this case, the Bartlett sphericity test rejected the null hypothesis($\chi^2(36) = 410.01, p < .0001$). Differently from the previous EFA the Eigenvalues and the Parallel analyses suggested that the number of factors to take into account was 2. Therefore a factorial analysis with two factors and with a *promax* rotation was conducted. The analysis revealed that two factors were sufficient to explain all items of the questionnaire ($\chi^2(19) = 24.28, p > .05$). Table 5 also reports the uniqueness index. According to the Factor Analysis, Factor 1 loaded items 5, 6, 7, and 8 while Factor 2 loaded items 9, 10, 11, 12, and 13 (see Figure 2 to check the results of the EFA). Cronbach's alpha for Factor 1 was $\alpha = 0.81$, while Factor 2 Cronbach's alpha was $\alpha = 0.63$. The EFA, similar to what was found in the previous EFA, indicated that Factor 1 is related to outdoor experiences while Factor 2 is related to teachers' educational approaches and students' personal care and hygiene.

Non-parametric analysis: Preschool Teachers *vs.* Primary School Teachers

Non-parametric MANOVA analysis of the single factor "school teacher" for each item was nonsignificant ($F(4.83, 674.65) = 2.02, p = .08$). However, the MANOVA analysis with EFA factors as dependent variables revealed the single factor "school teacher" was significant (ANOVA F type analysis: $F(2.87, 470.57) = 3.09, p = .03$; Wilks Λ : $F(4, 163) = 3.34, p = .014$). However, the non-parametric post-hoc analysis showed nonsignificant differences between preschool and primary school teachers for Factors 1, 2, and 3 ($\chi^2(1) = 3.29, p = .07, M_{preschool\ t} = 10.50, SE = 0.34$ points *vs.* $M_{primary\ school\ t} = 9.60, SE = 0.36$ points; $\chi^2(1) = 0.01, p > .05, M_{preschool\ t} = 4.60,$

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$SE = 0.22$ points *vs.* $M_{primary\ school\ t} = 4.76$, $SE = 0.30$ points; $\chi^2(1) = 0.04$, $p > .05$, $M_{preschool\ t} = 18.13$, $SE = 0.31$ points *vs.* $M_{primary\ school\ t} = 18.20$, $SE = 0.37$ points, respectively). In contrast, Factor 4 revealed that preschool teachers seemed to have more knowledge regarding OE principles compared with primary school teachers ($\chi^2 = 9.33$, $p = .002$; $M = 3.73$, $SE = 0.11$ points *vs.* $M = 3.13$, $SE = 0.15$ points).

Non-parametric analysis: OE Teachers *vs.* Regular Teachers

A non-parametric MANOVA revealed that the single factor "teacher" was significant (ANOVA F type analysis: $F(5.51, 910.85) = 13.92$, $p < .0001$; Wilks Λ : $F(9, 158) = 4.92$, $p < .0001$). The non-parametric post-hoc analysis showed significant differences between OETs and RTs in all the survey items (see Table 6 to check the statistical details and differences between OETs and RTs). Specifically, OETs reported that their students spend more time outdoors than RT students, with physical activity often being performed outside the gym. OETs organize more school trips into the woods; the time devoted to spontaneous, free outdoor play is greater for OETs' students, who cooperate more when compared with RTs' students. In addition, OETs are also more likely to discuss the education program with their students. Furthermore, OETs seem to be more likely to analyze the social and cultural reality of the school compared with RTs. OETs tend to collaborate more with local associations and authorities. Item 11 was weakly significant ($\chi^2(1) = 3.02$, $p = .08$; OET: $M = 4.02$, $SE = 0.10$ points *vs.* ST: $M = 3.80$, $SE = 0.10$ points); personal hygiene and care seem to be only slightly affected by teaching styles. The MANOVA performed on EFA Factors (i.e., Factors 1 and 2) revealed that the single factor "teacher" was significant (ANOVA F type analysis: $F(1.77, 293.27) = 29.50$, $p < .0001$; Wilks λ (2.0, 165.00) = 21.79, $p < .0001$). Non-parametric post-hoc analysis on Factor 1 revealed a higher score for OETs compared with STs ($\chi^2(1) = 26.76$, $p < .0001$; OETs: $M = 11.24$, $SE = 0.34$ points *vs.* STs: $M = 8.82$, $SE = .032$ points). Also, post-hoc analysis on Factor 2 revealed a higher score for OETs compared RTs ($\chi^2(1) = 24.97$; OTEs:

$M = 19.27, SE = 0.28$ points *vs.* ST: $M = 16.91, SE = 0.34$ points). In general, the results showed that OETs obtained higher points for each question of the survey compared with RTs with the exception of Item 11 (see Table 6). The analysis of Factors 1 and 2 highlighted similar results to each item analysis.

Discussion

In the present investigation, we analyzed the influence of teaching methodologies on behavioral and learning aspects. In particular, our attention was focused on how, and in what way, Italian preschool and primary school teachers are involved in OE and SCT activities, and how the OE and SCT activities are associated with students' cooperation and personal care. We expected a greater involvement of OE activities among preschool teachers compared with primary school teachers because the former usually operate in less structured environments. In addition, when comparing OETs and RTs, we hypothesized that OETs would be more involved in outdoor activities and pupils would be more involved in the learning process through the adoption of student-oriented teaching methods (Mygind, 2007; Mosston and Ashworth, 1986). Our findings suggest that there are no noteworthy differences between preschool and primary school educators. Nonetheless, we observed that OETs tended to obtain higher scores for the survey questions compared to their RT counterparts.

Preschool *vs.* primary school teachers

Contrary to our hypothesis, our results reveal no significant differences between preschool and primary school teachers. This could indicate that the environment can be easily changed in order to promote outdoor activities, and planning strategies are similar in the two contexts. Thus, these results suggest that further progress can be made by strategically planning competence development or by implementing educational programs that specifically focus on enhancing knowledge of OE. However, the analysis performed with the factors identified by the EFA demonstrated that preschool teachers seem to know

more about the principles of OE. In practical terms, this discrepancy is due to the two non-parametric MANOVA models employed. When considering the MANOVAs with all items, the power of item 1 was insufficient to match up to the significance of the model. This occurred when we reduced the variables with the EFA.

OE Teachers *vs.* Standard Teachers

Our results indicate a larger gap between OETs and RTs. OETs tend more to use the spaces outside the school, promoting free outdoor activities and structured physical activities outdoors, compared with RTs. Furthermore, OE teachers seem to apply more student-oriented teaching methodologies and/or Learner-Initiated Styles (Mygind, 2007; Mosston and Ashworth, 1986). This means that OETs are more likely to share their educational goals and to involve the students in this process than RTs. This aspect is highly significant because, according to a recent systematic review on children with special needs (Benton and Johnson, 2015), the inclusion of these educational goals in the development of educational programs apparently has a positive effect on the learning process and can enhance students' awareness. Another point that emerged from the survey is that OETs are willing to organize outings in the forests, and the amount of free play allowed is greater for students of OETs than for RTs. The benefits of going out into the woods are well known; children can learn more about nature, the connection with nature is enhanced, and mood and well-being are improved (see Legge, 2022; Ward, 2018 and Harvey et al., 2020). Regarding the amount of free play, this is an essential aspect that adults have to consider. In general, however, teachers are less likely to allow free play because it can sometimes be seen as wasted time. However, there is evidence that spontaneous free play is positively related to mental and physical health and is an essential part of the educational process (for a review, see Hewes, 2014). Thus, the results suggest that adults should promote these activities. At the same time, they should be vigilant against possible dangerous drifts such as too many risky and hazardous activities.

The EFA

The results of the Exploratory Factor Analysis revealed that the questionnaire was able to investigate the aims of the study. Furthermore, we found four latent variables into which the items can be categorized. A set of items (i.e., items 2, 5, 6, 7, and 8) was related to outdoor practice (i.e., Factor 1), while another set of items (i.e., items 9, 10, 11, 12, and 13) was related to the cooperation and socio-cultural aspects (Factor 3). Factor 2, on the other hand, was related to the questions about Scouting (i.e., items 3 and 4). The 9-item EFA highlighted two main factors, one related to outdoor practice and the second related to cooperation and sociocultural aspects. Furthermore, the EFA results suggest that in future studies, these sets of questions can be employed, except those referring to Scouting (i.e., items 3 and 4). Again, the results highlighted that, even in the case of Italy, the Scouting movement is associated with OE, but teachers may not link the Scouting movement to OE.

General discussion

At first sight, these results may not appear particularly surprising, but in countries that do not have a strong tradition of OE, such as Italy, they are important because they point out that if teachers have the opportunity to learn these methodologies, it is very likely that they could implement them in their educational programs. However, we have to consider that the previously described obstacles are also present in the Italian school environment (Borsos et al., 2022, 2018; Cengelci, 2013; Zink and Boyes, 2006). Thus, even if we did not analyze aspects regarding the teachers' motivation, we can speculate that if they are highly motivated and trained, they can succeed in overcoming the lack of adequate space and instruments as well as the lack of school organization. It is also reasonable to assume that during their undergraduate or postgraduate studies, OETs have learned how to master the key concepts of OE and, consequently, they have been able to develop paths related to its implementation. Personal hygiene and personal care, however, seem to be marginally affected by teachers' methodologies; both types of teachers seem to

give great importance to this essential aspect. However, even if the results regarding the OETs are promising, we cannot rely on teachers' motivation and determination. Government agencies and local authorities should support educators in order to facilitate the development of OE methods (Ray and Jakubec, 2018). As reported by Borsos et al. (2022), it is also possible that teachers are not fully satisfied with the training received during their studies. Consequently, university professors could take this into account in order to improve their syllabi. Another point that should be considered is the rethinking of school programs in countries that are in circumstances similar to those in Italy. As suggested by Barfod and Bentsen (2018), and as already occurring in Northern European countries with the "*udeskole*" and the "*Forest school*" (Bentsen et al., 2009; Waite et al., 2016; Fägerstam, 2014), OE should be a central feature of a school curriculum and not merely an afterthought. This could provide several benefits; for instance, if teachers promote a school curriculum similar to the "*udeskole*", this could also increase students' physical activity level. Consequently, it should be possible to fulfill the objectives suggested by the WHO regarding physical activity in countries in which this target has not yet been broadly reached (see WHO, 2018 for detailed information concerning the level of physical activity across European Countries).

Limitations

This complex study is not without its limitations. The first is the inclusion of a non-standardized survey. However, the internal consistency among the items is high ($\alpha = 0.82$), and the EFA shows promising but improvable results (see, for instance, uniqueness of items in Tables 4 and 5). With some changes, the questionnaire could become an important instrument with which to study the aspects investigated in this research. Moreover, this research is an initial investigation of Italian teachers' behavior, and the influence such behavior has on Italian students. As outdoor activities are not broadly developed in Italy, these results could be useful for future investigations. In

particular, mixed methods could be involved in future research to understand the phenomenon better. Specifically, semi-structured interviews could be conducted, and several confounding factors, such as age, experience, and the academic institution in which teachers pursued their studies, could be analyzed. For instance, older, more experienced teachers are likely to be less inclined to adopt innovative activities such as those involving OE when compared with young teachers. This could be due to the sociocultural status in Italy regarding teaching methods, and the fact that older teachers are usually less inclined to change their teaching methods (Abbiati, 2014). In addition, as a possible mediator, it may be worthwhile to analyze the university itself that conferred the degree. University programs can vary between institutions, so it is plausible that certain universities may place a greater emphasis on OE than others. Another possible limitation that warrants further investigation is the region in which teachers work, which may be closely linked to the university they attended. The majority of the teachers recruited in this experiment came from the Emilia-Romagna region ($n = 73$), or they preferred not to state the region in which they were teaching ($n = 74$; see Table 1), making an in-depth analysis of this potential mediator impossible. However, it is plausible that the involvement of OE and SCT activities varies across Italian regions; thus, a more profound analysis of the relationship between the region and teaching methods should be undertaken (Cornoldi et al., 2010; D’Amico et al., 2012; Costa and Coleman, 2013).

Conclusion

The findings of this study suggest that teachers who can effectively manage the principle of OE are more likely to implement and develop activities that align with this approach. Furthermore, it can be assumed that students’ academic experiences and skills could be enhanced if universities and other tertiary institutions provide teachers with appropriate instructions and educational tools. However, the teachers’ skills and willingness to undertake these activities may be essential for their implementation and

development. In countries such as Italy, given the considerable positive aspects of OE, a number of educational programs should be improved to enable more teachers to develop OE methodologies and put them into action. Nevertheless, even when excluding the structural obstacles, a strong motivation combined with solid knowledge of OE principles is necessary. The difficulties that may be encountered when developing these methods are significant and relevant. Therefore, governments and local authorities should undertake to deal with structural, financial, and to some degree, organizational issues.

Declaration of competing interest

The authors declare to have no known conflict of interest to disclose.

Ethical guidelines

The study received ethical approval from the University of Bologna bioethical committee.

Acknowledgments

We would like to thank Rubina Tosi for her help with participant recruitment, consent, and enrollment.

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Table 1
The region in which participants live/work

Region	Number of participants
Apulia	2
Calabria	2
Emilia - Romagna	73
Lazio	1
Liguria	2
Lombardy	3
Piedmont	2
Sicily	3
Tuscany	4
Veneto	2
NA	74

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Table 2
Survey Items

n	Questionnaire items
1	Are you familiar with the principles of Outdoor Education?
2	Do you usually use Outdoor Education methodologies?
3	Are you familiar with the principles of Scouting?
4	Do you usually use Scouting methodologies?
5	How much school time per day do your students spend outdoors?
6	How much time is planned for physical activity to be performed outdoors?
7	Are outings to the woods planned during the school year?
8	How much time is devoted to spontaneous, free outdoor play?
9	During spontaneous play, how much do children cooperate with each other?
10	Are your students involved in educational choices?
11	Are your children independent in terms of hygiene and personal care?
12	Are you familiar with the social and cultural reality which surrounds the school?
13	Are your activities planned outside the school in collaboration with local associations and local authorities?

Table 3
Pearson's correlation analysis among questionnaire items. Correlation coefficients are reported in the upper part, p-values in the lower part of the table

Item	1	2	3	4	5	6	7	8	9	10	11	12	13
1	1	0.47	0.32	0.29	0.36	0.25	0.29	0.33	0.17	0.2	0.05	0.17	0.2
2	.00	1	0.15	0.3	0.38	0.31	0.31	0.38	0.19	0.31	-0.02	0.2	0.05
3	.00	.05	1	0.77	0.21	0.2	0.24	0.13	0.11	0.2	0.12	0.25	0.26
4	.00	.00	.00	1	0.38	0.36	0.29	0.21	0.16	0.25	0.07	0.25	0.19
5	.00	.00	.01	.00	1	0.62	0.4	0.67	0.29	0.35	0.06	0.19	0.12
6	.00	.00	.01	.00	.00	1	0.49	0.53	0.42	0.41	0.14	0.32	0.21
7	.00	.00	.00	.00	.00	.00	1	0.47	0.25	0.25	0.05	0.28	0.28
8	.00	.00	.11	.01	.00	.00	.00	1	0.26	0.37	0.03	0.21	0.2
9	.03	.01	.16	.04	.00	.00	.00	.00	1	0.43	0.26	0.34	0.27
10	.01	.00	.01	.00	.00	.00	.00	.00	.00	1	0.16	0.3	0.13
11	.53	.76	.11	.34	.47	.07	.51	.66	.00	.03	1	0.3	0.2
12	.03	.01	.00	.00	.01	.00	.00	.01	.00	.00	.00	1	0.26
13	.01	.49	.00	.01	.12	.01	.00	.01	.00	.10	.01	.00	1

Table 4
Measure of Sample of Frequency for each item in 13-item EFA.

Item	1	2	3	4	5	6	7	8	9	10	11	12	13
MSA	0.79	0.78	0.60	0.65	0.80	0.87	0.90	0.81	0.83	0.87	0.74	0.88	0.80
Uniqueness	0.00	0.68	0.36	0.00	0.28	0.39	0.67	0.37	0.59	0.67	0.79	0.64	0.79

Table 5
Measure of Sample of Frequency for each item in 9-item EFA

Item	5	6	7	8	9	10	11	12	13
MSA	0.76	0.84	0.86	0.79	0.83	0.86	0.74	0.85	0.79
Uniqueness	0.29	0.40	0.67	0.38	0.57	0.67	0.80	0.66	0.83

Table 6
Pairwise comparisons between OETs and RTs for each survey item

OET			RT			df	χ^2	p value
Item	M (points)	SE	M (points)	SE				
5	2.91	0.09	2.38	0.10	1	17.36	<.0001	
6	2.84	0.10	2.19	0.11	1	20.00	<.0001	
7	2.10	0.13	1.49	0.10	1	11.53	.001	
8	3.38	0.10	2.76	0.11	1	15.32	<.0001	
9	3.93	0.08	3.57	0.11	1	6.26	.01	
10	3.32	0.11	2.61	0.13	1	17.65	<.0001	
11	4.02	0.10	3.80	0.09	1	3.60	.058	
12	4.20	0.08	3.67	0.11	1	13.37	.0003	
13	3.78	0.10	3.27	0.12	1	10.77	.0001	

Factor Analysis

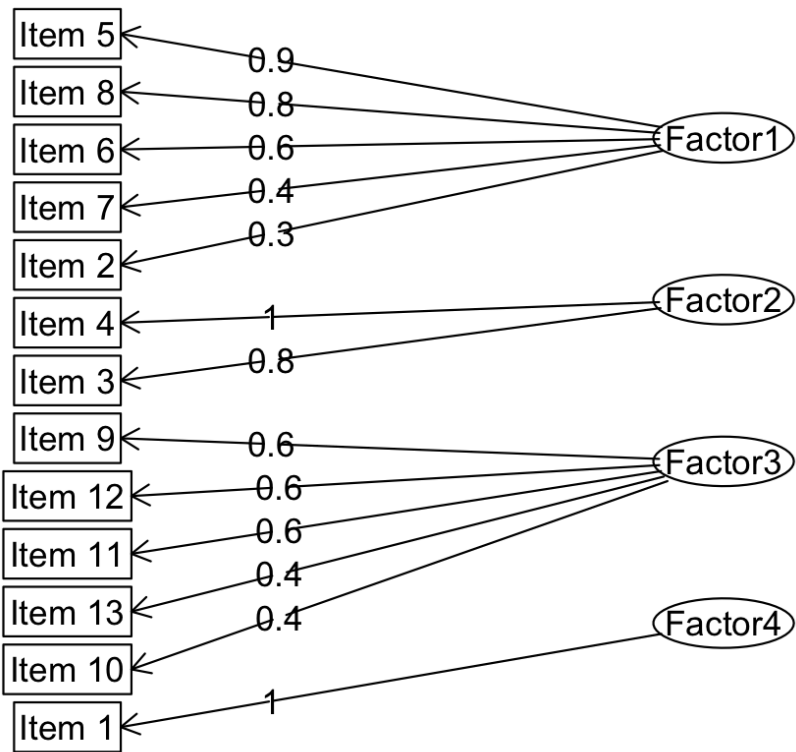


Figure 1. Results of the exploratory factor analysis of the entire questionnaire.

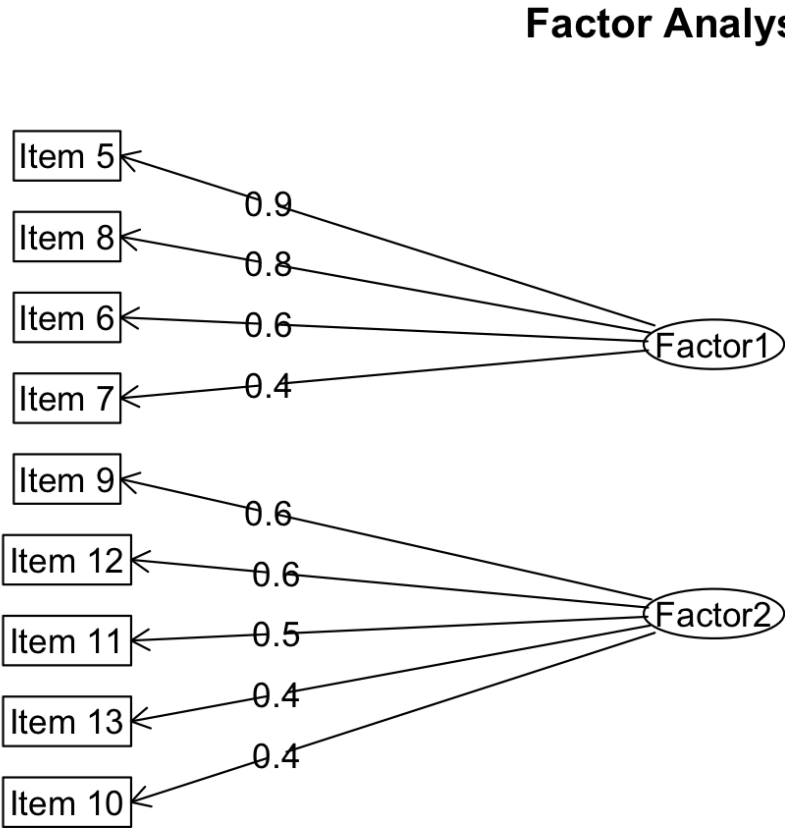
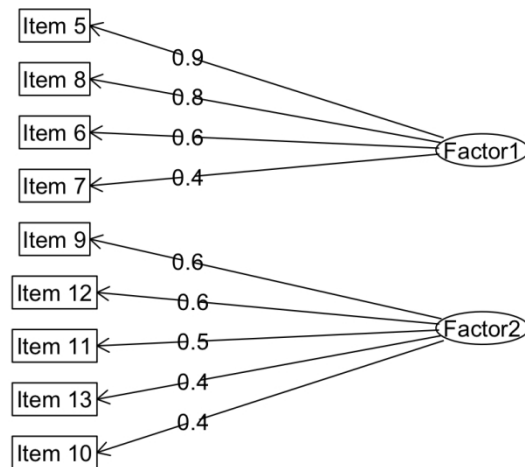


Figure 2. Results of the exploratory factor analysis without items 1, 2, 3, and 4

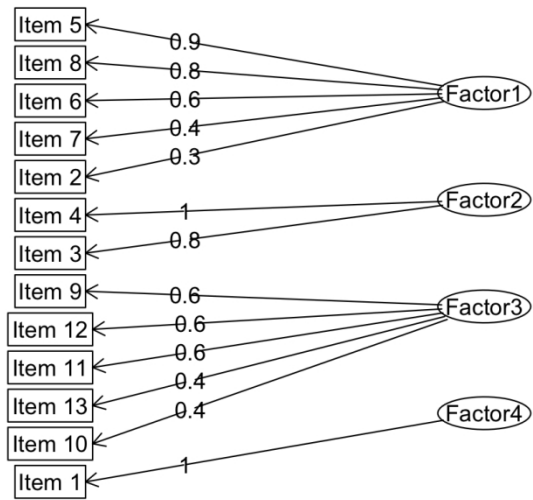
Factor Analysis



Results of the exploratory factor analysis without Items 1, 2, 3, and 4.

543x335mm (72 x 72 DPI)

Factor Analysis



Results of the exploratory factor analysis of the entire questionnaire.

543x335mm (72 x 72 DPI)