



**UNIVERSITÀ DI PARMA**

**UNIVERSITA' DEGLI STUDI DI PARMA**

**DOTTORATO DI RICERCA IN  
" PSICOLOGIA "**

**CICLO XXXIII**

**The Meanings of Space in Early Childhood Education and Care Centers:  
the point of view of adults and children in Italy, Belgium and Lithuania.**

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Anni Accademici 2017/18 – 2019/2020



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## Introduction

The last few decades have seen a growing interest in the role of physical environment in early childhood education and care (ECEC). In addition to *who* implements the educational action and *what* the contents of education are, it has become increasingly important *where* education takes place. Alongside staff (*who*) and programs (*what*), the physical environment of a center (*where*) is in fact recognized as a critical aspect through which ECEC quality could be implemented (Melhuish, 2016).

Attention to the role of physical space in educational settings began in the United States in the '60s: the first studies investigated specific features of space, such as crowding, color, openness, warmth or light, trying to define the optimal factors for good child development and learning (David & Weinstein, 1987; Weinstein, 1979). Since then, research has developed and the importance of educational settings has become more and more evident: the quality of the physical environment has shown to be linked to some developmental outcomes in the early years, by influencing behavioral, cognitive and emotional aspects (Evans, 2006; Guo, Justice, Kaderavek, & McGinty, 2012).

Attention to ECEC spaces has increased even more so since the Italian pedagogue and school psychologist Loris Malaguzzi, founder of the Reggio Emilia approach, defined physical environment as the "third teacher": he assumed that, besides family and education professionals, features and organization of spaces could convey educational meanings and affect children's growth in the early years (Edwards & Gandini, 2018; Malaguzzi, 1987). Similarly, the Italian architect Mario Botta has defined the construction of a school building as "the first pedagogical act" (Botta, Crepet, & Zois, 2007, p.73), highlighting the need to consider the physical spaces in which education takes place, even before constructing them. In line with these visions, many authors have stressed the importance of the physical dimension of the educational environment, which seems to affect and be affected by the pedagogical approach: they assume that the physical environment either enables or hinders potential actions, orienting children's experience and conveying psychological meanings.

The relationship between the physical environment and developmental outcomes could be considered in the light of some classic psychological and sociological theories that have investigated the underlying mechanism in the relation between space, perception and behavior. Piaget & Inhelder (1948)

distinguished between the perception of space and the representation of space: the former provides shapes while the latter creates meanings for these shapes. In this vision, space provides opportunities for action, and meanings are created from action. Similarly, Tuan (1977) argued that the physical features of space influence the perception and representation of reality: they define the context in which people can act and live, just as language gives structure to thought. Soja (1996) distinguished between quantitative spatial features (Firstspace), the psychological interpretation of space (Secondspace) and a third dimension in which the first two are connected through action (Thirdspace). All of these theories share the idea that space has a role in the definition of reality, supporting the presence of a relationship between the physical environment and psychological development.

Of course, the educational environment also includes psychological and social dimensions, in addition to the physical one, and the three are intertwined and interdependent (Gifford, 2014). For example, some authors observed that the presence of writing materials (physical dimension) was positively and significantly associated with children's literacy development (psychological dimension), but only in contexts in which teachers provided encouragement and support (social dimension) and not by itself (Mashburn, 2008). Other authors highlighted the process of constructing space through the everyday social interaction of children and teachers within the physical setting (Vuorisalo, Rutanen, & Raittila, 2015). Some comparative studies investigating ECEC centers in different countries focused on the extent to which the use of space and materials (physical dimension) is closely related to the pedagogical approach of the teachers (psychological dimension) and the relationship between the teachers and the children (social dimension) (Prochner, Cleghorn, & Green, 2008).

The theoretical model underpinning the present research project develops within a constructivist approach, based on the idea that the understanding and knowledge of the environment in which people live is co-constructed through experiencing things and reflecting on those experiences. In this vision, the perception of space is fundamental. This approach is consistent with a specific idea of space that is conceived not as something that subsists independently of interactions and individual behaviors, but as representative space, that is co-constructed and negotiated through the meanings and the behaviors of all those who inhabit it (Strong-Wilson & Ellis, 2014; Vuorisalo et al., 2015). According to this vision, the research project takes into account the specific points of view through which the space and the environment are experienced,

distinguishing the children's perspective from that of the adults' (parents, teachers, assistants and coordinators) in order to compare and integrate the different emerging meanings. The meanings of adults and children consist of ideas and representations but also beliefs and emotions elicited by the environment: such meanings guide actions, inspire feelings and influence relationships, affecting the personal experience of people in educational space and therefore contributing to its co-construction (Børve & Børve, 2017; Prochner et al., 2008; Skånfors et al., 2009; Vuorisalo et al., 2015). In addition to the exploration of such meanings in the Italian context, the project extended the investigation to other countries belonging to the wider European context: Belgium and Lithuania. The three countries were considered representative of three main European geographical areas, according to the classification provided by the Multilingual EuroVoc Thesaurus of the European Union (European Union, 2021): Italy belongs to Southern Europe, Belgium to Western Europe and Lithuania to Northern Europe. The comparison between these countries could therefore offer reflections that go beyond the Italian borders, to embrace other European geographical areas, in order to explore similarities and differences in the meanings given to ECEC space.

In Chapter 1, a state of the art on the meanings of space in ECEC centers is provided. A scoping review was conducted with the aim to investigate the relationship between the ECEC centers' spaces and child development, also including children's and adults' perceptions about the physical environment. The review allowed to identify some main issues on the topic and points of reflection from which the research project was designed in order to advance the research. In Chapter 2, the research project is introduced by explaining the theoretical framework and the reflections on the results of the literature review from which it was conceived and describing the studies that constituted it. In Chapter 3, the first study of the research project on the meanings of space in ECEC Centers in adults' experience is presented: it consists of a preliminary study conducted through group interviews and focus groups and a main study conducted through questionnaires. In Chapter 4, the second study of the research project on the meanings of space in ECEC Centers in children's experience is presented: it consists of a preliminary study conducted through drawings and tridimensional models and a main study conducted through drawings and interviews. In Chapter 5, the third study of the research project on the meanings of space in ECEC Centers in three European countries is presented: it consists of a qualitative study with adults conducted through group interviews, in a quantitative study with adults conducted through questionnaires and in a study with children conducted through drawings

and interviews. In the final conclusions, the progress that has been made in understanding the meanings of space in ECEC Centers and future orientations of research are discussed, also providing reflections and suggesting recommendations for researchers, education professionals and policymakers.

## Chapter 1

### State of the art on the meanings of space in ECEC Centers

What do we know so far about the relationship between ECEC physical, environmental and educational issues in early childhood? Many studies have been conducted in relation to the school environment (Choi et al., 2014; Weinstein, 1979), investigating how the physical features of classrooms could enhance or interfere with learning processes. In contrast, less attention has been given to similar issues regarding pre-school ECEC spaces (Amicone et al., 2017). Immediate feedback on this can be obtained by looking at the number of publications on PsycINFO, one of the main databases in psychological issues: entering the keywords “physical environment” and “school”, we find approximately one thousand results, while entering “physical environment” and “preschool” we only find about one hundred. The difference between the two, a ratio of ten to one, suggests that to date research has considered the relationship between environment and educational implications more relevant in school than in pre-school contexts. This could be due to greater interest in the relationship between certain aspects of space and the academic outcomes or learning processes of children (Barrett et al., 2017; Zandvliet & Broekhuizen, 2017). Nevertheless, national and international policies demand more investment in the quality of physical spaces in early childhood to ensure the proper development of children (CDC: National Center for Chronic Disease Prevention and Health Promotion, 2016; OECD: Organization for economic cooperation and development, 2012).

It is useful to highlight how the studies concerning the role of the environment in educational contexts present a large variability in the methods (e.g.: both qualitative and quantitative: interviews, focus groups, questionnaires, tests, observations in one session or pre-post intervention, comparison between different settings) and in the specific aspects of the educational environment considered (e.g.: colors of the walls, height of the ceilings, crowding, indoor or outdoor spaces, existence of natural materials, possibility to withdraw, gender connotation of the arrangements). It would be important to synthesize the variability in the research on the topic: from a scientific standpoint, such an analysis could enable researchers to identify any controversial aspects and discover areas as yet unexplored, on which to conduct future studies. From the application perspective, on the other hand, an analysis of the variability resulting from the research projects conducted on the role of environment in ECEC centers, could lead to the development of good practices for

educational practitioners and to important policy recommendations. Moreover, as far as we know, there are no reviews available in the scientific landscape that analyze, with systematic methods, the different contributions relating to the educational environment in pre-school contexts. Any existing contributions are narrative reviews which do not provide a systematic analysis of studies. In addition, a literature review allows us to identify the relationships that exist between some aspects of the educational environment and children's cognitive, emotional and social/behavioral development.

A meta-analysis wouldn't be appropriate for this research topic because, at the present time, the literature available does not allow us to make certain hypotheses regarding certain relationships between variables that might be verifiable in the studies collected. On the contrary, we believe that the literature on the role of the educational environment still requires an exploratory analysis in order to obtain an exhaustive and systematic framework of knowledge. Moreover, the aim of this review which was to consider a wide typology of peer-reviewed documents (empirical studies, reviews, theoretical articles and case-studies) and it would have been impossible to synthesize all of this literature using a meta-analysis method (Paré et al., 2015). On the basis of the above considerations, a scoping review was conducted. This type of literature review attempts to provide an initial indication of the potential size and nature of literature available on a particular topic. Scoping reviews tend to focus on the breadth – as opposed to the depth – of coverage of the literature (Paré et al., 2015). This detailed analysis will make it possible to indicate fruitful future directions of research, and identify relevant knowledge aimed at the design and construction of educational spaces that advance children's emotional, cognitive and social development.

### **Aim**

The present review is based on a constructivist theoretical model which considers that the understanding and knowledge of the environment is co-constructed by people who live it. According to this vision, the review aimed to investigate the relationship between the physical environment of ECEC centers and child development, also including children's and adults' perception of ECEC spaces. When we refer to *ECEC centers* we include all the institutional centers that take care of children from birth until school age. We did not set an age range for inclusion in the study, since the age of admission to school can vary between countries, even although in the majority of cases it is 6 y.o. We have included all types of centers that take

care of children from 0 to 6 y.o.. These were mostly daycare and childcare centers, nursery schools, preschools and kindergartens. Although these terms are sometimes used as synonyms, they indicate different centers: daycare and childcare centers are facilities that focus on caring for children and they accept children from birth to school age; nursery schools are usually designed for the same age range but they focus more on learning; preschools aim to prepare children for school, so they focus more on learning and are usually designed for children from 2-2.5 to 5-6 years old; kindergartens represent the beginning of formal mandatory education in some countries and they are usually designed for children from 3 to 6 years old. When we refer to *physical environment* we consider all the physical aspects of the centers environment, including both indoor and outdoor spaces. These aspects could be, for example, design, size, density, furnishings, activity areas, distribution and characteristics of rooms.

When we refer to the *relationship between physical environment and child development* we refer to two main areas, according to our theoretical model: “*perception of physical environment*”, which includes both children’s and adults’ perceptions, and “*relation between physical environment and developmental outcomes*”, which includes behavioral, cognitive and emotional outcomes. In our analysis, behavioral outcomes include variables related to play behavior and peer interactions (e.g.: types of play, engagement, cooperation...); cognitive outcomes include variables related to learning processes, the acquisition of cognitive abilities, (e.g.: academic skills, literacy acquisition, attentional processes ...); emotional outcomes include variables related to emotional experiences and needs and life-skills development (self-esteem, sense of competence, need for intimacy...).

Given all these specifications, the present analysis aims to get the state of the art on the knowledge acquired to date on the topic, to prompt useful reflections for education professionals and to identify future directions of research.

## **Method**

For the literature search, the following databases were included: PsycINFO, Education Research Complete, and SCOPUS. PsycINFO and Education Research Complete were chosen as robust databases for psychological and educational research, in order to find publications in both fields. SCOPUS was included as the largest database of peer-reviewed literature in many fields (Elsevier, 2019), in order to reach the highest

number of publications on the topic. The search terms were [“Physical Environment” and/or (“Architecture” and “Design”)] and (“Preschool” or “Kindergarten” or “Early Childhood Education” or “Child Care” or “Day Care”). These keywords were required to appear in the full text of the article. Since the aim of the review was to provide an indication of the nature of the available literature, both conceptual and empirical contributions were included, as is the norm for scoping reviews (Paré et al., 2015). In order to cover an extensive literature base, since attention to the role of physical space in educational settings first began in the '60s, the search included studies published from 1960 to June 30, 2018.

After a preliminary analysis of non-peer-reviewed works concerning the role of the environment in educational contexts, we decided to limit the analysis to peer-reviewed publications only. Although we are aware that the exclusion of the gray literature works could lead to an incomplete and unrepresentative framework of knowledge (Rothstein et al., 2005), the inclusion of gray literature would have implied the analysis of very different types of papers, with the risk of obtaining extremely heterogeneous material and reducing the significance and specificity of the various works. As highlighted by some authors, there is an open debate on whether to include works from gray literature in scoping reviews (Paré et al., 2015). On the basis of these considerations, it might be interesting to carry out a narrative review of gray literature as a subsequent step to the present review. The criteria for inclusion were therefore the following: only peer-reviewed publications were selected; studies had to be published in English, French, Italian, Spanish or Portuguese; publications had to refer to preschool age (0-6 years old); studies had to concern the physical environment of ECEC centers, such as preschools, kindergartens, childcare centers; the studies had to consider the physical environment as a variable. Furthermore, in line with the aims of the review, we excluded all the studies that: focused on the physical environment in relation to disabilities (e.g.: architectural barriers); limited their aim to the understanding of how the physical environment could increase physical activity in childhood with a view to preventing obesity; were aimed at assessing whether the centers of a specific country complied with the quality standards defined by the Government of that country. Table 1 summarizes inclusion and exclusion criteria.

Table 1.1 - Inclusion and exclusion criteria

Study characteristic	Inclusion criteria	Exclusion criteria	Reason
Types of publication	Peer-reviewed	Gray literature	To conduct a scoping review through a systematic method
Language	English, Spanish, Portuguese, French, Italian	Other languages	Main languages used in the world and known by the reviewers
Age range	From birth to school age (0-6)	From school age onwards	The aim was to investigate the topic in preschool age
Context where p.e. has been considered	Ecec centers (daycare and childcare centers, nursery schools, preschools, kindergartens...)	Other kinds of environment (family, urban environment, biosphere environment...)	The aim was to investigate the topic in ECEC centers
Topic	P.e. included in the investigated variables	P.e. not included in the investigated variable	The aim was to investigate the relationship between p.e. and child development
Focus		P.e. In relation to disabilities (e.g.: architectural barriers)	This is a specific topic that not complies the aims of the literature review
		How the p.e. Could increase physical activity in childhood with a view to preventing obesity	This is a specific topic that not complies the aims of the literature review
		Whether the centers of a specific country complied with the quality standards defined by the government of that country	This is a specific topic that doesn't comply the aims of the literature review

Note: p.e. = physical environment.

Before the inclusion and exclusion criteria were applied, the initial search retrieved 246 articles from PsycINFO, 169 articles from Education Research Complete, and 406 from SCOPUS. After screening the abstracts of these papers against the inclusion and exclusion criteria, 92 studies were selected and all of them were included in the sample, even after the screening of the full documents. Of the publications excluded, the majority (about 65%) referred to contexts other than ECEC centers, such as family environment or urban environment; others (about 16%) did not consider physical environment as a variable but just included a few secondary considerations on its role in broader contexts; many studies (about 12%) focused on the outdoor environment only investigating whether the amount of time spent outdoors can prevent obesity by increasing physical activity in childhood; a few studies (about 4%) focused on disabilities; some others (about 2%) on compliance with quality standards; finally, a small number of publications referred to school-age (0.5%) or were in languages other than the ones included (0.5%). After the elimination of duplicates, the systematic search provided us with 64 papers. In addition, some other relevant studies were identified by going through the references of the selected documents (*forward snowballing*; Wohlin, 2014). This procedure yielded an additional 24 studies. Altogether, 88 studies were included in the present review for a systematic analysis. The relevant information of the included studies and coding system are reported in Appendix 1.

The analysis of the selected studies was conducted through three steps. In the first step, the main characteristics of the studies were identified through a coding protocol which included the following data: authors, year of publication, country of data collection, type of publication (empirical studies, theoretical articles, etc...), type of ECEC center, range of children's age considered, aims, methods and main findings. In the second step, through a thematic analysis, it was determined whether the publication was about perception of physical environment or about the relationship between physical environment and child developmental outcomes. The publications on perception were divided into two categories: "children's perception" and "adults' perception". The publications on developmental outcomes were divided into three categories: "behavior", "cognition" and "emotion", on the basis of the definitions presented in the introduction section. All the selected publications were coded by two raters on the basis of these five categories. The agreement index between the two raters was acceptable for all categories considered (Choen's K: range 0.75-0.85).

In the last step, we summarized the main issues addressed in each category and critically examined the findings through a thematic analysis. Finally, we endeavored to draw useful reflections across studies, in order to orient the education professionals and identify future directions of research.

## **Results**

### **Characteristics of the studies**

As a first step of the review, we provide an overview of the general characteristics of the studies included. The papers were published from 1974 to 2018, showing a slow but constant increase over time: 3 studies were published from 1974 to 1980 (3.4% of the papers included); 8 studies from 1981 to 1990 (9.1%); 14 studies from 1991 to 2000 (15.9%); 20 studies from 2001 to 2010 (22.7%) and 43 studies from 2010 to 2018 (48.9%).

Most of the publications we examined are from the United States: 42 studies (47.7% of the papers included); 7 (7.9%) from Norway; 5 (5.7%) from Canada and Turkey; 4 (4.5%) from the United Kingdom; 3 (3.42%) from Australia, Brazil and Sweden, 2 (2.3%) from China, Finland, New Zealand and South Korea and one study (1.13%) from each of the following countries: Denmark, Egypt, Cyprus, Greece, Iran, Israel, Italy, Oman. Some of these studies involved other countries in their data collections: India, Indonesia and South Africa. It should be noted that, dividing the years of publication into two equal parts, of the 19 studies published from 1974 to 1996 (first 22 years) 16 (84.2%) are from the United States (the other three are from Canada, New Zealand and the United Kingdom), while of the 69 studies from 1996 to 2018 (second 22 years), only 26 (37.7%) are from the United States.

Most of the papers are empirical studies (75%), 8 are reviews (9,1%), 4 theoretical articles (4,5%), and 10 case studies (11,4%): of the latter, four are action-researches and two are comparative analyses of three different case studies.

### **Children's Perception of ECEC Spaces**

#### ***Aims***

The selected studies on children's perception aim to understand how the physical environment of the ECEC centers is perceived: in particular they focus on children's preferences regarding places (Durak, 2009; Rasmussen, 2004; Zamani, 2016, 2017), views on play opportunities (Cullen, 1993; Marques & Sperb, 2013;

Melhuus, 2012; Nah & Lee, 2016), identification of the strengths and weakness of the centers (Botsoglou et al., 2017; Havu-Nuutinen & Niikko, 2014; Marques & Sperb, 2013; Millei & Gallagher, 2012), emotional connotation of specific parts of the environment (Colwell et al., 2016; Şahin & Dostoğlu, 2012; Skånfors et al., 2009), attribution of relational meanings (Falender & Mehrabian, 1979; Vuorisalo et al., 2015), orientation (Read, 2003), sense of appropriation and sense of place (Read, 2007). Two studies underline the difference between the children's perception of spaces and that of the adults' (Kennedy, 1991; Rasmussen, 2004).

### **Methods**

To investigate children's perceptions, the instruments most frequently used were *interviews*, which were either conducted individually (Botsoglou et al., 2017; Cullen, 1993; Havu-Nuutinen & Niikko, 2014; Nah & Lee, 2016; Şahin & Dostoğlu, 2012; Zamani, 2016, 2017) or in the form of a focus-group (Colwell et al., 2016; Melhuus, 2012; Millei & Gallagher, 2012). Some information was also obtained through *informal conversations* and *guided tours* in which one child took the researcher on a tour of the places of his/her center, describing them and explaining their use and their connotations. In addition to verbal investigations, some graphical instruments were used. In many studies, children were asked to draw their center or their favorite place within it, often they were asked to verbally explain the content of their *drawings* (Botsoglou et al., 2017; Colwell et al., 2016; Durak, 2009; Martins & Gonçalves, 2014; Nah & Lee, 2016). Other studies used *photographs*, allowing children to take photos around their center (Botsoglou et al., 2017; Melhuus, 2012; Millei & Gallagher, 2012; Nah & Lee, 2016; Rasmussen, 2004) or asking them to choose a favorite image among many (Zamani, 2017). In some other studies children were asked to represent their centers through *maps*, composed of photos or drawings (Botsoglou et al., 2017; Melhuus, 2012; Millei & Gallagher, 2012) or through the *concrete construction* of the spaces with building materials such as blocks (Colwell et al., 2016; Marques & Sperb, 2013; Millei & Gallagher, 2012). *Observational techniques* were used in four studies, in order to infer preferences from behaviors (Botsoglou et al., 2017; Melhuus, 2012) or to investigate specific aspects on the use of space, such as withdrawal strategies (Skånfors et al., 2009) or relational meanings (Vuorisalo et al., 2015). Two studies used *play techniques*: children were involved in play situations conducted by the researcher (Marques & Sperb, 2013) or the researcher was involved in children's play to understand the dynamics from within (Shim et al., 2001). It should be noted that, although a few

studies detected data with a single instrument (Cullen, 1993; Martins & Gonçalves, 2014; Şahin & Dostoğlu, 2012; Zamani, 2016), most studies used a *multimethod approach*, mixing two or more of the aforementioned techniques: the most complex one used 7 different instruments to collect data (Botsoglou et al., 2017). One study used a *comparative method*, comparing centers in different geographic areas (Prochner et al., 2008), and four of the studies adopted an *action-research method*, acting within the context to produce a concrete change while doing the research (Bers et al., 2018; Botsoglou et al., 2017; Millei & Gallagher, 2012; Nah & Lee, 2016). Table 2 summarizes instruments and methods used.

*Table 1.2 - Instruments and methods to investigate children's perceptions of ECEC spaces*

Instrument	Method	Age range	Number of studies
Interview	Individual interview	3-6	7
	Group interview	3-6	3
Informal conversation	Children and researchers engaged in conversations	4-5	1
Guided tour	Children took the researchers on a tour of the spaces	4-5	1
Drawing	Children drew the center	3-6	5
Photograph	Children took photos	3-6	5
	Children chose photos among many	4-5	1
Map	Children represented a map of the center	3-6	3
Construction	Children constructed the center with building materials	3-5	3
Observation	Observations in the ecological context	1-6	4
Play technique	Children involved in plays conducted by researchers	4-5	1
	Researcher involved in plays conducted by children	2-5	1

*Note: most studies used a multimethod approach, mixing two or more of the aforementioned techniques; four of them were action research. One study compared data from observation and interviews in different countries.*

### **Findings**

***Children have personalized visions and preferences about space and are able to express them.*** The studies analyzed have shown how children have personalized perceptions of ECEC spaces and are able to

express and explain their preferences about places. When children were asked to draw their preschool environment they represented different elements: furniture, play materials, architectural elements and people (themselves, peers, teachers) and each child emphasized different features of space, demonstrating to have personalized views on the environment and the appropriation of ECEC spaces (Durak, 2009; Marques & Sperb, 2013).

***Children perceive the outdoors as a space of freedom where adults' intervention is required only in case of injury.*** In outdoor spaces, children seem to prefer natural or “mixed” (natural and manufactured) settings rather than manufactured ones: they seem to find the former stimulating and the latter predictable and boring (Zamani, 2016), and to see more opportunities for play and experimentation in environments which include a variety of materials and elements (Melhuus, 2012; Nah & Lee, 2016). When children play outside they seem to perceive a greater sense of freedom, more independence and more opportunities for socializing (Cullen, 1993). At the same time, they seem to have higher levels of risk perception, due to the risk of stumbling and to the enhanced physical activation of peers (Havu-Nuutinen & Niikko, 2014; Şahin & Dostoğlu, 2012). Consistent with these perceptions, they seem to consider the role of adults outdoors as being limited to intervention in case of injury (Cullen, 1993).

***Children's perceptions can be different from those of adults.*** Some of the selected studies have highlighted how children perceive spaces that are invisible to the adult eye: they invent imaginary places, both in natural or designed environments (Rasmussen, 2004; Strong-Wilson & Ellis, 2014; Zamani, 2016), reinterpreting the meaning and purpose of existing spaces and materials (Colwell et al., 2016; Kennedy, 1991; Skånfors et al., 2009). Kennedy suggests that in children's experience the physical environment “*is probably not 'space' in the sense in which we understand the term, but a person*” (Kennedy, 1991, p.39); he argues that children interact with the space in a personal, interlocutive manner underlying that “*a space that is alive and personal is quite different from the idealised, visually dominated space which we find reified in adult architecture*” (Kennedy, 1991, p.39).

***Children and adults construct relational meanings through the use of space.*** Some of the analyzed studies argued that preschoolers and teachers construct relational spaces jointly through the coordinated use of spaces, observing that the use of the physical environment reflects both the cultural approach of the institution and the interpretation of individuals (Vuorisalo et al., 2015). This emerged also by comparing

ECEC centers in three different countries: Canada, India and South Africa: the comparison highlighted how the use of space and materials could be affected by the pedagogical views of teachers, and how it conveys relational meanings through the actions allowed or denied in the relationship (Prochner et al., 2008).

***Children are competent about space issues of their ECEC environment and can contribute to improving the quality of their center, by actively participating in design processes.*** Finally, through action-research studies, children's competence on space issues emerged: preschoolers demonstrated accuracy in detecting the weaknesses of their preschool environments and the solutions they proposed to remedy these weaknesses showed to be coherent and creative and to improve the quality and livability of the environments. (Bers et al., 2018; Botsoglou et al., 2017; Millei & Gallagher, 2012; Nah & Lee, 2016). In addition, all the action-researches highlighted that children involved in co-design processes showed engagement, creativity, active participation and enthusiasm. In one study, at the end of the process, the teacher involved noted that the co-participatory process had enhanced children's initiative, confidence and perseverance, and had improved communication and negotiation skills between the adults and children (Nah & Lee, 2016).

## **Adults' Perception of ECEC Spaces**

### ***Aims***

The selected studies on adults' perceptions investigated which factors of the physical environment: affect the parents' choice and the teachers' preference regarding the centers (Gur, 2014; Havu-Nuutinen & Niikko, 2014); are considered indicators of quality for architects and teachers (Iwan & Poon, 2018); could help or hinder the teachers' work with children (Bers et al., 2018; Dennis Jr et al., 2014; Izadpanah & Günçe, 2014; Marshall & Lewis, 2014; Nevanen et al., 2014; Şahin et al., 2011; Strong-Wilson & Ellis, 2014); affect the perception of risk of teachers (Storli & Sandseter, 2015); can convey gender connotation of different areas (Børve & Børve, 2017); help orientation of caregivers in the centers (Read, 2003). Many studies aimed to analyze parents' and teachers' perceptions of the opportunities offered by outdoor spaces for children's development (Brussoni et al., 2017; Dennis Jr et al., 2014; Ihmeideh & Al-Qaryouti, 2016; Jayasuriya et al., 2016; Maynard & Waters, 2007; McClintic & Petty, 2015; Melhuus, 2012; Moser & Martinsen, 2010). Some studies focused on how environment can convey relational meanings (Berris & Miller, 2011; Gayle-Evans, 2004; Prochner et al., 2008). Finally, two of the studies analyzed communication between designers, child

development professionals and researchers studying environmental issues concerning the creation of ECEC spaces (Beacham, 2006; Wachs, 1989).

### **Methods**

Most of the studies selected used *semistructured interviews* guided by the researcher (Beacham, 2006; Berris & Miller, 2011; Bers et al., 2018; Børve & Børve, 2017; Dennis Jr et al., 2014; Havu-Nuutinen & Niikko, 2014; Ihmeideh & Al-Qaryouti, 2016; Iwan & Poon, 2018; Marshall & Lewis, 2014; Maynard & Waters, 2007; McClintic & Petty, 2015; Melhuus, 2012; Nevanen et al., 2014; Şahin et al., 2011) and some of them implemented *observational techniques in addition*, comparing the data from the interviews with those obtained through the observations in order to assess any contrasting findings (Ihmeideh & Al-Qaryouti, 2016; Maynard & Waters, 2007; McClintic & Petty, 2015; Prochner et al., 2008). Furthermore, one of these studies integrated interviews and observations with *journal questions*: teachers were asked to answer some open questions in written form (McClintic & Petty, 2015). Some studies used *focus group* (Beacham, 2006; Bers et al., 2018; Brussoni et al., 2017) and some others used *questionnaires* (Gayle-Evans, 2004; Gur, 2014; Havu-Nuutinen & Niikko, 2014; Jayasuriya et al., 2016; Moser & Martinsen, 2010; Storli & Sandseter, 2015) and it is interesting to note that questionnaires were the only instruments used in the three studies which investigated parents' perceptions (Gur, 2014; Havu-Nuutinen & Niikko, 2014; Millei & Gallagher, 2012). Finally, two studies differed from the others by adopting a *comparative method*, both by comparing observations and interviews in three different countries (Iwan & Poon, 2018; Prochner et al., 2008). Table 3 summarizes instruments and methods used.

*Table 1.3 - Instruments and methods to investigate adult's perceptions of ECEC spaces*

Instrument	Method	Number of studies
Interview	Semi-structured interviews with teachers	14
Focus Group	Focus group with teachers	3
Questionnaire	Teachers' and parents' report questionnaire	6
Journal Question	Teachers' report journal questions	1

*Note: Some studies used a multimethod approach, mixing two or more of the aforementioned techniques. Two studies compared data from interviews and observations in different countries.*

## ***Findings***

***Parents want ECEC centers to be homey, safe, connected with the outdoors and with spaces to socialize.*** Among the factors of the physical environment that adults perceive as “good” for their children, a “homey” atmosphere, the presence of child-scale elements and stimulating contents, safety, the connection between indoor and outdoor spaces and the readability of paths seem to be the most important (Berris & Miller, 2011; Gur, 2014; Read, 2003). In relation to the exterior environment, a front yard and front porch seem to offer a sense of inclusion and social opportunities for parents and children, transparent façade surfaces seem to offer reassurance, allowing parents and children who arrive to the center to see the activities inside (Gur, 2014). Moreover, the location of the building, its visibility in the community and user-friendly and child-centered aesthetics and scale seem to be other factors that affect the center’s selection by parents (Gur, 2014; Havu-Nuutinen & Niikko, 2014).

***Teachers want ECEC centers to have spaces and materials which support educational actions.*** In relation to the interior environment of ECEC centers, teachers indicate as very important the availability of adequate materials and suitable play equipment (Bers et al., 2018; Havu-Nuutinen & Niikko, 2014; Marshall & Lewis, 2014; Nevanen et al., 2014; Şahin et al., 2011), for example the presence of literacy materials is considered fundamental for literacy development (Marshall & Lewis, 2014). They also recognized that the physical features of their classroom, e.g. shape, lighting and temperature affect their work, observing that while the lack of materials can be easily remedied, the inadequacy of structures is much more difficult to change (Havu-Nuutinen & Niikko, 2014; Iwan & Poon, 2018; Şahin et al., 2011).

***Use of spaces and materials reflect pedagogical views.*** Some studies suggest that teachers’ pedagogical views are reflected by their use of spaces and materials. The set-up of spaces can be affected by teachers’ pedagogical views in terms of gender connotation (Børve & Børve, 2017) or availability of play materials (Prochner et al., 2008) and some materials, such as bulletin boards or posters on walls, are usually used to display educational illustrations and contents to be conveyed (Gayle-Evans, 2004; Prochner et al., 2008).

***Outdoor spaces are considered very important but they are rarely used for structured activities.*** Most parents and teachers seem to attribute great importance to the presence of outdoor spaces, especially if they include natural elements, considering them essential for children’s development, (Brussoni et al., 2017;

Gur, 2014; Ihmeideh & Al-Qaryouti, 2016; Jayasuriya et al., 2016; Maynard & Waters, 2007; McClintic & Petty, 2015; Melhuus, 2012; Moser & Martinsen, 2010). Although teachers like to organize some outdoor educational experiences during the daily routine, they seem not to be aware of the potential of outdoor spaces (Jayasuriya et al., 2016; Maynard & Waters, 2007; McClintic & Petty, 2015), so they normally restrict the use of such places for children's free play, limiting their role to supervisors (Ihmeideh & Al-Qaryouti, 2016; McClintic & Petty, 2015). Some studies underline that in the teacher's perception some characteristics of the outdoors make it difficult to carry out structured activities. These were found to be: inadequacy of size and location of the spaces, shortage of materials, lack of an easy direct transit route between interior and exterior places (Ihmeideh & Al-Qaryouti, 2016; Maynard & Waters, 2007). Moreover, it emerged that in certain cultures (e.g. Omani or Welsh ones) outside spaces are often unused if weather conditions are not optimal; for this reason educational opportunities for children to experience natural phenomena may be lost (Maynard & Waters, 2007). A special case is that of the Norwegian educational culture, where children spend a lot of time in the outdoor natural environment in all weather conditions and preschoolers are allowed to use artifacts such as saws, axes, knives and bonfires to interact with nature (Melhuus, 2012).

***Adults would like ECEC outdoor spaces to be linked with children's freedom but in such spaces teachers' risk perception is higher and children's freedom is limited.*** Adults would like children to spend more time outdoors, often remembering their own childhood experience in natural environments as characterized by freedom, experimentation and fun (Maynard & Waters, 2007; McClintic & Petty, 2015; Melhuus, 2012). Teachers, however, usually consider outdoor plays more risky than indoor plays; due to this perception they become more controlling, in contrast with their idea of open spaces being a place of freedom and experimentation (Jayasuriya et al., 2016; Maynard & Waters, 2007; McClintic & Petty, 2015; Storli & Sandseter, 2015).

***Architects' and teachers' close collaboration enhances the quality of ECEC physical environments, however there are some communication gaps between the two professionals.*** The studies selected, which compare designers' and users' perception of ECEC spaces, found that both design professionals and child development professionals feel the need to learn more about each other, but there are some difficulties due to different jargons and approaches that interfere with this communication (Beacham, 2006; Wachs, 1989) In a study which compared three award-winning green preschools, it emerged that the

preschool which ranked the highest in ECERS-R (Harms et al., 2005) and CPERS (Moore & Sugiyama, 2007) scores was the one whose project process was conducted jointly by architects, teachers and the director of the ECEC Center, while in the others project processes were conducted independently by the designer or by only consulting the director of the center, and not the teachers (Iwan & Poon, 2018).

## **Relation between ECEC Spaces and Children's Behavior**

### ***Aims***

The studies selected on the relation between ECEC spaces and children's behavior investigate the variations in play behavior and peer interactions after re-design interventions (Acer et al., 2016) or in specific play areas (Barnett, 2016; Brown & Burger, 1984; Kochanowski & Carr, 2014) or in relation to physical features of settings such as: spatial definition (Moore, 1986), room size and number of thematic areas (Kantrowitz & Evans, 2004; Neill, 1982; Shapiro, 1975), open space arrangement (Twardosz et al., 1974), height of ceilings and colors of walls (Read, 1999). The main behavioral variables investigated are: cooperation and social interactions during play (Acer et al., 2016; Brussoni et al., 2017; Larson et al., 1990; Moore, 1986; Neill, 1982; Read, 1999; Sager et al., 2003); engagement and self-determination (Kochanowski & Carr, 2014; Larson et al., 1990; Moore, 1986; Twardosz et al., 1974); kind of play involved (Cloward Drown, 2014; Cullen, 1993; Shim et al., 2001; Wight et al., 2016; Zamani, 2016); motor behavior (McLaren et al., 2011); interaction with nature (Herrington & Studtmann, 1998).

### ***Methods***

All the studies selected used *observational techniques*. Some studies compared observations in different schools (Brown & Burger, 1984; Kantrowitz & Evans, 2004; Larson et al., 1990; Moore, 1986; Shapiro, 1975; Wight et al., 2016) or in different environments of the same school (Read, 2007; Twardosz et al., 1974; Zamani, 2016). Other studies compared observations before and after a re-design intervention (Acer et al., 2016; Brussoni et al., 2017; Herrington & Studtmann, 1998). Lastly, some studies conducted a single observation relating the behaviors observed to the physical features of the setting (Barnett, 2016; Cloward Drown, 2014; Cullen, 1993; Kochanowski & Carr, 2014; Neill, 1982; Sager et al., 2003; Shim et al., 2001). Some observations were supported by a *spatial behavior map*, i.e. a map of the settings, on which the researcher indicates the movements of every child (Brussoni et al., 2017; Cloward Drown, 2014; Herrington & Studtmann, 1998; Kochanowski & Carr, 2014; Zamani, 2016), *teacher-report questionnaire*

and *focus group* on children’s behavior (Brussoni et al., 2017; Kochanowski & Carr, 2014). Table 4 summarizes instruments and methods used.

*Table 1.4 - Instruments and methods to investigate the relation between ECEC spaces and children’s behavior*

Instrument	Method	Number of studies
Observations	Observations in different centers	4
	Observations in different settings of the same center	1
	Observations before and after changes in the p.e.	3
	One observational session related to the features of the p.e.	7
Spatial Behavior Map	Spatial Behavior Map in different settings	3
Questionnaire	Teachers’ report questionnaires	1
Focus Group	Focus group with teachers	1

*Note:* p.e.= physical environment.

### ***Findings***

***Uncrowdedness, complexity and clarity of thematic areas seem to increase positive children’s interactions and on-task behavior.*** One of the environmental factors affecting children’s behavior seems to be crowding: in uncrowded playgrounds, preschoolers seem to be engaged in more physical activities, more complex play interactions, less school-oriented activities and more aggressive behaviors (Neill, 1982; Sager et al., 2003; Shapiro, 1975). Other important factors seem to be the complexity of the environment and organization in play-areas. Where physical features of rooms were complex (e.g.: differentiated colors of walls or height of ceilings), children showed more cooperative behavior (Read, 1999) and where play-units were more complex (e.g.: a play-house rather than a push-pull toy or a puzzle), children showed greater interactions, engagement and length of activity segments (Larson et al., 1990). A clear physical definition of thematic areas seems to boost the continuity of children’s play (Acer et al., 2016) and enhance exploratory behavior, social interaction and cooperation (Moore, 1986). In addition, the ratio of children to the number of activity areas in the classroom showed to be positively correlated with off-task behaviors (Kantrowitz & Evans, 2004). Even in infancy, children living in daily environments providing differentiated stimuli showed

more social interaction with peers (Provost et al., 1991) and a good balance between some dimensions, as simplicity/complexity of materials (e.g.: a ball is simpler than a play-house), openness/closeness of spaces (due to the arrangement of walls, fences and dividers), intrusion/seclusion dimension (e.g.: open play areas allow interactions while small secluded spaces help children to get away from the group) showed to be important. (Gonzalez-Mena, 2013) .

***Accessibility and appropriate child-scale materials of outdoor spaces seem to increase the quality of play behavior.*** In relation to outdoor playgrounds, one of the first studies in the field found that the physical features that promote more cognitive and socially complex behaviors were: the accessibility and definition of play areas, the presence of encapsulating spaces (e.g.: tunnel) and the provision of appropriate material (Brown & Burger, 1984). Similarly, more recent studies assume that the most complex form of play (complex socio-dramatic play) should be supported by environments with child-scale constructive play props, a sense of enclosure and natural surroundings (Cloward Drown, 2014). Focusing on the outdoors, it was observed that preschoolers from 2 to 5 years old are more inclined to engage in functional and dramatic play outdoors rather than indoors (Shim et al., 2001) and that physical play is the main type of play in outdoor spaces for five-year-old children, especially boys (Cullen, 1993).

***Natural outdoor spaces and materials may increase physical activity, functional, dramatic and independent play and quality of social behavior.*** Changes in the outdoor play behavior of children from 2 to 6 years old were observed following changes in the environment. It was observed that adding natural materials to existing outdoor environments led to an increase in play with natural materials, independent play and prosocial behaviors, and a decrease in antisocial behavior and physical activity (Brussoni et al., 2017). Children's movement paths and the social structure of the group also underwent changes as a result of changes in the outdoor environment: children who were dominant in an equipment-based play yard were not always the dominant children after the location of plant material and stepping stones in the yard (Herrington & Studtmann, 1998). Outdoor spaces that were intentionally designed for child-directed play in nature seem to enhance choice-making, problem-solving, engagement and self-regulation; in particular open-ended play structures stimulate children to test their own courage (Kochanowski & Carr, 2014). Comparing a traditional playground with a nature playscape specifically designed to connect children with natural environments, it was observed that the playscape elicited more independent exploration, self-conducted constructive play,

dramatic play and scientific inquiry (e.g.: observing nature, naming parts of nature), while in the playground such activities were elicited only by a teacher-led activity (Wight et al., 2016). When natural and manufactured zones are mixed, children seem to be more engaged in different kinds of cognitive, functional and exploratory play, compared with only natural or only manufactured areas (Zamani, 2016). The importance of natural outdoor spaces is underlined also in infancy and daycare environments, by suggesting that the open-ended nature of experiences, the relative freedom, the uncrowded spaces and the accessibility of equipment foster toddlers' exploration (Stephenson, 2002).

### **Relation between ECEC Spaces and Children's Cognition**

#### ***Aims***

The studies selected on the relation between ECEC spaces and children's cognition focused on how the physical features of the ECEC environment could affect preschoolers' acquisition of cognitive abilities. Some of the studies analyzed the shape, size, furniture and material of the classrooms in relation to the acquisition of academic skills, focusing in particular on literacy (Guo et al., 2012; Lee et al., 1997; Mashburn, 2008; Maxwell, 2007; Mincey, 1982; Morrow, 1990; Morrow & Weinstein, 1982; Neuman & Roskos, 1992). Other studies investigated general cognitive development in relation to crowding (Maxwell, 1996), open space settings (Twardosz et al., 1974) and color of the background (Stern-Ellran et al., 2016). One study related attentional processes to the amount of time spent outdoors (Ulset et al., 2017). Finally, some studies investigated how outdoor spaces could affect the acquisition of motor skills (Chow & Louie, 2013; Fjortoft, 2001; Scoditti et al., 2011; True et al., 2017).

#### ***Methods***

The methods used to assess the relation between ECEC spaces and children's cognition were very similar to those used to assess such relation on children's behavior, although *tests* on cognitive abilities were used instead of *observations*. Some studies compared data from different schools (Mashburn, 2008) or from different environments of the same school (Stern-Ellran et al., 2016). Others compared test results before and after a re-design intervention (Fjortoft, 2001; Guo et al., 2012; Morrow, 1990; Morrow & Weinstein, 1982; Neuman & Roskos, 1992). Most of the studies selected provided a single test phase, relating the results to the physical features of the environment (Chow & Louie, 2013; Lee et al., 1997; Maxwell, 1996, 2007; True et al., 2017; Ulset et al., 2017). Table 5 summarizes instruments and methods used.

Table 1.5 - Instruments and methods to investigate the relation between ECEC spaces and children's cognition

Instrument	Method	Number of studies
Test	Test sessions in different centers	1
	Test sessions in different settings of the same center	1
	Test sessions before and after changes in p.e.	5
Observation	One observational session related to the features of the p.e.	6

Note: p.e.= physical environment.

### **Findings**

***Literacy acquisition seems to be improved by the presence of literacy areas and materials, in interdependence with teachers' social support.*** Most of the studies selected evaluated the relation between physical environments and literacy development: the presence of literacy areas, books and writing materials resulted to be correlated with the acquisition of literacy abilities in preschoolers (Morrow & Weinstein, 1982; Neuman & Roskos, 1992) and the increase of voluntary literacy behaviors during play in toddlers (Lee et al., 1997). However, physical and psychological environments showed to be interdependent, so that the most effective environments were found to be those with both literacy materials and instructional support from adults (Guo et al., 2012; Lee et al., 1997; Morrow, 1990). In addition, one study attributed the physical environment with a role as moderator of the negative associations between income and academic performance, and between non-white ethnicity and literacy development in four-year-old children (Mashburn, 2008).

### ***Motor skill acquisition seems to improve in outdoor spaces which provide a variety of experiences.***

The presence of outdoor spaces has also been demonstrated to improve motor competence (Chow & Louie, 2013; Fjortoft, 2001; Scoditti et al., 2011; True et al., 2017): in particular, the physical diversity of the environment could increase specific motor skills such as balance and coordination (Fjortoft, 2001).

***Cognitive competence seems to be improved by uncrowded spaces, non-colorful surfaces and amount of time spent outdoors.*** The quality of the physical environment of some classrooms, in terms of social spaces, boundaries, privacy, personalization, complexity, scale, and adjacency, was only related to children's general cognitive competence (including verbal, perceptual-performance, numeracy, memory and

motor assessments) for the classrooms of 3 year-olds and not for those of 4-year-olds. (Maxwell, 2007) Comparing preschoolers from crowded and uncrowded homes and classrooms, it was observed that the former scored lower than the latter on performance tasks involving figure-ground relationship but no differences were found on pre-academic skills (Maxwell, 1996). In addition, a colorful play surface has been seen to interfere with preschoolers' attention and on-task behaviors during structured play (puzzle assembly, Lego reconstruction, and picture card lotto), compared with a non-colorful play surface (Stern-Ellran et al., 2016). Lastly, a positive relation was found between number of hours spent outdoors and children's attention, and a negative relation was found between the number of hours spent outdoors and inattention and hyperactivity symptoms (Ulset et al., 2017).

### **Relation between ECEC Spaces and Children's Emotion**

#### ***Aims***

With the exception of two (Giusti et al., 2014; Ulset et al., 2017), all the studies selected on the relation between ECEC Spaces and children's emotion-focused on indoor rather than outdoor spaces, evaluating the relation between physical environment and aspects related to children's social-emotional development, such as: self-esteem (Maxwell & Chmielewski, 2008), sense of competence and autonomy (Maxwell, 2007; Provost et al., 1991; Trancik & Evans, 1995), need for intimacy and privacy (Friedmann & Thompson, 1995; Skånfors et al., 2009), emotional disposition and mood (Laike, 1997; Provost et al., 1991) and social-emotional regulation (Maxwell, 1996; Mohamed, 2016). One study indirectly examined children's experiences with their caregivers by assessing the behavior of caregivers in different settings (NICHD Early Child Care Research Network, 1996). The two studies which investigate the impact of outdoor spaces on emotion aimed to understand whether staying outdoors could enhance a positive relation with nature (Giusti et al., 2014) and improve self-regulation (Ulset et al., 2017).

#### ***Methods***

To assess the relation between space and emotion the instruments used were *observational techniques* (Friedmann & Thompson, 1995; Laike, 1997; NICHD Early Child Care Research Network, 1996; Provost et al., 1991), *tests* (Maxwell, 1996; Maxwell & Chmielewski, 2008), *teachers' - or parents' -report questionnaires*, *focus groups* and *interviews* (Maxwell, 1996; Maxwell & Chmielewski, 2008; Mohamed & Marzouk, 2016; NICHD Early Child Care Research Network, 1996; Ulset et al., 2017). Apart from two

studies which compared data from different settings (Friedmann & Thompson, 1995) or before and after a re-design intervention (Maxwell & Chmielewski, 2008), all the studies provided a single assessment phase, relating the results to the physical features of the environment. Table 6 summarizes instruments and methods used.

*Table 1.6 - Instruments and methods to investigate the relation between ECEC spaces and children's emotion*

Instrument	Method	Number of studies
Observation	Observational sessions comparing different settings in the same center	1
	One observational session related to the features of the p.e.	4
Test	Test sessions before and after changes in p.e.	1
	One test session related to the features of the p.e.	1
Questionnaire	Teachers' or parents' report questionnaire	5
Interview	Interviews with teachers	1
Focus group	Focus group with teachers	1

*Note:* p.e.= physical environment.

### ***Findings***

***The quality of physical preschool environments may contribute to the prevention of children's social-emotional problems.*** It emerged that physical environment could affect some emotional aspects in children's development: in one study analyzing preschool classrooms (Mohamed & Marzouk, 2016), the "space and furnishing" subscale of the Early Childhood Environment Rating Scale Revised (ECERS-R; Harms et al., 2005) predicted the Total Score and the Total Protective Factor (composed by initiative, self-control and attachment) of the Devereaux Early Childhood Assessment – Clinical Form (DECA-C; LeBuffe & Naglieri., 2003). Since the data were collected in one country only and not all the relevant variables were checked, these findings should be interpreted with caution and should not be considered as covering every preschool situation. Nevertheless, this study suggests that appropriate physical preschool environments may contribute to the prevention of children's social emotional problems.

***Social-emotional wellbeing seems to be improved in ECEC environments characterized by unity, and both challenging and restoring features.*** Some studies identified characteristics of physical environment that can improve the social-emotional wellbeing of children. In child-care centers, some authors consider important a “homey” atmosphere, which can be enhanced by the presence of cozy spaces, outdoor spaces, spaces for family interactions and attention to beauty (Whitehead & Ginsberg, 1999). In a study on daycare centers (Laike, 1997), it emerged that higher levels of positive emotional processes were related to one factor of the physical environment, namely “unity”, which referred to “*how well the various components in the environment fit and function together*” (Laike, 1997, p.210). “Unity” showed correlation with another factor, namely “pleasantness”, described as “*the degree of comfort, beauty and security which the individual experiences in the environment*” (Laike, 1997, p.210). To promote toddlers’ general competence, described as “*the ability to interact effectively with one’s surroundings*” (Trancik & Evans, 1995, p.311) eight main characteristics of the physical daycare environment were identified: control, privacy, complexity, exploration, restoration, place identity, legibility and safety (Trancik & Evans, 1995). To enhance self-esteem, personalization of classrooms in terms of wall displays created by the children seems to be an important factor for children at first grade level but not for preschoolers (Maxwell & Chmielewski, 2008). Moreover, perceived competence in children of 3 and 4 years old was found to be correlated with one specific factor of the physical preschool environment, named “adjacency”, which identifies places characterized by compatible or complementary activity areas, support spaces, children’s access to large motor development areas, and children’s access to personal care (e.g., toilets) (Maxwell, 2007).

***In relation to children’s emotions, the ECEC environment should be considered in association with the home environment.*** Some studies analyzed infants’ emotional development in relation to both home and daycare center environments, finding a positive correlation between the crowding of both, and emotional/behavioral problems, such as hostile-aggressive, anxious-fearful and hyperactive-distractible behaviors: children subjected to crowding in both contexts exhibited more behavioral problems than children in only one crowded environment (Maxwell, 1996). Some features of home and child-care center environments showed significant correlations also with caregiving behaviors: positive caregiving behaviors were associated with safe, clean, and stimulating physical spaces (NICHD Early Child Care Research Network, 1996). It was also found that the differentiation of play materials between home and daycare

center environments was correlated with more autonomy and greater expression of positive emotions (Provost et al., 1991).

***Children need spaces for privacy and intimacy and time to withdraw.*** Some studies underlined the children's need for privacy and intimacy and their search for intimate cozy places in preschool environments, observing that 3-year-olds seemed to prefer "cozy" spaces, where wall colors, components and light were soft, while 5 year-olds seemed to prefer "slick" intimate spaces, where colors were bright, components were harder and light was filtered by a red plastic netting (Friedmann & Thompson, 1995). If there are no intimate spaces available in the environment, when children want to withdraw they use preschool spaces in different ways (e.g: hiding in closets, acting distant, constantly moving) or create new ones when necessary, with the materials available in the environment (Skånfors et al., 2009).

***Empathy, choice-making, problem-solving and self-regulation seem to improve in the natural outdoor environment.*** In relation to the natural outdoor environment, it was noted that children from preschools with routines closer to nature were more empathetic and concerned for non-human life forms and more aware of human-nature interdependence (Giusti et al., 2014). Moreover, environments intentionally designed for child-directed play in nature have been shown to improve choice-making, problem-solving and self-regulation. (Kochanowski & Carr, 2014) .

## **Discussion**

The results of the 88 studies included in the present review confirm the role of the space as "third teacher": it emerged that the physical environment affects children's behavior, cognition and emotion, contributing to their development and conditioning their experience in educational centers. Analyzing the geographical and temporal distribution of the publications considered, it should be noted that there has been a slow but constant increase over time and an ever-broader geographic distribution of studies on the issue. The first research was conducted in the United States, where environmental psychology began (Mehrabian & Russell, 1974), then other countries started to show interest in the subject, particularly since the beginning of the 21<sup>st</sup> century. The overall analysis of the state of the art reveals points of reflection from which future conceptual and methodological orientations can be derived in order to advance the research. The main points are discussed as follows.

***From characteristics of design to the process of design.*** Looking at the contents of the studies from a temporal viewpoint, it should be noted that, in the beginning, the focus was primarily on the direct effects of the physical environment on child development: most of the studies from '70s to the '90s aimed at evaluating how specific aspects of the physical environment, such as crowding, open-space distribution, complexity and play materials, could affect children's behavior. From the '90s onwards, some studies began to investigate children's perception of space and emotion-related topics, such as their search for intimacy, sense of competence, emotional mood. After 2000, some studies also began to investigate adults' perception, trying to understand how educational spaces are used by teachers, chosen by parents and designed by architects. During these years, a growing interest in the impact of the outdoor environment and nature play also emerged. The first action-researches related to the co-participatory design of ECEC spaces, which involved teachers, children and sometimes parents, were conducted after 2010: they were interested in understanding the needs and expectations of participants, the dynamics of the design processes and the communication gap between different professional mentalities and between designers and users.

The trend observed provides a long-term view of how space research in educational contexts has developed: a progressive shift of attention was seen from a static vision of the relation between ECEC spaces and children's development to a processual understanding of the dynamics involved in designing ECEC spaces. The concept of physical environment itself has developed: initially considered a passive container for educational actions, it has been studied more and more as a complex dynamic reality, in which perceptions and relations are fundamental. During this process, children's perceptions were first recognized as an important factor to be taken into consideration, then the adults' point of view began to become relevant and finally the inclusion of all the subjects involved in space and educational issues was encouraged.

***Main factors of physical environment related to children's development.*** Taking into consideration the studies focusing on the specific characteristics of the physical space, we observed that some characteristics were found to be transversally relevant to several studies. In particular, the analysis of these studies suggests that the ECEC physical environment, including both indoor and outdoor spaces, should be characterized by a child-scale design, variety and appropriateness of materials, spatial definition, cozy spaces, cleanliness and safety.

First of all, *health and safety* in physical environments are recognized as essential elements for

appropriate child development and seem to enhance positive caregiving behaviors. *Crowding* has been shown to affect behavioral as well as cognitive and emotional development: in crowded spaces, children seem to be engaged in more physical activity and more off-task behaviors during performance tasks, and seem to display more socio-emotional problems. *Variety and complexity* of spaces and play materials have been found to be correlated with more exploratory behaviors, engagement and social interactions. At the same time, in order to be effective, complexity should be associated with a clear *spatial definition*: where unity and definition of thematic areas are consistent, children seem to show more continuity in play, more cooperation and to experience more positive emotions. In relation to the development of academic skills, the *presence and availability of adequate materials* (e.g.: the presence of books and writing materials for literacy skills) has been shown to positively improve the acquisition of these cognitive abilities. Concerning emotional development, the presence of *cozy spaces* seems to be important to meet children's need for privacy, withdrawal and intimacy. Finally, *outdoor spaces* have been shown to be very important in children's experience of ECEC centers: outdoor children seem to be engaged in more complex plays and more exploratory behavior, especially in natural environments. In particular, starting from the analysis of the studies collected, optimal outdoor environments seem to be characterized by the presence of both natural and manufactured elements, the accessibility and definition of play areas and the provision of appropriate materials.

In such places, free child-directed play seems to increase, enhancing choice-making, problem-solving, self-regulation and prosocial behavior. Particularly in natural environments, the physical activity of children has been seen to increase and their motor skills improve. Their knowledge of nature and their awareness of human-nature interdependence also seem to develop. In addition, due to the amount of time spent outdoors during daycare, attentional processes seem to improve, while inattention and hyperactivity symptoms seem to decrease.

***Importance of a child-centered approach in design processes.*** In relation to the perception of space, a very relevant aspect that emerged from the literature review is that children seem to have personalized visions and preferences about places. In addition, it emerged that their vision and use of the physical environment is different from that of adults: they seem to see spaces invisible to the adult eye, perceiving imaginary places and reinterpreting the aims and uses of spaces designed for them. However, when involved

in design processes, children have shown a marked ability to detect the weaknesses and strengths of the physical environment, being able to suggest coherent and creative solutions to improve the quality of the ECEC environment. In addition, it was noted that involving preschoolers in design processes could improve their ability to communicate and negotiate with adults, their initiative and active participation.

Since it has emerged that the physical environment contributes to children's wellbeing, and since children have demonstrated competence on environmental issues concerning their ECEC centers, a child-centered approach is desirable during design processes. Results suggest that the children's point of view should be taken into account for several reasons: first, to meet the actual needs and preferences of children; second, to enhance their self-determination and autonomy; third, to give them a voice as competent players able to improve the environment in which they live. Furthermore, the involvement of children in design processes complies with the Child Centered Approach promoted by UNICEF (2018) which encourages the involvement and participation of children, in line with article 12 of the Convention on the Rights of the Child (The United Nations, 1989).

***Changed conceptual framework: from direct influence to co-construction.*** Reflections on the co-construction of physical and relational spaces in ECEC centers are discussed in some of the most recent studies included in our analysis: in addition to the action-researches on co-participatory design, some theoretical studies have been published. In particular, these studies focus on relational meanings of space co-constructed by teachers and children jointly, emphasizing the idea that the conformation of the physical environment can allow or deny actions, can convey messages and educational contents, can maintain or change particular interactive formats.

These reflections suggest that environmental issues should not be limited to understanding the direct influence of the physical features of the environment on children's behavior, in terms of static dimensions which affect development, in a deterministic conception. Rather, new conceptual frameworks should include the meanings given to space by both adults and children, the joint actions to co-construct them and the interconnection between the physical and the psychological environment. Since space is defined "the third teacher", it should be considered as an entity with which to relate, rather than a mere container where education takes place. Since relational dynamics are involved, a perspective focused on the processes is more appropriate than a static one: it would be very interesting indeed to investigate how the space changes

and develops over time, observing how the different subjects contribute to its development. To this end, the use of qualitative longitudinal studies would be appropriate.

***Need for reflective-practice and comparison between pedagogical realities.*** In the perspective that identifies adults and children as co-constructors of the environmental context, it might be useful to improve adults' awareness regarding their use and perception of space. Studies on this topic have shown that teachers are not always aware of their perceptions of space: sometimes their verbal declarations are in contrast with their effective practices, or sometimes they have been seen to experience a philosophy-reality conflict between intentions and possibilities in the use of space. Studies on perceptions of outdoor play have also underlined how teachers' views and culture could affect the use of space: in some countries, the outdoor environment is used only in optimal weather conditions and normally only for free play, where the role of adults is limited to supervising child-directed play, while in other countries children spend a lot of time outdoors, and teachers conduct specific educational activities in natural environments in all weather conditions. The importance of teachers' pedagogical views on the use of space is in fact more evident comparing educational practices and physical environments in different parts of the world.

In consideration of the above, teachers' awareness might include various issues. First, the potential of educational spaces, both indoors and outdoors. Second, perceptions of space that can affect their educational actions. Third, the cultural context that can affect the vision and use of space. To attain these goals, the involvement of teachers in reflective practices on environmental issues could be suggested, in order to prompt the emergence of implications and consequences relating to the use of space, enabling the teachers to undertake a deep examination of their personal beliefs. Such practices involving professionals from different pedagogical contexts, employing different approaches would be of great benefit inasmuch as they would help broaden their vision and stimulate thought on new possibilities, and on the educational potential of the physical environment.

***Communication gap between teachers and designers.*** Starting from the analysis of the studies collected, it emerged that comparisons and joint reflections between designers and educational practitioners are required to improve the quality of the educational environment, since the literature review highlighted that these two professionals seem to have different perceptions and expectations regarding ECEC design. In addition, their different technical languages widen the communication gap, so an improvement in

communication skills and a jargon-free style have turned out to be necessary. Some studies have shown that when communication works, the best design solutions also emerge. In specific terms, ECEC centers whose design processes were conducted by both architects and teachers have gained higher scores in environmental ratings, and transmit greater wellbeing to the professionals who work in the buildings designed.

These findings encourage education and design professionals to collaborate more closely during design processes and to work together in order to provide suitable spaces for child development. To ensure the effectiveness of such collaboration, it may be useful to clarify the specific jargon of the various professionals; in this sense, the presence of facilitators would be also important to render communication clearer and more fluid, at least in the initial phases.

***Participation of families and community.*** As shown by the literature review, few studies took parents' perceptions into account. They found that the main aspects affecting parents' preferences regarding ECEC centers seem to be a "homey" atmosphere, the presence of stimulating contents, and the safety and existence of natural outdoor spaces. Also important, in the parents' view, is presence of front porches, serving as filters between the inside and outside where they can stand and meet other parents and families, and of transparent façades, through which they can see even when they are outside. In addition, some of the parents interviewed would like the ECEC centers to be a hub for community integration, where the philosophy is that of looking after the whole family.

Looking at these results, it seems that parents would like to perceive ECEC centers as something that is not separate from the other contexts of life but in constant communication with them. According to this point of view, the role of ECEC centers would be not only to take care of children, but also to facilitate positive interactions between parents and professionals, families and the community, where resources from different professionals could be shared. This implies that ECEC centers should have the physical space to enable such relationships to develop, i.e. both large spaces for groups and smaller private spaces for delicate conversations. Such a vision is in line with European international policies, which encourage parental participation and involvement in ECEC centers (OECD: Organization for economic cooperation and development, 2012; OECD Organization for economic cooperation and development, 2006) and the development of integrated early childhood education systems (Gordon et al., 2016). A new concept of ECEC centers as a hub for community already seems to be in the parents' mind and is supported by international

policies. It would be important to develop this idea and find ways to make it concrete.

***Methodological considerations.*** Concerning empirical methodology, the importance of implementing a multimethod approach emerged, with the aim of gathering perceptions on space, from children and adults alike. Drawings, photographs and creations with construction materials have proved to be effective instruments for analyzing children's perceptions of space, but they seem to be even more effective if associated with verbal explanations, also considering the limited representational abilities in preschool age. Another effective instrument showed to be the tour, during which a child guides and illustrates his/her personal view of the environment, also demonstrating the daily paths and dynamics of the movements. Furthermore, it emerged that children are not always constant in their verbal affirmations: sometimes they change the content of their declarations from one day to another. For these reasons, their preferences and perceptions should be also inferred by observing their behavior.

Adults' perceptions are easier to obtain: interviews and focus groups were mainly used for this purpose. Nevertheless, even adults were not always totally conscious of their dynamics regarding the use of space, so they would sometimes declare their intentions regarding the use of space during interviews but act in contrast with them in practice (Børve & Børve, 2017; McClintic & Petty, 2015). In these cases, a comparison between the data emerging from the interviews and those obtained through observation showed to be useful. Comparative studies are also interesting methods to gain a better understanding of how the ECEC physical environment could be designed and used according to different visions.

Action-research in this field has shown to be an appropriate intervention that has facilitated the advancement of knowledge and contextually produced improvements in ECEC environments. Such interventions involve children, teachers, designers and sometimes parents in the design processes, with a view to implementing the above-mentioned points: child-centered approach, increased awareness of teachers, improved communication between professionals, and the participation of families, in a co-constructural framework.

## **Limitations**

Although this scoping review aims to define the state of the art on the topic, covering extensive literature, the findings should, nonetheless, be considered in the light of certain limitations. Firstly, given the debate on the need to assess the inclusion of studies in scoping reviews on the basis of their methodological

quality (Paré et al., 2015), we decided to limit our analysis to peer-reviewed articles, excluding all unpublished research on the topic. This gap poses a threat to the validity of the findings, due to the publication bias: given that published findings are more likely to be statistically significant (and have larger effect sizes), the decision to restrict a systematic review to peer-reviewed reports only, could likely positively bias conclusions (Rothstein et al., 2005). Moreover, although it would be very complex to develop a method of systematic selection of the large amount of gray literature produced on the topic, the exclusion of these unpublished works deprives the review of many updated and contextualized contributions. Secondly, because of the extensive coverage in time and space of the literature analyzed, some data from the primary sources may have been misrepresented or misunderstood. This risk exists especially in relation to older studies, that were conducted when ECEC centers had different structures from now, or in relation to studies carried out in cultural systems very distant from that of the authors. Thirdly, the analysis of the literature may have been influenced by authors' personal viewpoints, which may have resulted in a greater emphasis on some aspects rather than others when drawing the conclusions from the contributions.

Taking into account these limitations, the present literature review will still provide useful reflections for education professionals and policymakers.

### **Conclusion**

The present scoping review aimed to define the state of art on the relationship between the ECEC physical environment and the psychological development of children, also prompting reflections on future conceptual and methodological orientations in the field. It emerged that the concept of physical environment itself has developed: from a container for educational actions to a complex and dynamic reality, in which perceptions and relations are fundamental. From this perspective, all subjects involved in ECEC centers can contribute to constructing and redefining spaces. Doing so, awareness on educational issues is required for all stakeholders: children, families, teachers and architects should collaborate more closely during design processes and work together in order to provide suitable spaces for ECEC centers.

## **Chapter 2**

### **The Research Project**

#### **Rationale of the Research Project**

The literature review on the meanings of space in ECEC Centers exposed in Chapter 1 allowed to identify some gaps in the field, highlighting aspects that are so far little investigated and that should be more explored and systematized in future research.

First, although research has often focused on the identification of some aspects that the space should provide to meet children's, teachers' and parents' needs (Acer et al., 2016, Cloward Drown, 2014, Fjortoft, 2001, Maxwell, 2007), the underlying motivations that determine these preferences and visions seem to be not yet investigated. However, within a constructivist approach, the meanings given to space by the different stakeholders acquire great relevance. Such meanings are ideas, representations, affects and beliefs which characterize the perceptions of people who experience the space of ECEC centers in daily life. In this perspective qualitative explorations seem to be needed to define which meanings are given to the spatial experience, in order to form basis to systematize the knowledge in the field and orient research and practice.

Second, although research highlighted the importance of taking into account the point of view of all stakeholders involved (Durak, 2009; Gur, 2014; Iwan & Poon, 2018), most of the studies published so far limited their investigation to teachers' and children' perception. Few studies explored the point of view of other important actors as parents and coordinators, and none involved assistants. In order to be in line with a constructivist approach and adopt an inclusive methodology, the need for studies that take into account all these stakeholders' perspectives seem to be crucial. Furthermore, there is no research taking into account all these perspectives in a single study. For these reasons, it would be important to conduct studies that involve parents, teachers, assistants, coordinators and children on the same topic. This approach would help to have a multifaceted look at the same focus that may allow to understand and integrate the complexity of the object of study, avoiding the risk of excessive reductionism and unilateral perspectives.

Third, research conducted so far indicated that the point of view of children should be taken into account in design processes, in order to create spaces that respond to their real needs. Children's vision has in fact emerged to be different from adult's one and at the same time adequate and able to detect the

weaknesses and strengths of ECEC spaces (Bers et al., 2018; Botsoglou et al., 2017; Millei & Gallagher, 2012; Nah & Lee, 2016). Although many studies were conducted with children, a systematic investigation of their experience of space has not yet been conducted. Such effort may help to identify the meanings that children give to their spatial experience at a different level: physical, psychological and relational levels may be explored in order to investigate their representation of space.

Finally, an important aspect that emerged from the literature review is the enrichment that knowledge of experiences from realities far from our own, particularly from other countries, could provide in an extension of personal views on educational issues (Iwan & Poon, 2018; Prochner et al., 2008). The knowledge of different approaches in the use of space may broaden one's perception, by overcoming limiting beliefs and prejudices, and stimulating reflections and thoughts. Nevertheless, very few studies explored such topic, comparing experiences in different countries, showing the need for more research to be oriented in this direction.

Starting from these points, the present research project was aimed to fill some gaps in the field and to deepen aspects so far little investigated.

### **Research Design**

In the light of the aforementioned consideration, within a constructivist approach, the research project aimed to investigate the meanings of space in ECEC centers by exploring the point of view of adults and children. The personal meanings about the spatial experience acquire relevance in everyday life, since they guide the actions in the space, affect the feelings about spaces, condition the design processes on space and convey relational messages about how each actor (children, parents, teachers,...) is kept in mind. Therefore, the different points of view on space co-construct an educational environment which influences the development of children, the experience of adults and the relationships between the different stakeholders. The research project investigated adults' and children's ideas, representations, affects and beliefs about space, deriving them from the direct experience of participants, in terms of choices of favorite or not favorite places, which were explored through different strategies as verbal explanations, graphic representations and play activities, reasons underpinning those preferences and perceptions about specific spaces, both indoors and outdoors. The research project included three studies described as follows.

## **Study 1 - The meanings of space in ECEC Centers in adults' experience**

Since new conceptual frameworks on the scientific investigation on physical environment should include the meanings given to space, the first study explored the meanings given by adults, so far not systematized in scientific research, including both qualitative and quantitative methods. Moreover, since only few studies took parents' and coordinators' perceptions into account and no studies included assistants' voices, the points of view of parents, assistants and coordinators had been included in addition to that of teachers. This first study included a preliminary study and a main study described as follows.

### ***Preliminary Study - The meanings of ECEC space in adults' experience: an exploration through group interviews and focus groups.***

The preliminary study was aimed to explore the meanings of ECEC space in parents' and teachers' experience, defining categories of meanings that orient spatial experience and identifying some main themes about ECEC spaces to be further investigated in a subsequent study with a larger sample. The participants of the study were 20 teachers and 16 parents from two ECEC centers in Parma and Turin. The data was collected through five meetings (2 with parents and 3 with teachers), each including a group interview and a focus group, and analyzed with NVivo Qualitative Data Analysis Software .

### ***Main Study - The meanings of ECEC space in adults' experience: an investigation through questionnaires.***

The main study was aimed to investigate the meanings of space in adult's experience, starting from the results of the preliminary study. The participants were 1091 adults, including parents, teachers, assistants and coordinators, from various ECEC centers in Emilia-Romagna. The data was collected through online questionnaires and analyzed with SPSS Statistics software.

## **Study 2 - The meanings of space in ECEC Centers in children's experience**

Since a child-centered approach is recommended and listening to children's voices is encouraged, the second study explored the point of view of children by investigating the meanings that children expressed with respect to their educational spaces, including both qualitative and quantitative methods. The study tries to overcome the approaches of the research carried out so far with children which have mainly focused on defining which spaces they prefer. It included a preliminary study and a main study.

***Preliminary Study - The meanings of space in ECEC centers in children's experience: an exploration through drawings and tridimensional models.***

The preliminary study was aimed to explore the meanings of space in ECEC centers in children's experience identifying an effective method to get children's point of view which will be further investigated in a subsequent study with a larger sample. The total participants were 48 children aged from 3 to 6 years old, from two ECEC centers in Parma and Turin. The data was collected through two different drawings and a tridimensional model. 38 children participated in the first drawing collection; 34 children participated in the second drawing collection; 45 children in the 3D model collection. A qualitative analysis was conducted.

***Main Study - The meanings of space in ECEC centers in children's experience: an investigation through drawings and interviews.***

The main study was aimed to explore the meanings of space in ECEC centers in children's experience through the method that was found to be more effective in the preliminary study. The participants were 262 children from five ECEC centers in Parma. Data were collected through individual drawings and interviews and analyzed with SPSS Statistics software.

**Study 3 - The meanings of space in ECEC Centers in three European countries: Italy, Belgium and Lithuania**

Since the comparison between different pedagogical contexts and approaches could provide opportunities to broaden personal visions and stimulate thoughts on the educational potential of the physical environment, the third study explored the meanings given to space by both adults and children in three European countries: Italy, Belgium and Lithuania. It included two studies on study adult's meanings and a study on children's meanings.

***The meanings of ECEC spaces in adults' experience in Italy, Belgium and Lithuania: an exploration through group interviews.***

This study was aimed to investigate and compare the meanings of ECEC spaces in adults' experience in Italy, Belgium and Lithuania. The participants were parents and teachers from the three countries. Data were collected through 13 group interviews: 5 in Italy (20 teachers, 16 parents), 4 in Belgium (17 teachers, 7 parents), 4 in Lithuania (12 teachers, 12 parents). Data from Italy were obtained from Study 1.

***The meanings of ECEC spaces in adults' experience in Italy, Belgium and Lithuania: an investigation through questionnaires.***

This study was aimed to investigate and compare the meanings of ECEC spaces in adults' experience in Italy, Belgium and Lithuania. The participants were parents, teachers, assistants and coordinators of the three countries. Data were collected through questionnaires that involved 1091 adults in Italy, 166 in Belgium, 166 in Lithuania. Data from Italy were obtained from Study 1. The analyses were conducted with SPSS Statistics software.

***The meanings of ECEC spaces in children's experience in Italy, Belgium and Lithuania: an exploration through drawings and interviews.***

This study was aimed to investigate and compare the point of view of children on ECEC spaces in Italy, Belgium, Lithuania. Method: The participants were 86 children aged 3 to 6 years old belonging to two ECEC centers in each country. Data were collected through drawings and interviews. Participating children were 29 in Italy, 26 in Belgium, 31 in Lithuania. A qualitative analysis was conducted. A scheme of the research project is reported in Table 2.1.

*Table 2.1 – Scheme of the research project.*

Study	Aim	Participants	Method
Study 1	Exploring the meanings of ECEC space in adults' experience		
– Preliminary Study	Defining categories of meanings and identifying themes to be investigated in the main study	20 teachers and 16 parents from two ECEC centers in Parma and Turin	Group interviews and focus groups
– Main Study	Exploring the meanings of ECEC space in adults' experience on the basis of what emerged from the preliminary study	1091 adults, including parents, teachers, assistants and coordinators, from ECEC centers in Emilia Romagna	Online questionnaires

Study 2	Exploring the meanings of ECEC space in children's experience		
– <i>Preliminary Study</i>	Conduct a preliminary exploration on children's meanings and define a method to investigate them in the main study	48 children from two ECEC centers in Parma and Turin:	
		– 38 children	– Drawing1
		– 34 children	– Drawing2
		– 45 children	– Tridimensional model
– <i>Main Study</i>	Investigate the meanings of ECEC space in children's experience on the basis of what emerged from the preliminary study	262 children from 5 ECEC centers in Parma	Drawings and interviews
Study 3	Exploring the meanings of ECEC space in adults' and children's experience in Italy, Belgium and Lithuania		
– <i>First study with adults</i>	Exploring adults' meanings Italy, Belgium and Lithuania	– 20 teachers and 16 parents in Italy – 17 teachers and 7 parents in Belgium – 12 teachers and 12 parents in Lithuania	Group interviews
– <i>Second study with adults</i>	Exploring adults' meanings Italy, Belgium and Lithuania	– 1091 adults in Italy – 166 adults in Belgium – 166 adults in Lithuania	Online questionnaires
– <i>Study with children</i>	Exploring children's meanings in Italy, Belgium and Lithuania	– 29 children in Italy – 26 children in Belgium – 31 children in Lithuania	Drawings and Interviews

## Chapter 3

### Study 1: The meanings of space in ECEC Centers in adults' experience

The findings of the review in Chapter 1 indicates that research has often focused on the identification of some aspects that the space should provide to meet children's, teachers' and parents' needs. Studies on adults' perception indicate, for example, that parents would like ECEC spaces to be safe, cozy and connected with the outdoors (Berris & Miller, 2011; Gur, 2014; Read, 2003), and that teachers give great importance to spaces and materials that support educational actions (Bers, Strawhacker, & Vizner, 2018; Havu-Nuutinen & Niikko, 2014; Marshall & Lewis, 2014), arranging the environment in line with their pedagogical views (Børve & Børve, 2017; Prochner, Cleghorn, & Green, 2008). Nevertheless, to our knowledge, an investigation has not been yet conducted on the underlying motivations that determine these preferences and visions. Since preferences themselves are often linked to the specific contexts and related to them, is it possible to identify some categories of meanings that people attribute to space?

The present study tried to answer that question. The approach to inquiry is constructivist, based on the idea that the understanding and knowledge of the environment in which people live is co-constructed by experiencing things and reflecting on those experiences. According to this vision, space is not a static aspect: its meaning is constantly interpreted, reinvented and negotiated through social interactions. Therefore, in studying the ECEC environment it is very important to consider the point of view of the main actors who live in that space and understand the meanings they give to it. Thus, the study aimed to identify such meanings, by deriving them from the definition of favorite and least favorite spaces, the reasons given for preferences and non-preferences and the perception of specific ECEC spaces, both indoor and outdoor. This effort could contribute to clarify the aspects considered important for each actor, beyond the individual preferences, in order to orient programs and practices related to the organization and management of space. The results could then be useful for daily practices in the centers as well as at a political level, in addition to the research level, by providing a lens through which to read spaces and organize interventions.

The study also gives voice to parents and assistants, who are usually less involved in research projects on educational centers and for this reason are at the center of some European debates about the need for their involvement in ECEC centers issues. The state of the art in Chapter 1 also highlighted that their

point of view is little explored by the literature on the field, compared to the one of the teachers.

Nevertheless, parental involvement in decisional processes of ECEC services is encouraged by European policies which state that *'parents' participation as partners of such services is essential'* (Council of the European Union, 2019, p.11). The inclusion of families in ECEC experience is also supported by literature that highlights the need for a more participatory approach on parental involvement (Van Laere et al., 2018, Vanderbroeck et al., 2011) which encourage to considering them actors and not spectators of processes that take place in the centers (Tronto, 2013). Such an approach would also address issues related to the debate on the instrumentalization of parental involvement which criticises the tendency to think *for* parents rather than thinking *with* parents about educational processes (Hughes and Mac Naughton 2000; Rayna and Rubio 2010). Also in relation to the role of assistants, recent literature highlights the need for a major involvement in ECEC centers' processes, which is strictly related to the need to overcome the division between education and care in the approach and management of ECEC centers. Many research studies and reports underline how quality in ECEC should encompass a broad, holistic view on learning, caring, upbringing and social support for children, with specific attention to the fact that the concept of 'care' and 'education' are intertwined: it is not possible to divide them or to see one as superior to the other (European Commission, 2018; Laere et al., 2012; Peeters et al., 2018; Vandebroek et al., 2016). As pointed out also by the European Quality Framework (European Commission, 2014, 2018; UNESCO, 2010), and the tasks of ECEC professionals, whatever their profile is, should be geared towards this holistic approach. In many European countries, assistants are employed to work alongside teachers and are responsible for caring tasks and for looking after the children outside the classroom periods (during meals at midday, in the play-ground, during sleeping moments). Considering the debate about the 'schoolification' of the early years and the consequent priority that this perspective gives to the 'cognitive' aspects of education, different studies (Laere et al., 2012; Peeters et al., 2016) argue that the divided roles between assistants and teachers (in which assistants are seen as the ones that 'take care' and core practitioners as the ones that 'educate') might reinforce the division between care and education, which does not facilitate the holistic approach that we aim to embrace. International literature suggests to move towards a new integrated approach, namely "Educare", which includes both educational and caring meanings during all practices in ECEC centers (Peeters et al., 2018). In practice, this should include a more thought collaboration between teachers and assistants, their involvement

in common CPD paths to reflect on their practice together in order to work for the wellbeing of children and families. Although in the Italian context the role of assistants is different from most European countries, since teachers are also in charge for caring moments as eating, sleeping and toilet moments, it would be interesting listening to their point of view, which is probably different from the one of parents, teachers and coordinators, due to their different role in the everyday experience of ECEC centers. Furthermore, no studies have been found in the review of the literature on the meanings of ECEC spaces, then their involvement in the study would be an added value that may open new reflections and new paths for practice and research.

The 'Educare' debate may also be declined in ECEC space issues: observing that caring moments, such as eating, sleeping and toilet moments, usually have a less 'educational' connotation in the centers (for example, less pedagogical documentation) it might be implicit that eating, sleeping and toilet spaces deserve less investment in their spatial organization, compared to classes or playing rooms. Also spaces for the care of adults are usually considered less important than others, since the ECEC centers are obviously focused on children; nevertheless, such spaces may offer moments of intimacy and care that adults also need in their daily experience. In particular, spaces for families may facilitate the inclusion of parents in the educational reality of the center, by welcoming them and let them feel thought, and spaces for educational staff may allow moments of withdrawal and relaxation from the challenging and continuously demanding work situation. Not many studies focused on the way these spaces should be organized, implicitly showing the general less attention given to these moments. Therefore, the present study is also aimed to explore the visions about these spaces.

The first study included a preliminary study, aimed to conduct a first exploration on parents' and teachers' meanings through group interviews and focus groups, and a main study, that investigated the aspects that emerged on a larger sample through questionnaires.

### **3.1 Preliminary Study - The meanings of ECEC space in adults' experience: an exploration through group interviews and focus groups**

#### **Aim**

The present preliminary study aimed to conduct a first exploration on parents' and teachers' meaning of ECEC spaces, in order to explore the aspects relevant in adults' vision that orient the daily experience in ECEC centers. In particular, the aims of the study were: 1) to identify favorite and least-favorite spaces in the ECEC centers; 2) to investigate the reason for preferences and non-preferences about space; 3) to explore the perceptions about eating, sleeping and toilet spaces; 4) to explore perceptions about spaces for adults within the ECEC centers, in particular spaces for families and spaces for teachers; 5) to explore perceptions about outdoor spaces; 6) to identify which factors guide the preferences about spaces; 7) to explore which of the identified factors are the most relevant in preferences and non-preferences about space, for parents, teachers and children in adults' vision.

#### **Method**

##### **Participants**

Participants were 20 teachers and 17 parents from two Italian ECEC centers, placed in Parma and Turin. Of the teachers, 2 were men and 18 women; the total mean age was 35.9 years (range: 22-63 years old) and the mean years of service was 9.25 years (range: 3 months – 27 years). Fourteen of them (66.6%) had completed high school, 1 of them (4.8%) had completed a bachelor's degree and 6 of them (28.6%) had completed a master's degree. Of the parents, 5 were men and 12 women; the total mean age was 38.8 years (range: 30-45 years old) and the mean age of their children who attended the centers was 3 years and 2 months (range: 17 months-5 years old). One of the parents (5.9%) had completed high school, 1 of them (5.9%) had completed a bachelor's degree, 14 of them (82.3%) had completed a master's degree and 1 of them (5.9%) had completed a PhD course. The socio-economic status (SES) of the parents was calculated using the Hollingshead Four Factors Index (Hollingshead, 1975) based upon each parent's education and occupation. The mean SES of the participating parents was 56.4 (SD=5,50; range 55-60) so they should be considered in the category of major business and professionals (ibid). All the participants were Italian.

The recruitment of the participants was facilitated by the pedagogical coordinators of the two ECEC centers involved: they asked for face-to-face participation with all teachers and provided a printed letter to all the parents. All the 22 teachers of the centers gave their informed consent. Among the parents, 20 informed consent forms were signed. All the teachers and parents who gave their informed consent were selected. However, 2 teachers and 3 parents couldn't participate on the established dates, due to private matters. Thus, they were excluded from the study. Participation was voluntary and no incentives or compensation were provided. The study aims were explained to all the participants and assurances were given on the ethical processes of data collection.

### ***Researchers description***

Two researchers were present during the data collection: one as the conductor and the other as the assistant. The conductor is a researcher in developmental and educational psychology who also acts as educational consultant and trainer for ECEC coordinators and teachers. The assistant has a bachelor's degree in architecture and a master's degree in psychology, and she is currently attending a PhD project on innovation and quality in ECEC centers. The background of the two main researchers gave them some prior understanding about the relationship between the educational actions and the environment in which they are carried out. They know the context of the ECEC centers and the challenges that teachers, parents and children might encounter during their daily experiences. The researchers' experience in the field of psychology, early childhood education and architecture probably helped in conducting the interviews and structuring the data collection and analysis. It should be specified that prior to research, there had been no relationship between the researchers and the participants.

### **Instruments and procedure**

Data were collected during five meetings organized in the ECEC centers. Each meeting included a group interview in the first part and a focus group in the second part. The two parts are distinguished by their different characteristics: the group interview implied personal answers, not stimulating discussion between participants, while during the focus group interaction and discussion between participants was requested (Gill, Stewart, Treasure, & Chadwick, 2008). The aim of the group interview was to investigate preferences about space and to identify which factors guide such preferences. The aim of the focus group was to identify the main elements that should characterize some specific ECEC spaces and the meanings associated to them:

in particular, eating, sleeping, toilet spaces, spaces for adults and outdoor spaces. The three meetings with teachers included 9, 6 and 5 participants, while the two meetings with parents included 11 and 6 participants.

**Group interview**

During the group interview the conductor, the assistant and the participants all sat around a table. A map of the ECEC center was placed in the middle of the table and four open questions were proposed to the participants. Questions are reported in Table 3.1.

*Table 3.1 – Questions of the group interview*

Thematic area	Question
Adults’ preferences	Is there a place in this center that you like most of all and if so, why?
Reason for adults’ preferences	Is there a place in this center that you don’t like very much and if not, why?
Childrens’ preferences	Is there a place in this center that your child (for parents)/the children (for teachers) like most of all and if so, why?
Reasons for children’s preferences	Is there a place in this center that your child (for parents)/the children (for teachers) don’t like very much and if so, why?

The conductor asked each question to the group and each participant one at time, in random order, answered, expressed his/her own point of view, also referring to the answers of others and commenting on them. The conductor also asked the participants to indicate the places described in the answers on the map. The group interviews were held for 31 to 44 mins, with an average interview time of about 39 mins. They were audio and video recorded and a verbatim transcription was made for each recording.

**Focus group**

During the group interview the conductor, the assistant and the participants all sat around a table. Three pictures were used to stimulate discussion on eating, sleeping and toilet space: one for each space. The pictures were chosen jointly by conductor and assistants to represent realities where use of space differs from the Italian norm, in order to enhance reflections and thoughts on the space. The three pictures used are reported below.

Picture 1 –Eating space



Picture 2 – Sleeping space



Picture 3 – Toilet space



The questions proposed to stimulate discussion between participants are reported in Table 3.2.

Table 3.2 – Stimuli for focus groups

Space investigated	Questions
Eating space (using Picture1)	<ul style="list-style-type: none"> <li>• What do you think about this picture? How do you think children experience eating according to this picture?</li> <li>• Which elements are important in an eating space of an ECEC center, according to you?</li> </ul>
Sleeping space (using Picture2)	<ul style="list-style-type: none"> <li>• What do you think about this picture? How do you think children experience sleeping according to this picture?</li> <li>• Which elements are important in a sleeping space of an ECEC center, according to you?</li> </ul>
Toilet space (using Picture3)	<ul style="list-style-type: none"> <li>• What do you think about this picture? How do you think children experience going to the toilet according to this picture?</li> <li>• Which elements are important in a toilet of an ECEC center, according to you?</li> </ul>
Space for parents	<ul style="list-style-type: none"> <li>• Is it important to have spaces dedicated to parents in the school/center? (f.e. a room, a corner with books for adults etc.); Why?</li> <li>• Is it important to have ‘furniture’ or elements for parents in the playing rooms of the children? (f.e. chairs for adults, a sofa for adults in the playing room etc.) – Why?</li> <li>• Is it important that parents enter the class of their children during the drop in and pick up moments? Why?</li> </ul>

Space for teachers (questions only for teachers)	<ul style="list-style-type: none"> <li>• Is it important to have spaces for teachers and practitioners in ECEC centers?</li> <li>• What kind of space should be important to find for a teacher/practitioner in an ECEC center?</li> <li>• What features should characterize these spaces?</li> </ul>
Outdoor space	<ul style="list-style-type: none"> <li>• Do you think it's important to play outside? Why?</li> <li>• What kind of toys/equipment should characterize these spaces?</li> <li>• What do you think about going out with 'bad' weather?</li> <li>• Playing outside can also be adventurous and 'risky'. What do you think about this?</li> </ul>

For each space investigated, the conductor proposed the questions to the group and participants discussed about them expressing their own point of view, also referring to the answers of others and commenting on them. The focus groups immediately followed the group interviews and were held for 76 to 85 mins, with an average interview time of about 81 mins. They were audio and video recorded and a verbatim transcription was made for each recording.

## **Analysis**

### ***Data analytic strategies***

To analyze the group interviews, two researchers conducted a content analysis on the verbatim transcription of the meetings, to identify the main elements that should characterize ECEC spaces in adults' vision and to define some categories and subcategories by means of which the participants seem to motivate the preferences about spaces. In order to code the group interviews in relation to categories of meanings, two independent raters analyzed the whole transcriptions of the interviews and assigned each proposition to the defined categories. The coding categories were created through comparison and discussion of two evaluators who first read the transcribed separately. The unit of analysis was each answer of a participant to the same question. Sometimes the answers were concise and simple, but sometimes they were more complex and elaborate, consisting of many propositions. For these reasons, some rules were defined with which to conduct the analysis:

- If a participant used the same category for answering the same question (for example, expressing the same concept in more than one proposition), the raters should indicate the category just once;
- If a participant used more than one category in the same answer but in different sentences (for example, exposing a complex discussion which includes many aspects), the raters should indicate all the identified categories;
- If a rater could assign more than one category to the same sentence, he/she should choose the more significant aspect of the sentence and assign just one category.

The agreement index between the two raters was acceptable for all categories considered (Cohen's K: range 0.75-0.85). Finally, the frequency of the categories has been analyzed to investigate the frequency and the significance of the results in relation to some variables: preferences/non-preferences about space, adults'/children's perspective, teachers'/parents' point of view.

To analyze the focus groups, two researchers conducted a content analysis on the verbatim transcription of the meetings, using NVivo Qualitative Data Analysis Software. In particular, the six sections of the focus groups were analyzed independently to identify the main aspects that emerged for each space. In relation to eating, sleeping and toilet spaces, three aspects were coded, distinguishing parents' and teachers' visions: 1) aspects related to the environmental features that the specific space should provide 2) aspects related to the learning value of the space; 3) aspects related to the caring value of the space. In relation to spaces for families, the main aspects that emerged in describing the current spaces were coded, distinguishing parents' and teachers' visions. In relation to spaces for teachers two aspects were coded: 1) aspects of the current space for teachers; 2) aspects of the ideal spaces for teachers. In relation to outdoor spaces, four aspects were coded, distinguishing parents' and teachers' visions: reasons for the importance of outdoor spaces, equipment needed in outdoor spaces, considerations on the use of outdoor spaces in all weather conditions, the possibility of risky-play in outdoor spaces. It should be specified that the two researchers who analyzed the focus groups were the same who analyzed the group interviews.

### ***Methodological integrity***

To demonstrate that findings are grounded in the evidence, some quotes from the participants are reported in the Results section. As a supplementary check, the analysis was also presented to the participants,

to verify that misunderstandings did not occur: the feedback was positive, supporting the adequacy of the claims derived from the analysis.

The researchers' perspectives were managed in both the data collection and analysis. During data collection the researchers limited their role to the presentation of the open questions, then each participant could lay out his/her thoughts without being interrupted or corrected. Both the conductor and the assistant were coached to play the role of facilitator, in order not to influence the answers. During data analysis, the categories were identified by two researchers and then two independent raters assigned the identified categories to each answer: this guarantees that data were analyzed with more than one researcher's perspective.

Finally, the main relevant contextual information for findings are exposed, in order to clarify all the conditions related to the research: the settings of the interviews, information about participant and interview questions are reported in the Data collection section and discussed in the Limitation section.

## **Results**

The presentation of the results is organized as follows: first, the results about the favorite spaces and the reasons for preferences are presented, distinguishing parents' and teachers' preferences and adults' visions about children's preferences. Second, the results about the least favorite spaces and the reasons for non-preferences are presented, distinguishing parents' and teachers' non-preferences and adults' visions about children's non-preferences. Third, the results about eating, sleeping and toilet spaces are presented, distinguishing parents and teachers visions and identifying three main aspects for each space: the physical characteristics of the environment, the 'educational' value of the space, the 'care' value of the space. Fourth, the results about the space for families are presented, identifying the emerging aspects related to the characteristics of the environment, distinguishing parents' and teachers' visions. Fifth, the results about the space for teachers are presented, distinguishing the aspects emerged about the current space and the ones about the ideal space in teachers' vision. Sixth, the results about the outdoor space are presented, distinguishing parents' and teachers' visions about some main themes emerged: the importance of outdoor space, the equipment, the use of outdoor space in relation to weather, the possibility of risky-play.

Finally, the last section of the results introduces an analysis of the factors influencing preferences and non-preferences about space, through the identification of five categories through which participants seem to

motivate their preferences and non-preferences, the analysis of the frequency of such categories in parents' and teachers' answers, in preferences and non-preferences, also distinguishing the vision about themselves and about children, and the analysis of the correlation between categories. The organization of the result section is summarized in Table 3.3.

*Table 3.3 – Organization of the results sections*

Section	Aspects investigated	Categories
Favorite space and reasons for preferences	Favorite space and reasons for preferences	Parents / Teachers / Children
Least favorite space and reasons for non-preferences	Least favorite space and reason for non-preferences	Parents / Teachers/ Children
Eating space	Environment / Education / Care	Parents / Teachers
Sleeping space	Environment / Education / Care	Parents / Teachers
Toilet space	Environment / Education / Care	Parents / Teachers
Space for families	Characteristics of the space	Parents / Teachers
Space for teachers	Characteristics of the space	Current / Ideal in teachers' vision
Outdoor space	Aspects emerged: Importance / Equipment / Weather / Risky-play	Parents/ Teachers
Factors influencing preferences and non-preferences	Which factors influence preferences and non-preferences	The 5 identified categories and subcategories
	Frequency of categories and subcategories	Parents / Teachers Adults / Children Preferences / Non-preferences
	Correlation between categories	The 5 identified categories

### **Favorite space and reasons for preferences**

Parents' favorite space resulted to be: 1)the garden for its widht, its relaxing atmosphere and the possibility for children to stay outside; 2)the windows for the brightness, their role to create connection between inside and outside and for the possibility to meet other families; 3)the entrance for the good emotions experienced at the arrival; 4)the hall and corridor for the possibility to meet other families and the possibility to see what children do during the school day through pedagogical documentation; 5)the space for

families, where present, for meeting children after the day at work and enjoying nice moments with them, spending there lot of time there and for the possibility to learn from some available reviews; 6)the library for families, for being a cozy space that allows moments of privacy, for enjoing nice moments with children and for meeting other families there; 7)the soft/reading corner for its beauty and relaxing atmosphere, for the possibility to stay there chatting with teachers and enjoy seeing children reading quietly; 8)the toilet space for its beauty and for enjoying seeing children become autonomous and help each other; 9)the class for having spent the first moment in the center there, for feeling good emotions, enjoying nice moments with children, for its beauty and tidiness.

Teachers' favorite spaces resulted to be: 1)the garden, for enjoying nice moments with children, also supporting them in risky-play and for feeling good emotions; 2)the windows, for the brightness, their role to create a connection between inside and outside and for the possibility to meet other families; 3)the class, for feeling good emotions and feeling 'like at home', for staying there a lot of time, for having co-designed the space, also with the help of parents, for the beauty and multi-functionality; 4)the soft/reading corner and den/peekaboo corner for the possibility to enjoy nice moments with children and relax; 5)the pretend play corner for staying there a lot of time, enjoying seeing children playing quietly and for its beauty; 6)the sleeping space for enjoying nice moments with children and listening to music; 7)the toilet space for its beauty and its visibility from the class.

A few participants were able to answer to the children's preferences about space, referring to: 1)the garden for the possibility to run, risky-play, play with natural materials, meet other children, plant herbs and look at the neighborhood; 2)the windows for the possibility to look outside and seeing parents' arrival; 3)the corridor for the possibility to meet other children, the mirror pyramid and the de-constructed materials corner for enjoying to play, the soft/reading corner for enjoying to read and relax and for the warmth; 4)the pretend play space for enjoying to play there and for relax; 5)the den/peekaboo space and space for families for the pleasure to stay there; 6)the toiler for the pleasure to stay there reading books.

### **Least favorite spaces and reasons for non-preferences**

Parents' least-favorite spaces resulted to be the garden because for the hot in summer, the dust and the cemented ground; the windows for the hot in summer; the entrance because it is too width, not thought and it hasn't a clear definition; the sleeping space because it is too tight and dark.

Teachers' least favorite spaces resulted to be the garden for the cemented ground; the hall and corridor for the narrowness that doesn't facilitate children's autonomy; the toilet space for its non-functionality.

A few participants were able to answer to the children's non-preferences about space; they referred to the wardrobe for its narrowness and the corner of the natural materials in the class for its lack of a clear definition.

All preferences, non-preferences and relative reasons for parents, teachers and children are reported in Table 3.4

**Table 3.4 – Preferences, non-preferences and relative reasons for parents, teachers and children**

<i>Favorite Space</i>	<i>Participants</i>	<i>Reasons for preferences</i>	<i>Reasons for non-preferences</i>
Garden	Parents	I like children to be outside	It's too hot in summer
		It's wide	It's dusty
		It's relaxing	It's too cemented
	Teachers	I enjoy nice moments with children	It's too cemented
		I enjoy supporting children in risky-play	
		I feel good emotion	
	Children	They like to run	-
		They like risky-play	
		They like playing with natural materials	
		They like to meet other children	
		They like looking at the neighborhood	
		They remember having planted herbs	
Windows	Parents	There's a nice light	It's too hot in summer
		It connects inside and outside	
		It allows to see other families	
	Teachers	There's a nice light	-
		I enjoy nice moments with children	

		It connects inside and outside	
		It's relaxing	
	Children	They look outside	-
		They wait for parents	
Class	Parents	I spent there my first moments in the center	-
		I feel good emotions	
		I enjoy nice moments with my child	
		It's beautiful	
		It's tidy	
	Teachers	I feel like at home	-
		I stay there a lot of time	
		I co-design the space	
		It's beautiful	
		I feel good emotions	
		Parents help us to design the space	
		It's multi-functional	
	Children		
Entrance	Parents	I feel good emotions when I arrive	It's too wide
			It's not thought
			It hasn't a clear definition
	Teachers	-	-
	Children	-	-
Hall and corridor	Parents	I can meet other families	-
		I can see what my child does at school	
	Teachers	-	It's noisy
			It's not thought
	Children	They like to meet other children	-

Toilet space	Parents	It's beautiful I enjoy seeing children become autonomous I enjoy seeing children help each other	-
	Teachers	It's beautiful It's visible from the class	It's not functional
	Children	Children like staying there reading books	-
Sleeping space	Parents	-	It's narrow It's too dark
	Teachers	I enjoy nice moments with children I enjoy listening to music there	-
	Children	-	-
Family-Room	Parents	I enjoy nice moments with my children I spend a lot of time there I meet my child after the day at work I spent there my first time in the center I can learn from available reviews	-
	Teachers	-	It's narrow It's too dark
	Children	They like the available materials there	-
Family-Library	Parents	It's cozy It allows privacy I enjoy nice moments with my child I can meet other families	-
	Teachers	-	I don't spend there a lot of time It's dark
	Children	-	-

Wardrobe	Parents	-	-
	Teachers	-	It's narrow It doesn't facilitate children's autonomy
	Children	-	It's narrow
Soft/reading corner	Parents	I enjoy seeing children reading quietly	-
		I stay there chatting with teachers	
		It's beautiful It's relaxing	
	Teachers	I enjoy nice moments with children	-
	Children	They like to read	-
		They calm down It's warm	
Den/peekaboo corner	Parents	-	-
	Teachers	I enjoy nice moments with children It's relaxing	-
	Children	They like staying there	-
Pretend play corner	Parents	-	-
	Teachers	I stay there a lot of time It's beautiful I enjoy seeing children playing quietly	-
		Children	They like playing there
Mirror pyramid	Parents	-	-
	Teachers	-	-
	Children	They like staying there	-

De-constructed material corner	Parents	-	-
	Teachers	-	-
	Children	They like playing there	-
Natural materials corner	Parents	-	-
	Teachers	-	-
	Children	-	It hasn't a clear definition Teachers don't spend time there

## Eating Space

In relation to the environmental aspects that an eating space should provide both parents and teachers referred to a well-set table and no-plastic dishes and glasses; parents also think the space should be quiet and tidy and teachers also think the space should be well-designed. In relation to educational aspects both parents and teachers recognize the eating space as a space where children learn to be autonomous (e.g.: eating by themselves, pouring water, clearing the table...), taste all the food, know their limits (e.g.: when they are full), appreciate the food (e.g.: flavor, smell, appearance) and wait for their own turn. Parents also referred to the educational value of having the same meal for each child and teachers also underlined that children learn food preferences of their friends. In relation to care aspects both parents and teachers recognize the eating space as a space where all children eat the same food together sharing the experience, take care of others in several tasks (e.g.: bringing food and pouring waters for others...) and the older children help the younger ones. Teachers also referred to the care in preparing the table and the sharing personal stories.

The main aspects related to environment, education and care in eating space in parents' and teachers' vision are reported in Table 3.6 and some citations from the focus groups are reported below.

*Table 3.6 - Aspects related to environment, education and care in eating space in parents' and teachers' vision*

<i>Aspects</i>	<i>Parents</i>	<i>Teachers</i>
Environment	<ul style="list-style-type: none"> <li>– Well set table</li> <li>– No plastic dishes and glasses</li> <li>– Quiet space</li> <li>– Tidy space</li> </ul>	<ul style="list-style-type: none"> <li>– Well set table</li> <li>– No plastic dishes and glasses</li> <li>– Well-designed</li> </ul>
Education	<ul style="list-style-type: none"> <li>– Achieving autonomies</li> <li>– Learning to taste all the food</li> <li>– Learning to know your limits</li> <li>– Learning to appreciate the food</li> <li>– Learning to wait your turn</li> <li>– The same meal for each child</li> </ul>	<ul style="list-style-type: none"> <li>– Achieving autonomies</li> <li>– Learning to taste all the food</li> <li>– Learning to know your limits</li> <li>– Learning to appreciate the food</li> <li>– Learning to wait your turn</li> <li>– Learning food preferences of peers</li> </ul>
Care	<ul style="list-style-type: none"> <li>– A moment of sharing: all children eat the same food together</li> <li>– Take care of others in several tasks</li> <li>– The older children help the younger</li> </ul>	<ul style="list-style-type: none"> <li>– A moment of sharing: all children eat the same food together</li> <li>– Take care of others in several tasks</li> <li>– The older children help the younger</li> <li>– Care in preparing the table</li> <li>– Sharing personal stories</li> </ul>

*“One nice thing is that the children have a dish in common, for example in the morning at the fruit interval they have a dish in common, they take a piece and they know that they have to pass it to others. Even the bread, they take a piece and then pass it to others ... ” (a parent)*

*"It is also a moment of sharing, because it is the time when children often tell us about what they did during the weekend with the families ... So it is a time when we talk a lot" (a teacher).*

### **Sleeping Space**

In relation to the environmental aspects that an eating space should provide both parents and teachers referred to a place that gives security, which should be comfortable, intimate, not too large, with low light, with beds on the ground, without bars, close to each other and personalized for each child (e.g.: child's sheet; child's photographs, child's objects or dolls). Parents also referred to a quiet space and teachers also referred to an 'embracing', child-friendly space with music and with the possibility for adults to stay close to the

children (e.g.: cushions for adults). In relation to educational aspects only the teachers referred to sleeping space as a space where children learn autonomies in sleeping. In relation to care aspects parents referred to sleeping space as an emotionally-charged place where teachers take care of children's emotions and children learn to trust; they also recognize it as the space where cuddles and tenderness take place between teachers and children and also between peers.

The main aspects related to environment, education and care in sleeping space in parents' and teachers' vision are reported in Table 3.7 and some quotes from the focus groups are reported below.

*Table 3.7 - Aspects related to environment, education and care in sleeping space in parents' and teachers' vision*

<i>Aspects</i>	<i>Parents</i>	<i>Teachers</i>
Environment	<ul style="list-style-type: none"> <li>– A place that gives security</li> <li>– Comfortable</li> <li>– Intimate, not too large</li> <li>– Low light</li> <li>– Beds on the ground, without bars, close to each other</li> <li>– Personalized space</li> <li>– Quiet</li> </ul>	<ul style="list-style-type: none"> <li>– A place that gives security</li> <li>– Comfortable</li> <li>– Intimate, not too large</li> <li>– Low light</li> <li>– Beds on the ground, without bars, close to each other</li> <li>– Personalized space</li> <li>– Embracing</li> <li>– Child-friendly</li> <li>– Music</li> <li>– Possibility for the adult to stay close to children</li> </ul>
Education		<ul style="list-style-type: none"> <li>– Autonomies in sleeping</li> </ul>
Care	<ul style="list-style-type: none"> <li>– A moment of sharing stories...</li> </ul>	<ul style="list-style-type: none"> <li>– Emotionally-charged space</li> <li>– Teachers take care of children's emotions</li> <li>– Children learn to trust</li> <li>– Time for cuddles and tenderness between teachers and children</li> <li>– Time for cuddles and tenderness between peers</li> </ul>

*"It is the place of physical contact, of cuddles of teachers but also of friends ..." (a parent)*

*"Children recognize their place, everyone has their place... A personalized and special place ..." (a teacher)*

## **Toilet Space**

In relation to the environmental aspects that an eating space should provide both parents and teachers referred to a coloured, quiet, pleasant place with separate areas (potties, sinks...) and child-friendly (e.g.: accessible toilet bowls, toilet paper, washbasins), easy to clean, visible to the teachers and equipped to wait for child's turn (e.g.: a bench, a little sofa, some books). Parents also referred to adequate furnishings and teachers underlined the importance of good illumination, drawers to put each child's change of clothes, mirrors hanging over washbasins and personalization for each child (e.g.: child's photographs, child's objects, child's personal symbol). In relation to educational aspects both parents and teachers referred to achieving autonomies, learning to wait, learning by imitation of peers, learning to know their body and that of others. Parents also referred to learning hygiene habits, learning to stay alone and telling stories to each other and teachers also recognize that in toilet space children learn also by imitation of teachers. In relation to care aspects, both parents and teachers recognize that in toilet space children experience an intimate moment where an adult takes care of them and they learn to respect each other's intimacy. Parents also referred to taking care of their body and taking care of others, when older children help the younger ones. Teachers also referred to toilet space as an environment when important relational moments take place: the time for cuddles and tenderness, the time for special and individual attention and the time for listening to some children's stories.

The main aspects related to environment, education and care in toilet space in parents' and teachers' vision are reported in Table 3.8 and some quotes from focus groups are reported below.

*Table 3.8 - Aspects related to environment, education and care in toilet space in parents' and teachers' vision*

<i>Aspects</i>	<i>Parents</i>	<i>Teachers</i>
Environment	<ul style="list-style-type: none"> <li>– Coloured</li> <li>– A quiet place</li> <li>– A pleasant place</li> <li>– Separate areas</li> <li>– Child-friendly</li> </ul>	<ul style="list-style-type: none"> <li>– Coloured</li> <li>– A quiet place</li> <li>– A pleasant place</li> <li>– Separate areas</li> <li>– Child-friendly</li> </ul>

<i>Aspects</i>	<i>Parents</i>	<i>Teachers</i>
	<ul style="list-style-type: none"> <li>– Easy to clean</li> <li>– Visible to the teachers</li> <li>– Equipped to wait your turn</li> <li>– Adequate furnishings</li> </ul>	<ul style="list-style-type: none"> <li>– Easy to clean</li> <li>– Visible to the teachers</li> <li>– Equipped to wait your turn</li> <li>– Well lit</li> <li>– Drawers to put each child’s change of clothes</li> <li>– Mirrors hanging over washbasins</li> <li>– Personalized space</li> </ul>
Education	<ul style="list-style-type: none"> <li>– Achieving autonomies</li> <li>– Learning to wait</li> <li>– Learning by imitation of peers</li> <li>– Knowing your body and that of others</li> <li>– Learning hygiene habits</li> <li>– Learning to stay alone</li> <li>– Telling stories</li> </ul>	<ul style="list-style-type: none"> <li>– Achieving autonomies</li> <li>– Learning to wait</li> <li>– Learning by imitation of peers</li> <li>– Knowing your body and that of others</li> <li>– Learning by imitation of teachers</li> </ul>
Care	<ul style="list-style-type: none"> <li>– Having the experience of an adult taking care of you</li> <li>– Respecting each other’s intimacy</li> <li>– Is an intimate moment</li> <li>– Taking care of your body</li> <li>– Taking care of others: older children help the younger ones</li> </ul>	<ul style="list-style-type: none"> <li>– Having the experience of an adult taking care of you</li> <li>– Respecting each other’s intimacy</li> <li>– It is an intimate moment</li> <li>– The time for cuddles and tenderness</li> <li>– The time for special and individual attention</li> <li>– The time for listening to some children’s stories</li> </ul>

*“In the toilet space children learn the ability to take care of others, my child is learning to poop in the potty, she looks very much at her friend, and imitates her. The teacher told me that when she has to go to the bathroom her friend calls her, takes her hand and says: "Come now, it's time!!" and accompanies her to the toilet”. (a parent)*

*"It is the moment when an adult and a child look each other in the eye. Some children just wait for that moment to get the pampering of the teacher, some children tell each other ... it's time for deep relationships ... " (a teacher)*

## Space for families

In relation to space for families, it emerged that parents and teachers have different visions. Parents referred to the current space for families as a nice, meaningful, intimate, relaxing, emotionally-charged place where they can share personal experiences with other families and where they can learn new things from available books and reviews. Teachers referred to the current space for families as a small, narrow, unpleasant, dark, chaotic and badly furnished place with lack of documentation.

The characteristics of the current space for families in parents' and teachers' vision are reported in Table 3.9 and some quotes from focus groups are reported below.

*Table 3.9 - Characteristics of the current space for families in parents' and teachers' vision*

<i>Space</i>	<i>Parents</i>	<i>Teachers</i>
Space for families	<ul style="list-style-type: none"> <li>– Nice</li> <li>– Meaningful</li> <li>– Intimate</li> <li>– Relaxing</li> <li>– Emotionally-charged</li> <li>– Share personal experience with other families</li> <li>– Learning from books and reviews</li> </ul>	<ul style="list-style-type: none"> <li>– Small</li> <li>– Narrow</li> <li>– Unpleasant</li> <li>– Dark</li> <li>– Chaotic</li> <li>– Badly furnished</li> <li>– Lack of documentation</li> </ul>

*“In the place for the families I chatted with other mothers about separation and small difficulties and even now I am happy to sit there. There is also a collection of documents for parents on different topics that the teachers make available to families. I like it because it is also a time to learn new things.” (a parent)*

*“In the space for families it would be necessary to put some light and a bit of documentation. Recently an armchair has been put in place for mothers who wish to breastfeed, but it should be better furnished.” (a teacher)*

## Space for teachers

In relation to space for teachers, teachers themselves referred to their current one as small, noisy, narrow, uncomfortable, not thought, visible from the corridor (e.g.: parents see them during their moment of relax and ask to talk), too hot in summer and too cold in winter. Thinking about an ideal space for teachers

they referred to a beautiful, comfortable place, with something to eat and drink, a sofa or comfortable chairs, books and reviews to read; a place that facilitates sharing between teachers and relaxing moments.

The main characteristics of the current and ideal space for a teacher in teachers' vision are reported in Table 3.10 and some quotes from focus groups are reported below.

*Table 3.10 - Characteristics of the current and ideal space for a teacher in teachers' vision*

<i>Space</i>	<i>Current</i>	<i>Ideal</i>
Space for teachers	<ul style="list-style-type: none"> <li>– Small</li> <li>– Narrow</li> <li>– Uncomfortable</li> <li>– Not thought</li> <li>– Visible from the corridor</li> <li>– Too hot in summer, too cold in winter</li> </ul>	<ul style="list-style-type: none"> <li>– Beautiful</li> <li>– Comfortable</li> <li>– With something to eat and drink</li> <li>– With a sofa or comfortable chairs</li> <li>– With books and reviews to read</li> <li>– A place that facilitate sharing</li> <li>– A place that facilitate relax</li> </ul>

*“Our space for teachers is also the office for the coordinator: as a single office it is even too big but as a space for the teachers it is small: if we have to have a meeting, we don't all fit in” (a teacher)*

*“In some schools in Sweden I remember seeing beautiful and comfortable spaces for teachers, where they could share but also relax, and wind down” (a teacher)*

### **Outdoor space**

In relation to outdoor space both parents and teachers agreed that it is an important space in ECEC centers because children can move in a large space, explore, look the world around, experience adventure, enjoy all the seasons and weathers also enjoying getting dirty in rainy days. Parents also observe that in outdoor space children can play with natural materials, release their energies and relax. Teachers also referred to the observation of nature. In relation to the equipment, both parents and teachers referred to grass, trees and shaded areas. Parents referred to canopies for the conduction of activities in all climatic conditions and teachers referred to adequate floor not to get hurt and gardening areas. In relation to weather both parents and teachers agreed that children should go outside in all climatic conditions, as long as they are dressed appropriately, but not in too rainy days. Parents also worry about too windy days and suggest the provision of shaded areas and shelters for rainy and cold days. In relation to risky play, parents recognize that children

need to experience their body, overcome their fears and learn to take some risk. Teachers recognize that enjoy a lot and that it's a challenge for children and for the teacher, worrying about children to get hurt.

The main aspects that emerged about outdoor space in parents' and teachers' vision are reported in Table 3.11 and some quotes from focus groups are reported below.

*Table 3.11 - Aspects emerged about outdoor space in parents' and teachers' vision.*

<i>Thematic areas</i>	<i>Parents</i>	<i>Teachers</i>
Importance of outdoor space	Children can move in a large space Children explore Children enjoy all the seasons and weathers Children experience adventure Children enjoy getting dirty Children look the world around Children play with natural materials Children release their energies Children relax	Children can move in a large space Children explore Children enjoy all the seasons and weathers Children experience adventure Children enjoy getting dirty Children look the world around Children observe nature
Equipment	Grass Trees Shaded areas Canopies for activities in all climatic conditions	Grass Trees Shaded areas Adequate floor not to get hurt Gardening areas
Weather	Children should go outside in all climatic conditions, as long as they are dressed appropriately Not too rainy Not too windy Shaded areas and canopies for rain and cold should be provided	Children should go outside in all climatic conditions, as long as they are dressed appropriately Not too rainy
Risky-play	Children need to experience their body Children need to overcome their fears Children need to learn to take some risk	Children enjoy a lot It' a challenge for children and for teacher Worry that the children will get hurt

*“As much as the books are important, it seems to me equally important that children also experience the body: I think they need a balanced development. Indeed, perhaps the thing that worries me most in the case of my daughter, who grows up in the city, is that she has too little space to experiment ... She should climb, fall and be afraid... To overcome their fears.” (a parent)*

*"I would love it children to climb, I would like to let them do it, but with a floor underneath that can cushion the falls a little, just that. And that would already be a lot. For me it would already be a lot." (a teacher)*

### **Factors influencing preferences and non-preferences about space**

From the content analysis of the verbatim transcriptions of the group interview, five main categories and twelve subcategories were identified; through these categories, participants seem to motivate their preferences and non-preferences about spaces. Categories and subcategories are described as follows and reported in Table 3.5.

#### ***C1 - Experience: Space that favors experiences***

The first category, C1, is named "Space that favors experiences" and it refers to preferences moved by the possibility that space offers in terms of actions or sensations. It includes two subcategories: C1a "Play and Learning" and C1b "Wellbeing and Intimacy".

C1a subcategory was assigned when the motivation of preferences or non-preferences could be traced back to the sentence: "I like/don't like this place because it allows/doesn't allow me/my child to do that play/learning activity". It includes answers that refer mainly to the possibility for children to play and learn. However, some participants talked about their own experience of playing and learning in the space.

C1b subcategory was assigned when the motivation of preferences or non-preferences could be traced back to the sentence: "I like/don't like this place because it allows/doesn't allow me/my child to experience certain feelings." It includes answers that refer mainly to the possibility for children to experience calm and relaxation. It also includes answers that refer to similar sensations and to general wellbeing for adults. Examples of quotes are reported below.

#### ***C2 - Relations: Space that favors relations***

The second category, C2, is named "Space that favors relations" and it refers to preferences moved by the possibility to establish or carry on relations with other people. It includes three subcategories: C2a "Meeting", C2b "Sharing" and C2c "Affection".

C2a subcategory was assigned when the motivation of preferences or non-preferences could be traced back to the sentence: "I like/don't like this place because it allows/doesn't allow me/my child to meet with each other/other people." It includes answers that refer to the opportunity to meet other parents and

other children, to share experience with them, to talk and chat. Some answers also refer to the relation between adults and their children, underlying how certain spaces foster these kinds of exchange. Sometimes answers refer to the relations between children from different classrooms.

C2b subcategory was assigned when the motivation of preferences or non-preferences could be traced back to the sentence: “I like/don’t like this place because it allows/doesn’t allow me/my child to share experiences with others.” It includes answers that refer mainly to the opportunity for parents to share information and experiences with others.

C2c subcategory was assigned when the motivation of preferences or non-preferences could be traced back to the sentence: “I like/don’t like this place because children like/don’t like it or children like/don’t like this place because I like/don’t like it.” It includes answers that refer mainly to the thoughts of teachers about their possibility to influence the choice of children’s favorite/non-favorite place. Examples of quotes are reported below.

### ***C3 - Thought: Space that is felt and thought***

The third category, C3, is named “Space that is felt and thought” and it refers to preferences moved by the sensation of belonging and the feeling of having contributed to the creation of the space. It includes three subcategories: C3a “Co-construction”, C3b “Imprinting” and C3c “Belonging”.

C3a subcategory was assigned when the motivation of preferences or non-preferences could be traced back to the sentence: “I like/don’t like this place because I participated/didn’t participate in its construction.” It includes answers that refer to the personal contribution given/not given to the project, realization or arrangement of a certain space, both for adults and for children.

C3b subcategory was assigned when the motivation of preferences or non-preferences could be traced back to the sentence: “I like/don’t like this place because I lived/didn’t live there the first moments in the centers.” It includes answers that refer to preferences due to the fact that the first moments in the center were experienced there, for both teachers and parents.

C3c subcategory was assigned when the motivation of preferences or non-preferences could be traced back to the sentence: “I like/don’t like this place because I feel/don’t feel it mine”. It includes answers that refer to the sense of belonging to the space. Examples of quotes are reported below.

### ***C4 - Connection: Space that connects***

The fourth category, C4, is named “Space that connects” and it refers to preferences moved by the feeling that there is a connection between inside and outside. It includes two categories: C4a “Indoor/Outdoor” and C4b “Centre/World”.

C4a subcategory was assigned when the motivation of preferences or non-preferences could be traced back to the sentence: “I like/don’t like this place because it connects/doesn’t connect indoors and outdoors.” It includes answers that refer to the connection between the indoors of the center and the outdoors, typically the garden or the courtyard.

C4b subcategory was assigned when the motivation of preferences or non-preferences could be traced back to the sentence: “I like/don’t like this place because it connects/doesn’t connect the ECEC center and the world outside”. It includes answers that refer to the connection between the ECEC institution and the outside world. Examples of quotes are reported below.

***C5 - Physical: Space that has some physical characteristics***

The fifth category, C5, is named “Space that has some physical characteristics” and it refers to preferences moved by the feeling of beauty and adequacy. It includes two categories: C5a “Aesthetics” and C5b “Functionality”.

C5a subcategory was assigned when the motivation of preferences or non-preferences could be traced back to the sentence: “I like/don’t like this place because I find/don’t find it beautiful.” It includes answers that refer to the physical appearance like colors, light, tidiness, harmony.

C5b subcategory was assigned when the motivation of preferences or non-preferences could be traced back to the sentence: “I like/don’t like this place because I find/don’t find it functional.” It mainly emerges in regard to non-preferences and it includes answers that refer to the (lack of) functionality of some aspects or arrangements of space in relation to their aim.

All categories and sub-categories with examples are reported in Table 3.12.

*Table 3.12 - Categories and Subcategories derived from the content analysis*

<i>Categories and Subcategories</i>	<i>Examples</i>
<b>C1 – Experiences: Space that favors experiences</b>	
C1a – Playing and Learning	<i>“My son likes the library because, you know, children love books. He even crosses the fence when it’s closed.” (A parent)</i>

<i>Categories and Subcategories</i>	<i>Examples</i>
C1b – Wellbeing and Intimacy	<i>“I like that classroom because I found it cozy: I enter and I feel that sensation of wellbeing.” (A parent)</i>
<b>C2 – Relations: Space that favors relations</b>	
C2a – Meeting	<i>“I like the corridor because there I see many people that I wouldn’t see otherwise.” (A parent)</i>
C2b – Sharing	<i>“In the space for families, I shared my experience with other moms for the first time. and I realized that I wasn’t the only one” (A parent)</i>
C2c – Affection	<i>“The natural materials corner is not used by children, probably because we never sit in that corner and then we don’t invite children to come.” (a teacher)</i>
<b>C3 – Thought: Space that is felt and thought</b>	
C3a – Co-construction	<i>“Surely, my daughter likes the place where there was the vegetable garden because when she was at the nursery she contributed to its design.” (A parent)</i>
C3b – Imprinting	<i>“I like my son’s classroom because I experience the welcoming there and it was my first access to the center.” (A parent)</i>
C3c – Belonging	<i>“I feel at home in my classroom... I really feel as if I was at home. I feel that space to be ‘mine’” (A teacher)</i>
<b>C4 – Connections: Space that connects</b>	
C4a – Indoor/Outdoor	<i>“Looking out of the window to see the garden, the field... It gives me a sense of peace. I like it. And we also based our activities with children on this: to see the green, to see outside.” (A teacher)</i>
C4b – Centre/World	<i>“The glass windows are fantastic: my child likes to look outside: the construction site, the garden, the arrivals... The world.” (A parent)</i>
<b>C5 – Physical: Space that has some physical characteristics</b>	
C5a – Aesthetics	<i>“The reading corner is very nice with those lights and that small curtain at the entrance, it is really a beautiful place also aesthetically.” (A parent)</i>
C5b – Functionality	<i>“I see that children don’t have enough space and we struggle to move too.” (A teacher)</i>

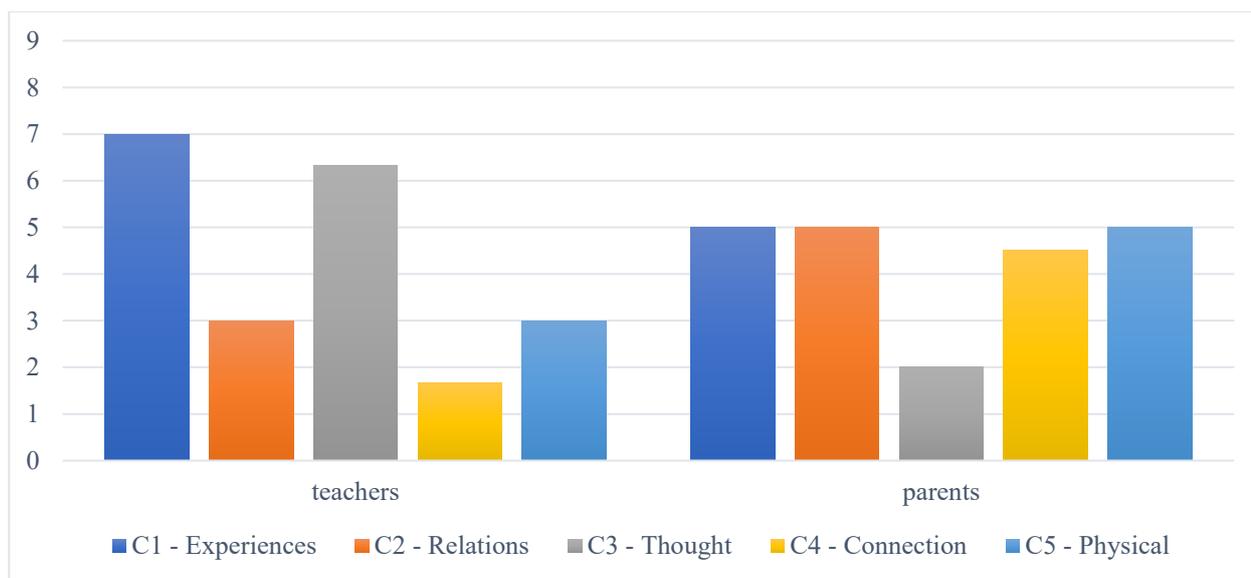
## Frequency of categories

Analyzing the frequency of the categories used in answering each of the four questions of the interview, no significant differences between parents and teachers emerged. However, in some cases, there are categories more used from one group compared to the other.

### *Adults' preferences*

In relation to adults' preferences, all the five categories were identified through the answers of participants. In teachers' answers "C1 - Experiences" was the most used category, followed by "C3 - Thought", then "C2 - Relations" and "C5 - Physical aspects" were cited with the same frequency and the least used was "C4 - Connection". In parent's answers three categories were the most used showing the same frequency: "C1 - Experiences", "C2 - Relations" and "C5 - Physical aspects", followed by "C4 - Connection" and the least used was "C3 - Thought".

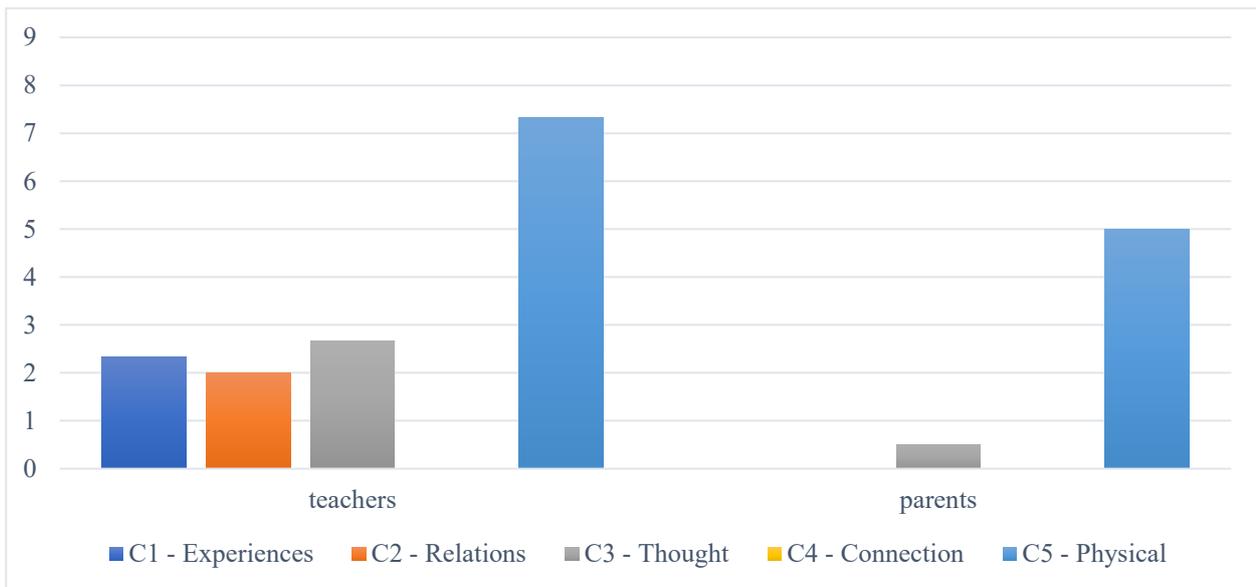
Figure 3.12 - Frequency of categories in teachers' and parents' preferences



### *Adults' non-preferences*

In relation to adults' non-preferences, the most used category for both the parents and the teacher was "C5 - Physical aspects", followed by "C3 - Thought" that was the second most used category by both. "C1 - Experiences" and "C2 - Relations" were used only by teachers and were missing in parents' answers and "C4 - Connection" was missing through the answers of all the participants.

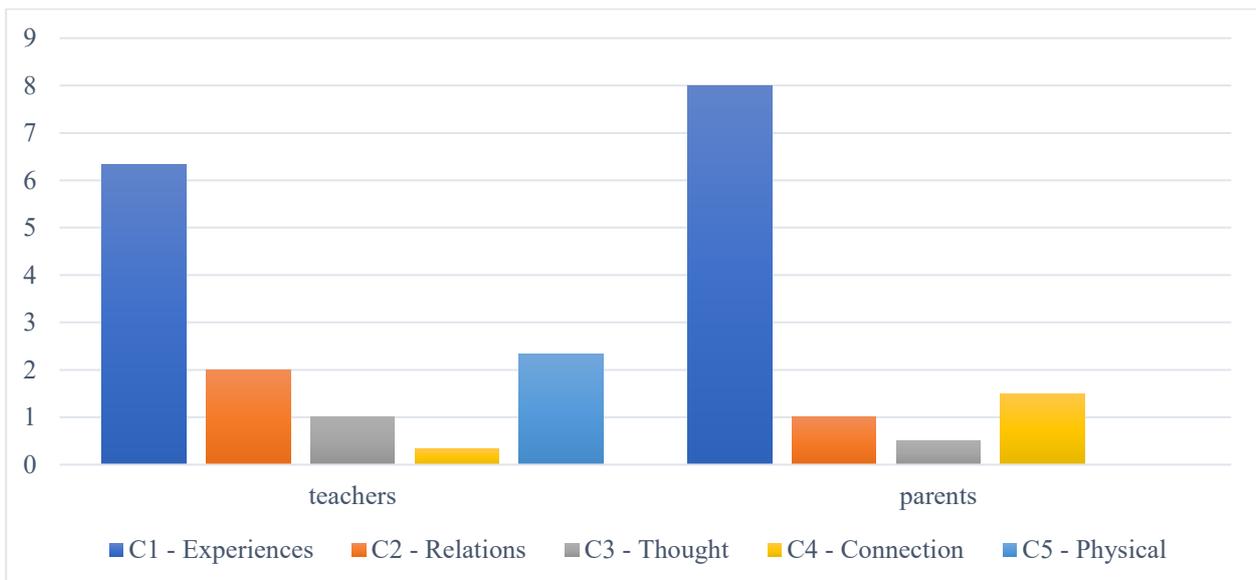
Figure 3.13 - Frequency of categories in teachers' and parents' non-preferences



### Children's preferences in adults' vision

In relation to children's preferences, the most used category by both teachers and parents was "C1 - Experiences". In teachers' answers, the second most used category was "C5 - Physical aspects", followed by "C2 - Relations", "C3 - Thought" and "C4 - Connection". In parents' answers the second most used category was "C4 - Connection", followed by "C2 - Relations" and "C3 - Thought", while "C5 - Physical aspects" was missing.

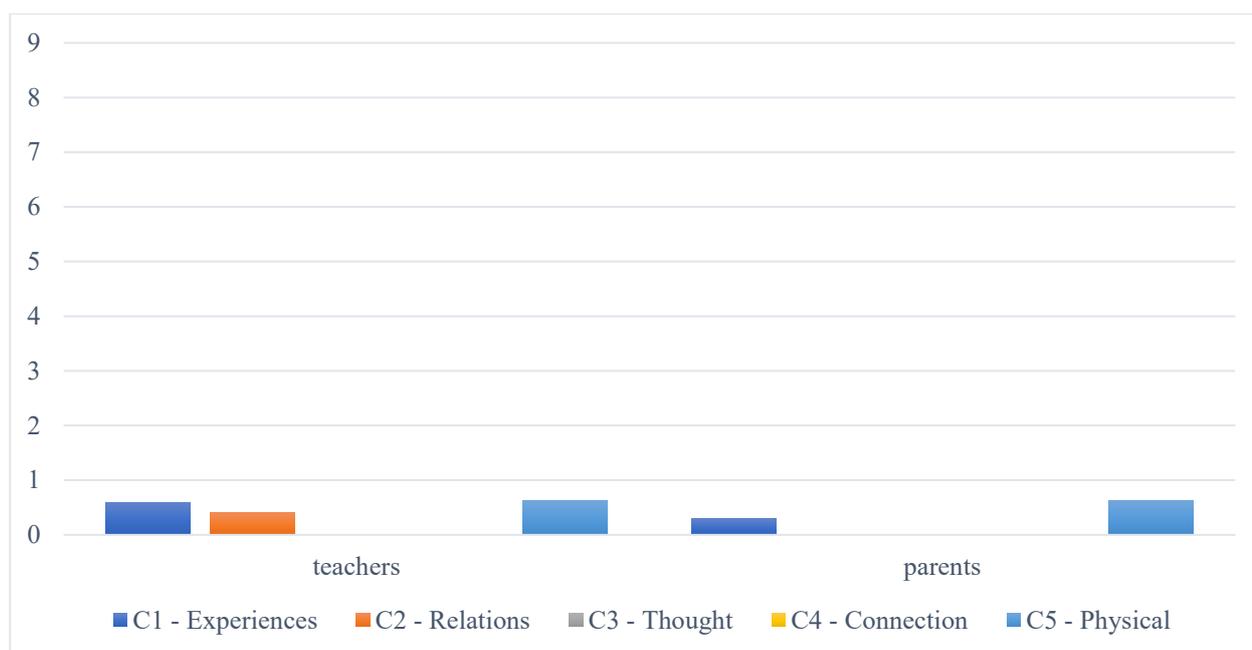
Figure 3.14 - Frequency of categories in children's preferences attributed by teachers and parents.



### Children's non-preferences in adults' vision

In relation to children's non-preferences, there were very few answers and only few categories were identified: the most used category was "C5 – Physical aspects" for both parents and teachers, followed by "C1 - Experiences". Teachers also used "C2 – Relations", while "C3 – Thought" and "C4 – Connection" were missing in both parents' and teachers' answers.

Figure 3.15 - Frequency of categories in children's preferences attributed by teachers and parents.



The frequency of categories and subcategories for each question is reported in Table 3.16.

Table 3.16 - Frequency of categories and subcategories for each question

Categories and Subcategories	Question #1 Adults' pref <sup>d</sup>	Question #2 Adults' non-pref <sup>d</sup>	Question #3 Children's pref <sup>d</sup>	Question #4 Children's non-pref <sup>d</sup>
<b>C1 - Experiences</b>	<b>6.20 (2.17)</b>	<b>1.40 (1.67)</b>	<b>7.00 (1.87)</b>	<b>0.60 (0.89)</b>
C1a – Play and Learn	3.40 (1.14)	0.80 (0.84)	5.60 (1.14)	0.40 (0.89)
C1b – Wellbeing	2.80 (1.92)	0.60 (1.34)	1.40 (1.14)	0.20 (0.45)
<b>C2 – Relations</b>	<b>3.80 (1.79)</b>	<b>1.20 (2.16)</b>	<b>1.60 (1.34)</b>	<b>0.40 (0.89)</b>
C2a – Meeting	3.40 (1.52)	1.00 (1.73)	1.40 (0.89)	-
C2b – Sharing	0.40 (0.55)	-	0.20 (0.45)	-
C2c – Affection	-	0.20 (0.45)	-	0.40 (0.89)

<i>Categories and Subcategories</i>	<i>Question #1 Adults' pref<sup>d</sup></i>	<i>Question #2 Adults' non-pref<sup>d</sup></i>	<i>Question #3 Children's pref<sup>d</sup></i>	<i>Question #4 Children's non-pref<sup>d</sup></i>
<b>C3 – Thought</b>	<b>4.80 (3.27)</b>	<b>1.80 (2,49)</b>	<b>0.80 (1.30)</b>	-
C3a – Co-construction	2.20 (2.59)	1.40 (1.67)	0.20 (0.45)	-
C3b – Imprinting	0.40 (0.55)	-	0.60 (1.34)	-
C3c – Belonging	2.20 (1.64)	0.40 (0.89)	-	-
<b>C4 – Connections</b>	<b>2.80 (3.03)</b>	-	<b>0.80 (0.84)</b>	-
C4a – Indoor/Outdoor	1.60 (1.34)	-	-	-
C4b – Centre/World	1.20 (1.79)	-	0.80 (0.84)	-
<b>C5 – Physical</b>	<b>3.80 (1.79)</b>	<b>6.40 (3.29)</b>	<b>1.40 (2.19)</b>	<b>0.60 (1.34)</b>
C5a – Aesthetics	2.80 (1.64)	1.60 (1.81)	1.20 (2.19)	-
C5b – Functionality	1.00 (1.00)	4.80 (2.17)	0.20 (0.45)	0.60 (1.34)

<sup>d</sup>Mean (Standard Deviation)

#### ***Differences in categories between preferences and non-preferences***

Conducting a non-parametric analysis for dependent groups (Wilcoxon test) significant differences emerged between the categories used for preferences (questions #1 and #3: places that you/your child likes the most) and non-preferences (questions #2 and #4: places that you/your child don't like so much). In particular, three categories are significantly more used in the description of the favorite spaces rather than the non-favorite ones: C1 ( $Z=-2.03$ ;  $p<.05$ ), C3 ( $Z=-2.03$ ;  $p<.05$ ) and C4 ( $Z=-2.03$ ;  $p<.05$ ). The values from the Wilcoxon test are reported in Table 3.17.

*Table 3.17 - Descriptive statistics from non-parametric analysis for dependent groups (Wilcoxon test)*

<i>Categories</i>	<i>Preferences<sup>l</sup></i>	<i>Non-preferences<sup>l</sup></i>	<i>Z</i>	<i>p</i>
C1 - Experience	13.20 (3.27)	2.00 (2.34)	-2.03	.04*
C2 – Relations	5.40 (0.89)	1.60 (3.05)	-1.77	..08
C3 – Thought	5.60 (3,58)	1.80 (2.49)	-2.03	.04*
C4 – Connection	3.60 (3.13)	-	-2.03	.04*
C5 - Physical	5.00 (2.00)	7.00 (3.00)	-1.46	.14

<sup>l</sup>Mean (Standard Deviation); \* $p<0.5$

***Differences in categories between preferences and non-preferences distinguishing adults' vision about themselves and about children***

Conducting the same analysis, but distinguishing the answers referred to adults themselves and the ones referred to the children, it emerged that the categories significantly most used for preferences rather than non-preferences are C1 ( $Z=-2.04$ ;  $p<.05$ ) and C4 ( $Z=-2.06$ ;  $p<.05$ ) for adults, while for children only C1 ( $Z=-2.03$ ;  $p<.05$ ) is significantly most used for preferences. The values from the Wilcoxon test are reported in Table 3.18 and 3.19.

*Table 3.18 - Adults' preferences and non-preferences - Descriptive statistics from non-parametric analysis for dependent groups (Wilcoxon test)*

Category	Preferences (M; SD) <sup>1</sup>	Non-preferences (M; SD) <sup>1</sup>	Z	p
C1 - Experience	6.20 (2.16)	1.40 (1.67)	-2.04	.04
C2 – Relations	3.80 (1.79)	1.20 (2.17)	-1.84	.07
C3 – Thought	4.80 (3.27)	1.80 (2.49)	-1.86	.06
C4 – Connection	2.80 (3.03)	-	-2.06	.04
C5 - Physical	3.80 (1.79)	6.40 (3.29)	-1.60	.10

<sup>1</sup>Mean (Standard Deviation)

*Table 3.19 - Childrens' preferences and non-preferences - Descriptive statistics from non-parametric analysis for dependent groups (Wilcoxon test)*

Category	Preferences (M; SD) <sup>1</sup>	Non-preferences (M; SD) <sup>1</sup>	Z	p
C1 - Experience	7.00 (1.87)	0.60 (0.89)	-2.03	.04
C2 – Relations	1.60 (1.34)	0.40 (0.89)	-2.12	.03
C3 – Thought	0.80 (1.30)	-	-1.34	.18
C4 – Connection	0.80 (0.84)	-	-1.63	.10
C5 - Physical	1.40 (2.19)	0.60 (1.34)	-0.54	.59

<sup>1</sup>Mean (Standard Deviation)

***Correlation between categories***

Analyzing the correlations between the five categories through all the answers of the participants, four significant positive correlations were found, between C1 and C2 ( $r=.89$ ;  $p<.05$ ), C1 and C3 ( $r=.97$ ;  $p<.01$ ), C1 and C5 ( $r=.90$ ;  $p<.05$ ), C2 and C5 ( $r=.89$ ;  $p<.05$ ). Correlation values are reported in Table 3.20.

Table 3.20. Correlation between categories

Categories	C1	C2	C3	C4
C1 - Experience				
C2 – Relations	.89*			
C3 – Thought	.97**	.80		
C4 – Connection	-.10	.34	-.26	
C5 - Physical	.90*	.89*	.82	.05

\*\* $p < 0.1$ ; \* $p < 0.5$

### Discussion

This preliminary investigation about space reveals the complexity of this matter. The identified categories refer to different aspects of space, which can be traced back to different levels of meaning. A first level concerns the opportunities given by space in terms of experience: opportunities to play, to learn, to feel. In this sense, the ECEC space is seen as a promoter of development both for children and adults. A second level refers to the relational aspect of space: at this level ECEC space is seen as a dimension that may enhance relations and exchanges between people. A third level concerns thoughts about the space: the ECEC space is then considered also a psychological dimension, an aspect to “bear in mind” in order to implement effective educational actions. A fourth level is related to the relevance of continuity in the space: by the importance given to the connection indoor/outdoor and center/world, the ECEC space is seen as a dimension that provides continuity to children’s different life experiences of. Finally, a fifth level refers to the mere physical aspects of space: at this level ECEC space is seen as a physical object that should have some characteristics to be functional and pleasant.

All these levels are sometimes intertwined in participants’ answers, and their connection also emerged from the analysis of the correlations: in particular the physical aspect of space seems to be closely related to developmental and relational dimensions, which are in turn strictly connected to each other. This may mean that the physical characteristics of space are considered relevant in fostering play, learning, feelings and relations. In addition, the level of developmental experiences and the one of relations seem to be linked in both teachers’ and parents’ vision, and also the thought on space result to be correlated to the developmental aspects, confirming the importance of the coherence between the pedagogical views and the arrangement of environment. On the contrary, the dimension of connection between inside and outside is present in adults’ conception, but it seems to be less connected to the other meanings.

The absence of significant differences between parents and teachers in the frequency in the use of the categories could mean that there's a general coherence in their visions, even if some non-significant differences reveal some slight variations between the two. Some of the main themes that emerged from the analysis are discussed in the following sections.

***Space should offer an opportunity to play, learn and experience emotions.*** The most used category throughout all the answers is C1 "Space that favors play, learning and sensations." It seems that parents and teachers attach the greatest importance to the possibilities that space offers in terms of experiences.

On the one hand, participants underline that the arrangement of space, its characteristics and the materials may facilitate children's play and learning (C1a). This is in line with the recognized role of ECEC centers as promoters of child learning, as environments that should favor the growth of children through the opportunities offered. Many of the educational guidelines of ECEC centers identify some developmental areas on which the center's activities should focus: physical, cognitive, social, emotional, artistic and communication skills are some of the most highlighted in European countries (European Commission, 2019). There is a great deal of attention to the programs proposed by the school, to pedagogical choices to assessment methods (ibid.) and it seems that in parents' and teachers' perspective the space itself has a role in this. This finding also confirms the interdependence of process quality and structural quality of ECEC centers: talking about structural aspects, participants underline its role in supporting the processes of education. On the other hand, it emerged that the characteristics of space can enhance particular feelings or sensations in both children and adults (C1b). The most cited are intimacy, calm and relaxation. The need for relaxing places for children also emerged from previous studies which underline how children often search for intimate, cozy places where they can withdraw from group activities and find some tranquillity (Colwell et al., 2016; Friedmann & Thompson, 1995; Skånfors, Löfdahl, & Hägglund, 2009). Some authors observed that if these kinds of places are not present in the center, then children build them with the materials available, like pieces of cloth or sheets, or find innovative solutions, such as hiding in closets or acting distant (Colwell et al., 2016; Skånfors et al., 2009). This finding highlights the importance of such spaces in environments for children and suggests how teachers and designers could take into account this need while thinking about spaces. The possibility also for adults to experience positive emotions at the ECEC center is an obvious finding and it can be related with the natural need for wellbeing and the idea that if the adults

experience positive feelings, their children will do the same. Some previous studies on adults' preferences also underline that both parents and teachers would like to feel an emotional connection to ECEC centers, which should provide a "homely" and inviting atmosphere (Berris & Miller, 2011; Gur, 2014). In Berris & Miller's study (2011) it emerged that for parents, the second key factor influencing the center selection, after the quality of the staff, was the "general vibe" they received from the physical environment. This finding may suggest the need to investigate the elements of the space that could provide a "good vibe" in adults and adapt the space on this, in order to enhance the positive connection of the adults with the center.

*Parents underline the relational opportunities offered by the space.* Although C1 is the most used category by both parents and teachers, it is interesting to note that parents used other categories with the same frequency: talking about preferences for themselves (question#1) they also often refer to C2 "Space that favors relations." This may indicate that parents attach great importance to the role of ECEC centers as places where relations can develop; they refer to the opportunity to meet other parents and other children, to share experiences with them, to talk with the teachers. This finding indicates how the ECEC centers can be seen not only as places that foster children's development, but also places where the relevant experience of relationship can be led by adults.

During the interviews, parents often talked about their mutual exchanges in the corridors or in the "family room:" such places, where they can meet and chat, allow them to interact and share impressions, confide their difficulties about their experience of being parents and feel supported by others. This emerged as a very important element for parents that allows them not to feel alone and to relieve stress. For this reason, ECEC centers should provide such places, conscious of their importance for parents.

Parents also talked about to the relationship between themselves and their children, underlying how certain spaces can foster these kinds of exchange. Most of the parents refer to the moment when they meet their son/daughter after the working day: they feel that this is a very important moment, characterized by strong emotions, the need for intimacy and the willingness to share. These moments should then be preserved because they are delicate times in which the relationship between parents and children grows and acquires confidence. It is interesting to note that among the teachers, this vision emerges about the non-preferences: talking about non-favorite spaces, teachers often highlighted how places where parents and children meet after the school day, or separate at the beginning of it, seem inadequate, being too cramped or

noisy. Teachers underline that these places should embrace the meeting between parents and children with delicacy and warmth, recognizing the value of these particular moments.

Finally, parents talked about the relations between children from different classrooms, highlighting the positive interaction and exchanges between children of different ages that can meet and work together. This may indicate that parents find useful and positive aspects in the exchanges between children of different ages and contexts: it seems that they consider such exchanges enriching in the child's experience. Parents who have one child at the nursery and another at the preschool like their children to have the chance to meet, and sometimes the favorite place indicated for their children indeed matches with the "meeting point." This finding supports the integrated system of ECEC center for children from 0 to 6 years old, and the importance of common spaces in comprehensive institutes.

***Parents like the space to connect inside and outside.*** Another category used by parents with the same frequency of C1 and C2, in describing their own and their children's preferences (questions #1 and #3), is C4 "Space that connects." Parents seem to find this characteristic very meaningful to them and to their children. It seems that they would like the center to connect inside and outside, both in the sense of indoor/outdoor connection and the ECEC center/world.

The yearning for the indoor/outdoor connection reflects the parent's belief that outdoor experiences are important for children's development. Many other studies confirm this evidence: outdoor experiences are considered essential for children's growth, especially if such spaces include natural elements (Brussoni, Ishikawa, Brunelle, & Herrington, 2017; Gur, 2014; Ihmeideh & Al-Qaryouti, 2016; Jayasuriya, Williams, Edwards, & Tnadon, 2016) and the presence of outdoor spaces seem to positively influence the choice of a service from parents (Berris & Miller, 2011). Although parents and teachers agree on the importance of outdoor spaces, the need also emerges for them to be adequate to their aim. In relation to non-preferences, it emerged that some characteristics of outdoor spaces did not allow them to exploit their potential and that it may be useful to rethink that, adapting the spaces to the real needs of children. Nevertheless, most of the preferences attributed to children went to "the garden," even when it seems "ugly" to the adult eye. This contrasting attribution highlights the different perspectives of adults and children. Previous studies also argue on this, suggesting that the children's perspective could be very different from that of the adults (Kennedy,

1991; Rasmussen, 2004; Strong-Wilson & Ellis, 2014). Here arises the importance of investigating children's preferences and meanings with direct measures.

Parents' appreciation of the connection of the ECEC center with the outside world is another interesting outcome. It indicates that parents would like the centers where their children grow up not to be "happy islands," isolated from the real world, but in constant interaction and continuity with it. Previous studies indicate how in the parents' vision, the ECEC centers should be visible to the community (Gur, 2014) and in some cases they are even expected to be "hub for community integration" where supportive interactions between parents and teachers can be carried on and different services can be available to families (Berris & Miller, 2011). This innovative role of ECEC centers may be supported by adequate physical settings that should facilitate new relationships and new ways to view the centers.

***Teachers argue that the space should be "kept in mind"***. The category C3 "Space that is felt and thought" is the second most used categories by teachers, both in preferences and non-preferences. Teachers underline the importance of thinking about the physical environment and participating in its arrangement. This is an important result, since the use of space and materials reflect pedagogical views (Børve & Børve, 2017; Gayle-Evans, 2004; Prochner et al., 2008) and since the coherence of the physical environment and the pedagogical views seem to increase the quality of the centers (Iwan & Poon, 2018). A method to enhance teachers' awareness in that sense may be their involvement in reflective practices on space issues, including stimuli from different countries or different pedagogical approaches to broaden visions (Berti et al., 2019). Adults' non-preferences about space are mainly determined by physical characteristics.

In relation to non-preferences, it emerged that the reasons underlying adults' choices, both for themselves and for their children, mainly refer to functional aspects: cramped spaces, loud noises, inadequate temperatures and outdoor spaces that were too sunny were the most cited faults of the described environments. This could mean that aesthetic aspects, in parents' and teachers' view, could be considered secondary to functional ones and non-fundamental. This finding may suggest that functionality should be taken into account as a primary need, in designing or re-organizing spaces. This functionality should also be evaluated via the direct assessment of people who use those spaces to address their real needs.

***Adults' preferences: the importance to listen to all points of view***. The favorite spaces for both parents and children resulted to be the garden and the windows, for different reasons: parents referred to the

possibility for children to move in a large space and release their energies, while teachers referred to their own experiences of feeling good emotions and enjoying moments with children. The windows were chosen mainly for the light they provide to the indoors and for their role of connection between inside and outside by both groups. It is interesting to note that the same spaces were considered at the same time the least favorite ones for their physical characteristics: in participants' vision gardens should be more grassy and equipped with canopies for bad weather and the large windows should be equipped with heat repair devices for the summer season. This may mean that the role of gardens and windows is fundamental in ECEC spaces, even if their characteristics are not perfectly functional for the context. Since these spaces seem to be spontaneously experienced with pleasure, the centers could invest in their greater functionality and organization to create suitable development paths.

Another popular choice for both groups was the class. Although both recognize the importance of aesthetic aspects, appreciating the beauty of the spaces, they mainly referred to different emotional reasons: parents lived there the first moments in the center enjoying nice moments with their children, while teachers spend a lot of time there, also co-designing the space, until they feel the class like a 'second home'. Other popular choices for both groups of participants were the soft/reading corner for the cozy atmosphere that contribute to create intimate moments for children, both alone or with the teachers and the group of peers, and the toilet for the beauty of the space and because its physical characteristics, such as child-friendly furnishings, facilitate children's autonomy.

It is very interesting to note that two spaces, the hall/corridor and the family-library, were among favorites for parents and the least-favorite for teachers. It seems that these spaces are lived in very different ways: since teachers don't spend much time in these spaces, they see only 'critical' aspects related to noise or darkness, while parents have many affective and relevant experiences with their children there. This underlines the importance of paying attention to the point of view of all people who live the daily school experience.

It can also notice that parents often referred to the possibility to meet other families as a reason for their preferences. This finding, in line with previous studies (Gur, 2014), highlights the important role of ECEC centers as spaces for inclusion and social opportunities for parents and children. The possibility for

families to meet and share experiences should be supported also by the setting of the space, which should facilitate such experiences.

***Children's preferences: adults know little about them.*** Both parents and teachers had some idea about children's preferences, mainly due to observation of their movements or because children themselves had told them, but they know very little about children's non-preferences. Both found this question the most difficult one. Some teachers doubted that children did not have real non-preferences, but that they may be influenced by teachers' non-preferences. They said: "If I don't go there, children won't go either." Will it really be so? Previous studies indicate that children have specific preferences about spaces, so why shouldn't they have non-favorite places? In one study (Şahin & Dostoğlu, 2012) children were asked about their least favorite place in their school and some aspects emerged in relation to crowdedness, boredom or danger of falling and getting hurt. Due to the unawareness of parents and teachers, it would be interesting to investigate this aspect. The direct indications of children about their non-preferences may provide useful information that is not immediately available to adult's cognition and that could help to create really child-friendly environments.

***Eating, Sleeping, Toilet spaces convey important educational contents in addition to those of care.*** In relation to eating, sleeping and toilet spaces the findings indicate the double value of these places: besides their 'caring' role it emerged their 'educational' role. Both parents and teachers recognize that in such environments important educational moments take place: besides the achievement of autonomies, especially in eating and toilet spaces the learning referred mainly to social-emotional abilities, like self-regulation (e.g.:waiting for their turn), self-knowledge (e.g.:feeling their satiety, knowing their body) and knowledge of others (e.g.:food preferences of peers, knowing other bodies). This finding is interesting as these spaces are mainly considered spaces for care: the awareness of their value as places where important educational experiences take place emerged in bot parents and teachers discussions. This vision may be enhanced and more explicit in the daily school experience and in school programs.

***Spaces for adults play an important role and deserve attention and care.*** In relation to space for adults, both spaces for families and teachers showed to play a very important role. Spaces for families are seen in very different ways by parents and teachers: teachers only see 'critical' aspects related to narrowness or bad furnishings, while parents experience them as emotionally-charged and meaningful spaces where

important intimate moments of sharing take place both with their children and with other families. This underlines once again the importance of listening to all voices in design processes. Spaces for teachers also would play a fundamental role for the wellbeing of staff during the school day, offering opportunities for private moments, to share emotions with colleagues, and relax a little by withdrawing from a crowded situation. Nevertheless, they seem inadequate in participants' experience and considered secondary in ECEC design processes. This finding allows us to reflect on the importance of the well-being of the staff who take care of children every day: adequate care and attention to teachers' spaces, aimed at the well-being of staff, is likely to have beneficial repercussions for children too.

***Well equipped outdoor spaces play an important role in the holistic development of children.***

Outdoor spaces were found to be the absolute favorite spaces for both parents and teachers, and also for children in adults' vision. They are considered to have a fundamental role in the holistic development of children, who, especially in parents' vision, need to experience their body and overcome their fears, also through risky-play. Participants agreed of an adequate equipment to risky-play in safety and to carry on activities for children in all climatic conditions, suggesting in particular shadowed areas and canopies for rain or wind. Both parents and teachers highlighted the importance for children to experience nature in all seasons, indicating that outdoor spaces need grassy areas and trees. These findings, in line with previous research highlighting the importance of outdoor education since the early years (Brussoni et al., 2017; Ihmeideh & Al-Qaryouti, 2016; Jayasuriya et al., 2016), add evidence to the need for well equipped stimulating and safe outdoor spaces.

**Limitations**

The findings should be read in the light of certain limitations. First, the research was conducted in Italy, so the ECEC contexts on which data were collected are typical of the Italian culture and knowledge and may be different from other countries. In addition, only two centers were involved and the participants constitute a very small sample. Furthermore, parents' participation was voluntary and free, so it is likely that the participating parents were the most involved in the activities of the center and that their vision was already aligned with the perspective of teachers and supported by a high motivation. These conditions undermine the generalizability of the results. Nevertheless, most of the findings resulted to be in line with previous studies conducted in other countries, supporting the relevance of certain aspects of physical space in

the parents' and teachers' perspective. For this reason, it is possible to suggest that our findings may apply to other contexts, at least of those typical of the Western approach to ECEC. Furthermore, the research proceeded from a constructivist framework, which underlines the constant redefinition and co-construction of meanings. From this perspective, the findings do not claim to be universal but to provide a basis for reflection and support practices, that always have to be strictly related to local contexts.

Second, although there was a male representation both in parents' and teachers' groups, it was a clear-cut minority compared to the female one. Hence, the perspective that emerged may be more representative of a female vision than a male one. It should be noted that this condition is determined by the context itself, as there is a very small percentage of males employed in ECEC centers and as mothers usually participate more in ECEC life. Nevertheless, it would be interesting to integrate the data with a male perspective, to highlight any differences in the visions and in the attribution of meanings to space.

Third, the children's point of view has been derived from adults' thoughts: parents and teachers supposed which were their children's favorite and non-favorite places, and argue about that, but it wasn't asked to children. Moreover, often adults did not know their children's preferences or non-preferences about spaces. According to some previous studies which highlight how a child's vision could be different from that of an adult, (Kennedy, 1991; Rasmussen, 2004) this is a limitation of the validity of the findings about children. It would be more appropriate to conduct studies that detect data directly with children, to grasp their point of view, to acquire data related to the real context and unfiltered by adult thinking.

Taking into account these limitations, the present preliminary study may contribute to the advancement of research, by providing a basis for more in-depth analysis on local realities, by soliciting reflections on the meanings and motivations that guide preferences about spaces.

### **Conclusion**

The present preliminary study would like to identify the meanings that parents and teachers attribute to ECEC spaces, deriving them from group interviews and focus groups. Both parents and teachers showed to have a very articulated and complex perception of ECEC spaces; although there's a general coherence in their visions, some differences emerged in particular for the spaces that some experienced more than others, highlighting the importance of taking into account the point of view of all stakeholders involved the daily school experience. The identification of categories and subcategories through which parents and teachers

motivate their preferences about spatial experience could contribute to understand the motivations underlying the individual preferences, showing an interesting definition of space at different levels. The categories identified may help the definition of projects in relation to the organization and management of space. The findings could provide a magnifying lens for observing ECEC spaces, and they form the basis on which to investigate in a more systematic and broad way the topic.

### 3.2 Main Study - The meanings of ECEC space in adults' experience: an investigation through questionnaires

#### Aim

The main study was aimed to investigate the meanings of space in adult's experience, starting from the results of the preliminary study. In particular, the purposes of the study were: 1) to identify the preferences and non preferences about ECEC spaces and the main reasons given to them; 2) to investigate adults' perception and thoughts on spaces for care, as eating, sleeping and toilet spaces; 3) to explore participants' visions about outdoor spaces.

#### Method

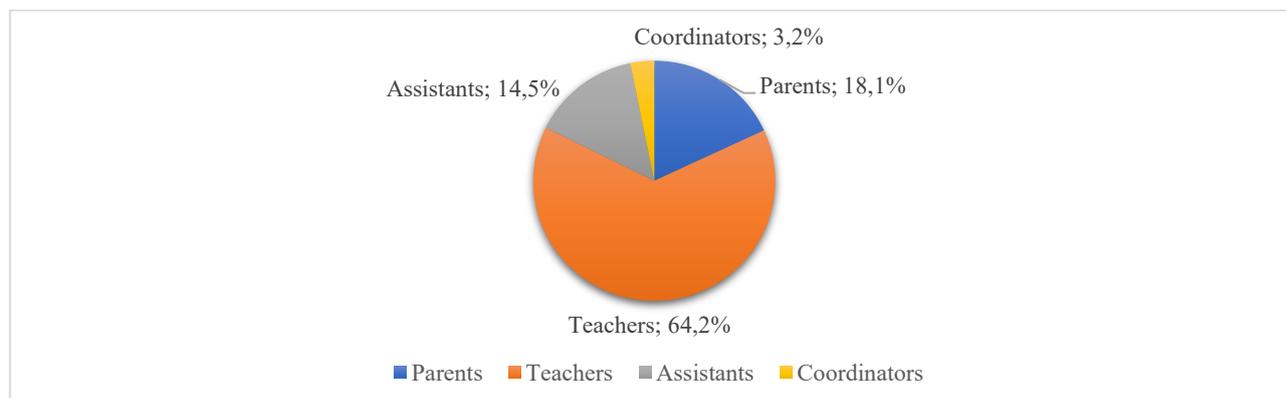
##### Participants

The participants were 1091 adults, including parents, teachers, assistants and coordinators, from various ECEC centers in Emilia-Romagna. They were mainly teachers (n=700;64.2%), then parents (n=198;18.1%), assistants (n=158;14.5%) and coordinators (n=35;3.2%). Data of participants are reported in Table 3.17 and Figure 3.9.

Table 3.17 - Participants in the online questionnaires

Group	Number	Percentage
Parents	198	18.1%
Teachers	700	64.2%
Assistants	158	14.5%
Coordinators	35	3.2%
Total	1091	100.0%

Figure 3.9 - Participants in the online questionnaires

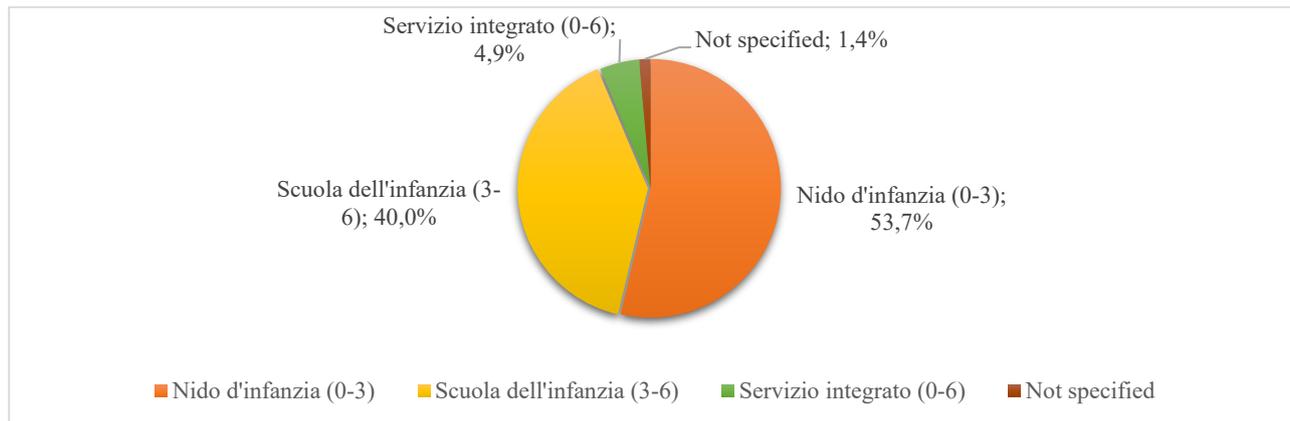


Participants belonged to different types of ECEC centers: in Italy 54% of participants belonged to nido d'infanzia (0-3 years old), 41% to scuola dell'infanzia (3-6 years old) and 5% to servizio integrato (0-6 years old). Data of participants are reported in Table 3.18 and Figure 3.10.

Table 3.18 - Centers participating in the online questionnaires

Group (range of age)	Number	Percentage
Nido d'infanzia (0-3)	586	53.7%
Scuola dell'infanzia (3-6)	437	40.0%
Servizio integrato (0-6)	53	4.9%
Not specified	15	1.4%
Total	1091	100.0%

Figure 3.10 - Centers participating in the online questionnaires in the three countries



### Instruments and procedure

The questionnaire was introduced to the pedagogical coordinators of Emilia Romagna contacted via email. The coordinators then introduced the questionnaires to their pedagogical staff and families asking them to participate in the research. Participation was voluntary and no incentives or compensation were provided. The study aims were explained to all the participants and assurances were given on the ethical processes of data collection. The first page of the questionnaire introduced the research with the following formula: *“Hi! This questionnaire is addressed to families and professionals (coordinators, teachers, educators, assistants ...) of Early Childhood Education and Care (ECEC) centers. In particular, we would like to collect some information on how the spaces of ECEC centers are experienced and perceived by those who live them daily, in order to make them always better and suitable for the needs of adults and children.*

*This is a short questionnaire, it will take less than 10 minutes to be filled in. You will find some questions about the spaces of your center. You should answer on the basis of your experience: we are interested in your personal opinion, therefore there are no right or wrong answers. Participation is voluntary. The collected data will be stored and processed in an absolutely anonymous and aggregated form, in accordance with the European privacy legislation (EU) 2016/679 (so-called GDPR). For any clarification, you can contact the scientific representatives of the project.”*

After consent to participate in the questionnaire, some data were asked about the anagraphics of the participant (role, age, gender, nationality, education), the type of ECEC center to which he/she would refer in the compilation, the age of the child (only for parents) and the duration of work in the center (only for staff). Then the questionnaire proposed 23 questions on six main areas: A)the space you prefer (3 questions); B)the space you like least (3 questions); C)the eating space (4 questions); D)the sleeping space (4 questions); E)the toilet space (4 questions); F)the outdoor space (5 questions). About the favorite space, three questions were asked: A1)Is your favorite space an indoor space (class, hall, etc ...) or an outdoor space (garden, courtyard, etc ...)?; A2)Among the interior spaces, which is your favorite space?; A3)Why is this space your favorite? About the least favorite space, three questions were asked: B1)Is your least favorite space an indoor space (class, hall, etc ...) or an outdoor space (garden, courtyard, etc ...)?; B2)Among the interior spaces, which is your least favorite space?; B3)Why is this space your least favorite? About the eating, sleeping and toilet spaces, four questions were asked: C/D/E1)Where is the eating/sleeping/toilet space in your ECEC center?; C/D/E2) In the eating/sleeping/toilet space it is important that there is ... Please order the following aspects from the most important to the least important; C/D/E3)Here you can find some statements. Please tell us, for each statement, how much you agree or disagree. The aspects of questions C/D/E2 and the statements of questions C/D/E3 were different for each ‘caring’ space and they were derived from what emerged in group interviews and focus groups of the preliminary study. About the outdoor space, five questions were asked: F1)How is the outdoor space of the ECEC center (grassy, paved...)?; F2)Do you think that the outdoor spaces in your center are adequate?; F3)How could outdoor spaces be improved? (if it was answered ‘no’ to the previous question) or What are the strengths of the outdoor spaces of your center? (if it was answered ‘yes’ to the previous question. F4)Here below you can find some statements. Please tell us, for each statement, how much you agree or disagree. F5) I think children should use the outdoor spaces ... Please, for

each option indicate how much you agree or disagree. The statements of questions F4 and F5 were derived from what emerged in group interviews and focus groups of the preliminary study. A scheme of the questionnaire is reported in Table 3.19. The complete version of the questionnaire is reported in Appendix 2.

*Table 3.19 – Scheme of the questionnaire*

Section	Questions
Introduction and consent	
Anagraphics	
A – Favorite space	A1 - Is your favorite space an indoor space or an outdoor space? A2 - Among the interior spaces, which is your favorite space?; A3 - Why is this space your favorite?
B – Least favorite space	B1 - Is your least favorite space an indoor space or an outdoor space? B2 - Among the interior spaces, which is your least favorite space?; B3 - Why is this space your least favorite?
C – Eating space	C1 - Where is the eating space in your ECEC center?; C2 - In the eating space it is important that there is... (aspects to order) C3 - How much you agree or disagree with this statements? C4 – The most important aspects for an eating space is... (open)
D – Sleeping space	D1 - Where is the sleeping space in your ECEC center?; D2 - In the sleeping space it is important that there is... (aspects to order) D3 - How much you agree or disagree with these statements? D4 – The most important aspects for a sleeping space is... (open)
E – Toilet space	E1 - Where is the toilet space in your ECEC center? E2 - In the toilet space it is important that there is... (aspects to order) E3 - How much you agree or disagree with these statements? E4 – The most important aspects for a toilet space is... (open)
F – Outdoor space	F1 - How is the outdoor space of the ECEC center? F2 - Do you think that your ECEC outdoor spaces are adequate? F3 – Which are the strengths/limitations of your ECEC outdoor space? F4 - How much you agree or disagree with these statements? F5 - I think children should use the outdoor spaces... (weather options)
Optional comments	
Thanks	

## Analysis

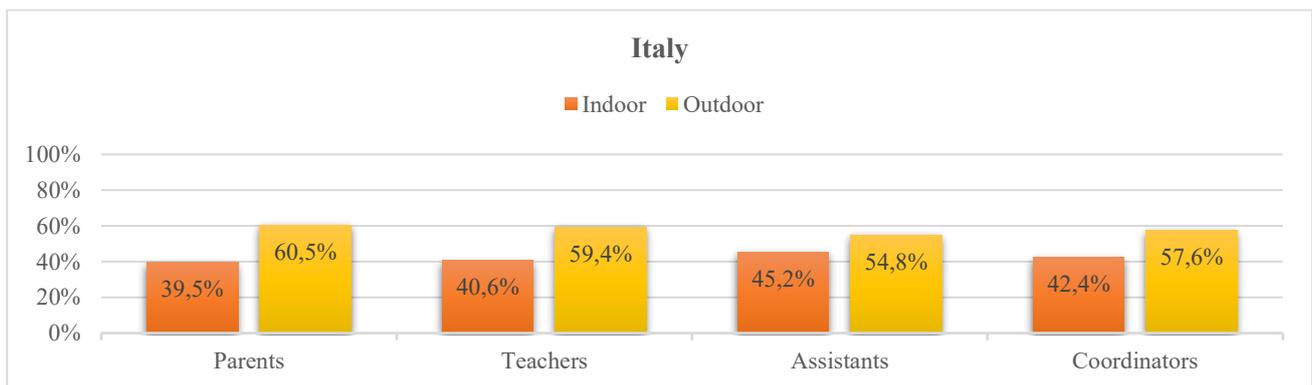
The analyses were conducted with IBM SPSS (Statistical Package for Social Science) Statistics for Windows, Version 21.0 (SPSS). Statistical analyses were carried out, including frequencies analyses to assess the distribution of all the variables, and multivariate analysis, with the “role” as a four-level independent variable, whose levels are the groups of participants (parents, teachers, assistants and coordinators), and all the variables of the questionnaire as dependent variables (favorite space, reasons for preferences, least favorite space, reason for non-preferences, eating, sleeping, toilet space, outdoor space), in order to assess statistical significant differences between the answers of the groups. NVivo Qualitative Data Analysis Software was used to analyze the open questions. The computerised system used to administer the questionnaires did not allow the participant to proceed with the compilation in case of non-answer to a question. The non-complete questionnaires were not considered valid and were not included in the analyses.

## Results

### Favorite space

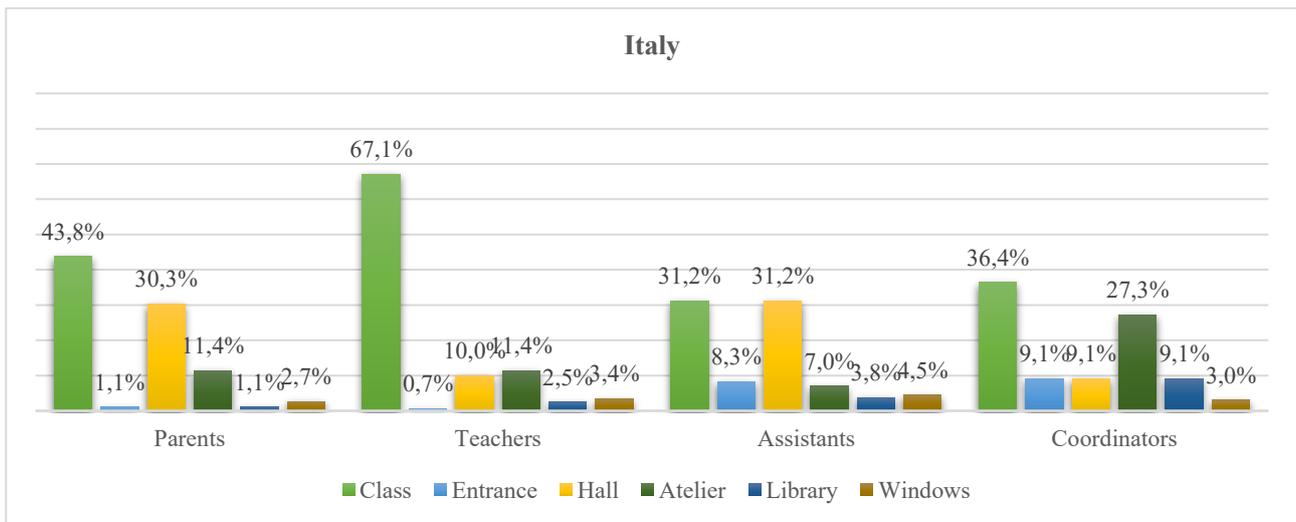
In relation to A1 question, the favorite space was found to be an outdoor space for all groups in Italy: parents (60.5%), teachers (59.2%), assistants (62.1%) and coordinators (54.9%). No statistically significant relations were found between the groups of participants. Percentages are reported in Figure 3.11.

Figure 3.11 – Preferences about indoor and outdoor spaces



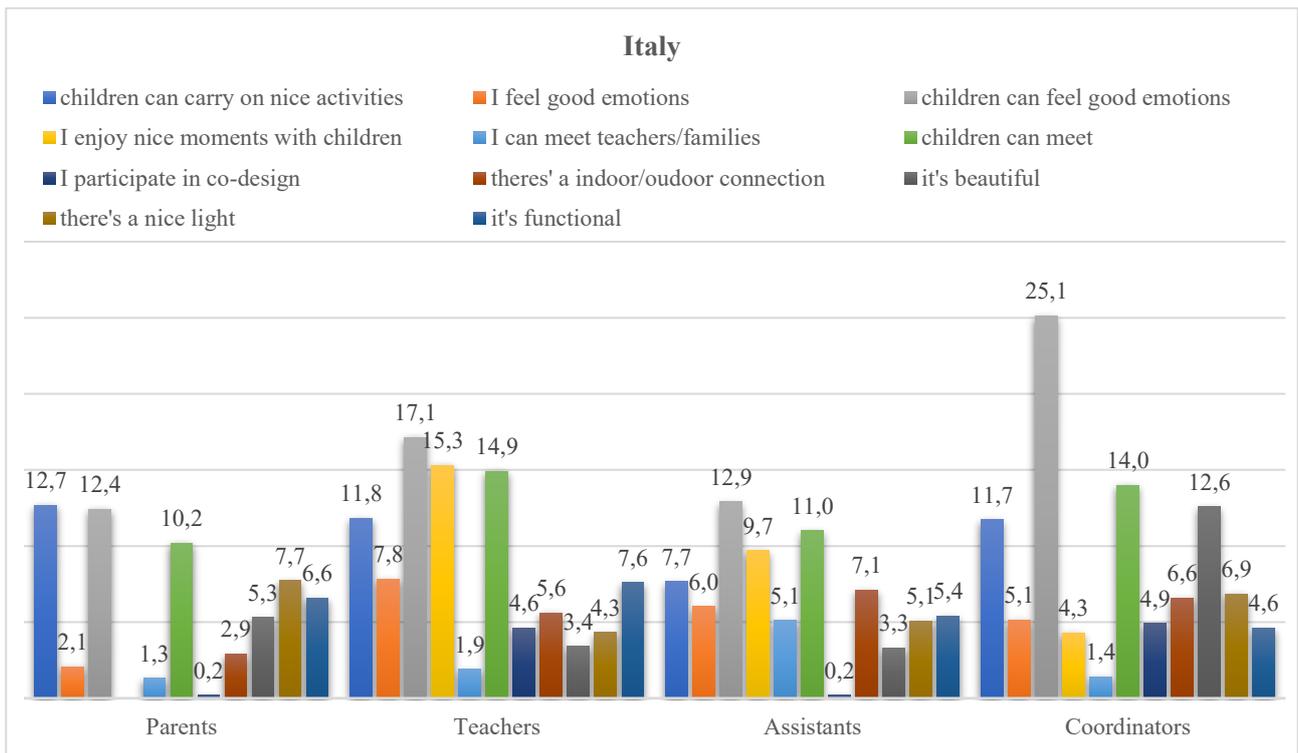
In relation to A2 question, the first indoor favorite spaces were found to be the class for all groups: parents (43.8%), teachers (67.1%), assistants (31.2%) and coordinators (36.4%). No statistically significant relations were found between the groups of participants. Then hall, atelier, entrance, library and windows were the most popular choices. Percentages are reported in Figure 3.12.

Figure 3.12 – Preferences about indoor spaces



In relation to A3 question, the first reason for preferences was found to be that children can feel good emotions for all groups: parents (M=12.4), teachers (M=17.1), assistants (M=12.9) and coordinators (M=25.1). No statistically significant relations were found between the groups of participants. Other popular reasons were found to be that children can carry on nice activities, especially for parents and teachers, that adults can enjoy nice moments with children, especially for teachers, that children can meet, especially for teachers and coordinators. Statistically significant relations were found between parents and assistants for the possibility for children to carry on nice activities [ $F(3,225)= 2.91$ ;  $p.<.05$ ], more frequent in parents' answers, and between parents and each other group of participant for the possibility to enjoy nice moments with children [ $F(3,199)= 10.87$ ;  $p.<.001$ ], less frequent in parents' answers. Other choices were the beauty of the spaces, especially for coordinators, and the presence of a nice light, especially for parents. Statistically significant relations were found between coordinators and each other group of participants for the beauty [ $F(3,113)= 12.0$ ;  $p.<.001$ ], more frequent in coordinators' answers, and between parents and teachers for the presence of a nice light [ $F(3,137)= 8.78$ ;  $p.<.001$ ], more frequent in parents. The mean scores are reported in Figure 3.13.

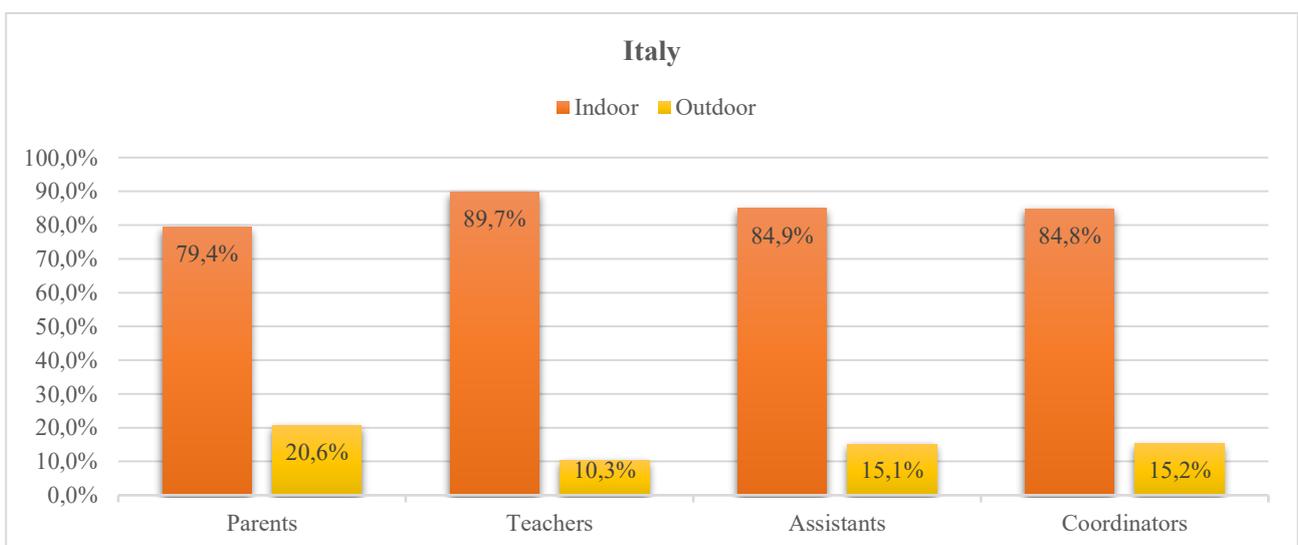
Figure 3.13 – Reasons for preferences in Italy



### Least favorite space

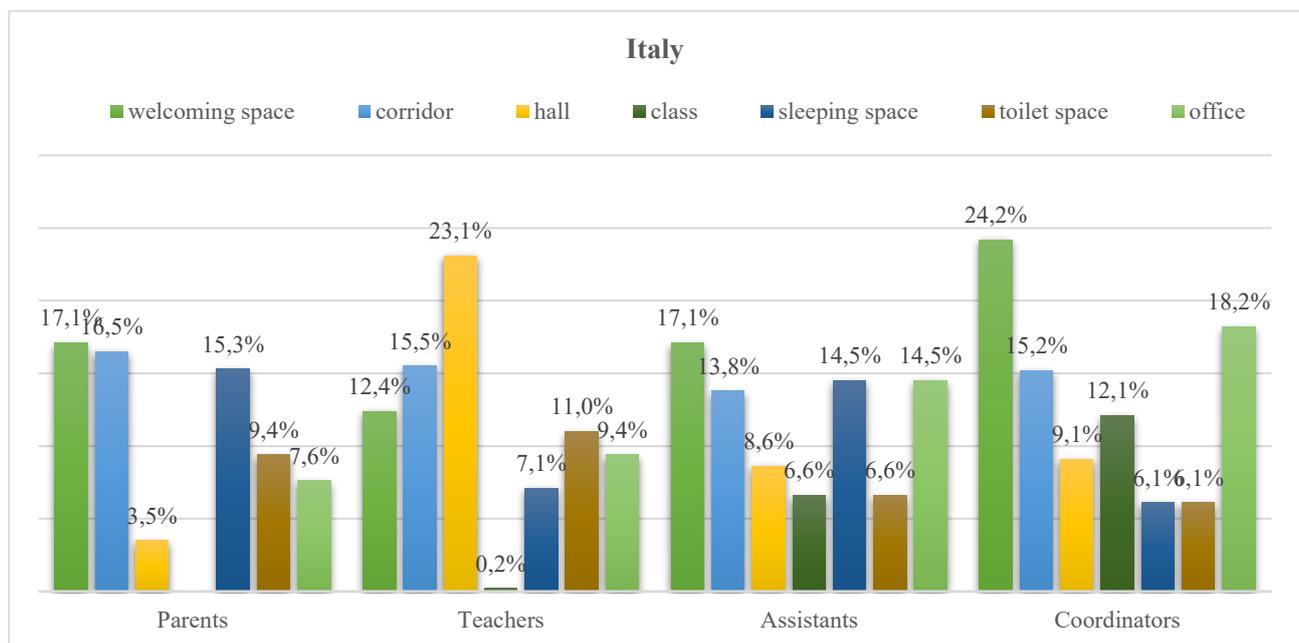
In relation to B1 question, the least favorite space was found an indoor space for all participants: parents (79.4%), teachers (89.7%), assistants (89.4%) and coordinators (84.8%). Statistically significant relations were found between parents and teachers [ $F(3,111)= 0.52$ ;  $p.<.01$ ] since indoor favorite spaces were less frequent in parents' answers. Percentages are reported in Figure 3.14.

Figure 3.14 – Preferences about indoor and outdoor spaces for each group



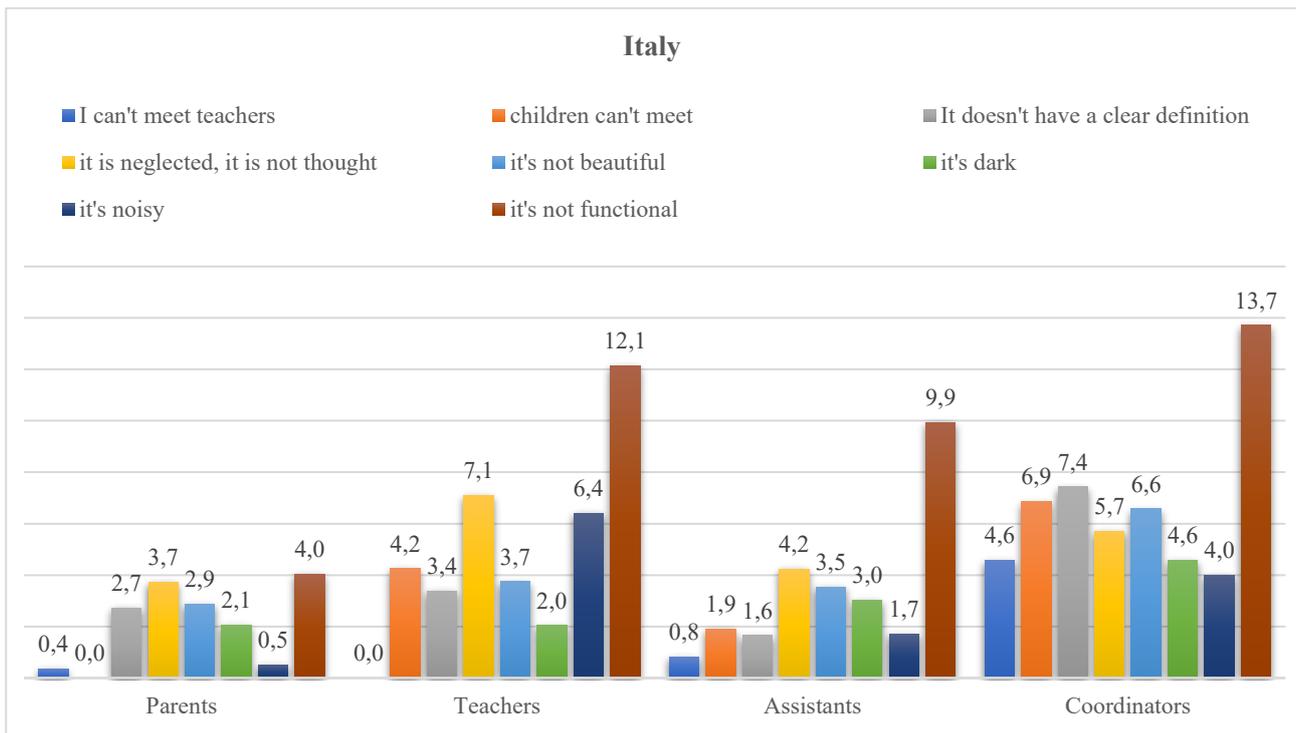
In relation to B2 question, the indoor least favorite space was found to be the welcoming space for parents (17.1%), assistants (17.1%) and coordinators (24.2%), and the hall for teachers (32.1%). Other popular least favorite spaces were found to be the corridor for all groups, the sleeping space for parents and assistants, the toilet space for teachers, the class for coordinators and the office for coordinators and assistants. No statistically significant relations were found between the groups of participants. Percentages are reported in Figure 3.15.

Figure 3.15 - Least favorite spaces for each group



In relation to B3 question, the first reason for the non-preferences was found to be the non-functionality for all groups: parents (M=4.0), teachers (M=12.1), assistants (M=9.9) and coordinators (M=13.7). Statistically significant relations were found between parents and each other group of participants for the non-functionality [ $F(3,242)= 10.57$ ;  $p.<.001$ ], less frequent in parents' answers. Other popular reasons for non-preferences were found to be that the space was noisy and not thought, especially for teachers, not defined and not beautiful, especially for coordinators. Statistically significant relations were found between parents and each other group of participants for the noise [ $F(3,139)= 23.44$ ;  $p.<.001$ ], less frequent in parents' answers; between parents and teachers for the lack of thought [ $F(3,195)= 3.90$ ;  $p.<.01$ ] less frequent in parents' answers; between parents and coordinators for the lack of beauty [ $F(3,134)= 2.71$ ;  $p.<.05$ ] less frequent in parents' answers. Percentages are reported in Figure 3.16.

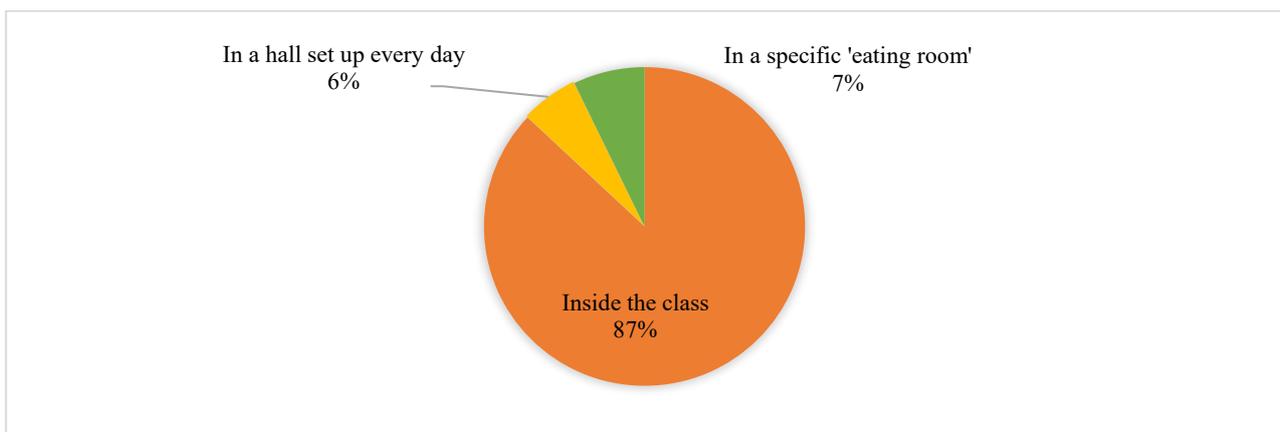
Figure 3.16 – Main reasons for non-preferences for each group



### Eating space

In relation to C1 question, the eating space was found to be mostly inside the class (87%), then in a specific eating room (7%) and finally in a hall set up every day (6%). Percentages are reported in Figure 3.17.

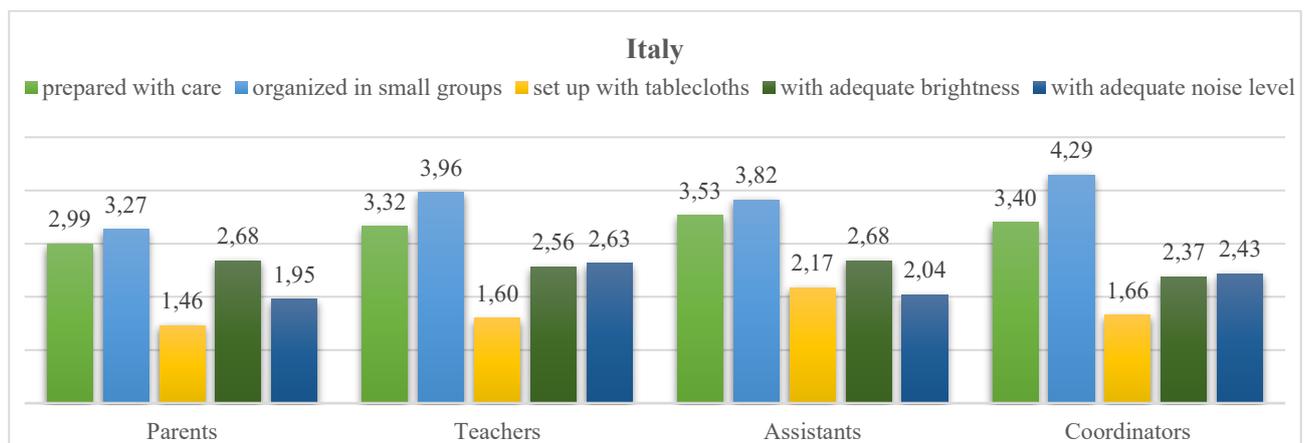
Figure 3.17 - Location of the eating room



In relation to C2 question, it was found that the most important aspect for an eating space was the organization in small groups for all groups: parents (M=3.27), teachers (M=3.96), assistants (M=3.82) and coordinators (M=4.29). Statistically significant relations were found between parents and teachers and

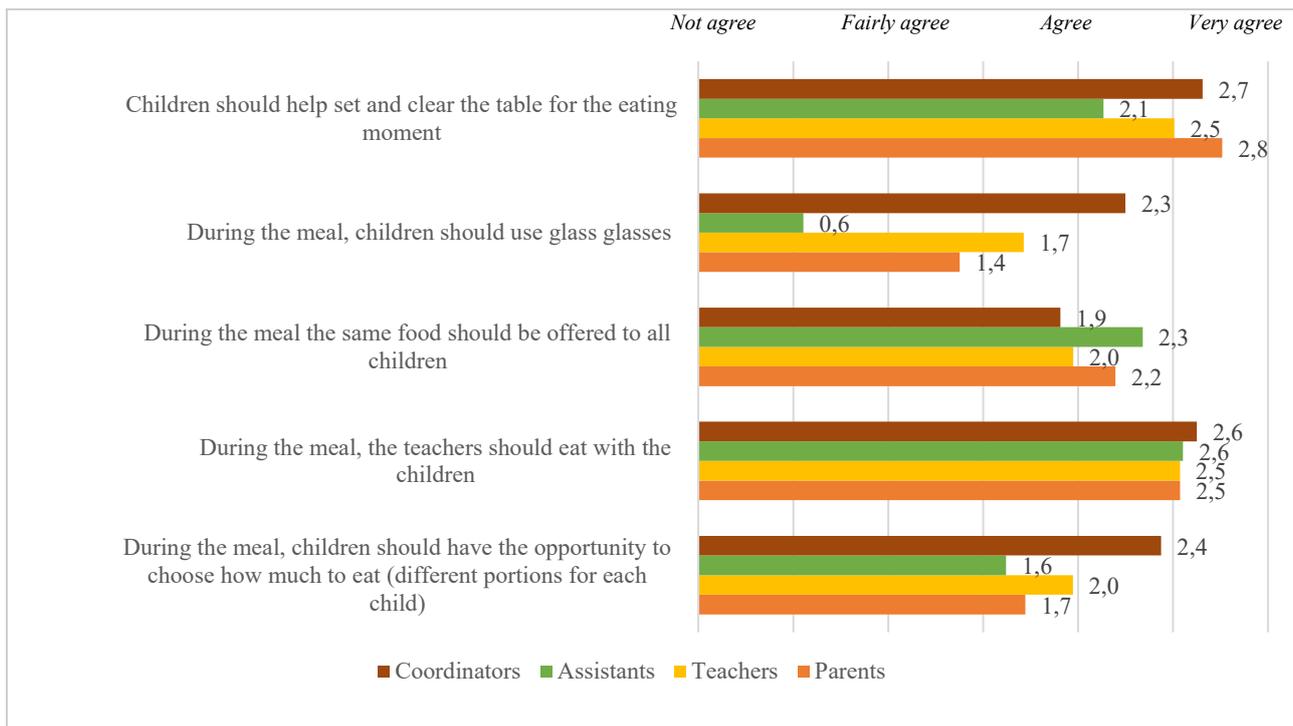
parents and assistants for the preparation with care [ $F(3,2.24)= 4.20$ ;  $p.<.0.01$  ], less frequent in parents' answers; between parents and all the other groups for the organization in small groups [ $F(3,2.48)= 11.03$ ;  $p.<.001$ ], less frequent in parents' answers; between assistants and parents and assistants and teachers for the setting up with tablecloths [ $F(3,1.24)= 13.90$ ;  $p.<. 001$ ], more frequent in assistants' answers; between teachers and parents and teachers and assistants for the adequate noise level [ $F(3,1.97)= 16.51$ ;  $p.<.001$ ], more frequent in teachers' answers. The mean scores are reported in Figure 3.18.

Figure 3.18 – Most important aspects of eating space for each group



In relation to C3 question, it was found that the aspect which found the highest agreement was that children set up and clean the table for parents ( $M=2.8$ ), teachers ( $M=2.5$ ) and coordinators ( $M=2.7$ ) and that teachers eat with children for teachers ( $M=2.5$ ) and assistants ( $M=2.6$ ); the aspect which found the lowest agreement was that children use glass glasses for parents ( $M=1.4$ ), teachers ( $M=1.7$ ) and assistants ( $M=0.6$ ) while it was that all children eat the same food for coordinators ( $M=1.9$ ). Statistically significant relations were found between parents and teachers and between assistants and each other group of participants for “Children should help set and clear the table” [ $F(3,0.49)= 21.56$ ;  $p.<.001$ ], less frequent in teachers' answers compared to parents and in assistants' answers compared to all the other groups; between all groups for “Children should use glass glasses” [ $F(3,1.05)= 58.24$ ;  $p.<.001$ ], between teachers and parents and teachers and assistants for “The same food should be offered to all children” [ $F(3,0.84)= 8.14$ ;  $p.<.001$ ], less frequent in teachers' answers; between all groups except between parents and assistants for “Children should choose how much to eat” [ $F(3,0.89)= 8.14$ ;  $p.<.001$ ], less frequent in parents' answers and more frequent in coordinators' answers. Means scores are reported in Figure 3.19.

Figure 3.19 – Agreement on statements on eating space for each group



In relation to C4 question, the most important aspects indicated by participants for an eating space were found to be serenity, experience, sharing, pleasure, autonomy, conviviality, peace and pleasure. The 30 most used words to answer the open question are reported in Table 3.29. A word cloud of the words used to answer the open question is reported in Figure 3.20.

Table 3.29 – Most important aspects for an eating space: words used to answer the open question

Word	Count	Word	Count	Word	Count
moment	282	pleasant	62	autonomy	44
eat	167	able	61	living	44
experience	141	conviviality	59	socialize	43
serene	116	time	59	comfortable	42
serenity	114	share	58	together	39
meal	111	without	51	children	38
live	109	convivial	50	good	38
serenely	80	way	49	space	38
food	74	peace	47	quiet	32
sharing	64	feeling	46	relationship	32

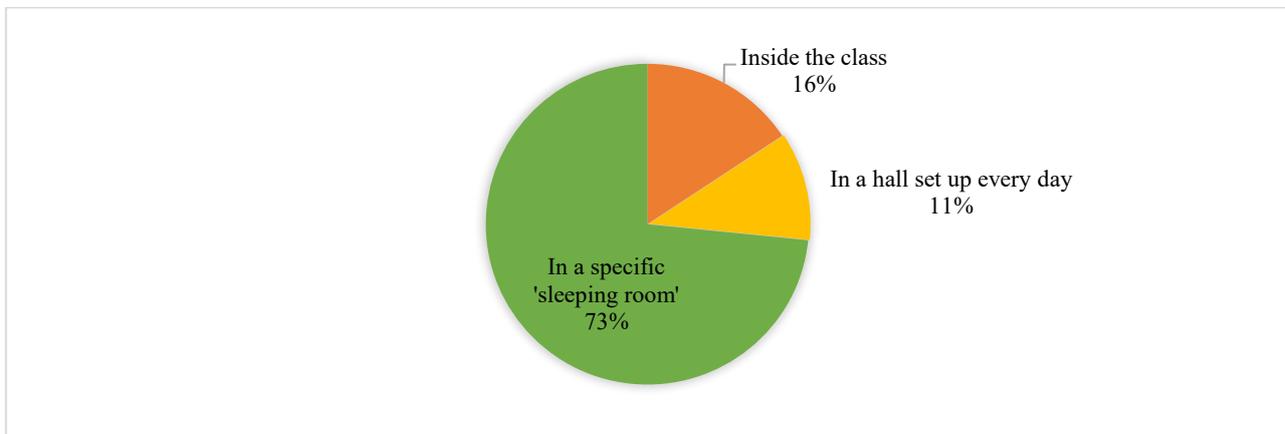
Figure 3.20 – Most important aspects for an eating space: words used to answer the open question



### Sleeping space

In relation to D1 question, the sleeping space was found to be mostly in a specific sleeping room (73%) then inside the class (16%), then in a hall set up every day (11%). Percentages are reported in Figure 3.21.

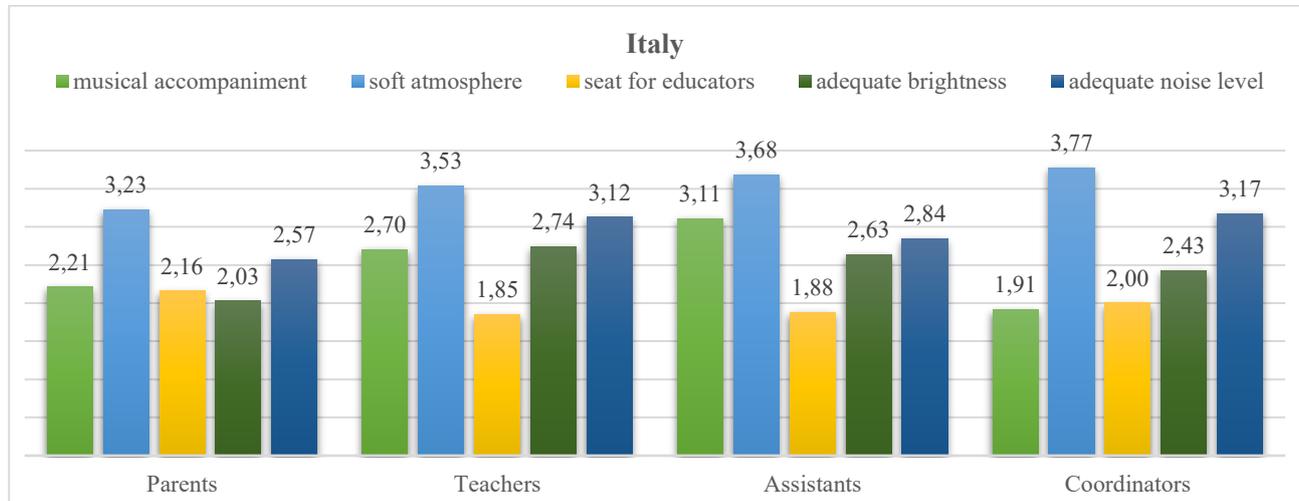
Figure 3.21 - Location of the sleeping room



In relation to D2 question, it was found that the most important aspect for the sleeping space was a soft atmosphere for all groups in Italy: parents (M=3.23), teachers (M=3.53), assistants (M=3.68) and coordinators (M=3.77). Statistically significant relations were found between teachers and all other groups and assistants and all other groups for “musical accompaniment” [F(3,2.38)= 12.85; p.<.0.01 ], more frequent in teachers’ and assistants’ answers; between parents and assistants for “soft atmosphere” [F(3,2.72)= 2.87; p.<.05], less frequent in parents’ answers; between parents and teachers for “seats for educators” [F(3,1.52)= 3.30; p.<. 05], more frequent in parents’ answers; between parents and teachers and parents and assistants for “adequate brightness” [F(3,1.94)= 13.60; p.<.001], less frequent in parents’

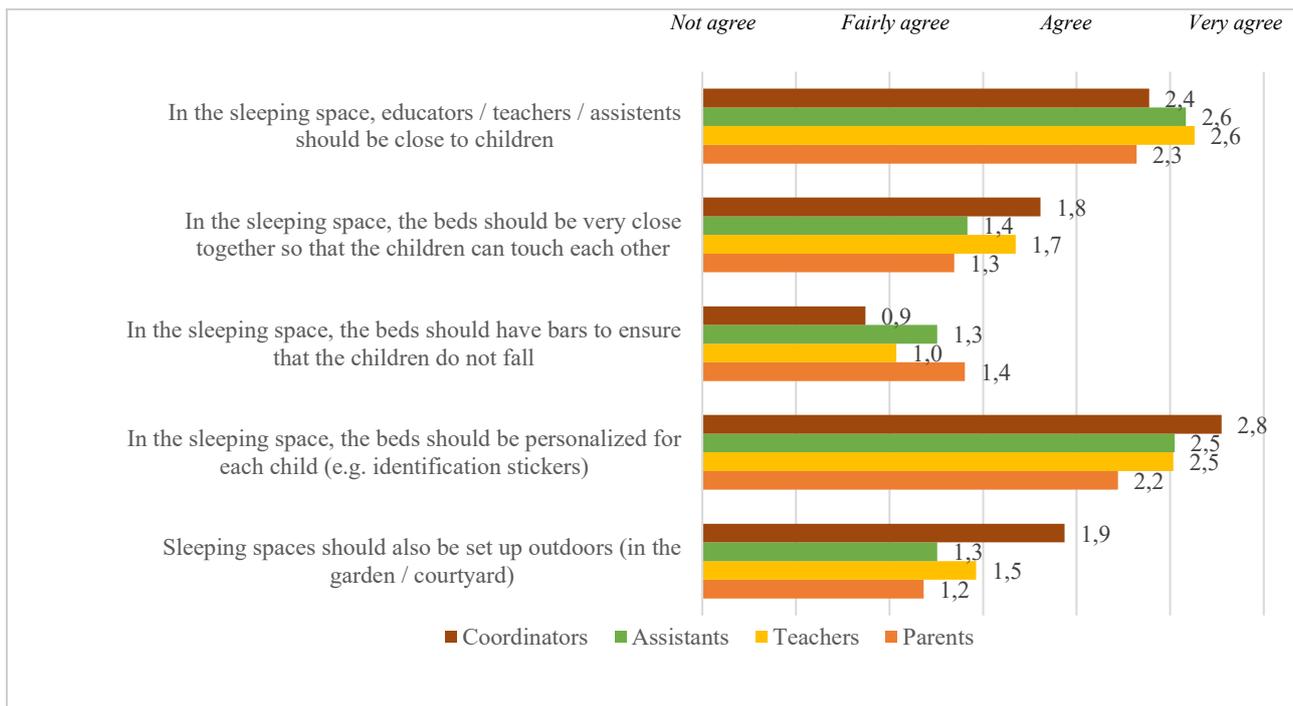
answers; between parents and teachers for “adequate noise” [ $F(3,2.68)= 6.47$ ;  $p.<.001$ ], less frequent in parents’ answers. The mean scores are reported in Figure 3.22.

Figure 3.22 – Most important aspects of a sleeping space for each group



In relation to D3 question, it was found that in Italy the aspect which found the highest agreement was that teachers stay close to children for parents ( $M=2.3$ ), teachers ( $M=2.6$ ) and assistants ( $M=2.6$ ) and that the beds are personalized for coordinators ( $M=2.8$ ); the aspect which found the lowest agreement was that sleeping spaces should also be set up outdoors for parents ( $M=1.2$ ) and assistants ( $M=1.3$ ) and the presence of bars in the beds for teachers ( $M=1.0$ ) and coordinators ( $M=0.9$ ). Statistically significant relations were found between parents and teachers and between parents and assistants for “Teachers should be close to children” [ $F(3,0.33)= 13.61$ ;  $p.<.001$ ], less frequent in parents’ answers; between parents and teachers, parents and coordinators and assistants and teachers for “The beds should be very close together” [ $F(3,0.65)= 10.29$ ;  $p.<.001$ ], less frequent in parents’ answers and more frequent in coordinators’ answers; between parents and teachers and parents and coordinators for “The beds should have bars for children not to fall” [ $F(3,0.90)= 8.05$ ;  $p.<.001$ ], more frequent in parents’ answers; between parents and all other groups for “The beds should be personalized for each child” [ $F(3,0.60)= 8.08$ ;  $p.<.001$ ], less frequent in parents’ answers; between parents and teachers, parents and coordinators and assistants and coordinators for “Sleeping spaces should also be set up outdoors” [ $F(3,1.03)= 7.16$ ;  $p.<.001$ ], less frequent in parents answers and more frequent in coordinators’ answers. Means scores are reported in Figure 3.23.

Figure 3.23 – Agreement on statements on sleeping space for each group



In relation to D4 question, the most important aspects indicated by participants for an eating space were found to be serenity, rest, relax, trust, peace, comfort, quiet and safety. The 30 most used words to answer the open question are reported in Table 3.33. A word cloud of the words used to answer the open question is reported in Figure 3.24.

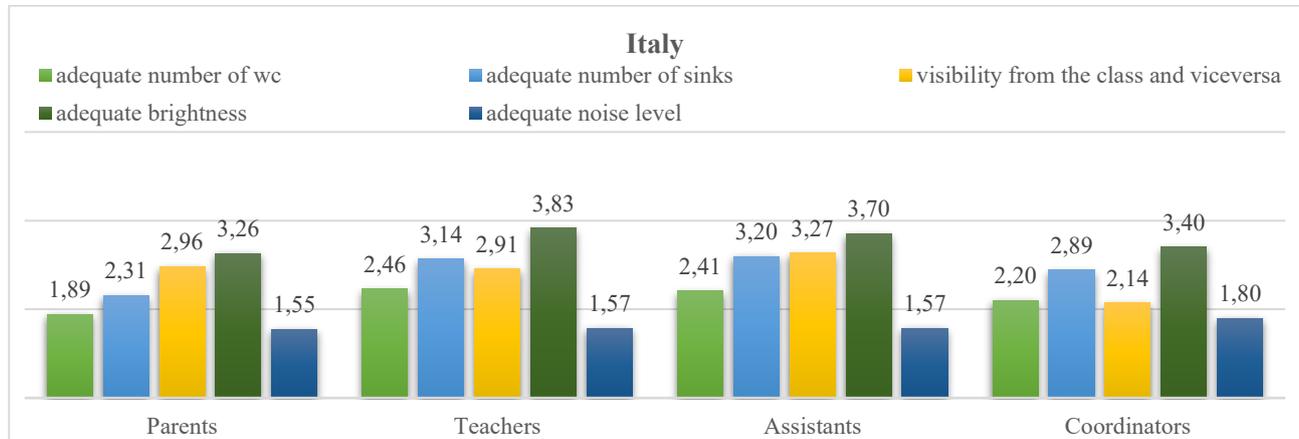
Table 3.33 – Most important aspects for a sleeping space: words used to answer the open question

Word	Count	Word	Count	Word	Count
relax	313	asleep	58	quietly	32
rest	303	peacefully	53	space	32
sleep	172	environment	50	way	32
feel	99	safe	49	well	31
serene	80	fall	48	indulge	28
serenely	78	without	48	find	26
moment	77	comfortable	45	time	22
serenity	67	let	44	relaxation	21
able	65	quiet	40	children	20
live	63	peace	39	experience	19



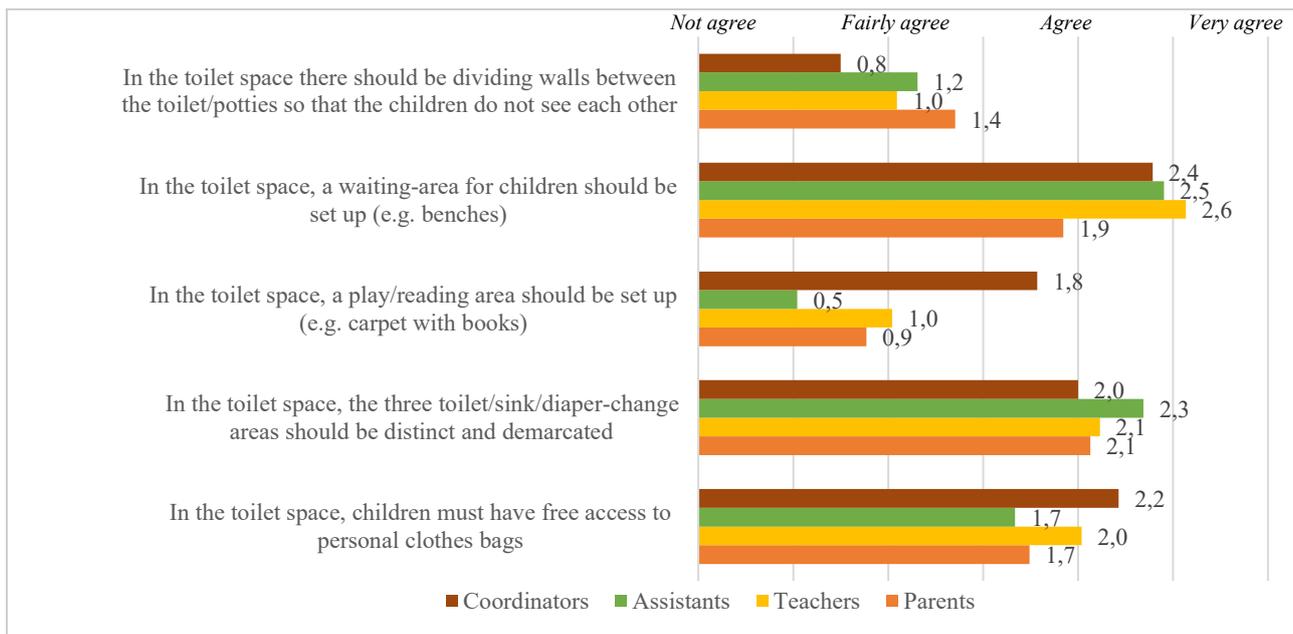
assistants for “adequate noise” [ $F(3,2.88)= 13.06$ ;  $p.<.001$ ], less frequent in parents’ answers and more frequent in coordinators’ answers. The mean scores are reported in Figure 3.26.

Figure 3.26 – Most important aspects of toilet space for each group



In relation to E3 question, it was found that in Italy the aspect which found the highest agreement was the distinction between toilet, sink and diaper areas for parents ( $M=2.1$ ) and the presence of a waiting area for children for teachers ( $M=2.6$ ), assistants ( $M=2.5$ ) and coordinators ( $M=2.4$ ); the aspect which found the lowest agreement was the presence of a play/reading area for parents ( $M=0.9$ ), teachers ( $M=1.0$ ) and assistants ( $M=0.5$ ) and the presence of dividing walls between toilet for coordinators ( $M=0.8$ ). Statistically significant relations were found between parents and all other groups for “There should be dividing walls between wc” [ $F(3,.56)= 15.94$ ;  $p.<.001$ ], more frequent in parents’ answers; between assistants and all other groups and between coordinators and parents for “A play/reading area should be set up” [ $F(3,1.03)= 15.86$ ;  $p.<.001$ ], less frequent in assistants’ answers and more frequent in coordinators’ answers; between parents and all other groups for “A waiting-area for children should be set up” [ $F(3,0.45)= 34.96$ ;  $p.<.001$ ], less frequent in parents’ answers; between assistants and parents and assistants and teachers for “Toilet/sink/diaper-change areas should be distinct” [ $F(3,0.67)= 5.52$ ;  $p.<.001$ ], more frequent in assistants’ answers; between assistants and the other groups for “Children should have free access to clothes bags” [ $F(3,0.89)= 6.72$ ;  $p.<.001$ ], less frequent in parents’ answers. The mean scores are reported in Figure 3.27.

Figure 3.27 – Agreement on statements on toilet space for each group



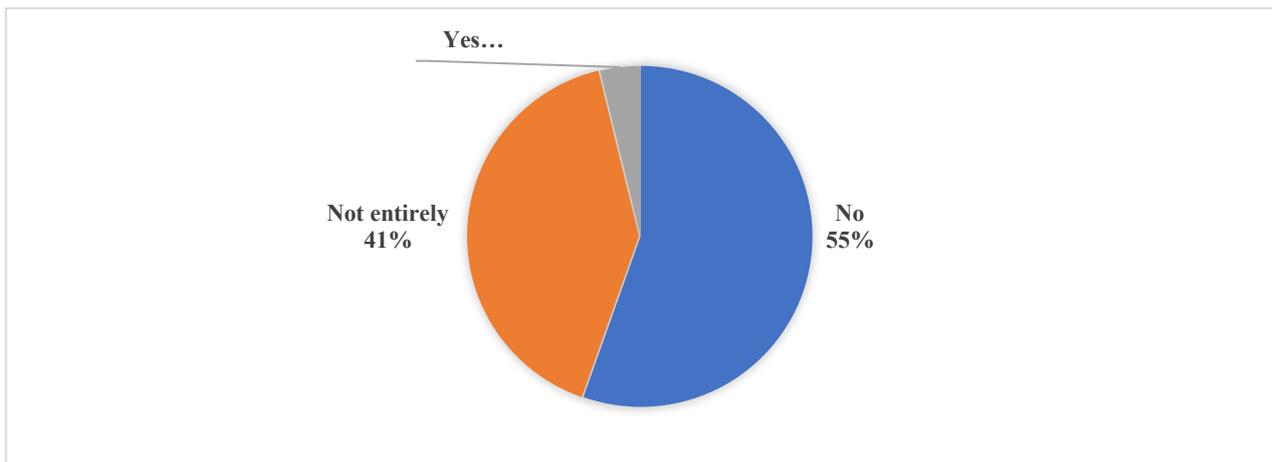
In relation to E4 question, the most important aspects indicated by participants for an eating space were found to be autonomy, safety, independence, movements, development, care, learn, experience, personal moment, hygiene. The 30 most used words to answer the open question are reported in Table 3.37. A word cloud of the words used to answer the open question is reported in Figure 3.28.

Table 3.37 – Most important aspects for a toilet space: words used to answer the open question

Word	Count	Word	Count	Word	Count
autonomy	248	feel	54	use	32
autonomous	161	develop	51	acquire	31
independently	103	care	46	become	31
safely	86	safe	44	space	31
move	75	safety	43	access	26
able	71	live	39	achieve	26
hygiene	64	needs	37	one	25
learn	56	personal	37	take	25
moment	56	comfortable	33	without	25
experience	55	possible	32	adult	24



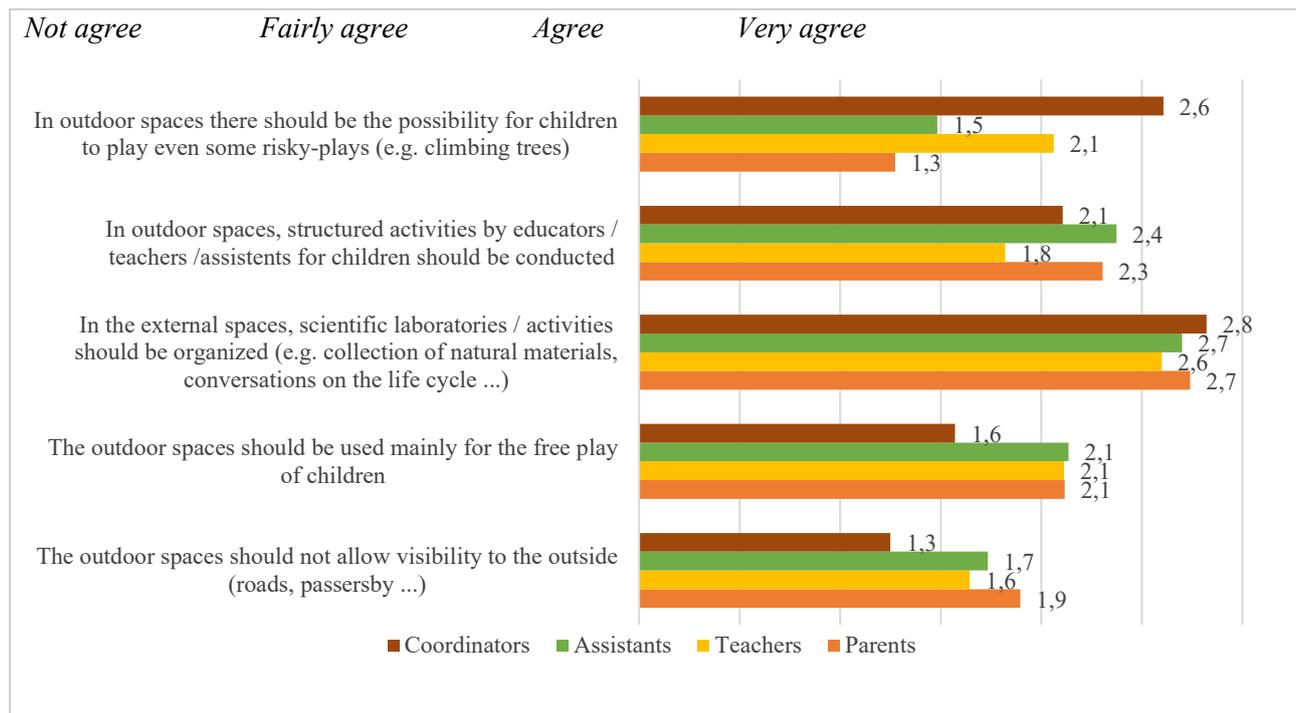
Figure 3.30 - Adequacy of outdoor spaces



In relation to F3 question, the strengths indicated by participants for outdoor spaces were found to be mostly the presence of natural elements, the large size, the equipment, the presence of thematic areas, the opportunities for children to explore. Limitations indicated by participants for outdoor spaces were found to be mostly the need for more safety, the lack of thematic areas, the lack of gardening areas, the lack of natural elements.

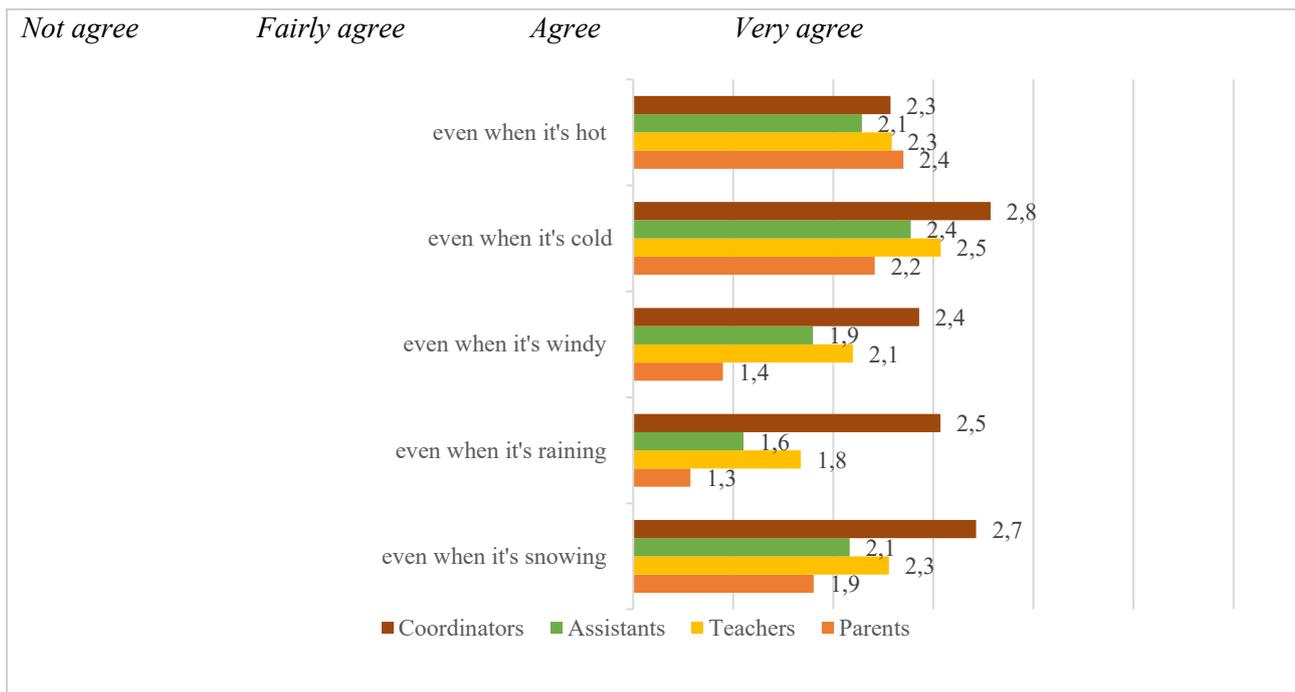
In relation to F4 question, it was found that in Italy the aspect which found the highest agreement was the organization of scientific laboratories and activities for all groups: parents (M=2.7), teachers (2.6), assistants (M=2.7) and coordinators (M=2.8). The aspect which found the lowest agreement was the possibility for risky play for parents (M=1.3) and assistants (M=1.5) and the visibility from the neighborhood for teachers (M=1.6) and coordinators (M=1.3). Statistically significant relations were found between all groups except between parents and assistants for the “Possibility for children to risky-play” [F(3,0.77)= 50.05; p.<.001], less frequent in parents’ and assistants’ answers; between teachers and parents and teachers and assistants for the “Conduction of structured activities” [F(3,0.66)= 28.14; p.<.001], less frequent in teachers’ answers; between parents and teachers for the “Organization of scientific laboratories/activities” [F(3,0.35)= 3.92; p.<.001], less frequent in teachers’ answers; between coordinators and all other groups for “Outdoors should be used mainly for free play” [F(3,0.61)= 4.44; p.<.001], less frequent in coordinators’ answers; between parents and teachers and parent and coordinators for “Outdoors should not allow visibility from/to outside” [F(3,1.05)= 4.30; p.<.001], more frequent parents’ answers. The mean scores are reported in Figure 3.31.

Figure 3.31 – Agreement on statements on outdoor space for each group



In relation to F5 question, it was found that most mean scores on the use of outdoor spaces in all climatic conditions were from fairly agree to agree for all participants, apart from parents and assistants who had mean scores from not agree to fairly agree on their use in windy and rainy weather and for teachers who had mean scores from not agree to fairly agree on their use in rainy weather. The highest agreement was found for hot weather for parents (M=2.4) and for cold weather for teachers (M=2.5), assistants (M=2.4) and coordinators (M=2.8). The lowest agreement was found for rainy weather for parents (M=1.9), teachers (M=2.3) and assistants (M=2.1) and for hot weather for coordinators (M=2.3). Statistically significant relations were found between parents and teachers, parents and coordinators and assistants and coordinators for “the use of outdoor space when it’s cold” [F(3,0.38)= 14.97; p.<.001], less frequent in parents’ answers and more frequent in coordinators’ answers; between parents and all other groups and assistants and all other groups for “the use of outdoor space when it’s windy” [F(3,0.64)= 30.85; p.<.001], less frequent in parents’ and assistants’ answers; between all groups except between parents and assistants for “the use of outdoor space when it’s raining” [F(3,0.88)= 22.79; p.<.001], less frequent in parents’ and assistants’ answers; between all groups except between parents and assistants for “the use of outdoor space when it’s snowing” [F(3,0.65)= 13.85; p.<.001], less frequent in parents’ and assistants’ answers. The mean scores are reported in Figure 3.32.

Figure 3.32 - Agreement on statements on the use of outdoors in all climatic conditions



### Discussion

The findings of the present study allow to reflect on different aspects of ECEC spaces. It was interesting to note that the favorite space was an outdoor space for all groups of participants, in line with what emerged in the preliminary study with a smaller sample of parents and teachers. This highlights the great relevance that the outdoors have in adults' vision of ECEC spaces, confirming findings from previous literature (Ihmeideh & Al-Qaryouti, 2016; Jayasuriya et al., 2016; Maynard & Waters, 2007; McClintic & Petty, 2015; Moser & Martinsen, 2010). In relation to some specific aspects of the use of outdoors, some results from the questionnaire were however in contrast with the ones from the focus groups; in particular, during focus groups the participants agreed on the possibility for risky-play and for the use of outdoors in all climatic conditions, while from the questionnaire it was found a fair agreement on these aspects. Parents and assistants in particular fairly agreed on the use of outdoor spaces for risky play and in bad weather conditions, especially on windy and rainy days, teachers were more likely to both such options and coordinators were the most likely of all participants. The most likely attitude of the coordinators may be due to their role in the management of the pedagogical choices of the centers, which lead them to be constantly updated on the results of research and on the customs of other countries. Scientific literature in fact indicates that risky outdoor play may improve physical and psychological health, risk management, self-confidence

and independence and in some cultural contexts, especially in Scandinavian countries, it is an integral part of the educational path, adding evidence to its feasibility and addressability for the early age (Brussoni et al., 2015; Hüttenmoser, 1995; Lavrysen et al., 2015; Sandseter & Kennair, 2011). Coordinators may know these studies and have reflected on them recognizing the value of such innovative educational practices. The worries of parents and teachers may be inferred from the findings of focus groups, where they talked about the concern for children to get hurt or sick, if the environment is not adequately equipped. Indeed, although participants declared that their favorite space in the ECEC center was an outdoor space, the great majority of them perceived their outdoor spaces not to be adequate and the lack of safety was one of the characteristics indicated to be improved in the outdoors. Other limitations were mainly related to the lack of natural elements and the lack of thematic areas, especially gardening areas; the presence of the same aspects were indicated among the strengths of outdoor spaces. This was another data in line with what emerged from the preliminary study, since in focus groups outdoor spaces were included in both favorite and least favorite spaces for the same reasons: in participants' vision, gardens offer great opportunities for children's development but at the same time they should be more natural, with grassy areas and trees, and have provisions to deal with the possibility to get hurt and bad weather. The unanimity among groups about all these issues relating to outdoor space indicates that it would be very important to work on these aspects and to improve their use, exploiting their full potential. The scientific literature also supports this need, indicating the benefits for children to stay in natural environments, relating in particular to the development of motor skills, self-regulation and prosocial behavior (Brussoni et al., 2017; Cullen, 1993; Fjortoft, 2001; Kochanowski & Carr, 2014).

It was also interesting to note that all groups of participants indicated the highest agreement on the organization of scientific laboratories and activities outdoor; the unanimity on this vision allows to argue that such activities may be suggested as a starting point for a renewed use of outdoor spaces. Previous research indeed showed that teachers would like to organize some outdoor educational activities but they seem not aware of what possibilities outdoors offer (Jayasuriya et al., 2016; Maynard & Waters, 2007; McClintic & Petty, 2015), so they tend to restrict their use for children's free play (Ihmeideh & Al-Qaryouti, 2016; McClintic & Petty, 2015). Furthermore, teachers found that some features of outdoors, such as location, size, shortage of materials, and lack of an easy connection with indoors hinder the feasibility of structured

activities (Ihmeideh & Al-Qaryouti, 2016; Maynard & Waters, 2007). In the light of all these considerations on outdoors, the present research may indicate some orientations to exploit their potential; in particular, the knowledge of other countries' realities may open new reflections on the possibilities offered by the natural environment for children's development, the installation of adequate provisions to protect children from injury during risky play (soft surfaces, safe equipment...) and sickness in case of bad weather (canopies for rainy days, shadows for hot sunny days ...) can improve outdoor use by responding to the safety request, reassuring parents and teachers about greater safety of the environment. Finally, the agreement of all participants on the organization of scientific laboratories and activities outdoors may be a suggestion for the pedagogical offer, constituting a starting point for an innovative use of such spaces.

Also on outdoor issues, a final aspect that deserves reflection is that visibility from the neighborhood has achieved the lowest agreement by teachers and coordinators. The connection between ECEC centers and the outside world is one of the subcategories identified during the preliminary study, due to participants referring to the pleasure of interacting with the surrounding environment, while the findings from the questionnaire showed a low agreement on this aspect, especially in teachers' and coordinators' vision. The contrast between these findings let us think that, even if the possibility to see the outside world is appreciated and considered enriching for children's experience, adults worry about some concerns that may arise in the contact with the surroundings. Since this study did not explore the reasons for the low agreement on the visibility of spaces from neighborhoods, further investigations should be done to understand what are the worrying aspects in adults' perception, in order to address such issues and allow children to experience the connection to the outside world in a safe and secure way.

In relation to indoor spaces, the favorite spaces were found to be the same indicated by parents and teachers in the preliminary study: the class, the hall, the atelier, the entrance, the library and the windows. The class in particular was the favorite space at all for all groups, and also in the preliminary study it was indicated as the favorite for parents, because they lived there the welcoming moments in the center and for teachers because they feel it like a 'second home'. The role of the class is certainly recognized in ECEC centers: it's an intimate space for both children and teachers, where a small group of children is in charge of one or two teachers who take care of them. Compared to the other ECEC spaces, more oriented to socialization in big groups, the class provides a cozier atmosphere where learning activities take place as

well as play activities, facilitated by the presence of thematic areas which allow to play alone or in small groups. Literature indicates that such characteristics of preschool classes support children's development: the presence of learning materials seems to enhance academic achievements (Mashburn, 2008; Neuman & Roskos, 1992) and the presence of compatible or complementary activity areas seems to positively influence preschoolers' perceived competence (Maxwell, 2007). The unanimous preference for the class among indoor spaces underlines the great importance it has in ECEC centers and the attention it deserves in the assessment of its physical environment.

Among favorite indoor spaces, the hall, the atelier and the entrance were the other most popular choices, even if they were indicated also among the least favorite spaces, especially by teachers. This finding is also in line with the results of the preliminary study, in which the hall was among parents' preferences and teachers' non-preferences, due to the fact that parents' experience in such spaces is emotionally charged while teachers' experience is mainly related to noise and crowding. This highlights the importance to listen to all stakeholders' points of view to fully understand the potential of the different spaces. The factors which explain the preferences for hall, atelier and entrance are related to the opportunities that such spaces offer in terms of relations: these are the places where children from different classes meet, teachers share their role of supervisors and teachers and parents meet other families and can enjoy the pedagogical documentation. These aggregation spaces deserve a special attention for their delicate role: since most important relational moments take place there between children, teachers and families, the environment should support such moments by allowing a serene atmosphere, not noisy or crowded, in order to facilitate contacts, communication and emotional experience during relational processes.

Among the other least favorite spaces, sleeping spaces were indicated by parents and assistants and toilet spaces by teachers; this opens reflections on the importance given to such spaces. Since they were included among the least favorite, it seems that less attention is given to such spaces compared to other spaces that have more explicit educational value. Nevertheless, toilets, sleeping rooms and eating spaces are very relevant spaces for children to achieve important autonomies and developmental goals at this age. This emerged also in the focus groups of the preliminary study, where the educational value of such spaces for care was highlighted, which mainly refers to autonomy, prosocial behavior and self-regulation. These findings may be interpreted in the light of the recent debate on the need to overcome the division between

education and care in the approach and management of ECEC centers. Many research studies and European reports underline how quality in ECEC should encompass a broad, holistic view on learning, caring, upbringing and social support for children, with specific attention to the fact that the concept of ‘care’ and ‘education’ are inter-twined: it is not possible to divide them or to see one as superior to the other (European Commission, 2018; Laere et al., 2012; Peeters et al., 2016; Vandebroek et al., 2016). As pointed out also by the European Quality Framework (European Commission, 2014, 2018; UNESCO, 2010), also the tasks of ECEC professionals, whatever their profile is, should be geared towards this holistic approach. In many other EU countries, ECEC assistants are employed to work alongside the core teachers and are responsible for caring tasks and for looking after the children outside the classroom periods (during meals at midday, in the play-ground, during sleeping moments). Considering the debate about the ‘schoolification’ of the early years and the consequent priority that this perspective gives to the ‘cognitive’ aspects of education, different studies (Laere et al., 2012; Peeters et al., 2016) argue that the divided roles between assistants and core practitioners (in which assistants are seen as the ones that ‘take care’ and core practitioners as the ones that ‘educate’) might reinforce the division between care and education, which does not facilitate the holistic approach. The orientation is to move towards a new integrated approach, namely “Educare”, which includes both educational and caring meanings during all practices in ECEC centers (Peeters et al., 2016).

Considering more specifically ECEC spaces, this means that the space where the children’s sleeping room is, the way and the location where it is built, as well as the location and organization of the toilet or the eating room, have the same importance as the way classes or playing rooms are organized. It means that high-quality time and space should be given to all the spaces where children live their days in ECEC centers, which means giving importance to all the elements that contribute to their growth in a holistic way. In the direction of an educare approach, much attention should be given to eating, sleeping and toilet spaces in order to support a holistic development of children. The results of the questionnaires showed a general agreement between participants about the most important aspects of each of these spaces: the eating space should be first organized in small groups and second prepared with care, the sleeping room should first offer a soft atmosphere and second adequate noise level, the toilet space should have first adequate brightness and second allow visibility from and to the class. From the open question on the most important aspects, similar concepts emerged for all the three spaces, mainly related to serene, comfort and safe environment which

offer of opportunities of caring and learning experiences for childrens that support the development of transversal competencies such as autonomy, independence and prosocial behavior. The indications provided by participants on these spaces may guide design processes to improve the environment of such places and valorise their important role in children's ECEC experience: this improvement would facilitate the achievement of developmental goals for children and create better conditions for teachers to support them during these delicate processes.

Another interesting finding of the questionnaire was that spaces for families were not indicated among the preferences of parents, even if they were among the answer options. This may be due to the fact that spaces for families are rarely present in ECEC centers. The inclusion of families in ECEC experience is supported by European policies that recognize that parents' participation as partners of ECEC centers is essential (Council of the European Union, 2019;(OECD: Organization for economic cooperation and development, 2012; OECD Organization for economic cooperation and development, 2006) and by scientific literature that highlights the need for a more participatory approach on parental involvement (Vanderbroeck et al., 2011; Van Laere et al., 2018) rather than considering them spectators and not actors of processes that take place in ECEC centers (Tronto, 2013). Effective involvement of families implies that ECEC centers should also provide a physical environment which enables it. It should be indeed observed that parental involvement may be conveyed also through the physical environment: for example, literature has shown how pedagogical documentation plays an important role in parents' experience of ECEC centers, allowing them a major understanding of children's educational processes (Buldu, 2010), enhancing discussions among stakeholders on such processes (Picchio et al, 2014) and facilitating relationships between parents and teachers as well as between parent and child (McLean, 2019). The organization of specific spaces for families would be a further step for enhancing parental involvement, by adding value to their presence in the ECEC centers. From the preliminary study it emerged that such spaces have very important meanings in parents' experience, mainly because they spend there intimate and relaxing moments with their children and have also the opportunity to learn new things about childhood and parenting from pedagogical reviews and books that are provided in there. The provision of specific spaces for families may therefore favor parental involvement and their positive experience in ECEC centers.

The reasons for preferences about space were first of all the possibility for children to experience good emotions, then the possibility to carry on nice activities, especially for parents and teachers, the opportunity to enjoy nice moments with children, especially for teachers, and the opportunity for children to meet each other, especially for teachers and coordinators. The emotional experience of children and their possibilities to experience and learn emerged to be the most relevant aspects, in line with the preliminary study and with previous literature (Van Laere et al., 2018). Then teachers and coordinators referred to relational opportunities, indicating once again that physical space should support and facilitate relationships. The reasons for non preferences were first of all the non-functionality, then the noise and the lack of thought, especially for teachers, and the lack of definition and beauty, especially for coordinators. These findings indicate the need to work on these aspects to improve the physical environment. In particular, in teachers' and coordinators' vision it seems very important that the space is defined and thought, underlying their need to identify the role of each space to implement effective pedagogical actions, by exploiting its full potential. The lack of beauty seemed to be relevant especially for coordinators, while other participants seemed to pay attention to other aspects of space. This may be explained considering their supervising role that allow them to observe space from perspective different to the one of professionals and parents: they may have more opportunities to reflect on the global visual impact of the centers, also paying attention to aesthetics aspects, while parents and teachers are more involved in practical activities with children that lead them to give more relevance to what space allow relating to the emotional, learning and relational experience of children. The different vision of coordinators also emerged from the fact that they indicated offices among their least favorite spaces. This may due to the fact that often coordinators do not have a specific space in ECEC centers: since they usually coordinate many different centers and are not always present in the same building, their 'offices' are not defined and often they have to use spaces that in the centers' daily routines have other functions. Nevertheless, their role in pedagogical coordination is of great importance in the centers' reality and their work foresee collective and private meetings with teachers and delicate dialogues with parents. On the basis of these considerations and from the results of the questionnaire, which indicated that coordinators do not perceive adequate spaces for their practice in ECEC centers, reflections may be done on the provision of adequate spaces for them, in order to facilitate their complex work by offering support spaces for its implementation. Once again the importance to include all perspectives emerged: communication between all

stakeholders consents to explicit what is visible from each point of view and sharing this visions allows to have an increasingly complete and complex framework through which observing the physical environment and reflect on its meanings and use.

### **Conclusion**

The current study was aimed to investigate the meanings of space in adult's experience, starting from the results of the preliminary study. A general coherence in the vision of parents, teachers, assistants and coordinators emerged, indicating that some aspects of spaces are unanimously recognized and have similar relevance in their experience. On the other hand, the differences that emerged between groups highlight the need for more communication between stakeholders and more expression of personal perspective, in order to co-construct joint meanings on ECEC spaces in a complex framework which takes into account diverse points of view and multiple voices. Such approach could orient policies and practices for the creation of spaces that support and facilitate educational processes in ECEC centers.



## Chapter 4

### Study 2: The meanings of space in ECEC Centers in children's experience

The analysis of the literature in Chapter 1 has shown the importance of taking into account children's vision in ECEC spaces design issues in order to create environments that respond to their real needs and to make them active participants in processes involved with their own development. Children showed to have personalized points of view and preferences about the physical environment of their ECEC centers and to have a complex perception which includes different elements of the space, such as furniture, play materials, architectural elements and people (Durak, 2009; Marques & Sperb, 2013). Moreover, it was found that children's visions are often different from the adults' ones, since from their perspective spaces and materials have different meanings and purposes (Colwell et al., 2016; Kennedy, 1991; Skånfors et al., 2009).and because they see imaginary places not visible to an adult eye (Rasmussen, 2004; Strong-Wilson & Ellis, 2014; Zamani, 2016). Their meanings are particularly relevant because they are the first 'users' of ECEC spaces and the actor for whom such spaces are designed and realized. Therefore, their point of view should be taken into account. In addition, the involvement of children in design processes is supported by article 12 of the Convention on the Rights of the Child (The United Nations, 1989) which indicate that every child has the right to express his/her views on matters that affect them and that such views should be taken into account, and it is also encouraged by the Child-Centered Approach promoted by UNICEF (2018), which encourage to listen to children's voices about their concerns and thoughts and to let them participate actively in the educational processes. Children's competence in space issues was already demonstrated, through action research studies that revealed that preschoolers were able to detect the strengths and weaknesses of their ECEC environments and propose creative solutions to make them more appropriate and livable (Bers et al., 2018; Botsoglou et al., 2017; Millei & Gallagher, 2012; Nah & Lee, 2016). For all these reasons this second study was aimed to explore the point of view of children on ECEC spaces, complementing the investigation of adult's meanings exposed in Chapter 3.

Among the methods used to investigate children's perceptions, the literature review indicated that the most frequent have been interviews and drawings, which were both found to be appropriate and effective. Therefore, the use of drawings and interviews were the main methodologies used in the study. While

interviews have quite obvious effectiveness as research tools, since they consist of a specific and explicit request to which the child should respond verbally, drawings require more specification on their use in research with children.

### **Children's drawings as a research instrument**

Drawing seems to be an easy and enjoyable activity for most children, and as a research technique it provides a relatively easy way to obtain information about children's experience (King, 1995). The literature indicated that many children may be more easily inclined to complete drawing tasks than answer questions on a topic (Lewis & Greene, 1983) and recent studies have also shown that drawings can be facilitators of communication: children who were first asked to draw provided more detailed narratives and referred more to emotions when interviewed on topics relevant to their lives (Driessnack, 2005; Katz & Hamama, 2013). For these reasons in the main study, children were asked first to draw and then to talk about their spatial experience.

Thomas & Jolley (1998) identified five main purposes that were pursued in the use of drawing techniques: personality assessment; evaluation of emotional states; evaluation of personal significance of a topic; assessment of intelligence or developmental level; assessment of possible neurological impairment. Since the aim of this second study is to identify some elements that can help to approach the children's experience of their ECEC center space, our conceptual framework refers to the second and third of these purposes. Through drawings in fact children express their vision on a topic, also providing insight into their feelings and thoughts about that topic (Crook, 1985) by reflecting an image of their own mind (Thomas & Silk, 1990). Farokhi & Hashemi (2011) consider drawing is in the same field of expression as play and speech, arguing that children 'express their fears, joys, dreams, pain, etc. through drawings, and also give you leads about their relationship to the world and to other things'. Following the same conceptual approach, in this study drawings are intended as communicative tools and integrated with interviews to let children express their point of view also through verbal explanations.

Besides the explicit content of the drawings, some implicit meanings may also be derived from symbolic elements or aspects that literature evidenced over the years. The main symbolisms that were considered in the study were relative to the representation of archetypical elements (Crotti & Magni, 2011; Serraglio, 2011), the use of colors (Crotti & Magni, 2011; Lucher, 1976) and the position of the drawing in

the sheet and of people in the drawing (Federici, 1998). Furthermore, some interpretative elements were taken from the Human Figure Drawing to explore the representation of the child him/herself and from the House Drawing as the school was represented as the mere building, considering that the way in which the child represents these elements can be indicative of psychological meanings not expressed directly. The main symbolism for each of the aforementioned aspects are described as follows.

### ***Archetypical elements***

Serraglio (2011) and Crotti (2015) describe the meanings of some recurring symbols in children's drawings. Among the main archetypical elements that children usually represent there are the sun, the moon, the sky, the earth, the rainbow, flowers and animals. The sun symbolizes strength, the desire for autonomy and independence, implying feelings of safety and protection. The moon is usually associated with darkness, which every child unconsciously fears: at this age it appears in the drawings of children who live moments of regression or a need for quiet caused by anxious states. The sky is an indication of serenity and concreteness, and desire to learn and achieve important goals. The earth is considered an indicator of safety and emotional stability. The rainbow is associated with a need for reassurance and protection against the difficulties that the outside world offers; children representing the rainbow seem to require protection and safety, due to something that has upset them. Flowers Animals are usually represented by children to exorcise their fears or to discharge violent feelings directed towards adults, thus their representation in drawings can be a signal of emotional tensions. Monsters have the function of exorcising a fear or concern of the child (Crotti & Magni, 2011; Serraglio, 2011). Similar meanings may be inferred to symbolic elements that children represented in their drawings in relation to how their ECEC center is experienced as a social environment.

### ***The use of colors***

The classic literature on children's drawings argues that emotional states may also be expressed through the choice of colors, which is a spontaneous action for children (Federici, 1999). Luscher (1976) in particular systematized such use identifying a distinction between warm and cold colors. According to this analysis, warm colors (such as yellow, orange and red) arouse feelings of excitement and motor activity, inspiring serenity and joy of life, while cold colors (such as blue, green and purple) arouse sensations of calm and stillness, denoting a more reflective attitude. Crotti (2015) also analyzed the variety of colors used, noting that multichromatism is associated with sensations of serenity and extroversion while

monochromaticity is associated with discomfort and introversion. On these bases, the colors used to represent the ECEC center can give us some indication of the emotional experience of children.

***The position of the drawing in the sheet***

Some authors indicated that the use of the sheet space can also give us information about the experience of children. Federici (1998) realized a grid to systematize the meanings that can be attributed depending on where the drawing is placed in the sheet space. Considering the horizontal position, the use of left portion of sheets reminds to past experience, the use of central portion to present experience and the use of right portion refers to the future. Considering the vertical position, in the upper space there are references to thoughts, in the central space reference to reality and in the lower space references to materiality. The grid proposed by Federici (1998) is reported in Table 4.1.

*Table 4.1. Meanings of the position of the drawing in the sheet*

		<i>Horizontal position</i>			
		<i>Left</i>	<i>Center</i>	<i>Right</i>	
<i>Vertical Position</i>	<i>Top</i>	Memory	Imagination	Dream	<i>Thought</i>
	<i>Center</i>	Past	Present	Future	<i>Reality</i>
	<i>Bottom</i>	Fear	Insecurity	Desire	<i>Materiality</i>

According to Federici (1998), drawings placed in the central part of the sheet, both horizontally and vertically, revealed security and emotional balance. In relation to the horizontal position, drawings in the left area indicates a regression or need to regress to the past, while drawing in the right area indicates the need for the child to project himself into the future and grow. In relation to the vertical position, drawings in the upper part of the sheet symbolize expansion, imagination and idealism, while drawings in the lower area are usually indication of inhibition and sadness. In the present study, the same meanings may be inferred to the experience of children in their ECEC spaces by observing the position of their drawings.

### ***The position of people in the drawing***

Similarly to the position of the drawing in the sheet, Federici (1998) also observed the relevance of the position of people in the drawing that may be interpreted on the basis of the same grid. Representation of people in the central area indicates their importance in children's thoughts and a balanced experience. In relation to the horizontal position, people on the left indicate passivity and introversion with meanings more related to the past, family and memories of childhood, while people on the right indicate an active and extroverted attitude, and the ability or desire to have serene relationships with others. In relation to the vertical position, people in the upper part of the sheet symbolize a detachment from the real, that can be interpreted as idealization or as an attempt to escape, while people in the lower area symbolize attachment to the concrete and the real or devaluation of the person. In the present study, similar meanings may be inferred to the relational experience of children who represent people in their drawings.

### ***Human figure drawing***

The Human Figure Drawing test is a popular instrument for children's assessment. Some elements in the representation of the human figure may reflect psychological meanings: the presence or absence of certain elements, or the fact that some aspects are valued or diminished can in fact indicate desires or fears of children (Oliverio Ferraris, 2012). Among the main elements to be considered there are: the head, representing thoughts and cognitive activity; the eyes, representing the contact between the internal and external world; the arms, representing the emotional contact with the others; the hands, representing the point of contact with the world and people; the legs representing children's feeling of security in the contact with the world; the feet, representing the stability in the world (Serraglio, 2011). In the present study, these elements may be observed in children who represented themselves in the drawing.

### ***House-drawing***

The house drawing test is a popular instrument in children's assessment. Children were asked to draw a house and on the basis of the characteristic of the represented house, some psychological meanings can be inferred. In particular a big house may be the expression of happiness and welcoming attitudes, while a little house may symbolize withdrawal and intimacy. A house represented 'as a castle' may indicate pleasure for imagination, play with fantasy and adventure. The roof represents cognitive aspects: if it is too big it indicates immersion in thoughts while if it is too small or crushed indicates a sense of mental

oppression. Walls represent the strength of the image of the self: they may be from thick or traced, indicating the need for defense, to transparent, indicating fragility and impossibility of defense. Doors and windows may be open or close indicating the openness (or not) to the world and willingness (or not) to open up to others. Balconies are at the same time an element of openness and defense, as they represent the possibility to face the outside world while remaining on a high floor and therefore protected. Chimneys symbolize emotional communication: if they are smokeless may indicate the need of more rewarding emotional relationships. Fences symbolize the need to defend against the outside world. The streets indicate communication between inside and outside, between the center and the world. The baseline represents the point of contact with social reality: a line parallel to the lower border of the sheet indicates a good relation with reality, an absent line indicates insecurity in the social relations, a waved line indicates malleability and a line resting on the border of the sheet indicates the need for security and support from the others. (Serraglio, 2011). In the present study, similar meanings may be attributed to children's experience when they represented ECEC centers building 'as a house'.

Taking into account the aforementioned theoretical framework, the second study explored the point of view of children, mainly through the use of drawings. First a preliminary study was carried out with the aim to conduct a first exploration on children's meanings and to identify an effective method to conduct such exploration. Since one of the aims of the preliminary study was to identify an effective method of exploring children's vision, two different drawing tasks were proposed to children in the preliminary study and a comparison was made between the two to identify which should be most appropriate in relation to the purpose of the study. In addition to drawings, in the preliminary study an innovative method was experimented: a tridimensional model of children's classroom was built and children were asked to position Playmobil dolls representing themselves, friends and teachers in the model. To our knowledge, such methodology has not yet been used in research so far, therefore it may be interesting to observe what emerged from this innovative way to explore children's spatial experience. The activity with the tridimensional model and Playmobil dolls was proposed to observe how children positioned themselves in the classroom space and how they represent interactions with teachers and friends. Playmobil dolls are suitable for this purpose, being miniature models with articulated limbs that children can pose as they prefer and that for their conformation do not force characters into defined roles or interactions (Van Leeuwen,

2009). Other studies have shown that telling stories through the use of Playmobil dolls may help the emergence of content that is difficult to express in another way (Rober and Van Eesbeek, 2006).

Furthermore, the opportunity to see the whole class was thought to enhance the awareness of children about all the spaces that they can choose and to think to the real experience of everyday life in the ECEC center.

After the preliminary study, the main study was conducted to broaden the investigation of the meanings that emerged on a larger sample, by using drawings and interviews as research tools.

#### **4.1 Preliminary Study - The meanings of ECEC space in children's experience: an exploration through drawings and tridimensional models**

##### **Aim**

The study aimed to explore the meanings of ECEC space in children's experience through a preliminary research and to identify an effective method to get children's point of view in order to further investigate it in the main study with a larger sample.

##### **Method**

##### **Participants**

The total participants were 48 children aged from 3 to 6 years old, from two ECEC centers in Parma and Turin. 27 were male and 21 were female. The mean age was 46,86 months (SD=9,22; range 15-72 months). Although the sample included a total of 48 participants, some children were absent during one or more of the three phases of data collection, so the actual groups of participants in the single data collection included 38, 34 and 45 children.

##### **Instruments and procedure**

Prior to data collection, parents' informed written consent was acquired, following the ethical guidelines defined by the American Psychological Association. The data collection also provided for the authorization and approval of all coordinators and teachers of the ECEC centers. The data was collected between February and March 2019 on three different days in each of the two centers: on the first day, the researcher introduced herself to the children telling them that she was writing a book about children and their schools and needed their help to better understand how children experience the spaces of their school. She also anticipated that she would ask them some drawings and play with them with a tridimensional model, asking for their consent to participate in these activities. Once the children agreed to participate, on the same day, she proposed to them the first drawing. On the second day, the researcher reminded the children of her purpose and proposed them the second drawing. On the third day, the researcher reminded the children of her purpose and proposed them the activity with the tridimensional model. The three instruments are described as follows.

### ***First drawing***

In each class, the first drawings were proposed to the whole group of children. The researcher asked children to draw their school using this formula: "Now I ask you to draw your school, please". Once the children agreed to participate, they were seated in little groups of about 6/8 around a table with markers of various colors at the center of the table and a white A4 paper (without rows or squares) for each child. The drawings could take all the time needed. When a child had finished the researcher or a teacher would go and ask him what he drew and write it on the sheet.

### ***Second drawing***

In each class, the second drawings were proposed to the whole group of children. After reminding the children of the purpose of her research, the researcher introduced the concept of "place" to the group of children using this formula: "Your school is great, and it is made up of many places, spaces where you can go, places that are both inside and outside. Each of you may have a place where he/she prefer to stay". Then she asked children to draw their favorite place using this formula: "Now I ask you to think of a place where you like to stay when you are here at school. It can be inside the school or outside in the garden. Okay, have you thought? And I ask you to draw yourself while you are in this favorite place. If you want you can draw some of your friends or teachers, or just you, as you prefer. All right?" (children's consent). Once the children agreed to participate, they were seated in little groups of about 6/8 around a table with pencils of various colors at the center of the table and a white A4 paper (without rows or squares) for each child. The drawings could take all the time needed. When a child had finished the researcher or a teacher would go and ask him what he drew and write it on the sheet.

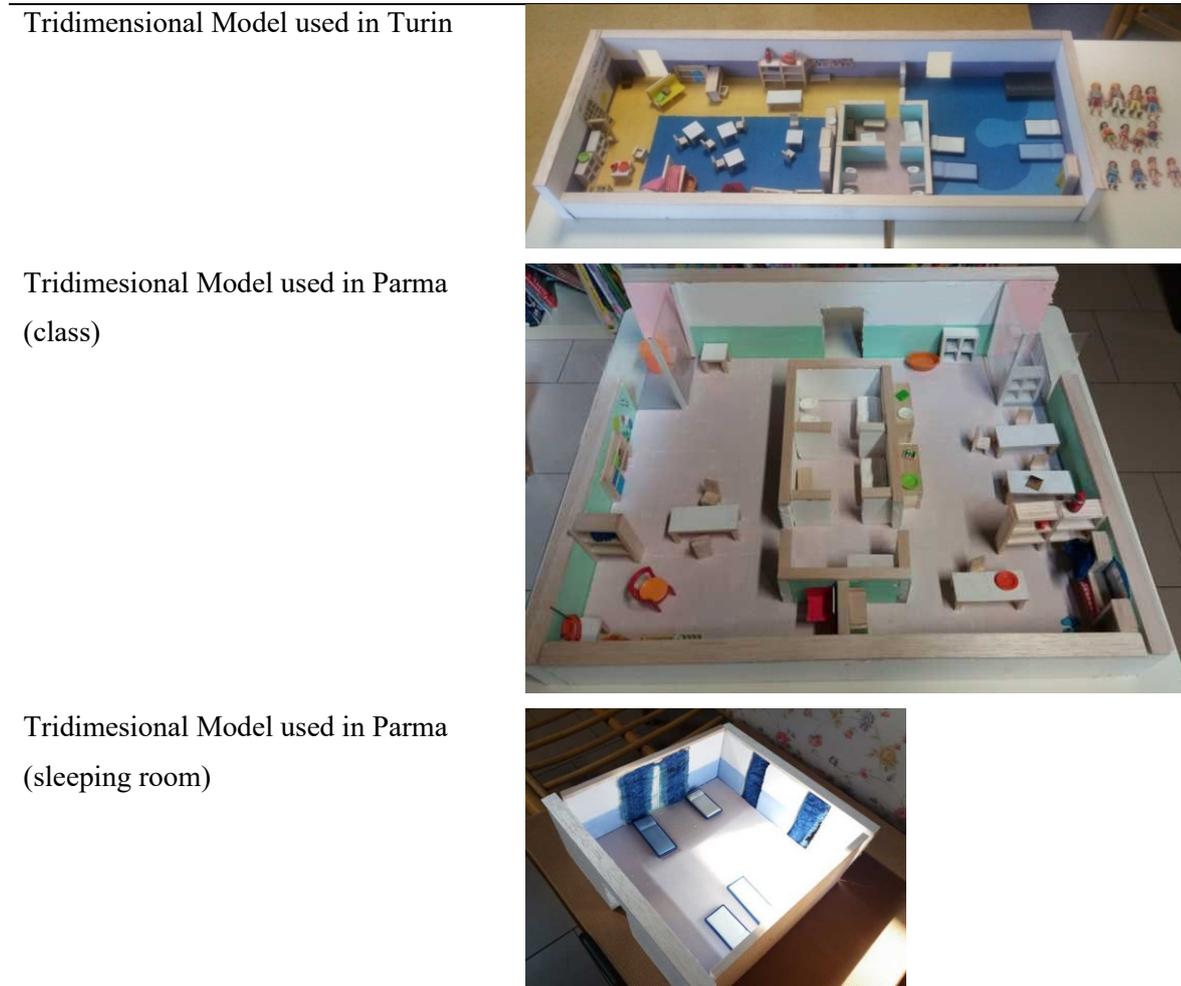
### ***Tridimensional model***

In each class, the activity with the tridimensional model was introduced to the whole group of children and then conducted in a quiet space apart from the class, involving one child at a time. After reminding the children of the purpose of her research, the researcher told them that now she would have call each of them, one by one, to go in a quiet room of the school to play with a tridimensional model. During the individual session the researcher showed the model to the child asking him/her if he/she recognizes what place it was. Once the child recognized his/her class, the researcher showed him some Playmobil dolls asking him/her to choose one doll to represent him/herself, two dolls to represent his/her two teachers and

three dolls to represent three of his/her school friends. Then the researcher asked the child to place all the dolls in the tridimensional model of the class, telling a story of a school day. After the session, the researcher thanked the child and took him back to class. The individual sessions were audio and video recorded.

The tridimensional models represented the classes in scale, structure, furnishings and colors. Both models included the class with a reading corner, a pretend-play corner, a construction corner, posters on the walls, shelves, child-friendly tables and chairs, toilet with child-friendly wc, sinks and benches and a sleeping room with child-friendly beds. The toilet space was inside the class in both models, while the sleeping space was inside the class in Turin and outside the class in Parma; for this reason, the model used in Parma had two parts, one with the class and the other with the sleeping room. It also should be specified that in both classes the eating moments took place on the table of the class. Thus, the main spaces were: the class, including its thematic-corner, the eating space, the sleeping space and the toilet space. Pictures of the tridimensional model are reported in Figure 4.1.

*Figure 4.1 - Tridimensional models*



## **Analysis**

In relation to the two types of drawings, a thematic content analysis was carried out, trying to identify categories that could be representative of the similarities and differences between the drawings, in order to highlight some main topics that emerged from the representation of ECEC spaces. This content analysis was conducted with NVivo Qualitative Data Analysis Software by importing drawings in the software and coding the main themes and elements represented, in order to identify some recurrent categories of meanings and aspects to be further investigated in the main study. The most recurrent aspects were quantified for each category.

The analysis of the activity with the three-dimensional model was carried out by identifying in advance four main categories to be observed. This choice was due to the more structured type of task required by this activity. The four categories were: preferences on spaces for themselves, preferences on spaces for school friends, preferences on spaces for teachers, representation of relationships. The most recurrent aspects have been quantified for each category.

In order to identify an effective method to get children's point of view, a comparative analysis between the three methods was conducted. To achieve this ultimate goal, our intention was to understand the specificity of the proposed methods, the particular aspects that they allowed to catch, and the way in which they involved children. The aspects taken into account to define the most effective method were: information on preferences about space, information on relationships, information on the elements of the environment.

## **Results**

### **First drawing**

Among the 38 first drawings, 36 were relevant to the task and 2 were not. The analysis was conducted on the 36 relevant drawings. Since the analysis included graphical aspects of the drawing, a first factor considered was the recognizability of drawings. Then, the thematic content analysis allowed to identify five main categories through which explore children's conceptions about school: preferences on spaces, representation of the school, representation of relationships, emotional climate, representation of the elements of the environment. The main categories considered for the analysis are reported in Table 4.2.

Table 4.2 - Scheme of the categories through which explore children's conceptions in the first drawings

Method	Categories
First drawing	<ul style="list-style-type: none"> <li>- recognizability</li> <li>- preferences on spaces</li> <li>- representation of school</li> <li>- representation of relationships</li> <li>- emotional climate</li> <li>- representation of the elements of the environment</li> </ul>

### Recognizability

A first aspect that emerged from the qualitative analysis is the recognizability of drawings. In some drawings the elements represented were recognizable without a verbal explication of the child, while in others not. Among the 36 relevant drawings, 24 were recognizable and 12 were not. Examples of recognizable and not recognizable drawings are reported in Figure 4.2.

Figure 4.2 – Examples of recognizable and not recognizable drawings

Recognizable drawing	Not-recognizable drawing
	
<p>“My school”</p>	<p>“My school with the sun”</p>

### ***Preferences on spaces***

Among the 36 drawings, most children represented the whole school (n=23), then the whole garden (n=6), a place in the garden near a tree (n=2), the whole class (n=1), the pretend play corner (n=1), the reading corner (n=1), the construction corner (n=1) and the toilet (n=1).

*Table 4.2 - Types of representation of space in the first drawing*

Elements	Count	Percentage
Whole school	23	63.9%
Whole garden	6	16.7%
A place near a tree in the garden	2	5.5%
Whole class	1	2.8%
Pretend-play corner	1	2.8%
Reading corner	1	2.8%
Construction corner	1	2.8%
Toilet	1	2.8%
Total	36	100.0%

In relation to indoor and outdoor spaces, most children represented both indoor and outdoor spaces (n=23), then outdoor spaces (n=8) then indoor spaces (n=1).

*Table 4.4. Preferences on indoor or outdoor space in the first drawing*

Elements	Count	Percentage
Outdoor spaces	8	22.2%
Indoor spaces	5	15.1%
Both	23	69.7%
Total	36	100.0%

### ***Representation of school***

Among the 36 drawings, 23 were a generic representation of the school, 6 were a generic representation of the garden, 1 was a generic representation of the class and 6 were a representation of specific spaces: 2 outdoor (the place near the tree) and 4 specific spaces indoor (pretend-play corner, reading corner, toilet, construction corner).

*Table 4.5 - Types of representation of space in the first drawing*

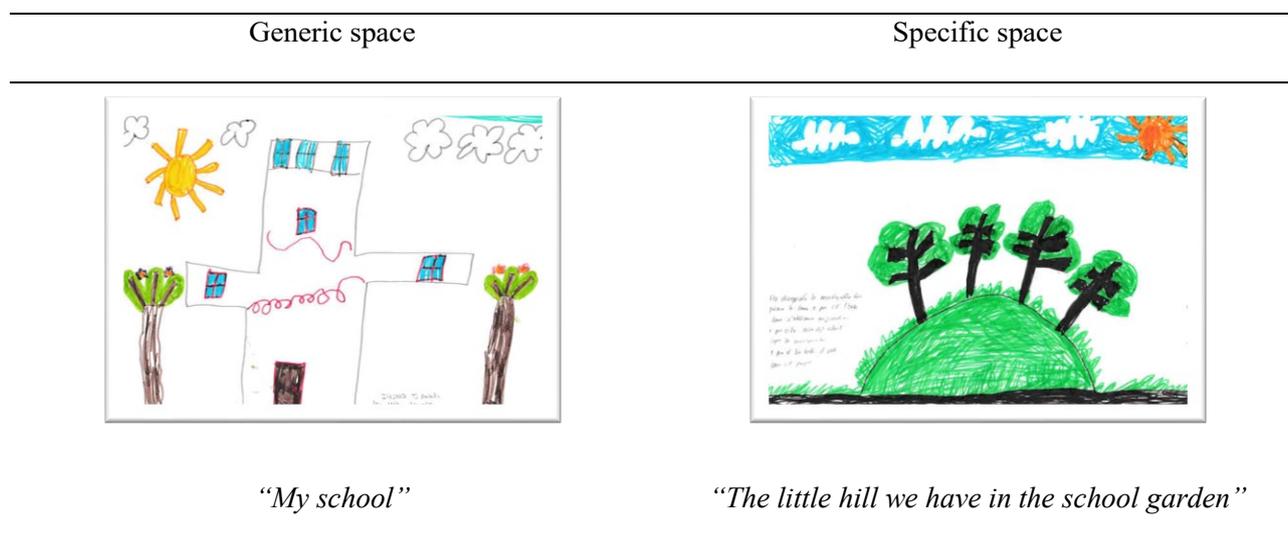
Elements	Count	Percentage
Generic representation of the school	23	63.9%
Generic representation of the garden	6	16.7%
Generic representation of the class	1	2.7%
Specific spaces	6	16.7%
Total	36	100.0%

Two main types of representation of the school were identified: representation of a generic space (e.g: the whole school building) and representation of a specific space (e.g.: the dolls corner). Among the 36 drawings, 30 represented generic spaces and 6 represented specific spaces. Examples of representation of generic and specific space are reported in Figure 4.3.

*Table 4.6 - Representation of generic or specific space in the first drawing*

Elements	Count	Percentage
Generic space	30	83.3%
Specific space	6	16.7%
Total	36	100.0%

*Figure 4.3 – Examples of representation of generic and specific space*



### ***Representation of relationships***

Considering the representation of relationships it was found that only 6 children represented themselves, only 3 children also represented a school friend and 1 child represented the teachers. Of these, two children declared to have drawn ‘the school with the children’ and ‘the school with children and teachers inside’ even if the drawing was not recognizable. Examples of representations of relationships are reported in Figure 4.4.

*Table 4.7. Representation of relationships in the first drawing*

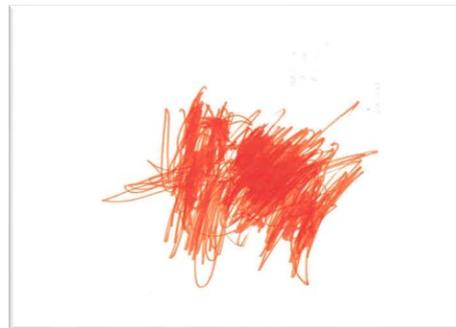
Representation	Count	Percentage
Participant him/herself	6	18.2%%
Friends	3	9.1%
Teachers	1	3.0%
Familiars	0	0%
Other	0	0%

*Figure 4.4 – Examples of representation of relationships*

*‘This is me and my friend Momo in the school garden’ (recognizable drawing)*



*‘The school with children and teachers inside’ (non-recognizable drawing)*



### ***Emotional climate***

Since the emotional climate was deduced mainly from facial expressions of people, it was explored through the 6 drawings in which people were represented. It was found that 5 children represented a positive emotional climate, while 1 child did not represented facial expressions.

### ***Representation of the elements of the environment***

In the first drawing it emerged that the most represented elements were natural elements (n=81): grass and sun (n=14), trees, sky (n=12), earth and flowers (n=7), clouds (n=4), little hill and rain (n=3) and apples (n=2). Then children represented mostly the school building ‘as a house’ (n=26), and the whole garden (n=12) and finally play material (n=6) which included generic indoor materials (n=2), generic outdoor materials (n=1), pretend play dresses (n=1), lego bricks (n=1) and the slide (n=1). Other elements represented were hearts (n=5). The frequencies of the represented elements are reported in Table 4.8.

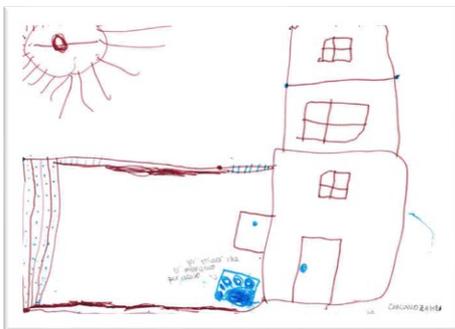
*Table 4.8 - Frequencies of the represented elements in the first drawings*

Elements	Frequency
School building	26
Whole garden	12
Natural elements	81
– Grass/lawn	14
– Sun	14
– Trees	12
– Sky/skyline	12
– Flowers	7
– Earth/Landline	7
– Clouds	4
– Little hill	3
– Rain	3
– Apples	2
Play materials	6
– generic indoor materials	2
– generic outdoor materials	1
– pretend play dresses,	1
– lego bricks	1
– slide	1
Other	11
– Hearts	5
– Garden gate	3
– Bicycle	2

- My house	2
- Ice cream	2
- Streetlights	2
- Fence	2
- Boots	1
- The door that teachers open to go to their cars	1
- Woodstove	1
- Writing: 'I like going to my school'	1

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Figure 4.5 – Examples of representation of specific elements



*'My school and the boots we wear to get out'*  
 (at the bottom center of the drawing, in blue)



*'My school, the door that teachers open to go to their cars to go home (on the left of the school, in green) and a tree that I like to climb (on the right of the school, in green)'*

### Second drawing

Among the 35 second drawings, 33 were relevant to the task and 2 were not. The analysis was conducted on the 33 relevant drawings. The thematic content analysis on these drawings allowed to identify the same five main categories of the first drawing: preferences on spaces, representation of school, representation of relationships, emotional climate, representation of the elements of the environment. The categories considered for the analysis of the second drawings are reported in Table 4.9.

Table 4.9 - Scheme of the categories through which explore children's conceptions in the first drawings

Method	Categories
Second drawing	<ul style="list-style-type: none"> <li>– preferences on spaces</li> <li>– representation of school</li> <li>– representation of relationships</li> <li>– emotional climate</li> <li>– representation of the elements of the environment</li> </ul>

**Preferences on spaces**

Among the 33 drawings, 1 represented the whole school, 1 the whole garden, 1 the whole class. Some children represented more specific spaces: the slide (n=6), the swing (n=2), the little wooden house (n=3), the part of the garden with the grass (n=2), a specific tree (n=2), the multisensory path (n=1), the space where we can jump in the garden (n=1), the sleeping space (n=1), the shelves (n=1), the den/peekaboo (n=1), the corridor (n=1), the deconstructed material corner (n=1), a not-specified ‘my favorite corner in the class’ (n=1).

Table 4.10 -. Preferences on space in the second drawing

Elements	Count	Percentage
Whole garden	8	24.3%
Slide	6	18.1%
Little wooden house	3	9.1%
A tree in the garden	2	6.1%
A grassy space in the garden	2	6.1%
Swing	2	6.1%
Multisensory path	1	3.0%
The space where we can jump in the garden	1	3.0%
Whole class	1	3.0%
Shelves	1	3.0%
Den/peakaboo	1	3.0%
Corridor	1	3.0%
Deconstructed material corner	1	3.0%
Sleeping space	1	3.0%
‘My favorite place’	1	3.0%
Whole school	1	3.0%
Total	33	100.0%

In relation to indoor and outdoor spaces, 23 children represented outdoor spaces, 9 children represented indoor spaces and 1 child represented both indoor and outdoor spaces.

*Table 4.11 - Preferences on indoor or outdoor space in the second drawing*

Elements	Count	Percentage
Outdoor spaces	23	69.7%
Indoor spaces	9	27.3%
Both	1	3.0%
Total	33	100.0%

### ***Representation of school***

The categories identified for the analysis of the first drawing, were found to be appropriated also for the second drawing. Among the 33 drawings, 20 were recognizable and 13 were not. Among the 33 drawings, 1 was a generic representation of the school, 8 were a generic representation of the garden, 1 was a generic representation of the class and 23 were a representation of specific spaces, both indoor (n=6) and outdoor (n=17).

*Table 4.12 - Representation of space*

Elements	Count	Percentage
Generic representation of the school	1	3.0%
Generic representation of the garden	8	24.3%
Generic representation of the class	1	3.0%
Specific spaces	23	69.7%
Total	33	100.0%

In relation to the representation of generic or specific space, 10 represented generic spaces and 23 represented specific spaces.

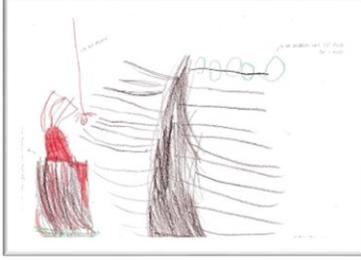
*Table 4.13 - Representation of generic or specific space in the first drawing*

Elements	Count	Percentage
Generic space	10	30.3%
Specific space	23	69.7%
Total	33	100.0%

**Representation of relationships**

Concerning the representation of relationships, children represented themselves (n=26), school friends (n=9), teachers (n=3), familiars (n=2) and other people (n=2) who were ‘the gardeners who came to hoe’ and ‘a boy who stand in the street’. Two children represented people without identifying them. Examples of representation of teachers, familiars and other people are reported in Figure 4.6.

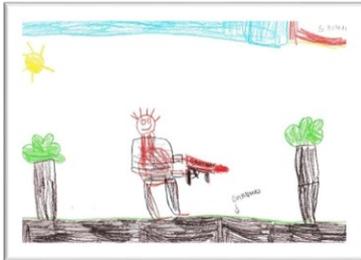
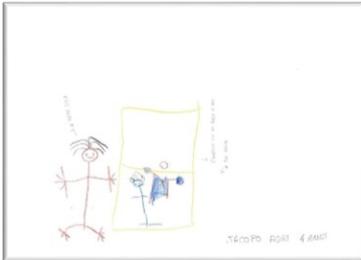
*Figure 4.6a – Examples of representation of teachers, familiars and other people*

Teachers	Familiars	Other people
		
<p><i>‘This is me with my teacher near the slide and the swings’</i></p>	<p><i>‘This is me with my sister playing in the school garden’</i></p>	<p><i>‘This is the tree outside and this is a boy who stand in the street’</i></p>

**Emotional climate**

The emotional climate was explored through the 19 drawings in which people were represented. It was found that 10 children represented positive emotional climate, 3 children represented neutral emotional climate, 3 represented negative emotional climate and 3 child did not represented facial expressions.

*Figure 4.6b – Examples of representation of emotional climate*

Positive emotional climate	Neutral emotional climate	Non-recognizable climate
		

***Representation of the elements of the environment***

In the second drawing the most represented elements were play materials (n=19) which included the slide (n=6), the swing (n=3), the wooden house (n=3), the den/peekaboo (n=2) and other material represented by only one child: multisensory path, hopscotch, puppies, pretend play corner, destructured play corner. Then children represented mostly the whole garden (n=10), the sun (n=9), the sky (n=8), the grass (n=5), then clouds, trees and flowers (n=4). The frequencies of the represented elements are reported in Table 4.14.

*Table 4.14. Frequences of the represented elements in the second drawings*

Elements	Frequence
School building	3
Whole garden	10
Natural elements	38
– Sun	9
– Sky/skyline	8
– Grass	7
– Cloud	4
– Trees	4
– Mountains	2
Play materials	19
– slide	6
– Swing	3
– Wooden house	2
– den/peekaboo	2
– multisensory path	1
– hopscotch	1
– puppies	1
– pretend play corner	1
– destructured play corner	1
Other	7
– Street	3
– Hearts	2
– My house	2

## Tridimensional model

The categories identified in advance to analyze children's experience of ECEC spaces through the activity with the tridimensional model were: preferences on spaces for themselves, preferences on spaces for school friends, preferences on spaces for teachers, representation of relationships. The categories considered for the analysis of the activity tridimensional model are reported in Table 4.15.

*Table 4.15 - Scheme of the categories through which explore children's conceptions during the activity with the tridimensional model*

Method	Categories
Tridimensional model	<ul style="list-style-type: none"><li>– preferences on spaces for themselves</li><li>– preferences on spaces for school friends</li><li>– preferences on spaces for teachers</li><li>– representation of relationships</li></ul>

### *Preferences on spaces for themselves*

During the activity with the tridimensional model most children positioned themselves in sleeping space (n=21;51.2%), then reading corner (n=6;14.6%), eating space (n=5;12.2%), toilet space (n=4;9.8%), playing spaces (n=2;4.9%) and working at the table (n=1;2.4%). Two children did not choose a specific position, moving their doll in the class 'looking around' (n=2;4.9%).

*Table 4.16 -. Preferences of space for themselves in the tridimensional model*

Space	Count	Percentage
Sleeping space	21	51.2%
Eating space	5	12.2%
Toilet space	4	9.8%
Reading corner	6	14.6%
Playing spaces	2	4.9%
Working at the table	1	2.4%
Listening to music	0	0.0%
Other	2	4.9%
Total	41	100.0%

### ***Preferences on spaces for school friends***

Most school friends were positioned in sleeping space (n=41;36.0%), then in toilet space (n=17;14.9%), playing space (n=18;15.8%) and eating space (n=14;12.3%). A few were positioned in the reading corner (n=7;6.1%), working at the table (5;4.4%) and listening to music (n=4;3.5%). Some friends were positioned in other spaces (n=8; 6,5%): on the balcony looking at the sky, asking something to the teachers, looking at the table, sitting near the wall, standing in front of the table, looking at the English poster, sitting while looking into a box and moving around.

*Table 4.17 - Preferences of space for teachers in the tridimensional model*

Space	Count	Percentage
Sleeping space	41	33.3%
Eating space	14	11.4%
Toilet space	17	13.8%
Reading corner	7	5.7%
Playing spaces	18	14.6%
Working at the table	5	4.1%
Listening to music	4	3.3%
Other	8	6.5%
Non positioned	9	7.3%
Total	123	100.0%

### ***Preferences on spaces for teachers***

Teachers were positioned mainly in sleeping space (n=22;28.9%) and toilet spaces (n=10;13.2%), then in the class: working at the table (n=10;12.2%), tidying up the class (n=7;9.2%) and looking after children playing (n=6;7.9%). Two teachers were positioned in eating space (n=2; 2,4%). Some teachers dolls were positioned in other spaces: standing one in front of the other (n=4); near the door waiting for parents who bring children to school (n=2), taking something on a shelf (n=2), near the basket (n=1), near the tables (n=1). Some teachers dolls were not positioned by children (n=6; 7.3%).

*Table 4.18 - Preferences of space for school friends in the tridimensional model*

Space	Count	Percentage
Sleeping space	22	26.8%
Eating space	2	2.4%
Toilet space	10	12.2%
Reading corner	5	6.1%
Playing spaces	0	0.0%
Working at the table	10	12.2%
Listening to music	2	2.4%
Looking after children	6	7.3%
Other	14	17.1%
Non positioned	6	7.3%
Total	82	100.0%

### ***Representation of relationships***

Concerning the representation of relationships, most children positioned themselves alone (n=17;44%), then with all three friends (n=7;17.9%) and third all together, with all friends and all teachers (n=6;15.4%). A few children positioned themselves with one friend (n=5=18.5%) and one child provide a mixed situation with some teachers and some friends (n=1; 3.7%). Some examples of configurations chosen by children are reported in Table 4.20.

*Table 4.19 - Representation of relationships in the tridimensional model*

Space	Count	Percentage
Participant alone	17	41.5%
Participant with 1 friend	4	9.8%
Participant with 2 friends	0	0.0%
Participant with 3 friends	7	17.1%
Participant with one teacher	2	4.9%
Participant with two teachers	2	4.9%
All together (children and the 2 teachers)	6	14.5%
Mixed situation (some teachers and some friends)	1	2.4%
Not applicable	2	4.9%
Total	41	100.0%

Table 4.20. Examples of configurations chosen by children

Configuration	Children's description
	<p><i>I'm in the sleeping room and the teacher is sitting next to me, helping me fall asleep (Federico, 4 y.o.)</i></p>
	<p><i>My friends and I are in the sleeping room. Teacher Lisa is covering us with sheets and teacher Miky is taking pillows for us. (Alice, 3 y.o.)</i></p>
	<p><i>I'm sitting in the reading corner reading a book. Santiago is sitting next to me and he also reads a book. (Mattia, 6 y.o.)</i></p>
	<p><i>Margherita is sitting at the table eating and the other kids are sitting at the table with me, while the teachers are sitting in another table taking coffee. (Margherita, 5 y.o.)</i></p>

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Configuration

Children's description

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*Enrico is in the toilet space peeing, while Jacopo is washing his hands. (Gabriele, 4 y.o)*



*I'm in the deconstructed material corner because I like to play there. Mattia, Tobia and Alessandro are playing with me in the same corner, all close. (Mosè, 5 y.o.)*



*Tobia is in the toilet space and teacher Chiara is in front of the bathroom door and she's cleaning. (Elisa, 4 y.o.)*



*I'm in the toilet doing pee and my friend Gabriele is next to me doing poo. (Alessio, 4 y.o.)*

Configuration	Children's description
	<p><i>The teacher is putting on music for the kids who are going to sleep. (Momo, 5 y.o.)</i></p>
	<p><i>Teachers are sitting in the reading corner reading a book and all children listen to the story. (Amelie, 4 y.o.)</i></p>

### Effectiveness of methods

The categories identified in advance to analyze children's experience of ECEC spaces through the activity with the tridimensional model were: information on preferences about space, information on relationships and information on elements of the environment. The main aspects considered for the analysis are reported in Table 4.21.

*Table 4.21. Scheme of the categories through which define the effectiveness of methods*

Method	Categories
Effectiveness of methods	<ul style="list-style-type: none"> <li>– information on preferences about space</li> <li>– information on relationships</li> <li>– information on elements of the environment</li> </ul>

### *Information on preferences about space*

The analysis of the three methods indicated that in response to the first drawing task 83.3% of children represented generic spaces and 16.7% represented specific spaces, while in response to the second

drawing task 30.3% of children represented generic spaces and 69.7% represented specific spaces. In the tridimensional model 4.9% of children positioned Playmobil dolls in generic spaces and 95.1% positioned Playmobil dolls in specific spaces.

*Table 4.22 - Information on preferences in the tridimensional model*

Representation	First drawing	Second drawing	Tridimensional model
Generic space	83.3%	30.3%	4.9%
Specific space	16.7%	69.7%	95.1%
Total	100.0%	100.0%	100.0%

### ***Information on relationships***

In response to the first drawing task, 18.2% of children represented themselves, 9.1% represented friends and 3% represented teachers, while no-one represented familiars or other people. In response to the second drawing task 72.2% of children represented themselves, 25.0% represented friends, 8.3% represented teachers, 5.5% represented familiars and 5.5% represented other people. In the tridimensional model 100% of children positioned Playmobil dolls representing themselves, 92.7% positioned Playmobil dolls representing friends and 92.7% positioned Playmobil dolls representing teachers. One child positioned a Playmobil doll representing her sister, even if the task did not require it and no one child represented others, in line with the task that did not require it.

*Table 4.23 - Representation of relationships in the tridimensional model*

Representation	First drawing	Second drawing	Tridimensional model
Participant him/herself	18.2%%	72.2%	100%
Friends	9.1%	25.0%	92.7%
Teachers	3.0%	8.3%	92.7%
Familiars	0%	5.5%	2.43%
Other	0%	5.5%	0%

### ***Information on the elements of the environment***

In response to the first drawing task children represented 26 school buildings, 12 whole gardens, 81 natural elements and 6 play materials. In response to the second drawing task children represented 3 school buildings, 10 whole gardens, 38 natural elements and 19 playing materials. During the activity with the

tridimensional model the representation of the school building, the whole garden, natural elements and play materials was not required, while some children involved play materials.

*Table 4.23.1 - Representation of the elements of the environment in the tridimensional model*

Representation	First drawing	Second drawing	Tridimensional model
School building	26	3	0%
Whole garden	12	10	0%
Natural elements	81	38	0%
Play materials	6	19	

### Discussion

In relation to drawings, most children provided relevant and recognizable drawings in response to both tasks, indicating the adequacy of the method. When children were asked ‘*draw your school*’ most of them drew a general representation of the school building ‘like a house’ surrounded by natural elements, mainly sun, grass and sky, that children often defined ‘the school garden’. The second most frequent representation was of the only school garden. This might indicate that children associate the concept of ‘school’ mainly to the building, taking into account its contextualization in the outdoors and giving great importance to the garden. Even if most representation of school were standardized, some children added interesting specific elements that help us to understand their vision: for example ‘*the boots we wear to go out*’ drew by a child near the door that connects the school building and the fenced garden, allow to think that in that child’s experience of school, this element was relevant and that in his perception of school space the connection between indoor and outdoor spaces has a strong meaning. Similarly, a child represented ‘*the door that teachers open to go to their cars to go home and a tree that I like to climb*’: the fact that the door and the tree were the only specific elements of the drawing, in addition to the school building, allow to think that these elements are relevant in this child’s experience of school. Thus it may be argued that in his perception of school space the connection between the school and the world outside has a strong meaning, as well as the possibility to experience his body in risky play as climbing the trees.

When children were asked ‘*draw your favorite place in the school*’, they provide less standardized representations and only in three cases they represented the whole school ‘like a house’. In response to this second task, most children represented specific places with play materials, especially outdoor ones (slides,

swings, wooden houses...), besides natural elements. This also confirms the importance of the outdoors for children and indicates their pleasure to stay outside, also highlighting their pleasure in playing activities. Although in this task many specific places were indicated by children as their favorites, the majority were chosen by only one child, apart from slides, swings, little wooden houses and specific parts of the garden that were chosen by 2 to 6 children. The great variability in children's preferences indicates that each child has a personal vision about space and that each space of the school may be important for one child, in line with previous research indicating that children have personalized visions about space (Durak, 2009; Marques & Sperb, 2013). The small sample doesn't allow to make a generalization on the aspects that emerged; for this reason future studies may explore preferences on a larger sample to define children's preferences.

It was interesting to note that in both tasks children represented many natural elements. The most represented ones, which were sun, earth, sky, trees and flowers, are typical in drawings of children at this age (Serraglio, 2012) and they could also be considered archetypic symbols. According to literature on this topic, the sun represents wellbeing and a sense of security and protection; the earth expresses a sense of stability, fullness and nutrition; the sky symbolizes the need and desire to do the best, to learn and to achieve important goals; the trees may be considered a representation of self; flowers are a symbol of positivity, delicacy and abilities ready to be expressed (Oliverio Ferraris, 2012; Serraglio, 2011). The representation of these elements allows to think that school is experienced positively by most children participating in the research. On one hand it emerged a sense of wellbeing, security, stability that children seem to associate to the environment of their ECEC centers. On the other hand children revealed the will to grow, learn and express their abilities also associated to their experience in the centers. These indicators are in line with the 'mission' of the ECEC centers which should provide a secure base for children to develop and reach their full potential (European Commission. 2011; 2014).

Concerning the exploration of relationships in the school space, the first task did not result adequate: very few children represented at least themselves, only three represented friends and only one teacher. Of these, all but one represented facial expressions that may indicate a positive emotional climate. The second task gave more information on relationships, since the majority of children represented at least themselves and often friends; teachers, familiars and other people were also represented. The emotional climate was positive, neutral or not-represented through facial expressions. An interesting element is the presence of

people from outside the school, *'the gardeners who came to hoe'* and *'a boy who stands in the street'*, that reminds to the connection between the school context and the world outside. This finding is linked with the findings from focus groups of Study 1 of the present research project: the possibility for children to see the world from their ECEC center was indicated by both parents and teachers as one of the reasons of the importance of outdoor space. In addition, the connection between the center and the world outside was a subcategory of "Space that connects", one of the identified categories through which adults seemed to give meanings to ECEC spaces, in line with previous literature (Berris & Miller, 2011; Gur, 2014). The fact that the children themselves have highlighted this aspect, allows us to think that in their vision the boundaries of the school are defined but allow to be crossed by perception to include elements of the outside world that enrich the environment and acquire meanings in their school experience. Concerning relationships another interesting data was that in all three methods the most represented situation was the presence of the participant alone. The fact that both in drawings and with the tridimensional model, most children chose to position themselves in the space alone, allows to argue that when children are asked to think to the environment of their ECEC centers they remind personal experiences more than relational ones. This is

Concerning the activity with the tridimensional model, since outdoors were not included in the model, this method consented us to explore more the spaces of the class; most children positioned themselves in 'caring spaces': first sleeping, second eating, third toilet space. Another popular choice has been the reading corner, and only two children put themselves in playing spaces. The school friends also were positioned mostly in 'caring spaces': first sleeping, second toilet, third eating space. Another popular choice has been the playing space, while a few children put themselves in reading corner, then working at table or listening to music. Teachers were also positioned first in sleeping space and second in toilet spaces, then in the class with different occupation. It emerged that in response to this new task the great majority of children gave more importance to 'caring' than 'playing' spaces; especially sleeping space resulted to be the first choice for positioning all the characters: themselves, friends and teachers. In children's stories often emerged the pleasure of sleeping at school and being cared for by teachers, who cover them with sheets or give them pillows or make them fall asleep or cuddle them. Teachers have also been placed in the class and it is interesting to note that, differently from care spaces, they have mainly been assigned to activities where they do not interact directly with children. It seems that in the class children perceive their presence and

observe their work even when they are not explicitly dedicating moments to them, as directors or supervisors of the scene.

Concerning the choice of an effective method to get children's point of view, the findings allow to reflect on the different outcomes that emerged with the different methods used. All three methods were found to be appropriate for the age: most children provided drawings relevant to the task and recognized their class during the activity tridimensional model, positioning Playmobil dolls properly. In addition, the children seemed to enjoy during all three activities, which turned out to be easy to understand and engaging. In relation to drawings, comparing the first and second tasks for drawings, children provided very different types of representation: in response to the first task most children represented generic spaces that give little information about their vision and preferences, while in response to the second task most children represented specific spaces, that give more information on their vision of school spaces and their preferences about them. In addition, in response to the first task children provided a more standardize representation of the school building 'as a house', while in response to the second task they drew more detailed representations of play materials. Furthermore, in response to the first task very few children represented people and relationships, while in response to the second task most children represented at least themselves and some represented friends, teachers, familiars and other people from outside the school. Given all these comparative data, it emerged that of the two tasks, the second provided less standardized and more specific information about the children's vision about their school space. The tridimensional model provided other different outcomes: almost all children represented themselves, friends and teachers in the space, positioning the Playmobil doll since the task specifically required it. This gives us more information than drawings about the relation between people and space in children's vision and about relationships between people at school. Furthermore, it was found that using the tridimensional model children highlighted very different spaces than the drawings: 'caring' spaces, especially sleeping space, were the most represented in the tridimensional model, while they were rarely represented in drawings and playing spaces were the most represented in drawings, while they were rarely represented using the tridimensional model. This is a very interesting finding that allows to reflect on the different outcomes that may be obtained with different instruments. Although it may be possible that the tridimensional model offered elements that provided 'affordances' (Gibson, 1977, 1979), physical features that activate a response in children affecting their choice, it should

be noted that similar spaces were chosen by children in both models, even if the model were different in size, shape and colors. In particular, the sleeping space obtained the great preference of children in both models, even if it was inside the class in one model and apart from the class in the other. This encourages us to think that choices about space were made independently of possible affordances. The preferences of the 'care spaces' can then be explained by the fact that the tridimensional model offered a vision of all the spaces of the school and not only of the 'standard' spaces that perhaps a child usually thinks about when asked about his experience at school. Nevertheless, the activity with the tridimensional model had several limitations: first, it did not include outdoor spaces, which emerged to be the most favorite ones in the drawings; second, the contingent stimuli of the model may have influenced children's choices, not allowing the emergence of elements that may be 'relevant' for them; third, the design and construction of the tridimensional model required much time and specific competencies that make it complicated to reproduce in future research and very expensive in terms of material and time compared to drawings.

In the light of all these considerations, it was thought that the more relevant method in relation to the aim of the research project would be the second task of the drawings: it seems to allow children to represent specific spaces, with details of personal visions that would be lost with the other methods. In line with previous literature (Einarsdottir, Dockett & Perry, 2009) it also emerged the importance of interviewing children about their drawings, preferably in individual sessions, to avoid misinterpretations and go more in-depth in the comprehension of their point of view on space.

### **Limitations**

The findings should be considered in the light of certain limitations. As a preliminary study, the sample size was small, and it was drawn from two Italian ECEC centers with typically developing children; although some findings such as the preference for outdoor spaces and the importance of the connection between the center and the world are in line with previous literature (Berris & Miller, 2011; Cullen, 1993, Gur, 2014) the characteristics of the sample does not allow these results to be generalized. In relation to drawings, although the children were briefly asked what they had represented immediately after finishing their drawings, they were not interviewed in depth, so a certain representation may have been misunderstood and some information on the meanings they gave to their drawings may have been lost. In relation to the activity with the tridimensional model, some physical elements of the model itself, such as the color, the

shape or the texture, may have constituted affordances that may have influenced children's choice. Despite the aforementioned limitations, this preliminary exploration of children's experience of space in ECEC centers consented to identify some main themes to be further investigated in a subsequent study with a larger sample.

### **Conclusion**

This preliminary study revealed some interesting indications of the meanings that children give to the spaces of their ECEC centers and of the methods that may be used to get their point of view. In drawings children expressed their vision of the school environment through representations of both realistic and archetypical elements, allowing us to explore their preference, their relational experience and their vision about space. It was evident that the investigation through drawings would be more complete and significant if accompanied by interviews with children about what represented in their drawings. Thus, drawings with in-depth interviews were found to be adequate methods for children to express their experience of space in their centers. In the activity with the tridimensional model it was observed more investment in 'care' spaces and interesting reflections on the use of an adequate method to get closer to children's perception of space were made. Although some findings were in line with previous literature, the small sample does not allow the results to be generalized. Therefore, based on what has emerged from this preliminary study, the main study has been carried out.

## **4.2 Main Study - The meanings of ECEC space in children's experience: an investigation through drawings and interviews**

### **Aim**

The purpose of the current study was to explore the meanings of ECEC space in children's experience, investigating on a larger sample and with a systematic method the main themes emerged in the preliminary study. These themes were preferences about spaces, the representation of the school, the representation of relationships, the emotional climate and the representation of elements of the environment. A secondary aim of the research was to investigate any differences in ECEC meanings in relation to children's age and gender.

### **Method**

#### **Participants**

The informed consent for the study was obtained for 531 children, belonging to 8 Italian kindergartens. Due to covid-19 emergency, during the data collection phase all the Italian kindergartens closed. In addition, some children whose parents provided consent were not present at school when the activity was proposed. The final sample included 262 children from five kindergartens. 141 were male and 121 female. The mean age was 55.78 months (SD=11.10; range 17-77 months).

The organization and the structure of the 5 involved ECEC centers were similar to most of the kindergartens in northern Italy. All the participating kindergartens had classes of about 20/30 children led by two or three teachers: in 4 kindergartens there were mixed-age classes (3 to 6 years old) and in 1 kindergarten there were classes divided by age. The architecture of the kindergartens was similar: in all the centers there was a large entrance, each class was spacious and bright and marked with a symbol that identified the group of children belonging to it, there was a common room where all the children from the different classes could meet and a sleeping-room separated from the other rooms. In 4 centers the lunch was served inside the classroom, in 1 center it was served in the common room. All the kindergartens, apart from one, had toilets inside the classes. All the kindergarten, apart from one, were on a one-story structure and had a spacious garden with grass, trees and play structures.

## **Instruments and procedure**

Prior to data collection, parents' informed written consent was acquired, following the ethical guidelines defined by the American Psychological Association. The data collection also provided for the authorization and approval of all coordinators and teachers of the ECEC centers. The data was collected between December 2019 and February 2020: in each class the researcher introduced herself to the children telling them that she was writing a book about children and their schools and needed their help to better understand how children experience the spaces of their school. Once the children agreed to participate, she proposed to them the drawing, also anticipating that she would interview them individually when they would finish drawing. The instruments, drawings and interviews, are described as follows.

### ***Drawings***

In each class, drawings were proposed to the whole group of children. The researcher introduced herself to the children, explaining that she was writing a book on children and their schools and that she would like to collect children's drawings of their favorite place in their schools. She introduced the concept of "place" to the group of children using this formula: *"Your school is great, and it is made up of many places, spaces where you can go, places that are both inside and outside. Each of you may have a place where he/she prefer to stay"*. Then she asked children to draw their favorite place using this formula: *"Now I ask you to think of a place where you like to stay when you are here at school. It can be inside the school or outside in the garden. Okay, have you thought? And I ask you to draw yourself while you are in this favorite place. If you want you can draw some of your friends or teachers, or just you, as you prefer."* She also anticipated that she would then interview them one by one to better understand what they had drawn, using this formula: *"When you finish the drawing, you can bring it to me and I'll ask you to tell me about what you drew. All right?" (children's consent)* Once the children agreed to participate, they were seated in little groups of about 6/8 around a table with markers of various colors at the center of the table and a white A4 paper (without rows or squares) for each child. The drawings could take all the time needed. When a child had finished he delivered the drawing to the researcher and followed her in a room apart from the class for an individual interview.

### ***Interviews***

Each child was interviewed individually by the researcher, immediately after the drawing activity, in an isolated room, to promote concentration, to avoid conditioning among children in the answers and to improve the audio quality of the audio recording. The interview grid asked the child to indicate 1) What was represented, trying to identify all relevant elements of the drawing; 2) Who were the people represented and what happens, what they are doing; 3) Why did he/she like that place. The questions of the interview are reported in Table 4.24. At the end of the interview the child was thanked and taken back to class. All the interviews were video and audio recorded.

*Grid 4.24 – Questions of the interview*

Questions
1) What was represented in the drawings?
2) Who are the people represented and what happens, what they are doing?
3) So this is a place where you like to stay here at school... And why do you like being here?

## **Data analyses**

### **Scoring**

Two independent raters evaluate the drawings and the interviews based on scoring grids which included 12 categories and 38 sub-categories for the drawing; 5 categories and 7 sub-categories for the interview about the drawing; 3 categories for the part of interview not related to the drawing. The grids with the indication of categories and sub-categories, the relative questions the researchers should ask themselves and the corresponding values to be assigned to evaluate the drawings and interviews are reported in Tables 4.25, 4.26 and 4.27.

### **Drawings**

*Table 4.25 - Drawings scoring grid.*

Categories	Sub-categories	Researchers' question	Values
Relevance		Is the drawing relevant with the task?	- Not Relevant - Relevant
Recognizability		Are the drawn elements recognizable?	- Not recognizable - Partially recognizable - Totally recognizable

Categories	Sub-categories	Researchers' question	Values
<b>SPACE AND SITUATION</b>			
Favorite Space			
	Which space	Which school space is represented?	<ul style="list-style-type: none"> <li>- Garden</li> <li>- Class</li> <li>- Common spaces</li> <li>- Entrance</li> <li>- Reading corner</li> <li>- Building corner</li> <li>- Pretend play corner</li> <li>- Sleeping room</li> <li>- Eating room</li> <li>- Toilet</li> <li>- All the school</li> <li>- Other</li> </ul>
	Specific or generic	It is a specific space or a generic space?	<ul style="list-style-type: none"> <li>- Specific</li> <li>- Generic</li> <li>- Specific a in a general context</li> </ul>
	Indoor or outdoor	It is an indoor space or an outdoor space?	<ul style="list-style-type: none"> <li>- Indoor</li> <li>- Outdoor</li> <li>- Both</li> </ul>
	Situation	What situation was represented?	<ul style="list-style-type: none"> <li>- Playing alone</li> <li>- Playing with others</li> <li>- Learning moment</li> <li>- Observation of nature</li> <li>- Privacy moment</li> <li>- Moment of transition or wait</li> <li>- Eating moment</li> <li>- Sleeping moment</li> <li>- Toilet moment</li> <li>- Not specified</li> </ul>
<b>PEOPLE AND RELATIONSHIPS</b>			
People		Are people represented?	<ul style="list-style-type: none"> <li>- No</li> <li>- Yes</li> </ul>
	Self-representation	Did the child represent him/herself?	<ul style="list-style-type: none"> <li>- No</li> <li>- Yes</li> </ul>
	Representation of friends	Did the child represent friends?	<ul style="list-style-type: none"> <li>- No</li> <li>- Yes</li> </ul>
	Representation of teachers	Did the child represent teachers?	<ul style="list-style-type: none"> <li>- No</li> <li>- Yes</li> </ul>

Categories	Sub-categories	Researchers' question	Values
	Representation of familiars	Did the child represent familiars?	- No - Yes
	Emotional climate	Which emotional climate is represented?	- Positive - Neutral - Negative - Not represented
Position of people	Horizontal	Which is the horizontal position of the people in the representation?	- To the left - In the center - To the right
	Vertical	Which is the vertical position of the people in the representation?	- At the top - In the center - At the bottom
Self Representation			
	Eyes	Are the eyes represented?	- No - Yes
	Arms	Are the arms represented?	- No - Yes
	Hands	Are the hands represented?	- No - Yes
	Hands dimension	Are the hands represented as diminished, normal, valorized?	- - Not represented - Diminished - Normal - Valorized
	Legs	Are the legs represented?	- No - Yes
	Feet	Are the feet represented?	- No - Yes
	Feet dimension	Are the feet represented as diminished, normal, valorized?	- - Not represented - Diminished - Normal - Valorized

#### NATURAL/ARCHETYPICAL ELEMENTS

##### Archetypical elements

Land line	Is the land line represented?	- No - Yes
Sky line	Is the sky line represented?	- No - Yes
Sun	Is the sun represented?	- No - Yes
Moon	Is the moon represented?	- No - Yes

Categories	Sub-categories	Researchers' question	Values
	Trees	Are the trees represented?	- No - Yes
	Flowers	Are the flowers represented?	- No - Yes
	Rainbow	Is the rainbow represented?	- No - Yes
	Animals	Are animals represented?	- No - Yes
	Monsters	Are monsters represented?	- No - Yes
	Others	Are other natural elements represented?	- No - Yes

### ARCHITECTURAL ELEMENTS, FURNISHINGS AND MATERIALS

#### Architectural elements

Walls	Are walls represented?	- No - Yes
Floors	Are floors represented?	- No - Yes
Ceilings/Roof	Are ceilings/roof represented?	- No - Yes
Doors	Are doors represented?	- No - Yes
Windows	Are windows represented?	- No - Yes
Chimneys	Are chimneys represented?	- No - Yes

#### Indoor furnishings and materials

Are indoor furnishings and materials represented?  
- No  
- Yes

Which indoor elements are represented?

#### Outdoor furnishings and materials

Are outdoor furnishings and materials represented?  
- No  
- Yes

Which outdoor elements are represented?

Categories	Sub-categories	Researchers' question	Values
<b>GRAPHIC ASPECTS</b>			
Colors of the drawings	Color tone	Which color tone is more used?	<ul style="list-style-type: none"> <li>- Warm colors</li> <li>- Cold colors</li> <li>- Both</li> </ul>
	Color variety	Which color variety is used?	<ul style="list-style-type: none"> <li>- One color</li> <li>- Up to four colors</li> <li>- More than four colors</li> </ul>
Position of the drawing on the sheet	Horizontal	Which is the horizontal position of the drawing in the sheet?	<ul style="list-style-type: none"> <li>- To the left</li> <li>- In the center</li> <li>- To the right</li> </ul>
	Vertical	Which is the vertical position of the drawing in the sheet?	<ul style="list-style-type: none"> <li>- At the top</li> <li>- In the center</li> <li>- At the bottom</li> </ul>

### **Interviews**

*Table 4.26 - Interviews scoring grid: first favorite space (based on drawing).*

Categories	Sub-categories	Question	Values
Coherence		Is the verbal description coherent with the elements represented in the drawing?	<ul style="list-style-type: none"> <li>- No</li> <li>- Yes</li> </ul>
<b>SPACE AND SITUATION</b>			
Favorite space	Which space	Which school space does the child describe?	<ul style="list-style-type: none"> <li>- Garden</li> <li>- Class</li> <li>- Common spaces</li> <li>- Entrance</li> <li>- Reading corner</li> <li>- Building corner</li> <li>- Pretend play corner</li> <li>- Sleeping room</li> <li>- Eating room</li> <li>- Toilet</li> <li>- All the school</li> <li>- Other</li> </ul>

Categories	Sub-categories	Question	Values
	Specific or generic	It is a specific space or a generic space?	<ul style="list-style-type: none"> <li>- Specific</li> <li>- Generic</li> <li>- Specific a in a general context</li> </ul>
	Indoor or outdoor	It is an indoor space or an outdoor space?	<ul style="list-style-type: none"> <li>- Indoor</li> <li>- Outdoor</li> <li>- Both</li> </ul>
	Situation	What situation does the child describe?	<ul style="list-style-type: none"> <li>- Playing alone</li> <li>- Playing with others</li> <li>- Learning moment</li> <li>- Observation of nature</li> <li>- Privacy moment</li> <li>- Moment of transition or wait</li> <li>- Eating moment</li> <li>- Sleeping moment</li> <li>- Toilet moment</li> <li>- Not specified</li> </ul>

#### PEOPLE AND RELATIONSHIPS

Relations	Which relations	Which relations are described?	<ul style="list-style-type: none"> <li>- None</li> <li>- With one friend</li> <li>- With two friends</li> <li>- With more than two friends</li> <li>- With teachers</li> <li>- With familiars</li> </ul>
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#### VERBAL STRUCTURE

Verbal structure	Which verbal structure	Which verbal structure does the child use while explaining what he/she drew?	<ul style="list-style-type: none"> <li>- List of items</li> <li>- Description of a relation</li> <li>- Description of an activity</li> <li>- Storytelling</li> </ul>
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#### MOTIVATION

Motivation	Which motivation	Which motivation does the child refer to while explaining his/her preferences?	<ul style="list-style-type: none"> <li>- Play opportunities</li> <li>- Learning opportunities</li> <li>- Possibility of relations</li> <li>- Observation of nature</li> <li>- Possibility of privacy</li> <li>- Indoor/Outdoor connection</li> <li>- Continuity with family</li> <li>- Aesthetical reasons</li> <li>- Functional reasons</li> <li>- Other</li> </ul>
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Table 4.27 - Interviews scoring grid: second favorite space (not based on drawing).

Categories	Sub-categories	Question	Values
Presence		Is there a second favorite space?	- No - Yes
<b>SPACE AND SITUATION</b>			
2 <sup>nd</sup> favorite space			
	Which space	Which school space does the child describe?	- Garden - Class - Common spaces - Entrance - Reading corner - Building corner - Pretend play corner - Sleeping room - Eating room - Toilet - All the school - Other
	Specific or generic	It is a specific space or a generic space?	- Specific - Generic - Specific a in a general context
	Indoor or outdoor	It is an indoor space or an outdoor space?	- Indoor - Outdoor - Both
	Situation	What situation does the child describe?	- Playing alone - Playing with others - Learning moment - Observation of nature - Privacy moment - Moment of transition or wait - Eating moment - Sleeping moment - Toilet moment - Not specified
<b>MOTIVATION</b>			
Motivation	Which motivation	Which motivation does the child refer to while explaining his/her preferences?	- Play opportunities - Learning opportunities - Possibility of relations - Observation of nature - Possibility of privacy - Indoor/Outdoor connection - Continuity with family - Aesthetical reasons - Functional reasons - Other

## Analyses

Each drawing and interview was evaluated by three raters and an agreement index was calculated for each variable by calculating Cohen's kappa coefficient (k). Variables which showed good to excellent inter-rater agreement were analyzed with IBM SPSS (Statistical Package for Social Science) Statistics for Windows, Version 21.0 (SPSS). To analyze both drawings and interviews, statistical analyses, including frequencies analyses and the Chi-square test, were carried out with SPSS, in order to assess the distribution of all the variables. Chi-square tests were conducted on variables, age and gender of the participants. A p-value of <0.05 was considered being statistically significant.

## Results

### Inter-rater reliability (k)

Categorical inter-rater reliability was assessed for each of the variable by calculating Cohen's kappa coefficient (k). Results revealed good to excellent inter-rater agreement for all the considered categories. K values and range for each variable are reported in Table 4.28

*Table 4.28 – Inter-rater reliability of categories and sub-categories*

Categories	Sub-categories	K	Range
Relevance		.889	K .80-1
Recognizability		.710	K .60-.80
Favorite Space		.771	K .60-.80
	Which space	.629	
	Specific or generic	.874	K .80-1
	Indoor or outdoor	.633	K .60-.80
	Situation	.929	K .80-1
People		.962	K .80-1
	Which people	.688	K .60-.80
	Emotional climate	.689	K .60-.80
	Position of people	.714	K .60-.80
Self Representation		.869	K .80-1
	Eyes	.608	K .60-.80
	Arms	.611	K .60-.80
	Hands	.650	K .60-.80
	Legs	.605	K .60-.80

Categories	Sub-categories	K	Range
	Feet	.682	K .60-.80
Archetypical elements		1	K .80-1
	Land line	.694	K .60-.80
	Sky line	.922	K .80-1
	Natural elements		K .60-.80
Architectural elements		.820	K .80-1
	Walls	1	K .80-1
	Floors	.625	K .60-.80
	Ceilings/Roof	.913	K .80-1
	Doors	1	K .80-1
	Windows	1	K .80-1
	Chimneys	1	K .80-1
Furnishings		.770	K .60-.80
	Furniture	.850	K .80-1
	Indoor elements	.862	K .80-1
	Outdoor elements	.777	K .60-.80
		.938	K .80-1
Colors of the drawings			
	Tone	.610	K .60-.80
	Variety	.814	K .80-1
Position of the drawing on the sheet			
	Horizontal	.617	K .60-.80
	Vertical	.607	K .60-.80

## Drawings

To analyze the drawings, statistical analyses, including frequencies analyses and the Chi-square test, were carried out with IBM SPSS Statistics for Windows, Version 21.0, in order to assess the distribution of all the variables. Chi-square tests were conducted on variables, age and gender of the participants. A p-value of <0.05 was considered being statistically significant.

## Relevance

The distribution of frequencies of relevance indicates that 72.5% of children made a drawing relevant to the task, while 27.5% of children made a not relevant drawing. Absolute numbers and percentages are reported in Table 4.29. The Chi-square test indicates a statistically significant relation between relevance and age ( $p > .001$ ); the relevant drawings were 41.8% in Age Group 1, 79.9% in Age Group 2 and 90.0% in Age Group 3, revealing a developmental trend for relevance. The Chi-square test indicates a not significant relation between relevance and gender. Absolute numbers, percentages and p-values are reported in Table 4.30. Examples of drawings are reported below.

Table 4.29 - Frequencies of relevance.

Values	<i>n</i>	%
Relevant	190	72.5
Not relevant	72	27.5
Total	262	100.0

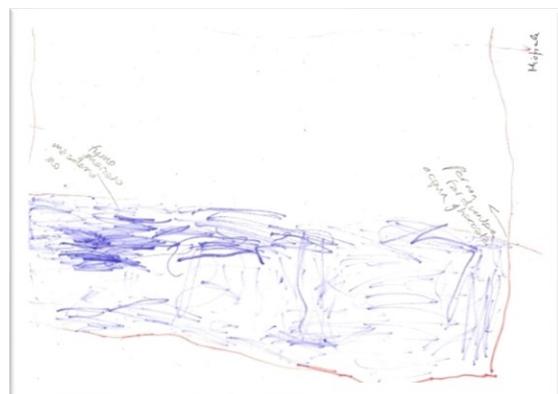
Table 4.30. Chi-square test on representation of relevance and age

Values	Age Group 1		Age Group 2		Age Group 3		Chi-square test
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>p</i> -value
Relevant	28	41.8	99	79.2	63	90	.001
Not relevant	39	58.2	26	20.8	7	10	
Total	67	100.0	125	100.0	70	100	

*Drawing 4.1 – Relevant drawing*  
 “I drew my friend and I playing on the tower in the corridor of the school” (Maria Vittoria, 5)



*Drawing 4.2 – Non-relevant drawing:*  
 “I drew a river that is going to ice” (Michele, 3)



### **Recognizability**

The distribution of frequencies of recognizability indicates that most of the children made a partially recognizable drawing (45,3%). Only 15,3% of children made totally recognizable drawings and 39,5% of children made not recognizable drawings. The Chi-square test indicates a not significant relation between recognizability and gender. Absolute numbers and percentages are reported in Table 4.31. The Chi-square test indicates a statistically significant relation between recognizability and age ( $p=.001$ ); the majority of drawings were not recognizable (46.4%) for Age Group 1 and partially recognizable for Age Group 2 (47.5) and Age Group 3 (52.4%). The not recognizable drawings were 46.4% for Age Group 1, 14.1% for Age Group 2 and 3.2% for Age Group 3. Absolute numbers, percentages and p-values are reported in Table 4.32. Examples of drawings are reported below.

*Table 4.31 - Frequencies of recognizability.*

<b>Values</b>	<b><i>n</i></b>	<b>%</b>
Totally recognizable	29	15.3
Partially recognizable	86	45.3
Not recognizable	75	39.5
Total	190	100,0

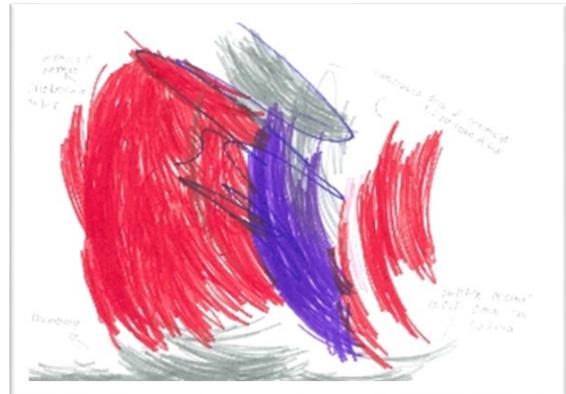
*Table 4.32 - Chi-square test on representation of recognizability and age*

Values	Age Group 1		Age Group 2		Age Group 3		Chi-square test
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>p-value</i>
Totally recognizable	9	32.1	38	38.4	28	44.4	.001
Partially recognizable	6	21.4	47	47.5	33	52.4	
Not recognizable	13	46.4	14	14.1	2	3.2	
Total	28	100.0	99	100.0	63	100.0	

*Drawing 4.3 – Recognizable drawing:  
“This is me in the school garden” (Federico, 5)*



*Drawing 4.4 – Non recognizable drawing:  
“This is the corridor of the school with the chairs” (Federico, 3)*



***Favorite space: which space***

The distribution of frequencies of the favorite space indicates that half of the children represented the garden (50%); common spaces are the second favorite spaces, represented by 18.9% of children; the class is the third favorite space, represented by 11,1% of the children. 10% of children made a general representation of all the school and a few children represented specific spaces as the building corner (3,7%), the pretend play corner (3.2%), the sleeping room (1.6%) and the reading corner (1.1%). One child (0.5%) represented the eating room. The Chi square test indicates a statistically non significant relation between either favorite space and age or favorite space and gender. Absolute numbers and percentages are reported in Table 4.33 and Figure 4.7 (Appendix 3).

*Table 4.33 - Frequencies of the favorite space represented.*

<b>Values</b>	<b>n</b>	<b>%</b>
Garden	95	50,0
Common spaces	36	18.9
Class	21	11,1
All the school	19	10.0
Building corner	7	3.7
Pretend play corner	6	3.2
Sleeping room	3	1.6
Reading corner	2	1.1
Eating room	1	0.5
Toilet	0	0.0
<b>Total</b>	<b>190</b>	<b>100,0</b>

***Favorite space: specific or generic space***

The distribution of frequencies of the favorite space indicates that most of the children (51.6%) represented generic space, 38.9% of the children represented specific space and 6.9% of the children represented a specific space also drawing a general context. Absolute numbers and percentages are reported in Table 4.35. The Chi-square test indicates a statistically non significant relation between specific or generic space and age, while a statistically significant relation emerged between specific or generic space and gender ( $p=.003$ ): the majority of males (63.5%) represented more generic space while the majority of females (39.4%) represented specific spaces. Absolute numbers, percentages and p-values are reported in Table 4.36. Examples of drawings are reported below.

*Table 4.35. Frequencies of preferences about specific or generic spaces.*

Values	n	%
Specific	74	38.9
Generic	98	51.6
Specific within a general context	18	6.9
Total	190	100,0

*Table 4.36. Chi-square test on specific or generic spaces and gender.*

Values	Male		Female		Chi-square test
	n	%	n	%	p-value
Specific	27	28.1	47	50.0	.003
Generic	61	63.5	37	39.4	
Specific within a general context	8	8.3	10	10.6	
Total	96	100.0	94	100.0	

*Drawing 4.5 – Specific space*

*“I drew the bench: it contains small animals that I like to play with” (Pietro, 5)*



*Drawing 4.6 – Generic space*

*“This is me arriving to school” (Karol, 5)*



### ***Favorite space: indoor or outdoor spaces***

The distribution of frequencies of the favorite space indicates that most of the children (51.6%) represented outdoor spaces (55.3%), 37.9% represented indoor spaces and 6.8% represented both outdoor and indoor spaces. The Chi-square test indicates a statistically non-significant relation between either indoor or outdoor space and age or indoor or outdoor space and gender. Absolute numbers and percentages are reported in Table 4.37.

*Table 4.37. Frequencies of preferences about indoor or outdoor spaces.*

Values	<i>n</i>	%
Outdoor	105	55.3
Indoor	72	37.9
Both	13	6.8
Total	190	100,0

### ***Favorite space: situation represented***

The distribution of frequencies of the favorite space indicates that most of the children represented a situation where they are playing with others (32.1%) or playing alone (26.8%). 17.9% of children did not specify the situation represented. 8.4% of the children represented the observation of nature, 4.7% moments of learning, 4.2% moments of transitions or waits, 2.6% eating moments, 1.6% moments of privacy and 1.6% sleeping moments. Absolute numbers and percentages are reported in Table 4.39 and Figure 4.8 (Appendix 3). The Chi-square test indicates a statistically non-significant relation between situation and age, while a statistically significant relation emerged between situation and gender ( $p=.021$ ): the majority of males (40.6%) represented a situation where they were playing with others while the majority of females (36.2%) represented a situation where they were playing alone. The second most represented situation was a not specified activity for males (21.9%) and playing with others for females (23.4%). The third most represented situation was playing alone for males (17.7%) and a non-specified activity for females (13.8%). Absolute numbers, percentages and p-values are reported in Table 4.40. The distribution is represented in Figure 4.8a (Appendix 3). Examples of drawings are reported below.

Table 4.39. Frequencies of the situation represented.

Values	<i>n</i>	%
Playing with others	61	32.1
Playing alone	51	26.8
Not specified	34	17.9
Observation of nature	16	8.4
Moment of learning	9	4.7
Moment of transitions or waits	8	4.2
Eating moment	5	2.6
Moment of privacy	3	1.6
Sleeping moment	3	1.6
Toilet moment	0	0.0
Total	190	100,0

Table 4.40. Chi-square test on situation represented and gender.

Values	Male		Female		Chi-square test
	<i>n</i>	%	<i>n</i>	%	<i>p-value</i>
Playing with others	39	40.6	22	23.4	.021
Playing alone	17	17.7	34	36.2	
Not specified	21	21.9	13	13.8	
Observation of nature	8	8.3	8	8.5	
Moment of learning	4	4.2	5	5.3	
Moment of transitions or waits	5	5.2	3	3.2	
Eating moment	1	1.0	4	4.3	
Moment of privacy	1	1.0	2	2.1	
Sleeping moment	0	0.0	3	3.2	
Toilet moment	0	0.0	0	0.0	
Total	96	100.0	94	100.0	

*Drawing 4.7 – Situation: Playing with others  
“I drew me in the hall playing with my friends”  
(Manfredi, 4)*



*Drawing 4.8 – Situation: Playing alone  
“This is me taking lego bricks and building things”  
(Davide, 5)*



*Drawing 4.9 – Situation: observation of nature  
“I drew my friends and I in the school garden  
looking at the tree leaves that are brown in winter,  
yellow in autumn and gree in spring” (Sofia, 5)*



*Drawing 4.10 – Situation: moment of learning  
“This is me drawing at the table with all the  
pencils” (Adriana, 5)*



*Drawing 4.11 – Situation: sleeping moment  
“This is me cuddling a little girl in the sleeping  
room and this is the kiss I give her” (Bianca, 5  
)*



*Drawing 4.12 – Situation: moment of transition  
“This is me inside the school: I am dressing up to  
go out with Jacopo who is outside waiting for me.”  
(Matteo, 5)*



### ***Representation of people***

The distribution of frequencies of the representation of people indicates that 80% of children represented at least one person in their drawings, while 20% of children did not represent people. Absolute numbers and percentages are reported in Table 4.41. The Chi-square test indicates a statistically significant relation between representation of people and age ( $p=.002$ ): at least one person was represented in 57.1% of children belonging to Age Group 1, in 80.8% belonging to Age Group 2 and in 88.9% of children belonging to Age Group 3, revealing a developmental trend for the representation of people. The Chi-square test indicates a statistically non-significant relation between representation of people and gender. Absolute numbers and percentages are reported in Table 4.42.

*Table 4.41. Frequencies of representation of people*

Values	<i>n</i>	%
At least one person represented	152	80.0
No people represented	38	20.0
Total	190	100.0

*Table 4.42 - Chi-square test on the representation of people and age.*

Values	Age Group 1		Age Group 2		Age Group 3		Chi-square test
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>p-value</i>
At least one person represented	16	57.1	80	80.8	56	88.9	.002
No people represented	12	42.9	19	19.2	7	11.1	
Total	28	100.0	99	100.0	63	100.0	

### ***Representation of people: self-representation***

The distribution of frequencies of self-representation indicates that 92.1% of children who represented at least one person drew him/herself, while 7.9% did not draw him/herself. The Chi-square test indicates a statistically non-significant relation between self-representation and age or self-representation and gender. Absolute numbers and percentages are reported in Table 4.43. Examples of drawings are reported in Appendix 4 (Drawing 4.13).

*Table 4.43. Frequencies of self-representation*

Values	<i>n</i>	%
Self-representation	140	92.1
No self-representation	12	7.9
Total	152	100.0

***Representation of people: friends***

The distribution of frequencies of the representation of friends indicates that 55.9% of children did not represent friends, while 44.1% represented at least one friend. The Chi-square test indicates a statistically non-significant relation between representation of friends and age or representation of friends and gender. Absolute numbers and percentages are reported in Table 4.44. Examples of drawings are reported in Appendix 4 (Drawing 4.14).

*Table 4.44 - Frequencies of representation of friends*

Values	<i>n</i>	%
No friends represented	85	55.9
At least one friend represented	67	44.1
Total	152	100.0

***Representation of people: teachers***

The distribution of frequencies of the representation of teachers indicates that 92.8% of children did not represent friends, while 7.2% represented at least one teacher. The Chi-square test indicates a statistically non-significant relation between either representation of teachers and age or representation of teachers and gender. Absolute numbers and percentages are reported in Table 4.45. Examples of drawings are reported in Appendix 4 (Drawing 4.15).

Table 4.45. Frequencies of representation of teachers

Values	<i>n</i>	%
No teachers represented	141	92.8
At least one teacher represented	11	7.2
Total	152	100.0

### ***Representation of people: familiars***

The distribution of frequencies of the representation of friends indicates that 97.4% of the children did not represent familiars, while 2.6% represented at least one familiar. The Chi-square test indicates a statistically non-significant relation between either representation of familiars and age or representation of familiars and gender. Absolute numbers and percentages are reported in Table 4.46. Examples of drawings are reported in Appendix 4 (Drawing 4.16).

*Table 4.46. Frequencies of representation of familiars*

Values	<i>n</i>	%
No familiars represented	148	97.4
At least one familiar represented	4	2.6
Total	152	100.0

### ***Emotional climate***

The distribution of frequencies of the representation of emotional climate indicates that 74.6% of children represented a positive emotional climate, 11.6% represented a neutral emotional climate, 1.5% represented mixed emotional climate and only one child (0.7%) represented a negative emotional climate. 10.1% of children did not represent emotional climate. Absolute numbers and percentages are reported in Table 4.47. The Chi-square test indicates a statistically non-significant relation between emotional climate and age, while a statistically significant relation emerged between emotional climate and gender ( $p=.015$ ): positive emotional climate was represented more by females (86.8%) than males (62.9%), while neutral emotional climate was more represented by males (17.1%) than females (5.9%). The non-representation of emotional climate also was more frequent in males (12.9%) than females (7.4%). Finally, males were the only ones who represented mixed (1.4%) and negative (5.7%) emotional climate. Absolute numbers and percentages are reported in Table 4.48. Examples of drawings are reported in Appendix 4 (Drawings 4.17 and 4.18)

Table 4.47 - Frequencies of emotional climate.

Values	<i>n</i>	%
Positive emotional climate	103	74.6
Neutral emotional climate	16	11.6
Negative emotional climate	1	0.7
Mixed emotional climate	4	1.5
No emotional climate representation	14	10.1
Total	138	100.0

Table 4.48 - Chi-square test on emotional climate and gender.

Values	Male		Female		Chi-square test
	<i>n</i>	%	<i>n</i>	%	<i>p-value</i>
Positive emotional climate	44	62.9	59	86.8	.015 <sup>a</sup>
Neutral emotional climate	12	17.1	4	5.9	
Negative emotional climate	1	1.4	0	0.0	
Mixed emotional climate	4	5.7	0	0.0	
No emotional climate representation	9	12.9	5	7.4	
Total	70	100.0	68	100.0	

**Position of people in the drawings: horizontal**

The distribution of frequencies of the horizontal position of people in the drawings indicates that most of the children (47.4%) represented people in the center of the drawing, 28.9% to the left and 23.7 to the right of the drawing. The Chi-square test indicates a statistically non-significant relation between either the horizontal position of people and age or the horizontal position of people and gender. Absolute numbers and percentages are reported in Table 4.49. Examples of drawings are reported in Appendix 4 (Drawings 4.19 and 4.20).

Table 4.49 - Frequencies of the horizontal position of people in the drawings.

Values	<i>n</i>	%
To the left	44	28.9
In the center	72	47.4
To the right	36	23.7
Total	152	100.0

### ***Position of people in the drawings: vertical***

The distribution of frequencies of the vertical position of people in the drawings indicates that most of the children (46.1%) represented people in the center of the drawing, 2% to the top and 52% to the bottom of the drawing. The Chi-square test indicates a statistically non-significant relation between either vertical position of people and age or vertical position of people and gender. Absolute numbers and percentages are reported in Table 4.50. Examples of drawings are reported in Appendix 4 (Drawings 4.21 and 4.22).

*Table 4.50 - Frequencies of the vertical position of people in the drawings.*

Values	<i>n</i>	%
At the top	3	2.0
In the center	70	46.1
At the bottom	79	52.0
Total	152	100.0

### ***Self representation as a human figure***

The distribution of frequencies of the self representation as a human figure indicates that all the children about one (99.3%) represented him/herself as a human figure. The child who did not represent herself explained to the researcher that she was present in the drawing, but inside the little wooden house, so she was not visible. The Chi-square test indicates a statistically non-significant relation between either self-representation as a human figure and age or self-representation as a human figure and gender. Absolute numbers and percentages are reported in Table 4.51.

*Table 4.51 - Frequencies of self-representation as a human figure*

Values	<i>n</i>	%
Self-representation as a human figure	139	99.3
No self-representation as a human figure	1	0.7
Total	140	100.0

### ***Human figure: eyes***

The distribution of frequencies of the self-representation as a human figure indicates that 92.8% of children represented eyes, while 7.2% did not represent them in the human figure. Absolute numbers and percentages are reported in Table 4.52. The Chi-square test indicates a statistically significant relation

between representation of eyes and age ( $p=.038$ ): children who represented eyes were 91.7% in Age Group 1, 87.5% in Age Group 2 and 100% in Age Group 3. The Chi-square test indicates a statistically non-significant relation between the representation of eyes and gender. Absolute numbers and percentages are reported in Table 4.53.

*Table 4.52 - Frequencies of the representation of the eyes in the human figure.*

Values	<i>n</i>	%
Eyes represented	129	92.8
No eyes represented	10	7.2
Total	139	100.0

*Table 4.53 - Chi-square test on the representation of people and age.*

Values	Age Group 1		Age Group 2		Age Group 3		Chi-square test
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>p-value</i>
Eyes represented	11	91.7	63	87.5	0	0.0	.038
No eyes represented	1	8.3	9	12.5	55	100.0	
Total	12	100.0	72	100.0	55	100.0	

### ***Human figure: arms***

The distribution of frequencies of the self-representation as a human figure indicates that 92.1% of children represented arms, while 7.9% did not represent them in the human figure. Absolute numbers and percentages are reported in Table 4.54. The Chi-square test indicates a statistically significant relation between representation of arms and age ( $p=.005$ ): children who represented arms were 75% in Age Group 1, 88.9% in Age Group 2 and 100% in Age Group 3, revealing a developmental trend. The Chi-square test indicates a statistically non-significant relation between the representation of arms and gender. Absolute numbers and percentages are reported in Table 4.55.

*Table 4.54 - Frequencies of the representation of the arms in the human figure.*

Values	<i>n</i>	%
Arms represented	128	92.1
No arms represented	11	7.9
Total	139	100.0

Table 4.55 -Chi-square test on the representation of people and age.

Values	Age Group 1		Age Group 2		Age Group 3		Chi-square test
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>p-value</i>
Arms represented	9	75	64	88.9	0	0.0	.005
No arms represented	3	25	8	11.1	55	100.0	
Total	12	100.0	72	100.0	55	100.0	

### **Human figure: hands**

The distribution of frequencies of the self-representation as a human figure indicates that 73.4% of children represented hands, while 26.6% did not represent them in the human figure. The Chi-square test indicates a statistically non-significant relation between either representation of hands and age or representation of hands and gender. Absolute numbers and percentages are reported in Table 4.56. Analyzing the dimension of hands, it was found that 19.5% of children represented valorized hands, 18,7% normal hands and 0.8% diminished hands. Absolute numbers and percentages are reported in Table 4.57.

Table 4.56 - Frequencies of the representation of the hands in the human figure.

Values	<i>n</i>	%
Hands represented	102	73.4
No hands represented	37	26.6
Total	139	100.0

Table 4.57 - Frequencies of the types of representation of the hands in the human figure.

Values	<i>n</i>	%
Valorised hands	51	19.5
Normal hands	49	18.7
Diminished hands	2	0.8
No hands represented	37	14.1
Total	139	100.0

### **Human figure: legs**

The distribution of frequencies of the self-representation as a human figure indicates that 96.4% of children represented legs, while 3.6% did not represent them in the human figure. Absolute numbers and

percentages are reported in Table 4.58. The Chi-square test indicates a statistically significant relation between the representation of legs and age ( $p=.008$ ): children who represented legs were 83.3% in Age Group 1, 95.8% in Age Group 2 and 100% in Age Group 3, revealing a developmental trend. Absolute numbers and percentages are reported in Table 4.59.

*Table 4.58 -Frequencies of the representation of the legs in the human figure.*

Values	<i>n</i>	%
Legs represented	134	96.4
No legs represented	5	3.6
Total	139	100.0

*Table 4.59. Chi-square test on the representation of people and age.*

Values	Age Group 1		Age Group 2		Age Group 3		Chi-square test
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>p-value</i>
Legs represented	12	83.3	69	95.8	0	0.0	.008
No legs represented	2	16.7	3	4.2	55	100.0	
Total	12	100.0	72	100.0	55	100.0	

### ***Human figure: feet***

The distribution of frequencies of the self-representation as a human figure indicates that 72.7% of children represented feet, while 27.3% did not represent them in the human figure. Absolute numbers and percentages are reported in Table 4.60. The Chi-square test indicates a statistically non-significant relation between either representation of feet and age or representation of feet and gender. Analyzing the dimension of feet, it was found that 61.2% of children represented normal feet, 8.6% represented valorized feet and 2.9% of children represented diminished feet. Absolute numbers and percentages are reported in Table 4.61.

*Table 4.60 - Frequencies of the representation of the feet in the human figure.*

Values	<i>n</i>	%
Feet represented	101	72.7
No feet represented	38	27.3
Total	139	100.0

*Table 4.61 - Frequencies of the representation of the types of feet in the human figure.*

Values	<i>n</i>	%
Valorised feet	12	8.6
Normal feet	85	61.2
Diminished feet	4	2.9
No feet represented	38	27.3
Total	139	100.0

### ***Elements of the school building***

The distribution of frequencies of the representation of the elements of the school building indicates that only 31.1% of children represented such elements, while 68.9% did not represent them. The Chi-square test indicates a statistically non-significant relation between the representation of the elements of the school building and either age or gender. Absolute numbers and percentages are reported in Table 4.62.

*Table 4.62. Frequencies of the representation of the elements of the school building*

Values	<i>n</i>	%
Elements of the school building	59	31.1
No elements of the school building	131	68.9
Total	190	100.0

### ***Elements of the school building: walls***

The distribution of frequencies indicates that, of children who represented elements of the school building, the majority (59.3%) represented walls, while 40.7% did not represent them. The Chi-square test indicates a statistically non-significant relation between representation of walls and either age or gender. Absolute numbers and percentages are reported in Table 4.63. Examples of drawings are reported in Appendix 4 (Drawing 4.23).

*Table 4.63 -Frequencies of the representation of walls*

Values	<i>n</i>	%
Representation of walls	35	59.3
No representation of walls	24	40.7
Total	59	100.0

***Elements of the school building: floors***

The distribution of frequencies indicates that, of children who represented elements of the school building, the majority (61%) represented floors, while 39% did not represent them. Absolute numbers and percentages are reported in Table 4.64. The Chi square test indicates a statistically not significant relation between representation of floors and gender; it indicates a statistically significant relation between representation of floors and age ( $p=.037$ ): children who represented floors were 16.7% in Age Group 1, 59.3% in Age Group 2 and 73.1% in Age Group 3, revealing a developmental trend. Absolute numbers and percentages are reported in Table 4.65. Examples of drawings are reported in Appendix 4 (Drawing 4.24).

*Table 4.64. Frequencies of the representation of floors*

Values	<i>n</i>	%
Representation of floors	36	61.0
No representation of floors	23	39.0
Total	59	100.0

*Table 4.65. Chi-square test on the representation of floors and age.*

Values	Age Group 1		Age Group 2		Age Group 3		Chi-square test
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>p-value</i>
Floors represented	5	83.3	11	40.7	7	26.9	.037
No floors represented	1	16.7	16	59.3	19	73.1	
Total	6	100.0	27	100.0	26	100.0	

***Elements of the school building: ceilings or roofs***

The distribution of frequencies indicates that, of children who represented elements of the school building, the majority (61%) represented ceilings or roofs, while 39% did not represent them. The Chi-square test indicates a statistically non-significant relation between the representation of ceilings or roofs and either age or gender. Absolute numbers and percentages are reported in Table 4.66. Examples of drawings are reported in Appendix 4 (Drawing 4.25).

*Table 4.66. Frequencies of the representation of ceilings or roofs*

Values	<i>n</i>	%
Representation of ceilings or roof	36	61
No representation of ceilings or roof	23	39
Total	59	100.0

### ***Elements of the school building: doors***

The distribution of frequencies indicates that, of children who represented elements of the school building, only 18.6% represented doors, while the majority (81.4%) did not represent them. The Chi-square test indicates a statistically non-significant relation between the representation of doors and either age or gender.. Absolute numbers and percentages are reported in Table 4.67. Examples of drawings are reported in Appendix 4 (Drawing 4.26).

Table 4.67 - Frequencies of the representation of doors

Values	<i>n</i>	%
Representation of doors	11	18.6
No representation of doors	48	81.4
Total	59	100.0

### ***Elements of the school building: windows***

The distribution of frequencies indicates that, of children who represented elements of the school building, only 25.4% represented windows, while the majority (74.6%) did not represent them. The Chi-square test indicates a statistically non-significant relation between representation of windows and either age or gender. Absolute numbers and percentages are reported in Table 4.68. Examples of drawings are reported in Appendix 4 (Drawing 4.27).

Table 4.68. Frequencies of the representation of windows

Values	<i>n</i>	%
Representation of windows	15	25.4
No representation of windows	44	74.6
Total	59	100.0

### ***Indoor furnishings and materials***

The distribution of frequencies of the representation of indoor furnishings and materials indicates that most of the children (56.3%) represented such elements, while 43.4% did not represent them. Absolute numbers and percentages are reported in Table 4.69. The Chi-square test indicates a statistically not significant relation between representation of indoor furnishings and materials and age ( $p=.052$ ), while a statistically significant relation was found between the representation of indoor furnishings and materials and

gender ( $p=.017$ ): the majority of males (52.1%) did not represent indoor furnishings and materials while the majority of females (64.9%) represented them. Absolute numbers, percentages and p values are reported in Table 4.70. The types of indoor furnishings that have been represented are: tables, chairs, lamps, furniture, play containers, beds, internal doors, radiators, ladder, fridge, mirror, sofa, LIM, Christmas tree, bench, sign, den/peekaboo. The frequencies of the types of indoor furnishings are reported in Table 4.71. The types of indoor materials that have been represented are: lego, ball, building materials, kitchen, dolls, tower, clothes, board games, pyramid of mirrors, generic indoor plays, rubber pads, confetti, balloon, drawing material, circles, gun, robot. The frequencies of the types of indoor materials are reported in Table 4.72. Examples of drawings are reported in Appendix 4 (Drawing 4.28, 4.29 and 4.30).

*Table 4.69 - Frequencies of the representation of indoor furnishings and materials*

Values	<i>n</i>	%
Indoor furnishings and materials	107	56.3
No indoor furnishings and materials	83	43.4
Total	190	100.0

*Table 4.70 - Chi-square test on indoor furnishings and materials and gender.*

Values	Male		Female		Chi-square test
	<i>n</i>	%	<i>n</i>	%	<i>p-value</i>
No indoor furnishings and materials	50	52.1	33	35.1	.017
Indoor furnishings and materials	46	47.9	61	64.9	
Total	96	100.0	94	100.0	

*Table 4.71. Frequencies of the types of indoor furnishings*

<i>Elements</i>	<i>n</i>
tables	19
chairs	9
lamps	8
furniture	7
play containers	4
beds	4
internal doors	3
radiators	3
mirror	3
ladder	1

<i>Elements</i>	<i>n</i>
fridge	1
sofa	1
LIM	1
Christmas tree	1
bench	1
sign	1
den / peakaboo	1

*Table 4.72. Frequencies of the types of indoor materials*

<i>Elements</i>	<i>n</i>
lego	10
ball	6
building materials	5
kitchen	5
dolls	4
tower	4
clothes	3
board games	3
pyramid of mirrors	3
generic indoor plays	3
books	2
foam mats	2
confetti	2
balloon	1
drawing material	1
circles	1
gun	1
robot	1

### ***Outdoor furnishings and materials***

The distribution of frequencies of the representation of outdoor furnishings and materials indicates that most of the children (63%) did not represent such elements, while 37% represented them. The Chi-square test indicates a statistically non-significant relation between representation of outdoor furnishings and materials and either age or gender. Absolute numbers and percentages are reported in Table 4.73. The types

of indoor furnishings and materials that have been represented are: slide, swing, little wooden house, bench, tunnel di legno (wood tunnel), climbing nets, table, gazebo, sensorial path, skateboard. The frequencies of the types of indoor furnishings and materials are reported in Table 4.74. Examples of drawings are reported in Appendix 4 (Drawing 4.31 and 4.32).

*Table 4.73 - Frequencies of outdoor furnishings and materials*

<b>Values</b>	<b><i>n</i></b>	<b>%</b>
Outdoor furnishings and materials	40	37%
No outdoor furnishings and materials	67	63%
Total	107	100.0

*Table 4.74. Frequencies of the types of outdoor furnishings and materials*

<b><i>Elements</i></b>	<b><i>n</i></b>
slide	18
swing	5
little wooden house	5
bench	4
tunnel di legno	2
climbing nets	2
table	1
gazebo	1
sensorial path	1
skateboard	1

#### ***Natural/archetypical elements***

The distribution of frequencies of the natural and archetypical elements indicates that most of the children (60.5%) represented such elements, while 39.5% did not. Absolute numbers and percentages are reported in Table 4.75. The Chi-square test indicates a statistically non-significant relation between the representation of natural/archetypical elements and either age or gender.

*Table 4.75. Frequencies of the representation of natural/archetypical elements*

<b>Values</b>	<b><i>n</i></b>	<b>%</b>
Natural/archetypical elements	115	60.5
No natural/archetypical elements	75	39.5
Total	190	100.0

***Natural/archetypical elements: land line***

The distribution of frequencies indicates that, of children who represented natural/archetypical elements, the majority (80.0%) represented land line, while 20.0% did not. The Chi-square test indicates a statistically non-significant relation between representation of land line and either age or gender. Absolute numbers and percentages are reported in Table 4.76. Examples of drawings are reported in Appendix 4 (Drawing 4.33)

Table 4.76. Frequencies of the representation of the land line

Values	<i>n</i>	%
Land line	92	80.0
No land line	23	20.0
Total	115	100.0

***Natural/archetypical elements: sky line***

The distribution of frequencies indicates that, of children who represented natural/archetypical elements, the majority (64.3%) represented the sky line, while 35.7% did not. The Chi-square test indicates a statistically non-significant relation between representation of sky line and either age or gender. Absolute numbers and percentages are reported in Table 4.77. Examples of drawings are reported in Appendix 4 (Drawing 4.34).

Table 4.77. Frequencies of the representation of the sky line

Values	<i>n</i>	%
Sky line	74	64.3
No sky line	41	35.7
Total	115	100.0

***Natural/archetypical elements: sun***

The distribution of frequencies indicates that, of children who represented natural/archetypical elements, the majority (66.1%) represented the sun, while 33.9% did not. The Chi-square test indicates a statistically non-significant relation between the representation of the sun and either age or gender. Absolute numbers and percentages are reported in Table 4.78. Examples of drawings are reported in Appendix 4 (Drawing 4.35)

Table 4.78. Frequencies of the representation of the sun

Values	<i>n</i>	%
Sun	76	66.1
No sun	39	33.9
Total	115	100.0

*Natural/archetypical elements: moon*

The results indicate that no children represented the moon in their drawings.

*Natural/archetypical elements: trees*

The distribution of frequencies indicates that, of children who represented natural/archetypical elements, the minority (39.1%) represented trees, while the majority (60.9%) did not. Absolute numbers and percentages are reported in Table 4.79. The Chi-square test indicates a statistically significant relation between the representation of trees and age ( $p=.041$ ). Trees were represented by 55.6% of children of Age Group 1, 28.3% of Age Group 2 and 48.6% of Age Group 3. Absolute numbers and percentages are reported in Table 4.80. The Chi-square test indicates a statistically non-significant relation between the representation of trees and gender. Examples of drawings are reported in Appendix 4 (Drawing 4.36)

Table 4.79 - Frequencies of the representation of trees

Values	<i>n</i>	%
Trees	45	39.1
No trees	70	60.9
Total	115	100.0

Table 4.80. Chi-square test on the representation of trees and age.

Values	Age Group 1 <sup>a</sup>	Age Group 2 <sup>a</sup>	Age Group 3 <sup>a</sup>	p-value <sup>b</sup>
Representation of trees	10 (55.6)	17 (28.3)	18 (48.6)	.041
No representation of trees	8 (44.4)	43 (71.7)	19 (51.4)	
Total	18 (100.0)	60 (100.0)	37 (100.0)	

<sup>a</sup> n (%), <sup>b</sup> Chi-square test

***Natural/archetypical elements: flowers***

The distribution of frequencies indicates that, of children who represented natural/archetypical elements, only a few (17.4%) represented flowers, while the majority 82.6% did not. The Chi-square test indicates a statistically non-significant relation between the representation of flowers and either age or gender. Absolute numbers and percentages are reported in Table 4.81. Examples of drawings are reported in Appendix 4 (Drawing 4.37)

*Table 4.81. Frequencies of the representation of flowers*

Values	<i>n</i>	%
Flowers	20	17.4
No flowers	95	82.6
Total	115	100.0

***Natural/archetypical elements: rainbow***

. The distribution of frequencies indicates that, of children who represented natural/archetypical elements, very few (4%) represented flowers, while the great majority (96%) did not. Absolute numbers and percentages are reported in Table 4.82. . Examples of drawings are reported in Appendix 4 (Drawing 4.38).

*Table 4.82. Frequencies of the representation of flowers*

Values	<i>n</i>	%
Rainbow	5	4.0%
No rainbow	110	96.0%
Total	115	100.0

***Natural/archetypical elements: animals***

The distribution of frequencies indicates that, of children who represented natural/archetypical elements, very few (10.4%) represented animals, while the majority (89.6%) did not. The Chi-square test indicates a statistically non-significant relation between the representation of the sun and either age or gender. Absolute numbers and percentages are reported in Table 4.83 and 4.84. Examples of drawings are reported in Appendix 4 (Drawing 4.39)

*Table 4.83 - Frequencies of the representation of animals*

Values	<i>n</i>	%
Animals	12	10.4
No animals	103	89.6
Total	115	100.0

*Table 4.84 - Frequencies of the types of animals*

Values	<i>n</i>
Spiders	4
Birds	3
Butterflies	2
Bees	1
Hedgehogs	1
Bats	1
Total	12

***Natural/archetypical elements: monsters***

The results indicate that no children represented monsters in their drawings.

***Natural/archetypical elements: others***

The distribution of frequencies indicates that, of children who represented natural/archetypical elements, some (33.9%) represented other natural/archetypical elements, while the majority (66.1%) did not. Absolute numbers and percentages are reported in Table 4.85. The types of other natural elements that have been represented included clouds, snow, mud, fruits, vegetables, holes dug, little hill, log, fog, vegetable garden, hive, berries, sea, leaves. The frequencies of the types of other natural elements are reported in Table 4.86.

*Table 4.85 - Frequencies of the representation of other natural elements*

Values	<i>n</i>	%
Other natural elements	39	33.9
No other natural elements	76	66.1
Total	115	100.0

Table 4.86 - Frequencies of the types of other natural elements

<i>Elements</i>	<i>n</i>
clouds	18
snow	8
mud	5
fruits	2
vegetables	2
holes dug	2
little hill	2
log	1
fog	1
vegetable garden	1
hive	1
berries	1
sea	1
leaves	1

### **Color tone**

The distribution of frequencies of the color tone indicates that most of the children (42.5%) used both warm and cold colors in their drawings, while 19.4% used cold colors and 11.1% used warm colors. Absolute numbers and percentages are reported in Table 4.87. The Chi-square test indicates a statistically non-significant relation between tone color and age, while a statistically significant relation emerged between tone color and gender ( $p=.001$ ): both colors were used by 46.9% of males and 69.1% of females. Males used more cold (39.6%) than warm colors (13.5%), while females used more warm (17.0%) than cold (13.8%) colors. Absolute numbers, percentages and p-values are reported in Table 4.88. Examples of drawings are reported below.

Table 4.87. *Frequencies of color tone*

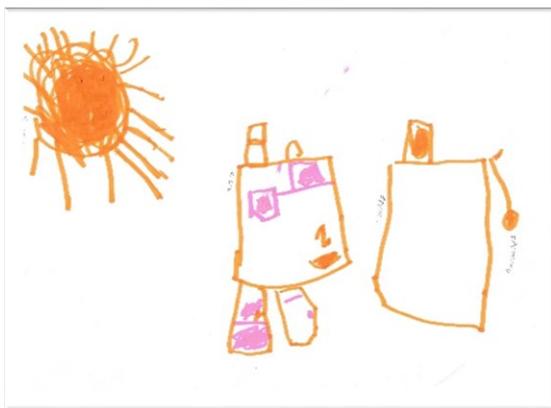
Values	<i>n</i>	<i>%</i>
Warm colors	29	11.1
Cold colors	51	19.4
Both	110	42.5
Total	190	100.0

Table 4.88. *Chi-square test on color tone and gender.*

Values	Male <sup>a</sup>	Female <sup>a</sup>	p-value <sup>b</sup>
Warm colors	13 (13.5)	16 (17.0)	.001
Cold colors	38 (39.6)	13 (13.8)	
Both	45 (46.9)	65 (69.1)	
Total	96 (100.0%)	94 (100.0%)	

<sup>a</sup> n (%), <sup>b</sup> Chi-square test

*Drawing 4.40 – Warm colors*  
 “I drew the pretend play corner with the kitchen and the mirror, and the sun” (Ionela, 4)



*Drawing 4.41 – Cold color*  
 “This is me in the garden with the snow and ice clouds” (Jacopo, 4)



### **Color variety**

The distribution of frequencies of the color variety indicates that most of the children (43.1%) used many colors in their drawings, while 22.9% used up to four colors and 6.5% used only one color. Absolute numbers and percentages are reported in Table 4.89. The Chi-square test indicates a statistically non-significant relation between tone variety and age, while a statistically significant relation emerged between tone variety and gender ( $p=.026$ ): more than four colors were used by 50% of males and 69.1% of females. More than four colors were used by 38.5% of males and 24.5% of females. One color was used by 11.5% of males and 6.4% of females. Absolute numbers, percentages and p-values are reported in Table 4.90. Examples of drawings are reported below.

Table 4.89 - *Frequencies of color variety*

Values	<i>n</i>	%
One color	17	6.5
Up to four colors	60	22.9
More than four colors	113	43.1
Total	190	100.0

Table 4.90 - *Chi-square test on color tone and gender.*

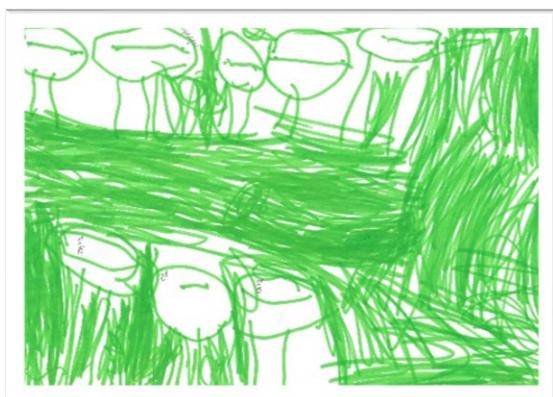
Values	Male <sup>a</sup>	Female <sup>a</sup>	p-value <sup>b</sup>
One color	11 (11.5)	6 (6.4)	.026
Up to four colors	37 (38.5)	23 (24.5)	
More than four colors	48 (50.0)	65 (69.1)	
Total	96 (100.0%)	94 (100.0%)	

<sup>a</sup> n (%), <sup>b</sup> Chi-square test

Table 4.91. *Chi square test on color tone and gender.*

Values	Male		Female		Chi-square test
	<i>n</i>	%	<i>n</i>	%	<i>p-value</i>
One color	11	11.5	6	6.4	.026
Up to four colors	37	38.5	23	24.5	
More than four colors	48	50.0	65	69.1	

*Drawing 4.42 – One color*  
 “I drew me, the teachers and my friends in the school garden (Christian, 3)



*Drawing 4.43 – Up to four colors*  
 “This is me playing with my friend in the school garden” (Nicolò, 4)



***Horizontal position of the drawing in the sheet***

The distribution of frequencies of the horizontal position of the drawing in the sheet indicates that most of the children (88.4%) drew in the center of the sheet, while 8.9% drew to the left and 2.6% to the right of the sheet. Absolute numbers and percentages are reported in Table 4.92. Examples of drawings are reported below.

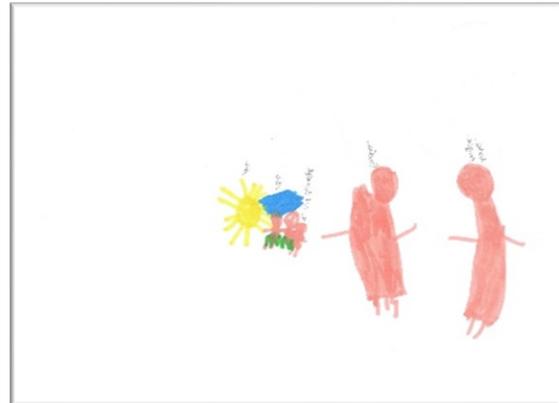
Table 4.92. *Frequencies of the horizontal position of the drawing in the sheet*

Values	<i>n</i>	%
To the left	17	8.9
In the center	168	88.4
To the right	5	2.6
Total	190	100.0

*Drawing 4.44 – Left horizontal position  
“This is me playing in the garden” (Bianca, 4)*



*Drawing 4.45 – Right horizontal position  
“The garden with the children, there are Cecilia, Giuseppe and I, the sky, the sun, nanny Paola and nanny Angela” (Judith, 4)*



***Vertical position of the drawing in the sheet***

The distribution of frequencies of the vertical position of the drawing in the sheet indicates that most of the children (84.2%) drew in the center of the sheet, while 15.8% drew at the bottom and 2.1% at the top of the sheet. Absolute numbers and percentages are reported in Table 4.93. Examples of drawings are reported below.

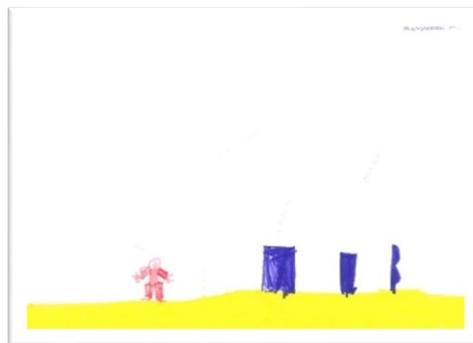
Table 4.93. *Frequencies of the vertical position of the drawing in the sheet*

Values	<i>n</i>	%
At the top	4	2.1
In the center	156	84.2
At the bottom	30	15.8
Total	190	100.0

*Drawing 4.46 – Top vertical position:  
“This is my school, we’re in the library”  
(Cecilia, 5 )*



*Drawing 4.47 – Bottom vertical position:  
“This is me in the corridor with the foam blocks”  
(Alessandro, 4 )*



### **Interview - first favorite space**

To analyze the first favorite space described during the interview, statistical analyses, including frequencies analyses and the Chi-square test, were carried out with IBM SPSS Statistics for Windows, Version 21.0, in order to assess the distribution of all the variables. Chi-square tests were conducted on the variables, age and gender of the participants. A p-value of <0.05 was considered being statistically significant.

Participants in the interviews include 190 children who did a drawing relevant to the task and 44 other children who did not a drawing relevant to the task but talked about their favorite space during the interview. Therefore, 234 children are included in these analyses.

### ***Favorite space: which space***

The distribution of frequencies of the favorite space indicates that almost half of children indicated the garden (48.5%); common spaces are the second favorite spaces, indicated by 18.9% of children; the class

is the third favorite space, indicated by 13.7% of the children. 8.2% of children indicated all the school and a few children indicated specific spaces as the building corner (3%), the pretend play corner (3%), the sleeping room (1.3%) and the reading corner (1.7%). 1.3% of children represented other spaces and one child (0.4%) indicated the toilet. The Chi-square test indicates a statistically non-significant relation between either favorite space and age or favorite space and gender. Absolute numbers and percentages are reported in Table 4.94. The graph is reported in Figure 4.9 (Appendix 3).

Table 4.94. *Frequencies of the favorite space.*

Values	n	%
Garden	114	48.5
Common spaces	44	18.9
Class	32	13.7
All the school	19	8.2
Building corner	7	3.0
Pretend play corner	7	3.0
Sleeping room	3	1.3
Reading corner	4	1.7
Other spaces	3	1.3
Eating room	0	0
Toilet	1	0.4
Total	234	100,0

#### ***Favorite space: specific or generic space***

The distribution of frequencies of the favorite space indicates that most of the children (56.0%) indicated a generic space, 37.2% of the children indicated specific space and 6.8% of the children indicated a specific space contextualized in a general context. Absolute numbers and percentages are reported in Table 4.95. The Chi-square test indicates a statistically non-significant relation between specific or generic space and age, while a statistically significant relation emerged between specific or generic space and gender ( $p=.003$ ): the majority of males (66.1%) indicated more generic space while the majority of females (48.2%) represented specific spaces. Absolute numbers, percentages and p-values are reported in Table 4.96.

Table 4.95. *Frequencies of preferences about specific or generic spaces.*

Values	n	%
Specific	87	37.2
Generic	131	56.0
Specific within a general context	16	6.8
Total	234	100,0

Table 4.96. *Chi-square test on specific or generic space and gender.*

Values	Male		Female		Chi-square test
	<i>n</i>	%	<i>n</i>	%	<i>p-value</i>
Specific	34	27.4	53	48.2	.003
Generic	82	66.1	49	44.5	
Specific within a generic context	8	6.5	8	7.3	
Total	124	100.0	110	100.0	

***Favorite space: indoor or outdoor spaces***

The distribution of frequencies of the favorite space indicates that most of the children (50.9%) indicated outdoor spaces, 43.2% indicated indoor spaces and 6.0% indicated both outdoor and indoor spaces. The Chi-square test indicates a statistically non-significant relation between either indoor/outdoor space and age or indoor/outdoor space and gender. Absolute numbers and percentages are reported in Table 4.97.

Table 4.97. *Frequencies of preferences about indoor or outdoor spaces.*

Values	<i>n</i>	%
Outdoor	119	45.4
Indoor	101	38.5
Both	14	5.3
Total	234	100,0

### ***Favorite space: situation***

The distribution of frequencies of the favorite space indicates that most of the children indicated situations where they are playing with others (33.3%) or playing alone (26.9%). 18.4% of children did not specify the situation. 7.3% of the children indicated the observation of nature, 5.1% moments of learning, 4.2% moments of transitions or waits, 2.6% eating moments, 1.3% moments of privacy, 1.3% sleeping moments and one child (0.4%) toilet moment. The Chi-square test indicates a statistically non-significant relation between situation and age or between situation and gender. Absolute numbers and percentages are reported in Table 4.98. The graph is reported in Figure 4.10 (Appendix 3).

*Table 4.98 - Frequencies of situation represented.*

Values	<i>n</i>	%
Playing with others	78	33.3
Playing alone	63	26.9
Not specified	43	18.4
Observation of nature	17	7.3
Moment of learning	12	5.1
Moment of transitions or waits	8	3.4
Eating moment	6	2.6
Moment of privacy	3	1.3
Sleeping moment	3	1.3
Toilet moment	1	0.4
Total	234	100,0

### ***Favorite space: relationships***

The distribution of frequencies indicates that most of the children (53.1%) did not refer to relationships when talking about their favorite space. 20.9% of children referred to relations with one friend, 4.2% with two friends and 13.0% with more than two friends. 5% of children referred to relations with teachers and 3.8% referred to relations with familiars. The Chi-square test indicates a statistically non-significant relation between relationships and age or relationships and gender. Absolute numbers and percentages are reported in Table 4.99.

*Table 4.99 - Frequencies of relationships.*

Values	<i>n</i>	%
No relationships	127	53.1
Relation with one friend	50	20.9
Relation with two friends	10	4.2
Relation with more than two friends	31	13.0
Relation with teachers	12	5.0
Relation with familiars	9	3.8
Total		100,0

***Favorite space: verbal description***

In relation to the verbal description of the favorite spaces, the distribution of frequencies indicates that most of the children (59.4) provide a list of items. 20.9% of children told a story, 9.8% provide a simple description of relations 9.8% provide a simple description of activities. Absolute numbers and percentages are reported in Table 4.100. The Chi-square test indicates a statistically non-significant relation between situation represented and age, while a statistically significant relation emerged between verbal description and gender ( $p=.043$ ): more males (67.7%) than females (50.0) exposed a list of items, more females (27.3%) than males (15.3%) told a story. Absolute numbers, percentages and p-values are reported in Table 4.101.

*Table 4.100. Frequencies of verbal description.*

Values	<i>n</i>	%
List of items	139	59.4
Storytelling	49	20.9
Simple description of relations	23	9.8
Simple description of activities	23	9.8
Total	234	100,0

*Table 4.101. Chi-square test on specific or generic space and gender.*

Values	Male	Female	Chi-square test

	<i>n</i>	%	<i>n</i>	%	<i>p-value</i>
List of items	84	67.7	55	50.0	.043
Storytelling	19	15.3	30	27.3	
Simple description of relations	10	8.1	13	11.8	
Simple description of activities	11	8.9	12	10.9	
Total	124	100.0	110	100.0	

### ***Favorite space: motivation***

The distribution of frequencies of the motivations given for the preferences on space indicates that most of the cited motivations (75.6%) referred to playing opportunities, 19.7% to relationships, 11.5% to the observation of nature, 5.6% to learning opportunities, 5.1% to functional aspects, 4.7% to opportunities for privacy, 2.5% to the continuity between school and family, 1.7% to the continuity between indoor and outdoor spaces, and 1.3% to aesthetic aspects. Absolute numbers and percentages are reported in Table 4.102 and Figure 4.11 (Appendix 3). The Chi-square test indicates a statistically non-significant relation between motivations and age or motivations and gender. Frequencies of other motivations are reported in Table 4.103.

*Table 4.102. Frequencies of motivations*

Values	<i>n</i>	%
Playing opportunities	177	75.6
Learning opportunities	13	5.6
Relationships	46	19.7
Observation of nature	27	11.5
Opportunities for privacy	11	4.7
Indoor/Outdoor continuity	4	1.7
School/Family continuity	6	2.6
Aesthetic aspects	3	1.3
Functional aspects	12	5.1
Other	24	10.3

*Table 4.103 - Frequencies of other motivations.*

Values	n
I like eating there	6
I can choose what to do	5
I don't know	3
I can watch tv	2
I can rest	2
Santa Claus arrives there	1
I can hide	1
I like sleeping there	1
I can pee	1
I like listening to music	1
I can cuddle teachers	1
Total	<b>24</b>

### **Interview: second favorite space**

To analyze the second favorite space described during the interview, statistical analyses, including frequencies analyses and the Chi-square test, were carried out with IBM SPSS Statistics for Windows, Version 21.0, in order to assess the distribution of all the variables. Chi-square tests were conducted on the variables, age and gender of the participants. A p-value of <0.05 was considered being statistically significant. Of the 234 children included in the interviews, 131 answered affirmatively to the question of whether they had a second favorite space in their school. Therefore, 131 children are included in these analyses.

### ***Second favorite space: which space***

The distribution of frequencies of the second favorite space indicates that most children indicated the class (26.7%); common spaces are the second favorite spaces, indicated by 23.7% of children; the garden is the third favorite space, indicated by 21.4% of the children. 9.9% of children indicated the pretend play corner, 8.4% of children indicated the building corner, 4.6% indicated the sleeping room, 3.1% the reading corner and 2.3% indicated all the school. The Chi-square test indicates a statistically not significant relation

between second favorite space and age or between second favorite space and gender. Absolute numbers and percentages are reported in Table 4.104. The graph is reported in figure 4.12 (Appendix 4).

*Table 4.104. Frequencies of the second favorite space.*

Values	n	%
Garden	28	21.4
Common spaces	31	23.7
Class	35	26.7
All the school	3	2.3
Building corner	11	8.4
Pretend play corner	13	9.9
Sleeping room	6	4.6
Reading corner	4	3.1
Eating room	0	0.0
Toilet	0	0.0
Total	131	100,0

***Second favorite space: specific or generic space***

The distribution of frequencies of the favorite space indicates that 57.3% of the children indicated a specific space, while 42.7% indicated generic space. The Chi-square test indicates a statistically non-significant relation between specific or generic space and age or between specific or generic space and gender. The Chi-square test indicates a statistically non-significant relation between either indoor or outdoor space and age or indoor or outdoor space and gender. Absolute numbers and percentages are reported in Table 4.105.

*Table 4.105. Frequencies of preferences about specific or generic spaces.*

Values	n	%
Specific	76	57.3
Generic	55	42.7
Total	131	100,0

### ***Second favorite space: indoor or outdoor spaces***

The distribution of frequencies of the favorite space indicates that most of the children (79.4%) indicated indoor spaces, 19.8% indicated outdoor spaces and only one child (0.8%) indicated both outdoor and indoor spaces. Absolute numbers and percentages are reported in Table 4.106.

Table 4.106 - *Frequencies of preferences about indoor or outdoor spaces.*

Values	<i>n</i>	%
Outdoor	26	19.8
Indoor	104	79.4
Both	1	0.8
Total	131	100.0

### ***Second favorite space: situation***

The distribution of frequencies of the favorite space indicates that most of the children indicated situations where they are playing with others (34.4%) or playing alone (33.6%). 12.2% of children indicated moments of learning, 5.3% did not specify the situation, 3.8% of the children indicated the observation of nature and 3.8% eating moments, 3.1% sleeping moments, 2.3% moments of privacy. One child (0.8%) indicated moments of transitions or waits and one child (0.8%) indicated toilet moment. The Chi-square test indicates a statistically non-significant relation between situation and age or between situation and gender. Absolute numbers and percentages are reported in Table 4.107. The graph is reported in figure 4.13 (Appendix 3).

Table 4.107 - *Frequencies of the situation represented.*

Values	<i>n</i>	%
Playing with others	45	34.4
Playing alone	44	33.6
Not specified	7	5.3
Observation of nature	5	3.8
Moment of learning	16	12.2
Moment of transitions or waits	1	0.8
Eating moment	5	3.8

Values	<i>n</i>	%
Moment of privacy	3	2.3
Sleeping moment	4	3.1
Toilet moment	1	0.8
Total	131	100,0

### ***Second favorite space: verbal description***

In relation to verbal description of the favorite spaces, the distribution of frequencies indicates that most of the children (59.4) provide a list of items, 29.0 % provide a simple description of activities, 8.4% of children told a story, 3.1% provide a simple description of relations. The Chi-square test indicates a statistically non-significant relation between verbal description and age or verbal description and gender. Absolute numbers and percentages are reported in Table 4.108.

*Table 4.108 - Frequencies of verbal description.*

Values	<i>n</i>	%
List of items	78	59.5
Storytelling	11	8.4
Simple description of relations	4	3.1
Simple description of activities	38	29.0
Total	131	100,0

### ***Second favorite space: motivation***

The distribution of frequencies of the motivations given for the preferences on space indicates that most of the children (67.7%) referred to playing opportunities, 19.7% to relationships, 11.5% to the observation of nature, 5.6% to learning opportunities, 5.1% to functional aspects, 4.7% to opportunities for privacy, 2.5% to the continuity between school and family, 1.7% to the continuity between indoor and outdoor spaces, and 1.3% to aesthetic aspects. Absolute numbers and percentages are reported in Table 4.109. The graph is reported in figure 4.14 (Appendix 3). The Chi-square test indicates a statistically non-significant relation between motivations and age or motivations and gender. Frequencies of other motivations are reported in Table 4.110.

Table 4.109 - Frequencies of motivations.

Values	<i>n</i>	%
Playing opportunities	88	67.7
Learning opportunities	25	19.2
Relationships	16	12.3
Observation of nature	5	3.8
Opportunities for privacy	8	6.2
Indoor/Outdoor continuity	1	0.8
School/Family continuity	1	0.8
Aesthetic aspects	4	3.1
Functional aspects	6	4.6
Other	19	14.6

Table 4.110 - Frequencies of other motivations.

Values	<i>n</i>
I like eating there	7
I like sleeping there	5
I can choose what to do	2
I like listening to music	2
I don't know	2
I watch tv	1
Total	<b>19</b>

## Discussion

### Drawings

The findings emerged from the analysis of drawings and interviews allow to reflect on various aspects related to the meanings of ECEC space in children's experience. As expected, it was found a significant developmental trend on relevance: the more children grow, the more they are able to understand the task and provide an appropriate response. The same trend was found for the recognizability of drawings: younger children made less recognizable drawings than older children. No significant differences on relevance and recognizability emerged in relation to gender. These findings are in line with classic literature

which indicates a parallelism between children's intellectual developments and their drawing development, with the provision of more detailed, better proportioned and more realistic representations as children get older (Luquet, 1913; Piaget, 1929).

In relation to the favorite spaces, it is interesting to note that half of the children represented the garden of their school in their drawings and the same choice was confirmed also considering the results from interviews. For the same reason, it was found that most children represented outdoor spaces rather than indoor ones or both. In addition, the observation of nature was found to be the third preferred activity of participants, after playing with others and playing alone. These findings add evidence to the importance of natural spaces in ECEC environment: previous studies indicated that in outdoor spaces children perceive a greater sense of freedom, independence and possibility to socializing (Cullen, 1993), preferring natural or "mixed" (natural and manufactured) settings rather than manufactured ones (Zamani, 2016). Natural outdoor spaces also demonstrated to support the development of many children's competence, such as motor skills (Chow & Louie, 2013; Fjortoft, 2001; Scoditti et al., 2011; True et al., 2017), prosocial behavior (Brussoni et al., 2017), engagement and self-regulation (Kochanowski & Carr, 2014). Moreover, a positive relation was found between number of hours spent outdoors and children's attention (Ulset et al., 2017). Although the importance of outdoor space is broadly recognized, literature has also shown how such spaces are rarely used in their whole potential, normally being used for the free playing of children rather than for structured activities (Ihmeideh & Al-Qaryouti, 2016; Jayasuriya et al., 2016; Maynard & Waters, 2007; McClintic & Petty, 2015). In addition to these considerations provided by the previous research, the current study added the voice of children, observing that outdoor spaces are their favorite too. For all these reasons, more investments on ECEC outdoors should be done, with the aim to use all their potential, allowing children to enjoy educational experiences both in free play and structured activities. The choice of garden as favorite space may be also linked with the results in relation to the representation of generic or specific spaces: the majority of generic representations in children's drawings may be due to the fact that usually outdoor spaces are perceived as less structured than indoor spaces (Cullen, 1993), and actually they are. Although some ECEC centers provide thematic areas in the garden, these are usually less defined, less clear and more widespread in large spaces than the thematic areas provided inside (reading corner, pretend-play corner...), therefore children may have represented the generic garden rather than specific defined areas into it.

Common spaces, like corridors or halls, were the second most favorite spaces and the class is the third one. However, when children were asked to name a second favorite space during the interview, most children referred to the class. This is another interesting finding: both common spaces and class seem very meaningful places in children's vision. It allows to think that relationships between children from different classes, that happen in common spaces and in big groups, play an important role in children's ECEC experience, as well as the opportunities offered by the class environment, which is more cozy and structured, allowing experiences in small groups. Both these opportunities seem to be needed by children during their daily experience in ECEC spaces. This is in line with previous studies which indicated that places characterized by compatible and complementary activity areas, cozy spaces and children's access to large motor development areas contribute to enhance the perceived competence in children of 3 and 4 years old (Maxwell, 2007). This result may be also linked to the fact that the most represented situations, both in drawings and interviews, have been playing with others and playing alone. The preference for playing activities is in line with previous research: children seem to find play as the most engaging thing in preschool (Torstensson-Ed, 1994; Strander, 1997; Vickerius & Sandberg, 2006) and it doesn't surprise. The interesting finding is that a little more than a third of the participants referred to playing with others and a little less than a third referred to playing alone, revealing a kind of balance of preferences between the two situations. Both social and non-social activities have shown to be important moments in children's experience of play (Rubin & Colplan, 1998). While the importance of social interaction and participation has been broadly explored, fewer and more recent studies have paid attention to children's experience of withdrawal and privacy. Skånfors et al. (2009) observed that such experience is a fundamental need at this age and that if ECEC centers do not provide spaces for intimacy and privacy, children build them themselves with materials available in the environment. Friedmann & Thompson (1995) also indicated the need for younger children to withdraw from the group and their preference for a cozy environment to do it. In the light of these reflections, the findings of the present study support the idea that ECEC centers should provide spaces which facilitate both these opportunities, that children showed to appreciate more than others in their experience.

Although no significant differences on favorite space emerged in relation to age and gender, it is interesting to note that some significant differences were found between gender and the representation of a specific or generic space and the situation represented. Males represented more generic spaces and situations

where they play with others, while females represented more specific spaces and situations where they play alone. These findings are in line with classic literature indicating that girls are usually engaged in more intimate play and smaller groups, compared to boys (Lever, 1976) and that girls are more oriented in small group interactions, whereas boys tend to choose more physical activities (Maccoby, 1990).

Children also represented architectural elements of the school environment, furnishings and materials in their drawings. About a third of participants represented architectural elements of the building, most children represented floors, walls and ceilings and they didn't represent doors and windows. This result may be explained considering that floors, walls and ceilings constitute the perimeter limits of the school and allow to define a delimited space, while doors and windows may be considered additional elements that may be omitted if the intention is to draw a defined 'container'. Indoor furnishings and materials were represented by 56.3% of children, while outdoor furnishings and materials were represented by 37% of children. This difference is probably due to the fact that indoor spaces provide much more furnishings and materials than outdoor spaces, which are usually characterized by more natural than manufactured materials. Among outdoor furnishings and materials, the slide was found to be the favorite one for children. Among indoor furnishings, tables are the most represented; this may indicate that they are relevant elements in children's ECEC experience; in fact, tables are often used during the class day for several reasons, mainly to draw, do handworks and eat. Among indoor materials, building materials, especially lego bricks, are the most represented, indicating the children's preference for such play. Other studies have also found structured and unstructured construction play as the favorite one for preschoolers in ECEC centers (Caldera et al., 1999) and many authors have highlighted the importance of such type of play in early childhood to foster cognitive abilities, having been found related with reading and maths achievements in school age (Hanline et al., 2010; Weber, 2020; Wolfgang et al., 2003). This finding supports the provision of construction play in ECEC centers, in both the typologies of structured and unstructured block play.

In relation to the representation of people, most children have drawn at least one person and a significant developmental trend was observed as younger children represented fewer people than older ones, in line with classical studies that argue that social sensitivity increases with age (Piaget, 1926; Mossler et al., 1976). Nevertheless, most children represented themselves, not referring to relationships with others, while about a third of participants represented at least one friend, and a few represented teachers or familiars. Also

during the interviews most of the children did not refer to relationships; among children who talk about friends, most referred to one friend and some children referred to teachers and familiars. These results may seem in contrast with the most represented situation which was found to be playing with others, but it should be specified that about half of participants did not represent relationships, while about a third represented situation of playing with others, so the percentages justify the apparent contrast. It seems that most children referred to intimate experiences when asked to think about their school environment. This data may be interpreted as a confirmation of the need of children for intimacy and privacy (Friedmann & Thompson, 1995; Skånfors et al., 2009), but it might also be taken into consideration the natural egocentrism of the child at this age, that may make them tend to consider their point of view as 'universal' and perhaps for this reason most represented only themselves when they are asked for their experience not expliciting to represent someone else.(Ostashchenko et al, 2019; Piaget, 1955; Piaget & Inhelder, 1956). Nevertheless, at least one friend has been represented in almost 45% of drawings and the relationship with one friend was the most described relational situation during the interviews. Previous studies have observed that in preschool years children tend to establish particular friendships that are usually gender-related (Hay et al., 2004) and that sometimes began in childhood and were then maintained during early childhood (Howes & Phillipsen, 1992). The position of people in the drawings, which was found to be mostly centered both horizontally and vertically, also may constitute an indicator of positive experience in ECEC relations, since it represents a balanced attitude between introversion and extroversion horizontally and overvaluation or devaluation vertically (Federici, 1998). Relational meanings may also be derived from the representation of the Human Figure: most children represented the main elements of the body, eyes, arms, hands, legs and feet, which are indicators of the cognitive contact between the internal and external world and the emotional contact with the others. In particular, hands and feet were represented mostly normal or valorized; since hands symbolize the point of contact with the world and people and feet symbolize the feeling of security and stability in this contact (Serraglio, 2011), it may be argued that the participants expressed a good relational experience with people and ECEC environment through these indicators.

In addition to the aforementioned positive indicators for relationships, the generally positive experience of ECEC environment also emerged from the results on the emotional climate revealed through the facial expressions drawn: the great majority of children represented a positive emotional climate, a few

represented a neutral emotional climate, two children represented mixed emotional climate and only one child represented a negative emotional climate. This data may be supported also by the analysis of the position of the drawing in the sheet and of the use of colors: most children represented drawings in the center of the sheet both horizontally and vertically and used more than four colors, both warm and cold. According to the literature, these are indicators of a balanced and positive experience in relation to the topic represented. In particular, drawings placed in the central part of the sheet, both horizontally and vertically, revealed security and emotional balance (Federici, 1998) and multichromatic representations with the use of both cold and warm colors indicate a serene attitude, with a good balance between excitement and stillness. (Crotti & Magni, 2011). Furthermore, also the most natural/archetypical elements seem to confirm the good emotional experience of children in their ECEC spaces: most children represented land line, sky line and sun, some children represented also trees and flowers, a few represented animals and rainbows, and no-one represented moon or monsters. According to literature, the most represented elements are associated with feelings of security (earth), desire to learn and grow (sky), strength, autonomy, independence (sun). Trees and flowers, represented by some children, indicate positivity and abilities ready to be expressed. Animals and rainbow, drew by a few children, symbolize emotional tension and needs for reassurance and protection. Moon or monsters, that no-one represented, are associated with anxious states, regression and fears (Crotti & Magni, 2011; Serraglio, 2011). Since the most represented elements are associated with good feelings and elements associated with negative meanings were very little represented or not represented at all, these findings allow to hypothesize that the great majority of participants experience good emotions in their ECEC spaces.

Concerning aspects related to the mere verbal exposition during the interview, it was observed that the majority of children provided a list of items to describe both their drawings and their second favorite space. As a second choice, they provided a simple description of activities. It was also found a significant relationship between verbal exposition and gender: males more than females provided a list of items and females more than males told a story. The finding is in line with classical studies on gender differences that indicated higher verbal abilities in girls than in boys (Maccoby and Jacklin, 1974) and with other studies on middle childhood and adolescence which showed similar trends: in particular, girls provided longer and more complex written descriptions in middle childhood, compared to boys (Matthys, Cohen-Kettenis and

Berkhoud, 1994) and averaged significantly higher scores on word fluency in adolescence (Mann, Sasanuma, Sakuma & Masaki, 1990).

Concerning the motivations for children's preferences about space, the great majority of children referred to playing opportunities both in the first and the second favorite space. In relation to the first favorite space, as a second reason children referred to relationships opportunities, as a third reason to the observation of nature and as a fourth reason they talked about learning opportunities. In relation to the second favorite space, as a second reason children referred to learning opportunities, as a third reason to relationships opportunities and as a fourth reason they talked about opportunities for privacy and withdrawal. Besides these main reasons, a few children referred to functional aspects, opportunities for privacy, continuity between school and family, continuity between indoor and outdoor spaces and aesthetic aspects for both first and second favorite space. The reasons given for the preferences may help us to get closer to the meanings that children give to the environment. First of all, it seems that they perceive ECEC spaces as playing environments, since the opportunity to play was found to be the most appreciated aspect for both first and second favorite space. The preference for playing activities is not a surprising finding, since the pleasure of children in playing and the important role of playing activities are broadly recognized.

Second, they seem to perceive ECEC spaces as a relational environment, since opportunities for relationships were cited among the first three reasons for preferences in both the first and second favorite space. Children referred mainly to relationships with peers, indicating how this experience is relevant for them in their school daily life. One of the main differences between ECEC centers environment and home environment is in fact the possibility to share experiences with other children in big and small groups. Peer relations begin in the first years of life and consolidate in the preschool years, involving cognitive and emotional processes in relation to child development (Hay et al., 2004). How children experience relation with peers influences their emotional well-being and social-emotional functioning (Asher & Paquette, 2003; Gazelle, 2008). At the same time, it is interesting to observe that when children were asked to motivate the preferences for their second favorite space, which was mainly the class, they referred also to opportunities for privacy. This result is in line with other studies indicating the need for children to withdraw from the group of peers at this age during the school day and the importance of space responding to this need (Friedmann & Thompson, 1995; Skånfors et al., 2009). The fact that children indicate the opportunity for

private moments as the reason for their preferences supports the idea that ECEC spaces should provide adequate environments to respond to this need as well as to the need for relations. Therefore, ECEC spaces should facilitate positive interactions between peers, facilitating experience in both big and small groups and at the same time offering opportunities to withdraw from the group when needed.

Third, children seem to perceive ECEC spaces as learning environments, since another popular reason for preferences for both first and second favorite space was the opportunity to learn, including writing, reading and drawing activities. The preschool environment was found to be fundamental for school readiness and children's achievement also in later years (Commodari, 2013; Nguyen et al., 2019). Many studies have shown that ECEC centers' environment may influence learning processes: some physical features of space, as shape, lighting and temperature have demonstrated to affect children's work (Havu-Nuutinen & Niikko, 2014; Iwan & Poon, 2018) as well as the availability of adequate learning materials (Bers et al., 2018; Marshall & Lewis, 2014; Nevanen et al., 2014). Although the support from adults and a secure relationship with teachers are fundamental in learning processes (Commodari, 2013; Lee et al., 1997; Morrow, 1990), the presence of literacy areas, books and writing materials resulted to be correlated with the acquisition of academic abilities as well (Morrow & Weinstein, 1982; Neuman & Roskos, 1992) and the most effective environments were found to be those with both relational and physical facilitation (Guo et al., 2012). Since the current study also found learning moments to be among the most important aspects in children's experience of their centers, it may be argued that ECEC spaces should provide an adequate environment to support learning processes; previous research has indicated that such environment should be uncrowded, complex and defined (Maxwell, 1996, 2007).

Finally, it seems that children perceive ECEC spaces as environments where the observation of nature is privileged. It may be assumed that the large gardens that characterized the ECEC centers where the data were collected offered children more opportunities to explore nature than the home environment, since all the centers were located in urbanized contexts of the city where little space is reserved for gardens in residential buildings. The current study indicates that observation of nature seems to play a fundamental role in children's ECEC experience. This result adds to the growing evidence of the importance of natural outdoor spaces in ECEC environments, which have shown to support the development of many abilities in preschoolers as motor competence, choice-making processes, problem-solving, self-regulation and attention

(Fjortoft, 2001; Kochanowski & Carr, 2014; True et al., 2017; Ulset et al., 2017) as well as empathy for non-human life forms and more awareness of human-nature independence (Giusti et al., 2014).

### **Conclusion**

The present study allowed to get closer to the meanings of space in ECEC Centers in children's experience. The findings from children's drawings and interviews gave us many information and opportunities to reflect on how children experience their school environment. The preferences on spaces indicated which were the most meaningful ones for children and the reason given for such preferences help us to understand which is their vision of ECEC environment, which are the most important aspects that space should provide and which are the most relevant situations and activities that space should support. The exploration of relational meanings and emotional climate that children expressed in relation to the preschool environment also helped to reflect on how space can facilitate positive experiences. The findings from the current study may stimulate reflections and provide useful indications for research, practice and policies in order to create ECEC spaces that respond to the real needs of children and support their development taking into account their voices.



## Chapter 5

### Study 3: The meanings of ECEC space in three European countries: Italy, Belgium and Lithuania

The findings from the literature review in Chapter 1 highlighted how the cultural context can affect the vision and use of ECEC spaces in daily routine. The habits and beliefs of the educational staff affect their perception of what the physical environment allows and doesn't allow to do, also influencing the design of pedagogical actions in space. For example, it was found that the role of educators changed depending on whether they were in indoor or outdoor space (Maynard & Waters, 2007), that the setting and use of indoor space and materials were affected by the personal and pedagogical views of educators (Børve & Børve, 2017; Prochner et al., 2008) and that the use of outdoors in different weather conditions changed in different countries (Maynard & Waters, 2007; Melhuus, 2012). These results suggest that the knowledge of different pedagogical realities and different approaches to ECEC spaces may help to broaden personal visions and stimulate thoughts on the educational potential of the physical environment. For this reason, while the first and the second study of the present doctoral project investigated adults' and children's meanings of ECEC space into the Italian context, the current study aimed to explore such meanings extending the investigation to other countries belonging to the wider European context. European policies are investing in the quality of ECEC services starting from the need to improve quality and accessibility of such services across European countries (European Commission, 2014). Since high quality of ECEC services was found to be related to beneficial effects in later stages of life (Bennett, Gordon, & Edelmann, 2012) and can contribute to address social and cultural inequalities (European Commission, 2014; Eurydice, 2009a, 2009b), the aim of such policies is to provide a generalized access to ECEC services of high quality, in order to support positive socio-emotional and learning experiences of children (European Commission, 2011). A European Quality Framework (EQF) on Early Childhood Education And Care (ECEC) was developed by representatives from 26 EU Member States and of a stakeholder group in 2014: it was officially launched in 2016 and it is constantly improved. The last EQF for ECEC was discussed during the Council of the European Union on High-Quality ECEC Systems in 2019 defining ten statements which refer to five main areas: access, staff, curriculum, governance and funding, evaluation and monitoring. (Council of the European Union, 2019). As reported in the Official Journal of the European Union (Ibid, p.11):

*“The framework's main objective is to describe a system which can provide high-quality early childhood education and care for all children and its development; it is guided by the following principles:*

- high-quality services are crucial in promoting children's development and learning and, in the long term, enhancing their educational chances;*
- parents' participation as partners of such services is essential — the family is the most important place for children to grow and develop, and parents (and guardians) are responsible for each child's well-being, health and development;*
- early childhood education and care services need to be child-centered, actively involve children and acknowledge children's views.*

One of the issues that European policies on ECEC services are addressing is the division between the concepts of ‘education’ and ‘care’, observing that high-quality services should provide both these aspects and considered them as inseparable concepts (European Commission, 2011; European Commission, 2014; UNESCO, 2010). The issue is due to the tendency to ‘schoolify’ the early years, giving much relevance to ‘education’, in the sense of learning, and ranking ‘care’ as a less important aspect, so that caring tasks of ECEC staff, as supporting children during eating, sleeping and toilet moments are considered of lower value than learning (Ortlipp et al., 2011). Nevertheless, previous research has observed that this approach may hinder children’s natural learning processes which develop through play, exploration, peer-relations and other spontaneous activities, by investing in more predefined top-down strategies (Broström, 2006; Hjort, 2006). Some studies have also argued that considering ‘learning’ as a mere ‘preparation for school’ leads to underestimate the ‘caring’ dimension of education (Alvestad, 2009; Forrester, 2005; Kyriacou et al., 2009). The division of education and care is also reflected in the different roles and profiles of the professional staff: in most European countries in fact the learning activities are reserved to teachers while caring aspects of education such as cleaning facilities, feeding children and other routines are tasks for assistants. Assistants in European ECEC contexts seem to have three main roles: a teaching role, when they are involved in children’s learning processes related to academic achievements; a bridging role, facilitating communication between schools and families; a caring role, being responsible for children’s hygiene and emotional wellbeing (Van Laere et al., 2012). Nevertheless, it was found that in many European countries they are

mostly in charge of caring roles, being often considered technical workers and having low or no qualifications (Peeters et al., 2018). These data are in contrast with the orientation of European policies which underline the importance of a holistic view of children's education and highlight the need for an 'Educare approach' to balance the value of educational and caring aspects in pedagogical contexts (Peeters et al., 2018; UNESCO, 2010). As the Organization for Economic Co-operation and Development (OECD) observed, policies are *'deeply influenced by underlying assumptions about childhood and education'* (OECD, 2001, p. 63), therefore the meanings given to ECEC centers organizations and provisions emerges as a very important aspect. According to this vision, the physical environment also has a relevance in the 'Educare' debate, due to the 'educational' and 'caring' value that may be given to ECEC spaces, affecting their organization and use.

### **Purpose of the Study**

In addition to the exploration of ECEC meanings in the Italian context, conducted in Study 1 and 2, the purpose of Study 3 was to extend the same investigation to other countries belonging to the wider European context in order to have a broader vision of the European trend on this issue. Three countries were involved as representative of three main European geographical areas, according to the classification provided by the Multilingual EuroVoc Thesaurus of the European Union (European Union, 2021): in addition to Italy, as representative of Southern Europe, Belgium was involved as representative of Western Europe and Lithuania was involved as representative of Northern Europe. The aim of the third study was also to compare the emerging visions of these countries, in order to find similarities and differences that might offer reflections on the local meanings given to ECEC space by both adults and children.

### **Centers involved in the third study**

The present study was designed in the light of the aforementioned considerations. While the first and second studies were conducted in the Italian context, this third study aimed to extend the investigation to other two European countries: Belgium and Lithuania. The meanings of ECEC spaces were explored with the same procedures and methods used in the first and second study: to investigate adults' experience, data were collected through focus groups with parents and teachers and through questionnaires with parents, teachers, assistants and coordinators; to investigate children's experience, data were collected through drawings and interviews. This transnational study is strictly intertwined with an international project titled

“*EDUCAS: Space and Educare. Space and Educare: Creating child and family-friendly learning spaces in ECEC (Early Childhood Education and Care) centers*” co-funded by the Erasmus+ project of the European Commission. EDUCAS project’s overall goal is creating ECEC environments that support children’s development in a holistic way, taking into account the diverse needs of children and families, with special attention to the ones at risk of social exclusion. The specific goals of EDUCAS project are: 1) Examine existing visions and methods related to organizing ECEC environments, with a focus on Educare approach and on family involvement; 2) Increase ECEC staff’s reflective/relational/methodological competencies related to the connection space/Educare, with attention to involving children and families, particularly the ones at risk of social exclusion; 3) Promote ECEC innovation by experimenting new methods concerning how to improve spaces within an Educare approach, and how to adapt this experimentation to other local and EU contexts; 4) Specify how national and EU policy should address this issue, through policy recommendations elaborated by analyzing strengths and critical points of the experimentations.

EDUCAS project involved three European countries, Italy, Belgium and Lithuania, and the partnership is constituted by one research center and two ECEC centers in each country. The Belgian research center was Vernieuwing in de Basisvoorzieningen voor Jonge Kinderen (VBJK; Center for Innovation in the Early Years), which works focusing on high-quality ECEC services involving research, policies and practical issues. The Lithuanian research center was VšĮ Ugdymo Inovacijų Centras (UIC; Center For Innovative Education) which works on promoting, creating and implementing high-quality practices of early childhood education by adapting and applying best worldwide education ideas and experiences. The qualitative data provided by adults’ group interviews and children’s drawings and interviews for the present study were collected in the ECEC centers involved in EDUCAS, apart from Italian data on children’s drawings and interviews which were collected in other two Italian ECEC centers, not involved in EDUCAS project. The list of the ECEC centers participating in the third study is reported in Table 5.1. A brief description of each ECEC center is provided as follows.

*Table 5.1 – ECEC centers involved in the third study*

Country	City	ECEC Centre	Age of children	Data collection
Italy	Parma	Gelsomino	0-3 + 3-6	Adults
	Torino	Maria Vittoria	0-3	Adults

	Parma	Girasoli	3-6	Children
	Parma	Tartaruga	3-6	Children
Belgium	Bruges	De Tandem	0-4	Adults + Children
	Ghent	Hippo's Hof	2,5-6	Adults + Children
Lithuania	Austelke	Aukštelkės	2-6	Adults + Children
	Vilnius	Vaikystes Sodas	1-6	Adults + Children

## Italy

Italian data collection with adults was conducted in Gelsomino and Maria Vittoria. Italian data collection with children was conducted in Girasole and Tartaruga.

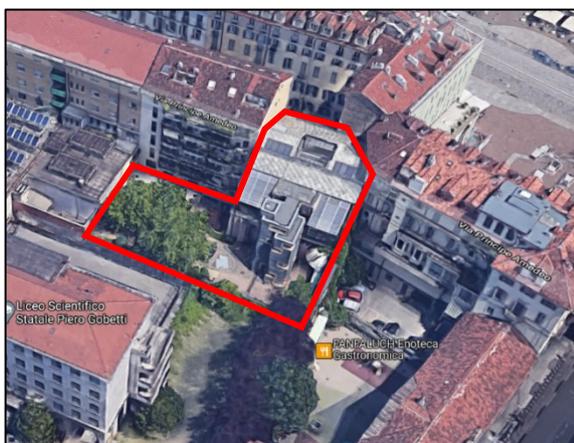
### *Gelsomino*



Gelsomino is an ECEC center placed in Parma, in a new residential area close to unbuilt lands. It included three classes of children from 0 to 3 years old and three classes of children from 3 to 6 years old, in mixed-aged groups. Classes and common spaces are in a one-story building, while offices and locker rooms for teachers are on the first floor. The building is surrounded by a

large garden and another little internal garden is accessible from the corridors.

### *Maria Vittoria*



Maria Vittoria is an ECEC center with three classes of children from 0 to 3 years old placed in the historic center of Turin. Classes and common spaces are in a three-storey building: entrance, offices and children's lockers are on the ground floor; two classes are on the first floor and one class is on the top floor. The building is surrounded by historic buildings and it has a small grass-free courtyard with few trees.

### *Girasoli*



Girasoli is an ECEC center placed in Parma, in a new residential area. It included three classes of children from 0 to 3 years old and three classes of children from 3 to 6 years old. Classes, common spaces, offices and all the internal rooms are in a one-story building. The building is surrounded by gardens accessible to children.

### *Tartaruga*



Tartaruga is an ECEC center placed in Parma, in a residential area. It included six classes of children from 3 to 6 years old. Classes, common spaces, offices and all the internal rooms are in a one-story building. The building is surrounded by other school buildings and it has a garden accessible to children and visible from each class.

### **Belgium**

Belgian data collection with both adults and children was conducted in De Tandem and Hippo's Hof.

### *De Tandem*



De Tandem is an ECEC center placed in Bruges, in a residential area. It included three classes of children from 0 to 4 years old. Classes, common spaces, offices and all internal rooms are in a one-story building. The building is part of a comprehensive school for children from 0 to 12 y.o. which consists of other two buildings and is surrounded by a large green area.

### *Hippo's Hof*



Hippo's Hof is an ECEC center placed in Ghent, in a residential area of the historic center. It included three mixed-age classes of children from 2,5 to 6 years. The building has two floors: kindergarten is on the ground floor while a primary school is on the first floor. The building is surrounded by other historic buildings and it has a grass-free courtyard with few trees.

### **Lithuania**

Lithuanian data collection with both adults and children was conducted in Aukštelkės mokykla-daugiafunkcis centras and Vaikystės Sodas'.

### *Aukštelkės mokykla-daugiafunkcis centras*



Aukštelkės mokykla-daugiafunkcis centras is an ECEC center placed in Aukštelkės, in a country area. It included three classes of children from 2 to 6 years old in groups according to the age of the children. It consists of a one-story building where classes and offices are located and it is surrounded by a large green area with grass and trees.

### *Vaikystės Sodas'*



Vaikystės Sodas' is an ECEC center placed in Vilnius, in a country area. It included classes of children from 1 to 6 years old in groups according to the age of the children. It consists of one building with two floors where classes and offices are located and it has a small free-grass courtyard garden with a few trees.

### **Local literature on ECEC spaces in Italy, Belgium and Lithuania**

Before starting the data collection, a review of the local literature of each country was conducted with the aim to explore the reflections and debates on ECEC spaces in Italy, Belgium and Lithuania. Besides the literature review reported in Chapter 1 on the scientific international peer-reviewed publications, this brief review included local contributes published in the national language of each country participating. The choice to include local European gray literature is due to the different framework it could provide by deepen some specific experiences of the countries involved and to take into account their perspective on space, often resulting from the concrete experience. To search for local publications, each participant country has consulted its local literature on the topic. All three research centers (UniPR, VBJK, UIC) and the six ECEC centers involved in the EDUCAS Project were involved in the literature search. Each partner could find any kind of publications (academic papers, research reports, grey literature, theoretical articles..) by consulting any kind of sources (online databases, books, journals, internal documentation of ECEC centers...). The search terms were: Physical Environment; Space; Materials; Outdoor; Indoor. About ECEC services; Early Childhood Education; Child Care; Day Care; Preschool; Kindergarten. On the basis of the aforementioned criteria, Italy provided 26 publications, Belgium provided 24 publications and Lithuania provided 25 publications. In total 75 publications were provided. Each publication found was coded and the main information was summarized by each partner on a prepared grid that allowed to extract information relevant for the analysis and to organize them on the basis of descriptive characteristics: title, authors, year, type of publication, source, abstract or summary, aims of the document, age of children, focus on (which aspects), which aspects of space, which perspectives, which methods, main findings, images, notes. The grid is reported in Figure 5.1.

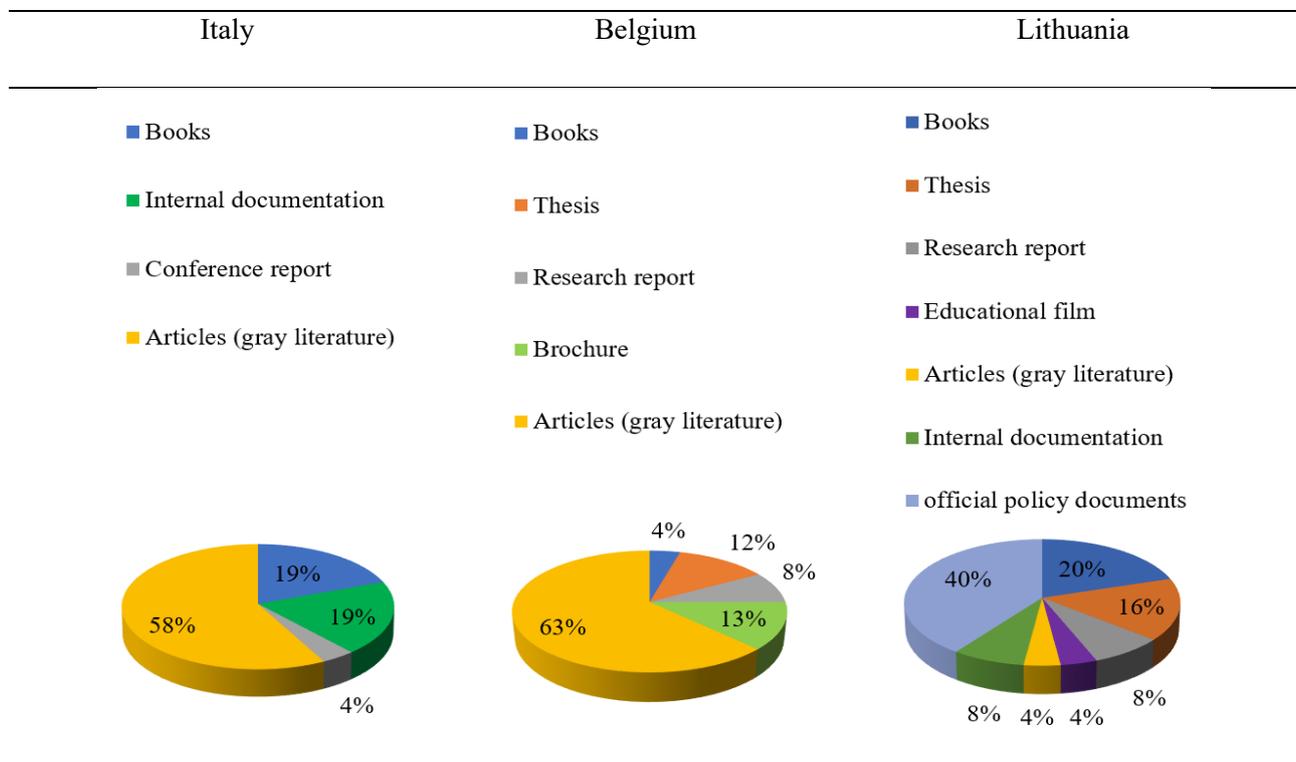
Figure 5.1 – Grid for the review of the local literature

Document Code	
Title	
Authors	
Year	
Type of publication	
Source	
Abstract or Summary	
Aims of the document	
Age of children	
Focus on (which aspects)	
Which aspects of space	
Which perspectives	
Which methods	
Main findings	
Images	
Notes	

Italy, Belgium and Lithuania provided literature from their country; in addition to Flemish studies, Belgium included 9 studies from the Netherlands (37,5% of the documents provided) because of the same language. The selected local publications were published from 1997 to 2019, with only 2 studies published before 2000 (2,67%), 25 studies from 2001 to 2010 (33,3%) and a prevalence of studies of the last ten years, from 2011 to 2019 (64%), with similar distribution in the three countries. It should be noted that almost all the documents provided were published after 2000 and 80% of them from 2009 to 2019. The thesis (bachelor's, master or PhD) were all drafted in the last five years, from 2014. This data suggest that European local realities are recently paying attention to the spatial aspects of ECEC services, considering them important for the proper development of children and putting a thought and a reflection on them.

In relation to the types of publications, Italy provided 5 books (19%), 5 internal documents from services (19%), 1 conference report (4%) and 15 articles from reviews belonging to the Italian gray literature on infancy (58%). Belgium provided 1 book (4%), 2 research reports (8%), 3 thesis (12.5%), 3 brochures (12.5%), and 15 articles from reviews belonging to the Belgian gray literature on infancy (63%). Lithuania

provided 5 books (20%), 1 article (4%), 1 film (4%), 2 internal documents from services (8%), 4 thesis (16%), 2 documents from international projects (8%) and 10 official policy documents of the Lithuanian government, as ministerial documents and municipality legislation (40%). Figure 5.2 is reported below.



In relation to the content of the studies, it emerged that each country gives attention to specific aspects and reflections on the physical environment, letting emerge its vision about the meanings of space in ECEC centers. Some of the main concepts that emerged are summarized as follows.

**Italy**

From the Italian local literature, it emerged that space should be considered a relational space: a dimension which should support affectivity, positive relationship and education. Space is co-constructed through relations: all the actors involved co-create meanings through materials and physical elements of the environment. Space should be thought and adapted in coherence with the pedagogical vision of the center and children should be educated to take care of it. Space should be child-centered and support the development of all children. Space should be subject of reflection for educational staff through concrete experiences. Space includes an important communicative dimension that allows to keep in touch with the internal world of the services and the external world. Space should enhance the participation of families and community; co-design experiences can facilitate this process.

## ***Belgium***

From the analysis of the Belgian local literature it emerged that space should support the development of a “rich and competent child”, by allowing autonomy and meeting the needs of all children. Space contributes to define the quality of a service and for this reason it should be coherent with the pedagogical vision of the ECEC center. Space can enhance the involvement of families and the relationship staff-families, through devices as the family wall (very used in Belgium) and the pedagogical documentation (still not much developed in the country). Outdoor space should be a thought place with different offers and the possibility of risks and adventures, to support motor development as well as children’s autonomy and self-esteem. Space can support the Educare approach: it should be organized and adapted in order to help children live “caring moments” in an autonomous and pleasant way, underlying the learning-socio-emotional experience of the “caring moments”. Recent research shows a clear hierarchy between care and education in ECEC services in Belgium (FL), which is also emphasized by the presence of ECEC assistants that have mainly “caring tasks”.

## ***Lithuania***

From the analysis of the Lithuanian local literature it emerged that space should be child-centered, with opportunities for children to play actively, make choices and take responsibility. Space should be enriched with a variety of educational environments to meet the changing needs and abilities of all children. Special attention should be given to spatial aspects that can support the development of children with special needs. The teaching team has a fundamental role in creating the environment and transforming it into a kind of laboratory where children may experiment many roles. Space needs specific requirements defined by the government to guarantee the proper establishment and maintenance of the preschool institutions. Space should be welcoming, accessible and comfortable and creates a sense of belonging, to enhance children’s wellbeing and involvement of families.

Although all three countries underline the importance of some issues, as a child-center approach, the thought of educators on space and the potential of the outdoor environment, some differences emerged between the main stressed topics in the three countries. Concerning the specific spatial aspects considered:

– Italian studies underline the relational aspect of space and report many real experiences of transformation and co-construction of space in the services. It emerges the idea of a generative space that

changes and evolves, adapting to always new needs of those who inhabit it. Italian literature also focuses on the importance of the involvement of educational staff and families in co-design processes and reflective practice on space issues: publications describe a lot of experiences of co-participatory design and staff reflection on ECEC environment.

– Belgian studies stress the overlap between education and care in many moments and spaces of the services, suggesting the need for an Educare approach, rather than a net division between the two, in terms of spaces, practices, and professional staff. Recent research shows that Belgian (FL) ECEC centers don't always work within an Educare approach, and that actually education and care are perceived as split in a hierarchic way. This is mainly due to the meaning historically given to ECEC centers and to the structural conditions of the ECEC system in Belgium (low staff qualifications, lack of involvement of assistants in CPD paths together with core practitioners, lack of childfree hours to reflect on practice, lack of pedagogical coordination etc.). Almost all the included studies from the Netherlands highlight the potential of outdoor spaces, underlining the importance of play in nature and possibilities for risks and adventures.

– Lithuanian studies show a significant interest of the government on spatial issues, with the production of many documents, recommendations, methodological tools and orders to provide indications for education professionals and designers. Lithuanian literature also pays attention to space as a dimension to enhance inclusion, in terms of promotion of equal opportunities for all children and participation of parents and communities.

These findings add evidence to the awareness that environmental issues should not be limited to understanding the direct influence of the physical features of the environment on children's behavior, in terms of static dimensions that affect development, in a deterministic conception. Rather, new conceptual frameworks should include the meanings given to space by both adults and children, the joint actions to co-construct them and the interconnection between the physical and the psychological environment.

The present transnational research was developed starting from all the aforementioned considerations on the opportunities to broaden personal visions through the knowledge of other countries' pedagogical realities and on the relevance of the quality of ECEC centers highlighted by the European policies. The research was aimed to explore the meanings of ECEC spaces in Italy, Belgium and Lithuania; it included a study on adult's experience and a study on children's experience.

## 5.1 The meanings of ECEC spaces in adults' experience in Italy, Belgium and Lithuania: an exploration through group interviews

### Aim

The aim of this study was to investigate the meanings of ECEC spaces in adults' experience in three European countries: Italy, Belgium and Lithuania. In particular, the study aimed to identify which factors guide the preferences about ECEC spaces by conducting a first exploration on parents' and teachers' representation and exploring the aspects relevant in adults' vision that orient the daily experience in ECEC centers.

### Method

#### Participants

Group interviews involved total 49 teachers and 36 parents in the three countries. In Italy participants were 20 teachers and 17 parents from two ECEC centers, placed in Parma and Turin: of the teachers, 2 were men and 18 women; of the parents, 5 were men and 12 women. In Belgium participants were 17 teachers and 7 parents from two ECEC centers, placed in Bruges and Ghent: of the teachers, 2 were men and 15 women; the parents were all women. In Lithuania participants were 12 teachers and 12 parents from two ECEC centers, placed in Austelke and Vilnius: all the teachers were women and of the parents, 2 were men and 10 women. The recruitment of the participants was facilitated by the pedagogical coordinators of the ECEC centers involved: they asked for face-to-face participation with all teachers and provided a printed letter to all the parents. Participation was voluntary and no incentives or compensation were provided. The study aims were explained to all the participants and assurances were given on the ethical processes of data collection. Data of participants in group interviews in the three countries are reported in Table 5.2.

*Table 5.2 - Participants in group interviews*

Country	Group	Total	Males	Females
Belgium	Parents	7	0	7
	Teachers	17	2	15
Italy				

Lithuania	Parents	17	5	12
	Teachers	20	2	18
	Parents	12	2	10
	Teachers	12	6	6

### Instruments and procedure

The group interviews were organized in the ECEC centers. During the group interview the conductor, the assistant and the participants all sat around a table. A map of the ECEC center was placed in the middle of the table and four open questions were proposed to the participants. Questions are reported in Table 5.3.

*Table 5.3 – Questions of the group interview*

Thematic area	Question
Adults' preferences	“Is there a place in this center that you like most of all and if so, why?”
Reason for adults' preferences	“Is there a place in this center that you don't like very much and if not, why?”
Children's preferences	“Is there a place in this center that your child (for parents)/the children (for teachers) like most of all and if so, why?”
Reasons for children's preferences	“Is there a place in this center that your child (for parents)/the children (for teachers) don't like very much and if so, why?”.

The conductor asked each question to the group and each participant one at time, in random order, answered, expressed his/her own point of view, also referring to the answers of others and commenting on them. The conductor also asked the participants to indicate the places described in the answers on the map. The group interviews were audio and video recorded and a verbatim transcription was made for each recording and translated into English language.

## **Analysis**

Two researchers conducted a content analysis on the verbatim transcription of the meetings, to identify the main elements that should characterize ECEC spaces in adults' vision and to define some categories that represent the reasons of participants for their preferences about spaces. In order to define the categories, two independent raters analyzed the whole transcriptions of the interviews and assigned each proposition to the defined categories. The unit of analysis was each answer of a participant to the same question. The analysis included 217 sentences of the group interview in Italy, 143 in Belgium and 43 in Lithuania. The analysis follows the same rules defined in Study 1 for the Italian context: 1) If a participant used the same category for answering the same question (for example, expressing the same concept in more than one proposition), the raters should indicate the category just once; 2) If a participant used more than one category in the same answer but in different sentences (for example, exposing a complex discussion which includes many aspects), the raters should indicate all the identified categories; 3) If a rater could assign more than one category to the same sentence, he/she should choose the more significant aspect of the sentence and assign just one category. The agreement index between the two raters was acceptable for all categories considered (Cohen's K: range 0.75-0.85). Finally, the frequency of the categories used in answering all the four questions of the interviews by both parents and teachers were analyzed. Given the small sample and the difference in the number of sentences analyzed in each country, this analysis has included both parents' and teachers' answers to all the four questions, in order to have a preliminary insight on similarities and differences across countries in the attribution of meanings to space. What emerged from the analysis was also discussed with the research centers and coordinators of ECEC centers of each country to help the contextualization and interpretation of the results.

## **Results**

### **Factors influencing preferences and non-preferences about space**

From the content analysis of the verbatim transcriptions of the group interview five main categories were identified; through these categories participants seem to motivate their preferences and non-preferences about spaces. Categories are reported in Table 5.4 and described as follows.

Table 5.4 - Categories derived from the content analysis

Categories
C1 - Space that favors play, learning and sensations
C2 - Space that favors relations
C3 – Space that is felt and thought
C4 – Space that connects
C5 – Space that has some physical characteristics

***C1: Space that favors play, learning and sensations***

The first category, C1, is named “Space that favors play, learning and sensations” and it refers to preferences moved by the possibility that space offers in terms of actions or sensations. The category was observed in all three countries. Some extracts from the interviews in each country are reported in Table 5.5.

Table 5.5 – Extracts from the group interviews in the three countries that refer to C1

Country	Extracts from the group interviews
Italy	<p>«I like the peekaboo space because I stay in there with the children and, <b>reading, singing or simply telling stories, we are fine</b>» [Maria Vittoria]</p> <p>«I like the entrance because when I arrive at the entrance <b>I feel that sensation of well-being that the whole structure transmits to me</b>» [Gelsomino]</p>
Belgium	<p>«In the hall, for example in the evening at half six or so, <b>we gather there for a booklet to read or so, or just I often call that “coffee chatter”, but the kids find that super fun.</b>» [Hippo’s Hof]</p> <p>«That place in the garden (...) There I find always <b>a very nice atmosphere</b> with the food forest next to it and <b>that green that gives you peace.</b>» [De Tandem]</p>
Lithuania	<p>«I would think yard. We don't run in the classroom and <b>we can do it outside.</b>» [Sodelis]</p> <p>«<b>You feel much more free, more space. Children exude energy, joy.</b>» [Austelke]</p>

## **C2: Space that favors relations**

The second category, C2, is named “Space that favors relations” and it refers to preferences moved by the possibility to establish or carry on relations with other people. The category was observed in all three countries. Some extracts from the interviews in each country are reported in Table 5.6.

Table 5.6 – Extracts from the group interviews in the three countries that refer to C2

Country	Extracts from the group interviews
Italy	<p><i>"I like the entrance and welcoming space because it is really an agora, so <b>there are parents who meet ... It's noisy, but there is life, and there are relationships</b>" [Maria Vittoria]</i></p> <p><i>"That is a particular place because for us (0-3) it is a connection with the kindergarten (3-6), so children often come from the kindergarten, and we know many of them and then <b>it is often an opportunity to see each other, keep in touch again</b>" [Gelsomino]</i></p>
Belgium	<p><i>«Here you come into the building along the hall, <b>you have the hall where you meet everyone</b>. At the previous school we had nothing like that.» [Hippo's Hof]</i></p> <p><i>«I think it's nice that they go in groups out of the living space and <b>they get mixed with other children</b>.» [De Tandem]</i></p>
Lithuania	<p><i>«They like <b>to go to a different group</b> as guests because of new toys, <b>new kids</b>. (...) It is sometimes useful to come and <b>enjoy the guests</b>. [Austelke]</i></p> <p><i>«When I bring my kids to kindergarten, <b>they are in different groups</b>, but I see that I really like it. My son is timid and has difficulty to adapt to the environment, but with their help it is very successful and everything is fine.» [Austelke]</i></p>

### ***C3: Space that is felt and thought***

The third category, C3, is named “Space that is felt and thought” and it refers to preferences moved by the sensation of belonging and the feeling of having contributed to the creation of the space. The category was observed in all three countries. Some extracts from the interviews in each country are reported in Table 5.7.

*Table 5.7 – Extracts from the group interviews in the three countries that refer to C3*

Country	Extracts from the group interviews
Italy	<p>«This year <b>I had the opportunity to make changes in the space</b> and so I feel it much more mine ... I feel fine» [Gelsomino]</p> <p>«We dedicated a lot to the pretend play space, so <b>that place was very well thought out</b> and it is a space that all teachers can share» [Maria Vittoria]</p>
Belgium	<p>«I chose the multipurpose room, because I like to move with the toddlers and because that is good, with the music system and so... And also because <b>the celebrations are there too and because that is an important part of... Our school.</b>» [Hippo's Hof]</p> <p>«I like also the space where I can take decisions (...) <b>I arrange the space to focus on what I choose for myself</b> and I like this very much » [De Tandem]</p>
Lithuania	<p>«I like my class. Because the classes that we are responsible for, are <b>set up as we like.</b>» [Sodelis]</p> <p>«Since I started working in the autumn, we were in another class, and now we moved to larger rooms. I somehow found it easier to breathe when we moved into a new space and then <b>we could create it for ourselves.</b> It's more fun now for me to have that other space.» [Austelke]</p>

#### **C4: Space that connects**

The fourth category, C4, is named “Space that connects” and it refers to preferences moved by the feeling that there is a connection between inside and outside, in the sense of both indoors/outdoors or center/world. The category was observed in all three countries. Some extracts from the interviews in each country are reported in Table 5.8.

Table 5.8 – Extracts from the group interviews in the three countries that refer to C4

Country	Extracts from the group interviews
Italy	<p>«The glass windows are fantastic, <b>my child likes to look outside</b>: the construction sites, the garden, the arrivals .. a world..» [Maria Vittoria]</p> <p>«I asked her [a child] ‘Why do you like being here so much?’ And she answered ‘Because this is the secret part of the garden <b>and it is near the house of the nannies</b>’» [Gelsomino]</p>
Belgium	<p>«We actually started on the other side... And I found that place more nice <b>with that window on the outside</b> and so, but then we had to move.» [De Tandem]</p> <p>«I actually find this is the nicest place, because you also have the swing window there and <b>I find that a very nice aspect is that you see the people pass by, the parents see you leave and forward</b>, and also for the kids it’s the last time they could go to their mum and dad. This leads to very nice scenes. So parents who do peekaboo games to the window or so.» [De Tandem]</p>
Lithuania	<p>«Sometimes we don't go to the playground but go for a walk. If the weather is kind of wet and we don't want the kids to get dirty, <b>we go for a walk. A walk around the village.</b>» [Austelke]</p> <p>«We had a goose domesticated last year. <b>The geese could hear from afar that the children were coming and clapping.</b> it was very interesting for children.» [Austelke]</p>

### ***C5: Space that has some physical characteristics***

The fifth category, C5, is named “Space that has some physical characteristics” and it refers to preferences moved by the feeling of beauty and adequacy, including aesthetics and functionality. The category was observed in all three countries. Some extracts from the interviews in each country are reported in Table 5.9.

*Table 5.9 – Extracts from the group interviews in the three countries that refer to C5*

Country	Extracts from the group interviews
Italy	<p>«The reading corner is very nice with <b>those lights and that small curtain</b> at the entrance, it is really <b>a beautiful place also aesthetically</b>» [Maria Vittoria]</p> <p>«Even the bathrooms are beautiful because they are <b>suitable for children, with a small sink, with low shelves, low chairs, cushions ..</b>» [Gelsomino]</p>
Belgium	<p>«It is important that the rooms have <b>a lot of light</b>. I don't like those first two spaces, I'm not that happy there, because I love daylight.» [De Tandem]</p> <p>«I have chosen the playground with the trees, because when the trees have leaves in summer and spring <b>there is shadow and half shade there.</b>» [Hippo's Hof]</p>
Lithuania	<p>«the classroom itself is <b>big enough and bright enough</b>. On one hand, you see that everything in it is structured - for space and space for children. You can visually see what the zone is for, but at the same time there is no spirit of such an institution, <b>the place is really cute.</b>» [Sodelis]</p> <p>«For me <b>those tables are good</b>, if the tutors come up with something to do, the children sit there and something works.» [Austelke]</p>

### Frequency of categories from the group interviews

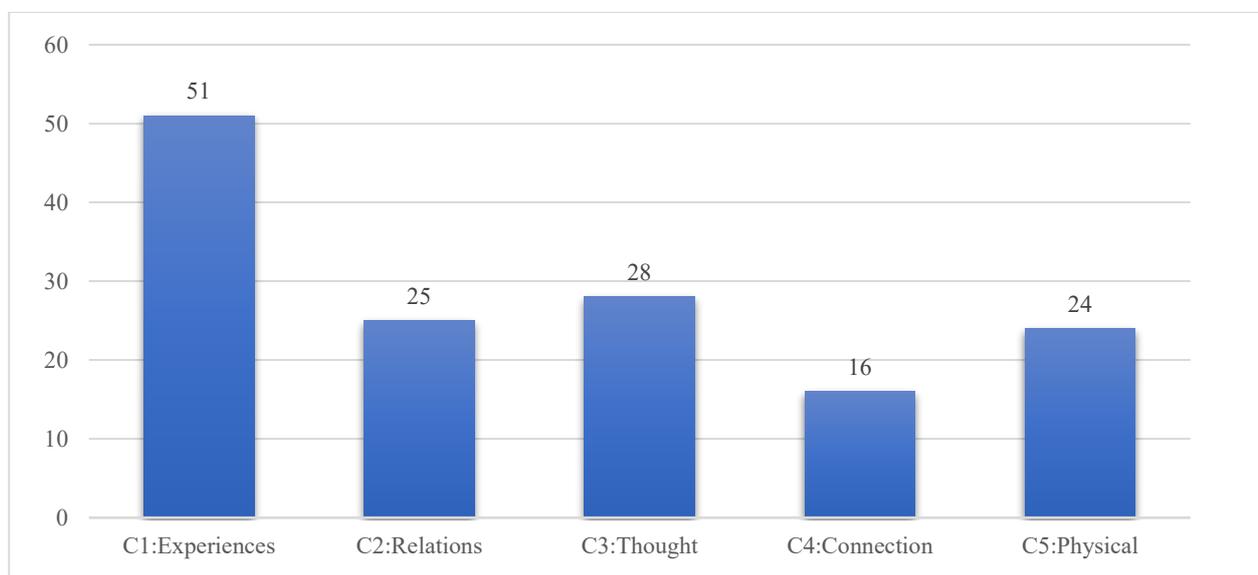
The frequency of the categories was analyzed considering both parents' and teachers' answers to all the four questions of the interviews.

In the Italian group interviews it was found that C1 was the most used category (35.17%), followed by C3 (19.31%), C2 (17.24%), C5 (16.55%) and C4 (11.72%). The number of answers relating to each category and percentages on the total answers are reported in Table 5.10 and Figure 5.3.

Table 5.10 – Frequency of categories in Italy

Category	Number	Percentage
C1 - Experiences	51	35.17%
C2 - Relations	25	17.24%
C3 - Thought	28	19.31%
C4 - Connection	17	11.72%
C5 – Physical aspects	24	16.55%

Figure 5.3 – Frequency of categories in Italy

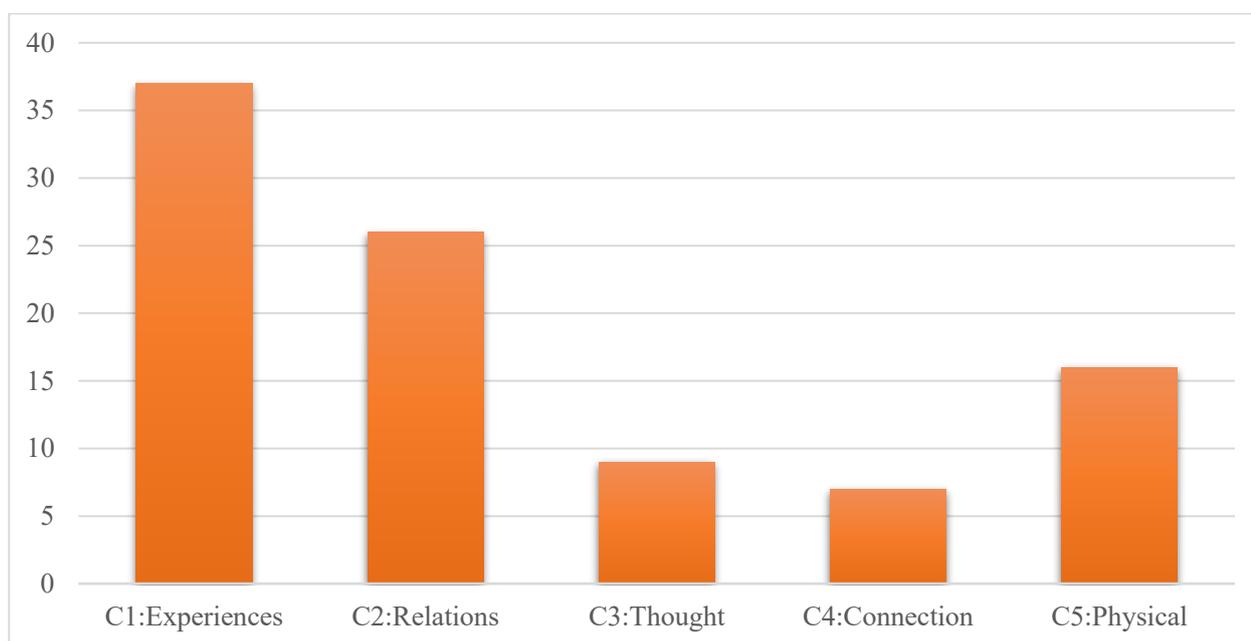


In the Belgian group interviews it was found that C1 was the most used category (38.95%), followed by C2 (27.37%), C5 (16.84%), C3 (9.47%) and C4 (7.37%). The number of answers relating to each category and percentages on the total answers are reported in Table 5.11 and Figure 5.4.

Table 5.11 – Frequency of categories in Belgium

Category	Number	Percentage
C1 - Experiences	37	38.95%
C2 - Relations	26	27.37%
C3 - Thought	9	9.47%
C4 - Connection	7	7.37%
C5 – Physical aspects	16	16.84%

Figure 5.4 – Frequency of categories in Belgium

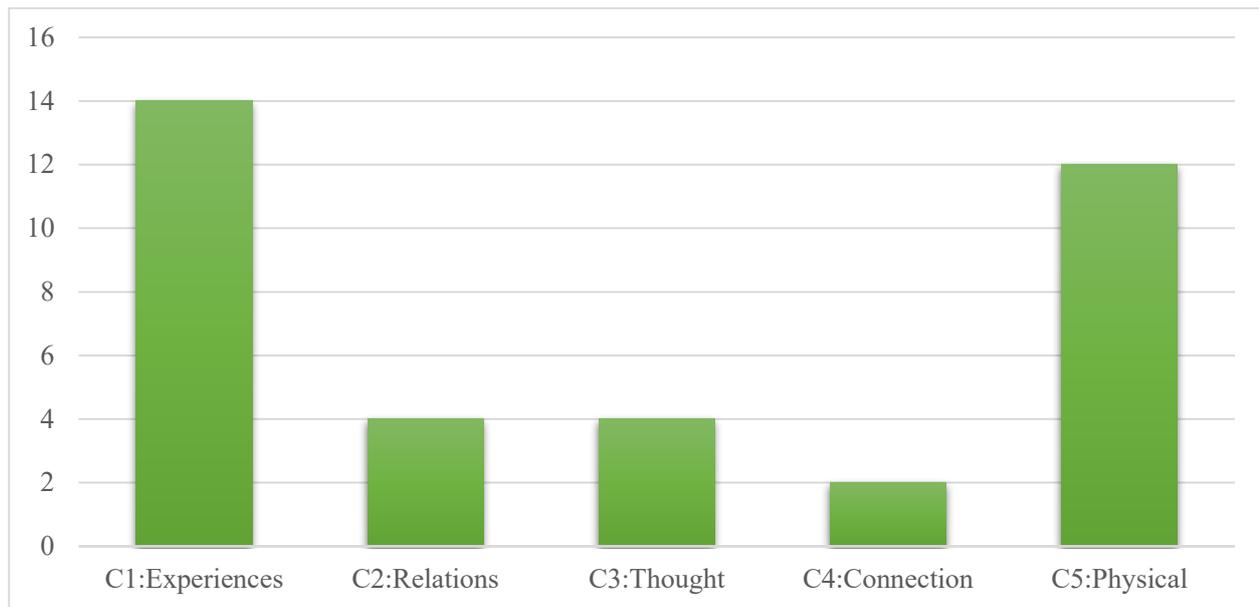


In the Lithuanian group interviews it was found that C1 was the most used category (38.89%), followed by C5 (33.33%), C2 (11.11%), C3 (11.11%) and C4 (5.56%). The number of answers relating to each category and percentages on the total answers are reported in Table 5.12 and Figure 5.5.

Table 5.12 – Frequency of categories in Lithuania

Category	Number	Percentage
C1	14	38.89%
C2	4	11.11%
C3	4	11.11%
C4	2	5.56%
C5	12	33.33%

Figure 5.5 – Frequency of categories in Lithuania



### Discussion

The current study allows to reflect on the meanings that may be given to space in different countries and from the different perspectives of parents, teachers, assistants and coordinators. It was interesting to note that in all three countries teachers and parents referred to the same categories of meanings. The participants in the 3 countries often use similar sentences and similar concepts while talking about their preferences on space; this may mean that there are common visions and values about the ECEC spaces across countries. Analyzing the frequency of the categories used in answering all the four questions of the interviews by both parents and teachers, some similarities and differences were observed across countries. First, it was found that the most used category in all three countries was C1 ‘Space that favors experiences’: for participants the opportunity that space offers in terms of actions or sensations seems to be the most important role of ECEC spaces. Second, the less used category in all three countries was C4: ‘Space that connects inside and outside’: it seems a very appreciated aspect of space which emerges spontaneously by the sentences of participants, but among the five categories, the connection between inside and outside seems to be the less relevant. Third, the second most used category varies across the countries: in Italy it was C3: ‘Space that is felt and thought’; in Belgium it was C2: ‘Space that favors relations’; in Lithuania it was C5: ‘Space that has some physical characteristics’. Although there’s a common vision in all countries, emerging from the most and less used categories, this finding on the second choices indicates slight differences in the meanings given to space

that may reflect slight differences in pedagogical visions and approaches to space, too. The discussion with the researchers and pedagogical coordinators of each country helped the interpretation of these results. The Italian accent on the thought on space seems to reflect the importance that is given to participation in the ECEC centers involved: many team reflections were in fact oriented to the co-design of spaces and this may explain the result. The Belgian accent on the relational aspect of space seems to reflect the relevance of relations in the pedagogical view of the centers involved: since Belgium has an important history of immigration and it is today challenged by super-diversity, much investment is provided on relations also in ECEC centers, which invest on the involvement of families and children, with special attention to the ones with a disadvantaged background. This contextual framework may explain the accent given to the relational aspect also on space issues. The Lithuanian accent on the physical characteristics of space seems to reflect the approach to space suggested by local policies that give many indications on the physical characteristics that spaces should have in terms of size, light, materials, etc... This political approach may have influenced the vision of space also in teachers and parents who live the ECEC centers daily.

### **Limitations**

The finding from this study should be taken in the light of several limitations. In relation to the group interviews it should be observed that the 5 identified categories were the same identified in Study 1 with the Italian sample. Since the analysis was conducted by Italian researchers it may reflect Italian vision and approach to space and Belgian and Lithuanian group interviews may have been read through “Italian lens”, then other meanings of space, more typical in other vision may not have been caught. In addition, the English translations of Belgian and Lithuanian interviews didn’t allow us to catch all the “nuance of meaning” of the concepts expressed and it might contain errors that could have caused misunderstandings about some words or phrases. Furthermore, the Italian group interviews were much longer than the others, in fact the analysis have been done on 217 sentences in Italy, 143 in Belgium and 43 in Lithuania. This difference may have influenced the results. Finally, the small sample doesn’t allow to generalize the results, since the categories and their frequency in each country may be representative of the specific contexts of the ECEC centers where group interviews were conducted and not of the whole country. Taking these specifications into account, the comparative insights that emerged may however stimulate reflections on the different accents that may be posed on ECEC spaces, affecting their vision and use.

## 5.2 The meanings of ECEC spaces in adults' experience in Italy, Belgium and Lithuania: an investigation through questionnaires

### Aim

The main study was aimed to investigate the meanings of space in adult's experience, starting from the results of the preliminary study. In particular, the purposes of the study were: 1) to identify the preferences and non-preferences about ECEC spaces and the main reasons given to them; 2) to investigate adults' perception and thoughts on spaces for care, as eating, sleeping and toilet spaces; 3) to explore participants' visions about outdoor spaces.

### Method

#### Participants

Questionnaires involved 1091 participants in Italy, 166 in Belgium and 166 in Lithuania. In Italy participants were 18% parents, 64% teachers, 16% assistants and 3% coordinators. In Belgium participants were 66% parents, 4% teachers, 16% assistants and 14% coordinators. In Lithuania participants were 13% parents, 59% teachers, 18% assistants and 10% coordinators. Data of participants in the online questionnaires in the three countries are reported in Table 5.13. Graphics are reported in Figure 5.6 (Appendix 5).

*Table 5.13 - Participants in online questionnaires in the three countries*

Country	Group	Total
Italy	Parents	18%
	<b>Teachers</b>	<b>64%</b>
	Assistants	16%
	Coordinators	3%
Belgium	<b>Parents</b>	<b>66%</b>
	Teachers	4%
	Assistants	16%
	Coordinators	14%
Lithuania	Parents	13%
	<b>Teachers</b>	<b>59%</b>
	Assistants	18%
	Coordinators	10%

Participants belonged to different types of ECEC centers: in Italy 54% of participants belonged to nido d'infanzia (0-3 years old), 41% to scuola dell'infanzia (3-6 years old) and 5% to servizio integrato (0-6 years old); in Belgium 49% of participants belonged to kinderopvang (0-3 years old), 28% to kleuterschool (2.5-6 years old), 10% to buitenschoolse opvang (2.5-6 years old), and 13% to kleuterschool en buitenschoolse opvang (2.5-6 years old); in Lithuania 87% of participants belonged to Ikimokyklinio ugdymo įstaiga, vaikų amžius (0-6 years old), 9% to Mokykla-darželis, vaikų amžius (0-11 years old) and 4% to Mokykla daugiafunkcinis centras, vaikų amžius (0-17 years old). Data of the ECEC centers participating in the online questionnaires in the three countries are reported in Table 5.14. Graphics are reported in Figure 5.7 (Appendix 5).

*Table 5.14 - Centers participating in the online questionnaires in the three countries*

Country	Group (range of age)	Total
Italy	<b>Nido d'infanzia (0-3)</b>	<b>54%</b>
	Scuola dell'infanzia (3-6)	41%
	Servizio integrato (0-6)	5%
Belgium	<b>Kinderopvang (0-3)</b>	<b>49%</b>
	Kleuterschool (2.5-6)	28%
	Buitenschoolse opvang (2.5-6)	10%
	Kleuterschool en buitenschoolse opvang (2.5-6)	13%
Lithuania	<b>Ikimokyklinio ugdymo įstaiga, vaikų amžius (0-6)</b>	<b>87%</b>
	Mokykla-darželis, vaikų amžius (0-11)	9%
	Mokykla daugiafunkcinis centras, vaikų amžius (0-17)	4%

## **Instruments and procedure**

The questionnaires were introduced to the directors and pedagogical coordinators of the three countries by the local research centers. The directors and coordinators then introduced the questionnaires to their pedagogical staff and families. Participation was voluntary and no incentives or compensation were provided. The study aims were explained to all the participants and assurances were given on the ethical processes of data collection. The first page of the questionnaire introduced the research with the following formula: *“Hi! This questionnaire is addressed to families and professionals (coordinators, teachers, educators, assistants ...) of Early Childhood Education and Care (ECEC) services. In particular, we would like to collect some information on how the spaces of ECEC services are experienced and perceived by those*

*who live them daily, in order to make them always better and suitable for the needs of adults and children. This is a short questionnaire, it will take less than 10 minutes to be filled in. You will find some questions about the spaces of your service. You should answer on the basis of your experience: we are interested in your personal opinion, therefore there are no right or wrong answers. Participation is voluntary. The collected data will be stored and processed in an absolutely anonymous and aggregated form, in accordance with the European privacy legislation (EU) 2016/679 (so-called GDPR). For any clarification, you can contact the scientific representatives of the project.”*

After consent to participate in the questionnaire, some data were asked about the anagraphics of the participant (role, age, gender, nationality, education), the type of ECEC center to which he/she would refer in the compilation, the age of the child (only for parents) and the duration of work in the center (only for staff). Then the questionnaire proposed 23 questions on six main areas: A)the space you prefer (3 questions); B)the space you like least (3 questions); C)the eating space (4 questions); D)the sleeping space (4 questions); E)the toilet space (4 questions); F)the outdoor space (5 questions). About the favorite space, three questions were asked: A1)Is your favorite space an indoor space (class, hall, etc ...) or an outdoor space (garden, courtyard, etc ...)?; A2)Among the interior spaces, which is your favorite space?; A3)Why is this space your favorite? About the least favorite space, three questions were asked: B1)Is your least favorite space an indoor space (class, hall, etc ...) or an outdoor space (garden, courtyard, etc ...)?; B2)Among the interior spaces, which is your least favorite space?; B3)Why is this space your least favorite? About the eating, sleeping and toilet spaces, four questions were asked: C/D/E1)Where is the eating/sleeping/toilet space in your ECEC center?; C/D/E2) In the eating/sleeping/toilet space it is important that there is ... Please order the following aspects from the most important to the least important; C/D/E3)Here you can find some statements. Please tell us, for each statement, how much you agree or disagree. The aspects of questions C/D/E2 and the statements of questions C/D/E3 were different for each ‘caring’ space and they were derived from what emerged in group interviews of the preliminary study. About the outdoor space, five questions were asked: F1)How is the outdoor space of the ECEC center (grassy, paved...)?; F2)Do you think that the outdoor spaces in your service are adequate?; F3)How could outdoor spaces be improved? (if it was answered ‘no’ to the previous question) or What are the strengths of the outdoor spaces of your service? (if it was answered ‘yes’ to the previous question. F4)Here below you can find some statements. Please tell us, for each statement, how

much you agree or disagree. F5) I think children should use the outdoor spaces ... Please, for each option indicate how much you agree or disagree. The statements of questions F4 and F5 were derived from what emerged in group interviews of the preliminary study. At the end of the questionnaire, an optional question was asked for any comments from the participant: *“If you want to clarify some of your answers or if there is something else you want to tell us about the spaces of your service you can write it below.”*. Then the participant was thanked using the following formula: *“Thank you for taking the time to fill in the questionnaire! Your answers have been recorded and will be very useful in trying to improve early childhood services even more. Thank you!”* A scheme of the questionnaire is reported in Table 5.15. The complete version of the questionnaire is reported in Appendix 2.

*Table 5.15 – Scheme of the questionnaire*

Section	Questions
Introduction and consent	
Anagraphics	
A – Favorite space	A1 - Is your favorite space an indoor space or an outdoor space? A2 - Among the interior spaces, which is your favorite space?; A3 - Why is this space your favorite?
B – Least favorite space	B1 - Is your least favorite space an indoor space or an outdoor space? B2 - Among the interior spaces, which is your least favorite space?; B3 - Why is this space your least favorite?
C – Eating space	C1 - Where is the eating space in your ECEC center?; C2 - In the eating space it is important that there is... (aspects to order) C3 - How much you agree or disagree with these statements? C4 – The most important aspects for an eating space is... (open)
D – Sleeping space	D1 - Where is the sleeping space in your ECEC center?; D2 - In the sleeping space it is important that there is... (aspects to order) D3 - How much you agree or disagree with these statements? D4 – The most important aspects for a sleeping space is... (open)
E – Toilet space	E1 - Where is the toilet space in your ECEC center? E2 - In the toilet space it is important that there is... (aspects to order) E3 - How much you agree or disagree with these statements? E4 – The most important aspects for a toilet space is... (open)
F – Outdoor space	F1 - How is the outdoor space of the ECEC center? F2 - Do you think that your ECEC outdoor spaces are adequate? F3 – Which are the strengths/limitation of your ECEC outdoor space?

F4 - How much you agree or disagree with these statements?

F5 - I think children should use the outdoor spaces... (weather options)

Optional comments

Thanks

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## Analysis

In relation to questionnaires, the analysis was conducted with IBM SPSS (Statistical Package for Social Science) Statistics for Windows, Version 21.0 (SPSS). Frequencies analyses were carried out with SPSS, in order to assess the distribution of the variables across countries. The computerised system used to administer the questionnaires did not allow the participant to proceed with the compilation in case of non-answer to a question. The non-complete questionnaires were not considered valid and were not included in the analyses. What emerged from the analysis was also discussed with the research centers and coordinators of ECEC centers of each country to help the contextualization and interpretation of the results.

## Results

### Favorite space

In relation to A1 question on the favorite space, it was found that most participants indicated an outdoor space in Italy (58.8%) and Belgium (63.3%) and an indoor space in Lithuania (66.5%). Percentages and numbers are reported in Table 5.16. Graphics are reported in Figure 5.8, 5.9, 5.10 (Appendix 5).

Table 5.16 – Preferences about indoor or outdoor spaces in each country

Country	Indoor space		Outdoor space	
	%	n	%	n
Italy	41,2%	435	58,8%	622
Belgium	31,7%	44	68,3%	95
Lithuania	66,5%	103	33,5%	52

Distinguishing the preferences of the groups of participants, the favorite space was found to be an outdoor space for all groups in Italy, for parents, teachers and assistants in Belgium, while Belgian coordinators prefer indoor spaces, and for parents and coordinators in Lithuania, while Lithuanian teachers and assistants prefer indoor spaces. The percentages are reported in Table 5.17.

*Table 5.17 – Indoor and outdoor location of the favorite spaces for each group in each country*

Country	Parents		Teachers		Assistants		Coordinators	
	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor
Italy	39,5%	60,5%	40,8%	59,2%	37,9%	62,1%	45,1%	54,9%
Belgium	20,7%	79,3%	33,3%	66,7%	44,0%	56,0%	62,5%	37,5%
Lithuania	36,8%	63,2%	77,4%	22,6%	58,3%	41,7%	46,7%	53,3%

In relation to A2 question on the indoor favorite space, it was found that most participants indicated the class as the favorite one in all countries. Then hall, atelier, entrance and library were the most popular choices in all countries. the most favorite spaces for each group in each country are reported in Table 5.18, 5.19 and 5.20. Graphics are reported in Figure 5.11, 5.12, 5.13 (Appendix 5).

*Table 5.18 - Most favorite spaces for each group in Italy*

Space	Parents	Teachers	Assistants	Coordinators
Class	43.8%	67.1%	31.2%	36.4%
Hall	30.3%	10.0%	31.2%	9.1%
Atelier	11.4%	11.4%	7.0%	27.3%
Entrance	1.1%	0.7%	8.3%	1.1%
Library	1.1%	2.5%	3.8%	9.1%
Windows	2.7%	3.4%	4.5%	3.0%

*Table 5.19 - Most favorite spaces for each group in Belgium*

Space	Parents	Teachers	Assistants	Coordinators
Class	77.0%	83.3%	76.0%	52.4%
Atelier	3.4%	0.0%	8.0%	23.8%
Entrance	5.7%	0.0%	0.0%	14.3%
Library	1.1%	16.7%	0.0%	0.0%
Windows	0.0%	0.0%	0.0%	4.8%

*Table 5.20 - Most favorite spaces for each group in Lithuania*

Space	Parents	Teachers	Assistants	Coordinators
Class	52.6%	80.7%	50.0%	40.0%
Atelier	0.0%	4.3%	7.1%	20.0%
Hall	5.3%	7.5%	7.2%	0.0%
Library	15.8%	3.2%	10.7%	0.0%
Office	5.3%	0.0%	0.0%	6.7%

In relation to A3 question, the main reasons indicated for preferences were found to be the same in all countries: children can feel good emotions, children can carry on nice activities, adults can enjoy nice moments with children, children can meet, the beauty of the space. The presence of a nice light was also found to be relevant for all groups in Italy. The time spent in the space resulted to be relevant for teachers in Belgium and for coordinators in Lithuania. The mean scores of the main reasons for preferences for each group in each country are reported in Table 5.21, 5.22 and 5.23. Graphics are reported in figure 5.14, 5.15 and 5.16 (Appendix 5).

*Table 5.21 – Main reasons for preferences for each group in Italy*

Reason	Parents	Teachers	Assistants	Coordinators
Children's emotions	12.4	17.1	12.9	25.1
Children's activities	12.7	11.8	7.7	11.7
Adults and children enjoy	0.0	15.3	9.7	4.3
Children can meet	10.2	14.9	11.0	14.0
Beauty	6.6	7.6	5.4	4.6
There's a nice light	7.7	4.3	5.1	6.9

*Table 5.22 – Main reasons for preferences for each group in Belgium*

Reason	Parents	Teachers	Assistants	Coordinators
Children's emotions	2.5	3.3	13.0	2.9
Children's activities	18.5	16.7	16.7	13.3
Adults and children enjoy	16.2	6.7	20.7	20.4
Children can meet	10.6	8.3	9.3	5.8
Beauty	7.0	3.3	3.3	8.8
Lot of time spent there	0.0	21.7	10.4	0.0

*Table 5.23 – Main reasons for preferences for each group in Lithuania*

Reason	Parents	Teachers	Assistants	Coordinators
Children's emotions	5.9	5.0	3.4	4.1
Children's activities	3.2	5.9	5.5	7.1
Adults and children enjoy	0.0	0.9	4.5	2.4
Children can meet	1.4	1.2	3.4	4.7
Beauty	1.8	1.3	1.0	6.5
Lot of time spent there	0.9	3.8	0.0	5.3

### Least favorite space

In relation to B1 question on the least favorite space, it was found that most participants in all countries indicated an indoor space. Percentages and numbers are reported in Table 5.24. Graphics are reported in figure 5.17, 5.18, 5.19 (Appendix 5).

*Table 5.24 – Indoor and outdoor location of the least favorite spaces for each group in each country*

Country	Parents		Teachers		Assistants		Coordinators	
	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor
Italy	79.4%	20.6%	89.7%	10.3%	84.9%	15.1%	84.8%	15.2%
Belgium	88.2%	11.8%	100.0%	0.0%	64.0%	36.0%	60.0%	40.0%
Lithuania	78.6%	21.4%	55.2%	44.8%	63.6%	36.4%	84.6%	15.4%

In relation to B2 question on the indoor least favorite space, different answers were provided in each country. The most favorite spaces for each group in each country are reported in Table 5.25, 5.26, 5.27. Graphics are reported in figure 5.20, 5.21 and 5.22 (Appendix 5).

*Table 5.25 - Least favorite spaces for each group in Italy*

Space	Parents	Teachers	Assistants	Coordinators
Welcoming space	<b>17.1%</b>	12.4%	<b>17.1%</b>	<b>24.2%</b>
Corridor	10.5%	15.5%	13.8%	15.2%
Hall	3.5%	<b>23.1%</b>	8.6%	9.1%
Class	0.0%	0.2%	6.6%	12.1%
Sleeping space	15.3%	7.1%	14.5%	6.1%
Toilet space	9.4%	11.0%	6.6%	6.1%
Office	7.6%	9.4%	14.5%	18.2%

*Table 5.26 - Least favorite spaces for each group in Belgium*

Space	Parents	Teachers	Assistants	Coordinators
Welcoming space	11.8%	0.0%	0.0%	20.0%
Corridor	20.6%	0.0%	16.0%	<b>25.0%</b>
Sleeping space	7.4%	0.0%	16.0%	20.0%
Eating space	4.0%	0.0%	12.0%	5.0%
Toilet space	<b>29.4%</b>	<b>75.0%</b>	<b>44.0%</b>	15.0%
Space for educators	0.0%	25.0%	4.0%	0.0%
Office	2.9%	0.0%	0.0%	10.0%

Table 5.27 - Least favorite spaces for each group in Lithuania

Space	Parents	Teachers	Assistants	Coordinators
Welcoming space	21.4%	1.8%	4.5%	15.4%
Corridor	<b>28.6%</b>	16.1%	27.3%	15.4%
Hall	21.4%	5.7%	9.1%	<b>23.1%</b>
Sleeping space	14.3%	5.7%	13.6%	5.4%
Eating space	0.0%	8.0%	4.5%	0,0%
Toilet space	14.3%	<b>23.0%</b>	<b>31.8%</b>	15.4%
Windows	0.0%	1.1%	0.0%	7.7%

In relation to B3 question, the main reason indicated for the non-preferences was the non-functionality for all groups in Italy. It was the non-beauty of children’s activities for parents, assistants and coordinators and the non-functionality for teachers in Belgium. It was the non-facilitation of children’s activities for parents and assistants, the non-functionality for teachers and the non-beauty for coordinators in Lithuania. The mean scores of the main reasons for preferences for each group in each country are reported in Table 5.28, 5.29 and 5.30. Graphics are reported in figure 5.23, 5.24 and 5.25 (Appendix 5).

Table 5.28 – Main reasons for preferences for each group in Italy

Reason	Parents	Teachers	Assistants	Coordinators
It’s not functional	<b>4.0</b>	<b>12.1</b>	<b>9.9</b>	<b>13.7</b>
It’ noisy	0.5	6.4	1.7	4.0
It’s not thought	3.7	7.1	4.2	5.7
It’s not defined	2.7	3.4	1.6	7.4
It’s not beautiful	2.9	3.7	3.5	6.6

Table 5.29 – Main reasons for preferences for each group in Belgium

Reason	Parents	Teachers	Assistants	Coordinators
It’s not functional	2.6	<b>8.3</b>	5.9	7.9
It’ noisy	2.0	0.0	6.7	5.8
It’s not thought	4.9	0.0	6.7	5.8
It doesn’t favor children’s activities	0.4	6.7	5.9	6.3
It’s not beautiful	<b>6.1</b>	6.7	<b>11.5</b>	<b>8.8</b>

*Table 5.30 – Main reasons for preferences for each group in Lithuania*

Reason	Parents	Teachers	Assistants	Coordinators
It doesn't favor children's activities	<b>3.6</b>	0.8	<b>3.1</b>	0.0
I spend few time there	2.3	2.8	1.4	0.0
It's not thought	1.8	2.2	1.4	2.4
It's not defined	0.0	0.6	2.4	0.0
It's not beautiful	2.3	2.7	1.0	<b>5.3</b>
It's not functional	1.8	<b>3,5</b>	1.0	4.1

### **Eating space**

In relation to C1 question, it was found that most participants in all countries indicated that the eating moment was spent inside the class in their ECEC centers: 87% in Italy; 81% in Belgium; 56% in Lithuania. Some participants indicated that the eating moment was spent in a hall set up every day: 6% in Italy, 18% in Belgium and 25% in Lithuania. Some participants indicated that the eating moment was spent in a specific eating room: 7% in Italy, 1% in Belgium and 19% in Lithuania. Percentages are reported in Table 5.31.

Graphics are reported in figure 5.26 (Appendix 5).

Table 5.31 - Location of the eating room in each country

Country	Inside the class	In a hall set up daily	In a specific room
Italy	87%	6%	7%
Belgium	81%	18%	1%
Lithuania	56%	25%	19%

In relation to C2 question, it was found that the most important aspect for an eating space was the organization in small groups for all groups in Italy; it was the care in its preparation for parents and assistants and was the organization in small groups for teachers and coordinators in Belgium; it was a caring preparation for all groups in Lithuania. The mean scores are reported in Table 5.32, 5.33 and 5.34. Graphics are reported in Figure 5.27, 5.28 and 5.29 (Appendix 5).

*Table 5.32 – Most important aspects of eating space for each group in Italy*

Aspect	Parents	Teachers	Assistants	Coordinators
Prepared with care	2.99	3.32	3.53	3.40

Organized in small groups	3.27	3.96	3.82	4.29
Set up with tableclothes	1.46	1.60	2.17	1.66
With adequate brightness	2.68	2.56	2.68	2.37
With adequate noise level	1.95	2.63	2.04	2.43

*Table 5.33 – Most important aspects of eating space for each group in Belgium*

Aspect	Parents	Teachers	Assistants	Coordinators
Prepared with care	2.59	1.83	3.78	3.17
Organized in small groups	2.28	2.33	3.74	3.54
Set up with tableclothes	0.69	0.67	1.30	1.50
With adequate brightness	1.62	0.83	2.63	1.88
With adequate noise level	1.77	1.83	2.44	2.42

*Table 5.34 – Most important aspects of eating space for each group in Lithuania*

Aspect	Parents	Teachers	Assistants	Coordinators
Prepared with care	2.59	3.74	3.28	3.35
Organized in small groups	2.45	3.12	2.55	2.47
Set up with tableclothes	1.55	1.73	1.79	1.71
With adequate brightness	1.64	2.26	1.90	1.47
With adequate noise level	1.32	1.85	1.34	1.59

In relation to C3 question, it was found that in Italy the aspect which found the highest agreement was that children set up and clean the table for coordinators and parents and that teachers eat with children for teachers and assistants; the aspect which found the lowest agreement was that children use glass glasses for all groups apart for coordinators who indicated that all children eat the same food. In Belgium the aspect which found the highest agreement was that children have the opportunity to choose how much to eat for all groups; the aspect which found the lowest agreement was that all children eat the same food for all groups. In Lithuania the aspect which found the highest agreement was that teachers eat with children for parents and coordinators and that children set up and clean the table for teachers and assistants; the aspect which found the lowest agreement was that all children eat the same food for parents and coordinators and that children use glass glasses for teachers and assistants. Means scores are reported in Table 5.35, 5.36 and 5.37. Graphics are reported in Figure 5.30, 5.31 and 5.32 (Appendix 5)..

*Table 5.35 – Agreement on statements on eating space for each group in Italy*

Statement	Parents	Teachers	Assistants	Coordinators
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Children should help set and clear the table	2.8	2.5	2.1	2.7
Children should use glass glasses	1.4	1.7	0.6	2.3
The same food should be offered to all children	2.2	2.0	2.3	1.9
Teachers should eat with the children	2.5	2.5	2.6	2.6
Children should choose how much to eat	1.7	2.0	1.6	2.4

*Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree*

*Table 5.36 – Agreement on statements on eating space for each group in Belgium*

Statement	Parents	Teachers	Assistants	Coordinators
Children should help set and clear the table	2.4	2.3	2,2	2.2
Children should use glass glasses	1.6	1.3	1.4	2.2
The same food should be offered to all children	1.3	0.7	1.1	1.0
Teachers should eat with the children	1.8	2.3	2.3	2.5
Children should choose how much to eat	2.4	3.0	2.7	3.0

*Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree*

*Table 5.37 – Agreement on statements on eating space for each group in Lithuania*

Statement	Parents	Teachers	Assistants	Coordinators
Children should help set and clear the table	2.5	2.3	2.5	2.2
Children should use glass glasses	2.1	1.5	1.4	1.5
The same food should be offered to all children	1.4	1.6	1.4	1.0
Teachers should eat with the children	2.5	2.1	2.4	2.3
Children should choose how much to eat	2.3	2.0	2.0	2.0

*Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree*

### **Sleeping space**

In relation to D1 question, it was found that most participants in all countries indicated that the sleeping moment was spent in a specific ‘sleeping room’: 73% in Italy; 90% in Belgium; 47% in Lithuania. Some participants indicated that the sleeping moment was spent inside the class: 16% in Italy, 6% in Belgium and 36% in Lithuania. Some participants indicated that the sleeping moment was spent in a hall set

up every day: 11% in Italy, 4% in Belgium and 17% in Lithuania. Percentages are reported in Table 5.38 and Figure 5.33 (Appendix 5)..

*Table 5.38 - Location of the sleeping room in each country*

Country	Inside the class	In a hall set up daily	In a specific room
Italy	16%	11%	73%
Belgium	6%	4%	90%
Lithuania	36%	17%	47%

In relation to D2 question, it was found that the most important aspect for the sleeping space was a soft atmosphere for all groups in Italy; it was an adequate noise level for parents, an adequate brightness for teachers, and a soft atmosphere for assistants and coordinators in Belgium; it was a soft atmosphere for parents, teachers and assistants and an adequate noise level in Lithuania. The mean scores are reported in Table 5.39, 5.40, 5.41. Graphics are reported in Figure 5.34, 5.35 and 5.36 (Appendix 5)..

*Table 5.39 – Most important aspects of sleeping space for each group in Italy*

Aspect	Parents	Teachers	Assistants	Coordinators
Musical accompaniment	2.21	2.70	3.11	1.91
Soft atmosphere	3.23	3.53	3.68	3.77
Seats for educators	2.16	1.85	1.88	2.00
With adequate brightness	2.03	2.74	2.63	2.43
With adequate noise level	2.57	3.12	2.84	3.17

*Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree*

*Table 5.40 – Most important aspects of sleeping space for each group in Belgium*

Aspect	Parents	Teachers	Assistants	Coordinators
Musical accompaniment	0.91	1.17	2.63	1.71
Soft atmosphere	2.24	1.83	3.52	3.33
Seats for educators	1.16	0.67	1.70	1.38
With adequate brightness	2.31	2.17	3.04	3.08
With adequate noise level	2.33	1.67	3.00	3.00

*Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree*

*Table 5.41 – Most important aspects of sleeping space for each group in Lithuania*

Aspect	Parents	Teachers	Assistants	Coordinators
Musical accompaniment	2.14	2.54	2.31	2.41
Soft atmosphere	2.73	3.19	2.72	2.24
Seats for educators	1.41	1.34	1.28	1.47
With adequate brightness	1.55	2.32	2.00	1.88
With adequate noise level	1.73	2.86	2.55	2.59

In relation to D3 question, it was found that in Italy the aspect which found the highest agreement was that teachers stay close to children for parents and that the beds are personalized for coordinators; the aspect which found the lowest agreement was that sleeping spaces should also be set up outdoors for parents and assistants and the presence of bars in the beds for teachers and coordinators.

In Belgium the aspect which found the highest agreement was that the beds are personalized for teachers, assistants and coordinators and that teachers stay close to children for parents; the aspect which found the lowest agreement was the closeness of children for all groups. In Lithuania the aspect which found the highest agreement was that the beds are personalized for parents, teachers, and coordinators and that teachers stay close to children for assistants; the aspect which found the lowest agreement was the closeness of children for all groups. Means scores are reported in Table 5.42, 5.43 and 5.44. Graphics are reported in Figures 5.37, 5.38 and 5.39 (Appendix 5)..

*Table 5.42 – Agreement on statements on sleeping space for each group in Italy*

Statement	Parents	Teachers	Assistants	Coordinators
Teachers should be close to children	2,3	2,6	2,6	2,4
The beds should be very close together	1,3	1,7	1,4	1,8
The beds should have bars for children not to fall	1,4	1,0	1,3	0,9
The beds should be personalized for each child	2,2	2,5	2,5	2,8
Sleeping spaces should also be set up outdoors	1,2	1,5	1,3	1,9

*Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree*

*Table 5.43 – Agreement on statements on sleeping space for each group in Belgium*

Statement	Parents	Teachers	Assistants	Coordinators
Teachers should be close to children	2,1	3,0	2,4	2,3
The beds should be very close together	1,0	1,0	1,0	1,4
The beds should have bars for children not to fall	1,8	0,0	1,9	1,4
The beds should be personalized for each child	2,3	2,0	2,9	2,6
Sleeping spaces should also be set up outdoors	1,9	2,3	1,6	1,9

*Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree*

*Table 5.44 – Agreement on statements on sleeping space for each group in Lithuania*

Statement	Parents	Teachers	Assistants	Coordinators
Teachers should be close to children	2,5	2,4	2,6	2,3
The beds should be very close together	0,4	0,4	0,2	0,3
The beds should have bars for children not to fall	2,3	2,1	2,1	2,3
The beds should be personalized for each child	2,6	2,6	2,5	2,9
Sleeping spaces should also be set up outdoors	1,2	0,7	0,9	1,1

*Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree*

### **Toilet space**

In relation to E1 question, it was found that most participants in Italy and Lithuania indicated that the toilet space was inside the class: 67% in Italy; 34% in Belgium; 83% in Lithuania. Most participants in Belgium indicated that the toilet space was outside the class: 33% in Italy, 65% in Belgium and 17% in Lithuania. Only in Belgium, some participants indicated that the toilet space was in another building (1%). Percentages are reported in Table 5.45 and Figure 5.40 (Appendix 5)..

*Table 5.45 - Location of the toilet space in each country*

Country	Inside the class	Outside the class	In another building
Italy	67%	33%	0%
Belgium	34%	65%	1%
Lithuania	83%	17%	0%

In relation to E2 question, it was found that the most important aspect for the sleeping space was an adequate brightness for all groups in all countries, apart from parents and assistants in Lithuania who

indicated the visibility from the class. The mean scores are reported in Table 5.46, 5.47 and 5.48. Graphics are reported in Figures 5.41, 5.42 and 5.43 (Appendix 5)..

*Table 5.46 – Most important aspects of toilet space for each group in Italy*

Aspect	Parents	Teachers	Assistants	Coordinators
Adequate number of wc	1.89	2.46	2.41	2.20
Adequate number of sinks	2.31	3.14	3.20	2.89
Visibility from/to the class	2.96	2.91	3.27	2.14
Adequate brightness	3.26	3.83	3.70	3.40
Adequate noise level	1.55	1.57	1.57	1.80

*Table 5.47 – Most important aspects of toilet space for each group in Belgium*

Aspect	Parents	Teachers	Assistants	Coordinators
Adequate number of wc	0.93	1.00	1.89	1.13
Adequate number of sinks	1.68	1.50	2.70	2.17
Visibility from/to the class	1.82	1.33	2.59	2.71
Adequate brightness	2.73	2.17	4.07	3.67
Adequate noise level	1.79	1.50	2.63	2.83

*Table 5.48 – Most important aspects of toilet space for each group in Lithuania*

Aspect	Parents	Teachers	Assistants	Coordinators
Adequate number of wc	1.23	1.74	1.10	1.24
Adequate number of sinks	1.41	2.33	1.79	1.71
Visibility from/to the class	2.50	3.07	3.14	3.00
Adequate brightness	2.41	3.49	3.10	3.12
Adequate noise level	2.00	1.61	1.72	1.53

In relation to E3 question, it was found that in Italy the aspect which found the highest agreement was the presence of a waiting area for teachers, assistants and coordinators and the division between toilet, sinks and diaper areas for parents; the aspect which found the lowest agreement was the presence of a play/reading area for parents, teachers and assistants and the presence of dividing walls between toilet for coordinators. In Belgium the aspect which found the highest agreement was the presence of a waiting area for parents, the children's free access to clothes bag for teachers, the dividing walls between toilets for assistants and coordinators; the aspect which found the lowest agreement was the presence of a play/reading area for all groups. In Lithuania the aspect which found the highest agreement was the presence of dividing walls between toilets for all groups; the aspect which found the lowest agreement was the presence of a play/reading area for all groups. Means scores are reported in Table 5.49, 5.50 and 5.51. Graphics are reported in Figure 5.44, 5.45 and 5.46 (Appendix 5)..

*Table 5.49 – Agreement on statements on toilet space for each group in Italy*

Statement	Parents	Teachers	Assistants	Coordinators
There should be dividing walls between WC	1,4	1,0	1,2	0,8
A play/reading area should be set up	0,9	1,0	0,5	1,8
A waiting-area for children should be set up	1,9	2,6	2,5	2,4
Toilet/sink/diaper-change areas should be distinct	2,1	2,1	2,3	2,0
Children should have free access to clothes bags	1,7	2,0	1,7	2,2

*Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree*

*Table 5.50 – Agreement on statements on toilet space for each group in Belgium*

Statement	Parents	Teachers	Assistants	Coordinators
There should be dividing walls between WC	1,3	2,0	1,9	2,2
A play/reading area should be set up	1,5	0,7	1,4	1,3
A waiting-area for children should be set up	0,6	0,3	0,4	1,2
Toilet/sink/diaper-change areas should be distinct	1,3	1,7	1,4	1,9
Children should have free access to clothes bags	1,1	2,3	1,6	2,1

*Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree*

Table 5.51 – Agreement on statements on toilet space for each group in Lithuania

Statement	Parents	Teachers	Assistants	Coordinators
There should be dividing walls between WC	2,7	2,4	2,7	2,8
A play/reading area should be set up	2,0	1,7	1,7	1,6
A waiting-area for children should be set up	0,8	0,2	0,3	0,3
Toilet/sink/diaper-change areas should be distinct	2,0	2,0	2,0	2,3
Children should have free access to clothes bags	1,9	1,8	2,1	1,9

Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree

### Outdoor space

In relation to F1 question, it was found that most participants in Belgium and Lithuania indicated that the outdoor spaces in their ECEC centers were grassy: 63% in Italy, 25% in Belgium, 70% in Lithuania. Some participants indicated that the outdoor spaces in their ECEC centers were paved or asphalted: 30% in Italy, 24% in Belgium, 17% in Lithuania. Half participants in Belgium and a few participants in Italy and Lithuania indicated that the outdoor spaces in their ECEC centers were of other typology, mainly mixed grassy and paved: 7% in Italy, 50% in Belgium, 13% in Lithuania. In Belgium some participants indicated that their ECEC centers didn't have outdoor spaces (1%). Percentages are reported in Table 5.52 and Figure 5.47 (Appendix 5)..

Table 5.52 – Types of outdoor spaces in each country

Country	Grassy	Paved	Other (mixed)	No outdoor spaces
Italy	63%	30%	7%	0%
Belgium	25%	24%	50%	1%
Lithuania	70%	17%	13%	0%

In relation to F2 question, it was found that most participants perceived the outdoor spaces in their ECEC centers as not adequate: 55% in Italy, 69% in Belgium, 55% in Lithuania. Some participants perceived the outdoor spaces in their ECEC centers as not entirely adequate: 41% in Italy, 27% in Belgium, 41% in Lithuania. A few participants perceive the outdoor spaces in their ECEC centers as adequate: 4% in all countries. Percentages are reported in Table 5.53 and Figure 5.48 (Appendix 5).

*Table 5.53 – Perception of adequacy of outdoor spaces in each country*

Country	Not adequate	Not entirely adequate	Adequate
Italy	55%	41%	4%
Belgium	69%	27%	4%
Lithuania	55%	41%	4%

In relation to F4 question, it was found that in Italy the aspect which found the highest agreement was the organization of scientific laboratories and activities for all groups; the aspect which found the lowest agreement was the possibility for risky play for parents and assistants and the visibility from the neighborhood for teachers and coordinators. In Belgium the aspect which found the highest agreement was the use of outdoors mainly for free play for parents and assistants and the possibility for risky play for teachers and coordinators; the aspect which found the lowest agreement was the visibility from the neighborhood for all groups. In Lithuania the aspect which found the highest agreement was the organization of scientific laboratories and activities for all groups; the aspect which found the lowest agreement was the visibility from the neighborhood for parents and the possibility of risky play for teachers, assistants and coordinators. Means scores are reported in Table 5.54, 5.55 and 5.56. Graphics are reported in Figures 5.49, 5.50 and 5.51 (Appendix 5).

*Table 5.54 – Agreement on statements on outdoor space for each group in Italy*

Statement	Parents	Teachers	Assistants	Coordinators
Possibility for children to risky-plays	1,3	2,1	1,5	2,6
Conduction of structured activities	2,3	1,8	2,4	2,1
Organization of scientific laboratories / activities	2,7	2,6	2,7	2,8
Outdoors should be used mainly for free play	2,1	2,1	2,1	1,6

Outdoors should not allow visibility from/to outside	1,9	1,6	1,7	1,3
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Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree

Table 5.55 – Agreement on statements on outdoor space for each group in Belgium

Statement	Parents	Teachers	Assistants	Coordinators
Possibility for children to risky-plays	2,1	2,7	2,2	2,5
Conduction of structured activities	1,9	1,3	1,9	1,9
Organization of scientific laboratories / activities	1,9	1,7	1,8	2,0
Outdoors should be used mainly for free play	2,6	2,0	2,6	2,3
Outdoors should not allow visibility from/to outside	1,8	0,7	1,2	1,7

Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree

Table 5.56 – Agreement on statements on outdoor space for each group in Lithuania

Statement	Parents	Teachers	Assistants	Coordinators
Possibility for children to risky-plays	1,8	1,0	0,9	1,3
Conduction of structured activities	2,1	1,8	2,0	2,1
Organization of scientific laboratories / activities	2,8	2,4	2,6	2,8
Outdoors should be used mainly for free play	2,2	2,2	2,1	1,9
Outdoors should not allow visibility from/to outside	1,2	1,2	1,3	1,5

Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree

In relation to F5 question, it was found that in Italy most mean scores on the use of outdoor spaces in all climatic conditions were from fairly agree to agree for all participants, apart from parents and assistants who had mean scores from not agree to fairly agree on their use in windy and rainy weather. In Belgium most mean scores on the use of outdoor spaces in all climatic conditions were from fairly agree to agree for all participants. In Lithuania most mean scores on the use of outdoor spaces in all climatic conditions were from not agree to fairly agree for parents and teachers, and from fairly agree to agree for assistants and coordinators. Means scores are reported in Table 5.57, 5.58 and 5.59. Graphics are reported in Figures 5.52, 5.53 and 5.54 (Appendix 5).

*Table 5.57 – Agreement on statements on the use of outdoors in all climatic conditions in Italy*

Statement	Parents	Teachers	Assistants	Coordinators
even when it's hot	2,4	2,3	2,1	2,3
even when it's cold	2,2	2,5	2,4	2,8
even when it's windy	1,4	2,1	1,9	2,4
even when it's raining	1,3	1,8	1,6	2,5
even when it's snowing	1,9	2,3	2,1	2,7

*Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree*

*Table 5.58 – Agreement on statements on the use of outdoors in all climatic conditions in Belgium*

Statement	Parents	Teachers	Assistants	Coordinators
even when it's hot	2,8	2,7	2,6	2,4
even when it's cold	2,8	2,7	2,7	2,7
even when it's windy	2,5	2,7	2,7	2,7
even when it's raining	2,4	2,7	2,2	2,7
even when it's snowing	2,6	2,7	2,7	2,8

*Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree*

*Table 5.59 – Agreement on statements on the use of outdoors in all climatic conditions in Lithuania*

Statement	Parents	Teachers	Assistants	Coordinators
even when it's hot	1,9	1,8	2,0	2,7
even when it's cold	2,0	1,7	2,1	2,3
even when it's windy	1,8	1,5	2,2	2,2
even when it's raining	1,6	1,4	2,1	2,1
even when it's snowing	1,9	1,9	2,3	2,3

*Note: 0=not agree; 1=fairly agree; 2=agree; 3=very agree*

## Discussion

The current study allows to reflect on the meanings that may be given to space in different countries and from the different perspectives of parents, teachers, assistants and coordinators. It is interesting to note that in Italy and Belgium the favorite space at all was found to be an outdoor space for most participants, while in Lithuania it was found to be an indoor space for most participants. The preferences for outdoor spaces in Italy also emerged from the preliminary and main study in Chapter 3 and in Belgium it resulted to be in line with the importance given to outdoor education that emerged from the local literature review; the Lithuanian preferences for indoors may be motivated by the fact that outdoor spaces are not frequently used due to government regulation and harsh climate. This data may be linked also to the findings on the use of outdoor space relating to the weather; of the three countries Lithuania was found to be the less likely to use outdoor spaces in all climatic conditions. Although in Lithuania there are a few ‘outdoor ECEC centers’ where the pedagogical choice is to take children outside as long as possible, in most centers according to the government regulations, children are taken outdoor twice a day only during daylight hours and only if specific climatic conditions are met: in winter, at a temperature of at least minus 12° C and a low wind speed up to 2 m/sec or at a temperature of at least minus 8°C and an average wind speed from 2 to 6 m/sec. In addition, it seems that wet clothes cannot be dried quickly in most centers, and the concern for children to get sick seems to be shared by both parents and professionals. Furthermore, learning goals seem to be very important in Lithuanian pedagogical vision and, since outdoor space is more associated to free play, it may be viewed as less important for children’s development rather than indoor space that offers more structured educational opportunities. On the contrary of the three countries, Belgium was found to be the most likely to use outdoor spaces in all climatic conditions, since the mean scores were from fairly agree to agree for all participants. Although outdoor education is more popular in Scandinavian countries (Fjortoft, 2001; Melhuus, 2012), Belgian centers are moving toward more extensive use of outdoor spaces: this may be due to the influence of the near Netherlands where the potential of outdoor spaces is highly supported, and the use of the same language also may have a role, since almost all of the Flemish literature from the Netherlands provided by Belgium for the literature review highlighted the importance of play in nature. (Deman, Robberecht, & Stoffels, 2016; Wijffels & Veekamp, 2009). These findings are in line with what emerged in relation to risky play: it was very interesting to observe that the possibility for risks and adventures in

outdoor space was among the aspects of outdoors that received the lowest agreement in Italy and Lithuania, while it was among the aspects that received the highest agreement in Belgium. This result can also be traced back to the influence of Flemish literature in Belgian pedagogical reflections: many gray literature from Flanders underlines in fact the possibilities for risks and adventures that outdoor natural environment offers and their importance for children development (Leereveld, 2008; Steffens, 2014a), while in Italian and Lithuanian publication this aspect seem to be less explored. In both these countries, however, the organization of scientific laboratories and activities in outdoors was the aspect of outdoors which found the highest agreement for all groups of participants: this unanimity on agreement allows to think that this may be a very relevant aspect in their vision that might become the starting point to increase the use of outdoors. The international literature indicates that the potential of outdoors is often not exploited and that ECEC centers seem to give more attention to activities carried on inside more than outside, since professionals don't feel that everything that can be learned and taught indoors can be done outdoors (Hansen et al., 1997; Jayasuriya et al., 2016; Maynard & Waters, 2007). These findings may indicate a possible way to give a push in the direction of a more aware use of outdoors, indicating what kind of activities can be done outdoors. Another interesting finding is that among the aspects of outdoors which found the lowest agreement the visibility of the center from the neighborhood emerged in all countries, with most mean scores near to fairly agree. The connection between ECEC centers and the world outside was one of the five categories of adults' meanings that emerged from the group interviews; although among the five, it was the less frequently used, it was present in all three countries with statements indicating the pleasure to see people pass by or to go for a walk in the neighborhood. Given these two contrasting findings, it may be hypothesized that some worries about what could happen in the contact with the world may interfere with the pleasure to feel this connection. Since the integration with the community, the visibility of the center and the transparence of facades were found to be important factors in adult's vision (Gur, 2014; Havu-Nuutinen & Niikko, 2014), further investigation should be done on this aspect, to better understand which are the perceived strengths and limitations of the connection between the ECEC centers and the outside world in order to improve the outdoor environment in a way that allows a safe contact with the surroundings. The great unanimity of the non-adequacy of outdoor space in each country confirms that more efforts should be done to provide outdoor spaces that exploit their full potential.

Moving the attention to the indoor spaces, it was interesting to note that the class was found to be the most favorite one in all countries and for all groups of participants; this finding confirms the importance of such space in the daily routine of the ECEC centers for all people involved: the class seems to be the first place where professionals and parents find pleasure to stay: this may be due to the fact that, compared to the other spaces of the centers, the class is more 'personal' and may be felt like a safe, cozy place to be. Also in the group interviews, some participants said that they feel the class 'as a second home', and in particular, teachers underlined the importance for them to have the opportunity in the class to arrange the space as they want. It was also interesting to note that hall and atelier were often the second and third choices in all countries. Immediately after the need to feel safe in an intimate space, it emerged then the need to socialize and share experiences with others: hall are the spaces where children, teachers and also families can meet, they are relational space where the borders of classes are overcome and where meetings and celebrations take place. Ateliers also are aggregation spaces where children from different classes meet and work together. These spaces were often linked with the relational meaning of space in the group interview in all countries, with statements as: *"I like the welcoming space because it is really an agora, so there are parents who meet ... It's noisy, but there is life, and there are relationships"* or *"Here you come into the building along the hall, you have the hall where you meet everyone."* The relevance of such spaces in adults' vision is then probably due to their relational potential and their role as facilitators of opportunities to meet and share.

Although the favorite spaces were similar in all countries, the reasons for preferences were different. In Italy the first reason was that children can feel good emotions for all groups, and all groups also cited that children can meet among the main reasons. In Belgium the first reason is different for each group: parents underlined the possibility for children to carry on nice activities, teachers referred to the duration of time spent in the space, assistants talked about the possibility to enjoy nice moments with children and coordinators pose accent on the possibility for children to feel good emotions. In Lithuania, the first reason was the possibility for children to carry on nice activities, except for parents who cited the possibility for them to feel good emotions. These differences may indicate different visions on the value of ECEC spaces: apart from Belgium where reasons differed also among participants, it is interesting to note the difference of vision between Italy and Lithuania. In Italy most participants indicate the emotional experience and in

Lithuania most participants indicate the learning experience as the most important factor affecting preferences. These diverse accents are in line with the relative government's orientations, which give more attention to the emotional development of children in Italy and to the cognitive development in Lithuania. This is very interesting also in relation to the debate on the Educare approach. Both countries actually seem to give more attention to one aspect than the other, while the desired direction is that of an integration of the two to support a holistic approach of children (Peeters et al., 2018; UNESCO, 2010). In relation to this issue, another interesting finding emerged from the questionnaires: in all three countries the assistants include enjoying nice moments with children in the first three reason for preferences. This may be linked to their role that is mainly addressed to the emotional wellbeing of children in most European states (Peeters et al., 2018). Finally, it was interesting to observe that in all three countries the coordinators are the only ones who include the beauty of the space in the first three reason for preferences: this may be probably due to their role as supervisors in the centers: while parents and teachers seem to give more importance to aspects related to the opportunities given by space in the daily routine in terms of emotions, activities or relations, coordinators may have more opportunities to appreciate the space for its aesthetic features and are probably also more involved in decisional processes about its arrangement.

Among the least favorite spaces, it was interesting to note that the entrance and the corridor were found to be 'critical' spaces in all countries, especially in Italy where all groups agreed. This aspect also emerged from the group interviews: these spaces seem to be appreciated for the relational opportunities that they offer, but they are often described as too crowded, in particular noisy and narrow. This result may help to identify the criticism of these spaces and enhance interventions to reduce the non-functional aspects, maintaining their relational potential at the same time. Other spaces that emerged to be critical were the offices in Italy, for coordinators and assistants, the toilets in Belgium and eating, sleeping and toilet spaces in Lithuania. In Italy coordinators and assistants in Italy usually don't have a personal space in ECEC centers: coordinators usually stay in spaces that normally have other functions in the daily routine, since they work on different services and move from one to the other during the day, and assistants usually have only a locker room to change their outfit. Their indication of the non-adequacy of such spaces suggests that more attention may be reserved for them, in order to improve their inclusion and support their value in the centers. In Belgium and Lithuania toilets are often non considered as educational space but as room only for

physiological needs; this vision affects the arrangement and use of such spaces. It should be also noted that Belgium is the only country where toilets were found to be located mainly outside the class and in some cases they are even placed outside the building so that children have to cross a courtyard to reach them from the class. In Lithuania also the eating and sleeping spaces were found to be among the least favorite for teachers. This also may be traced back to the Educare debate: the small value given to these spaces reflect the small value given to the activities that take place in them. Nevertheless, these activities involve a great deal of effort for teachers and assistants and moreover for children these moments are very relevant to achieve important developmental goals, as the ability to use the toilet independently, the unwillingness to sleep, the unwillingness to eat food which they may not like. If teachers don't like those spaces, unconsciously they may not give children the attention and help they need during caring moments. This suggests that much attention should be given to caring spaces, to support the holistic development of children in the direction of an Educare approach. The most important aspects of these spaces seem to be shared in all three countries: it was found that the eating space should be organized in small groups and prepared with care, the sleeping space should have a soft atmosphere and the toilet space should have an adequate light level and be visible from the class. Also answering the open question about the most important aspects of caring spaces, the visions of the three countries seem to be in line, highlighting the 'need' to provide spaces which offer to children calmness, coziness, relax, comfort and security, in order to achieve important competences and autonomies by following their own rhythm.

Concerning the reasons for non-preference, the non-functionality was indicated in all countries among the first three reasons. In particular, in each country it was the first reason of all for teachers. This demonstrates that the functionality is the first aspect on which invest to improve ECEC spaces, in particular for teachers who obviously give it much relevance due to their role. It was interesting to note that non-functionality was the first reason for all groups in Italy, while the non-beauty was the first reason in Belgium and it emerged as the most critical aspect also for coordinators in Lithuania. The discussion with the ECEC centers involved in EDUCAS project allows to know that actually in Belgium and Lithuania pedagogical visions on space are more focused on functionality than on beauty, and this may imply that beauty wouldn't be so important to characterize spaces. In Italy, on the contrary, the aesthetical aspects are felt as very relevant and more investment is done for their improvements, sometimes maybe focussing less on

functionality. An adequate balance of beauty and functionality seems to be the way to address this issue. This underlines once again the added value of the meeting with other visions to broaden the personal point of view and improve ECEC spaces. The factors that emerged as more critical in each country may constitute the starting point to reflect on re-design processes and the knowledge of other realities may help to improve the ECEC spaces in each local environment.

### **Conclusion**

The current transnational study was aimed to investigate adults' meaning of ECEC spaces in Italy, Belgium and Lithuania. The numerous findings allow to reflect on several topics about space. In general the differences found in the attention given to learning and caring spaces highlighted the need for a more inclusive vision in the direction of an Educare approach. The similarity and differences among the perspectives of parents, teachers, assistants and coordinators showed which aspects are unanimously recognized and the importance of joint reflection and comparisons between all the stakeholders, in order to be aware of the different aspects taken into account by each of them. The similarity and differences among the countries encourage the dialogue between different pedagogical realities in order to broaden personal visions, become aware of the strengths and limitations of each approach and reflect together on ECEC spaces to provide the best environment for improving professionals' working conditions, meet parents' need and enhance the holistic development of children.

### 5.3 The meanings of ECEC spaces in children’s experience in Italy, Belgium and Lithuania: an exploration through drawings and interviews

#### Aim

The aim of this study was to explore the meanings of ECEC spaces in children’s experience through a preliminary investigation in three European countries in Italy, Belgium and Lithuania. In particular, the purpose of the study was to identify categories of meanings that children give to ECEC spaces and investigate their presence and distribution across the countries.

#### Method

##### Participants

The total participants were 86 children aged from 3 to 6 years old, from two ECEC centers in each country; Belgium, Italy and Lithuania. 49 were male and 37 were female; the mean age was 58.21 months (SD=10.53; range 39-76 months). Belgian participants were 31 (14 males; 17 females); the mean age was 57.55 months (SD=9.23; range 45-74 months). Italian participants were 29 (19 males; 10 females); the mean age was 59.24 months (SD=10.61; range 39-71 months). Lithuanian participants were 26 (18 males; 8 females); the mean age was 57,78 months (SD=11.87; range 38-76 months). The data of participants from each country are reported in Table 5.60.

Table 5.60 – Participants from each country

Country	Total	Males	Females	Mean age in months <sup>1</sup>
Belgium	31	14	17	57.55 (9,23)
Italy	29	19	10	59.24 (10.61)
Lithuania	26	18	8	57.78 (11.87)

<sup>1</sup> Mean (SD)

##### Instruments and procedure

The data was collected through drawings and interviews on the basis of guidelines shared with all the researchers in each country. (Appendix 6). All materials compiled in English were stored and shared on a private online file hosting service and made available to all researchers on the team. Prior to data collection, parents’ informed written consent was acquired, following the ethical guidelines defined by the American

Psychological Association. The data collection also provided for the authorization and approval of all coordinators and teachers of the ECEC centers.

## **Measures**

### ***Drawings***

In each class, drawings were proposed to the whole group of children. The researcher introduced him/herself to the children, explaining that he/she was writing a book on children and their schools and that he/she would like to collect children's drawings of their favorite place in their schools. She introduced the concept of "place" to the group of children using this formula: *"Your school is great, and it is made up of many places, spaces where you can go, places that are both inside and outside. Each of you may have a place where he/she prefer to stay"*. Then she asked children to draw their favorite place using this formula: *"Now I ask you to think of a place where you like to stay when you are here at school. It can be inside the school or outside in the garden. Okay, have you thought? And I ask you to draw yourself while you are in this favorite place. If you want you can draw some of your friends or teachers, or just you, as you prefer."* She also anticipated that she would then interview them one by one to better understand what they had drawn, using this formula: *When you finish the drawing, you can bring it to me and I'll ask you to tell me about what you drew. All right?" (children's consent)* Once the children agreed to participate, they were seated in little groups of about 6/8 around a table with markers of various colors at the center of the table and a white A4 paper (without rows or squares) for each child. The drawings could take all the time needed. When a child had finished he delivered the drawing to the researcher and followed her in a room apart from the class for an individual interview.

### ***Interviews***

Each child was interviewed individually by the researcher, immediately after the drawing activity, in an isolated room, to promote concentration, to avoid conditioning among children in the answers and to improve the audio quality of the audio recording. The interview grid consisted of two sections. The first section included 3 questions relating to the drawing asking children to indicate: 1)What was represented, trying to identify all relevant elements of the drawing; 2)Who were the people represented and what happens, what they are doing; 3)Why did he/she like that place. The second section included 2 questions relating to the drawing asking children to indicate: 4)If he/she thought there was something missing in his/her school to

make it even more pleasant and beautiful for children; 5) If there was anything else the child like to tell about his/her school". At the end of the interview the child was thanked and taken back to class. The questions of the interview grid are reported in Table 5.61.

*Table 5.61 – Questions of the interview grid*

Section	Questions
Questions relating to the drawing	4) What was represented in the drawings?
	5) Who are the people represented and what happens, what they are doing?
	6) So this is a place where you like to stay here at school... And why do you like being here?
Questions not relating to the drawing	7) What do you think is missing in this school to make it even more pleasant and beautiful for children?
	8) Is there anything else you'd like to tell me/tell me about your school...

## **Analysis**

A qualitative thematic content analysis was conducted in relation to the content of drawings and interviews, to identify categories that could be representative of the similarities and differences between the drawings, in order to highlight some main categories through which children seem to give meanings to their ECEC spaces. Each drawing and interview could contain aspects related to more than one category. The aspects related to each category were quantified for each country, distinguishing if they emerged in drawings and in the first three questions of the interview or in the last two questions of the interview, which were not referred to the content of the drawings.

## **Results**

### **Categories**

The thematic content analysis on drawings allowed to identify nine main categories through which children seem to give meanings to their ECEC spaces: playing outside, playing inside, observing nature, experiencing the body, learning, caring – teachers, caring – friends, withdrawing and including the family.

The list of categories is reported and the frequencies of the aspects identified in drawings and interviews for each category are reported in Table 5.62 and described below.

*Table 5.62 - Frequences of the aspects identified for each country in relation to each category*

Categories	Belgium	Italy	Lithuania	Total
Playing outside	15	15	16	46
Playing inside	19	13	13	45
Observing nature	10	6	4	20
Experiencing the body	3	6	6	15
Learning	8	3	10	21
Caring – teachers	2	2	3	7
Caring - friends	0	4	0	4
Withdrawing	3	3	3	9
Including the family	8	11	1	20

### ***Playing outside***

It was found that some children were referring to ECEC spaces in relation to playing outside. The category was observed in all three countries. The aspects that refer to playing outside were quantified for each country, distinguishing if they emerged in relation to drawings or to the last two questions of the interview. Data are reported in Table 5.63. Some examples of drawings are reported in Table 5.64. Some extracts from the interview are reported in Table 5.65.

*Table 5.63 - Aspects emerged in drawings and interviews in each country that refer to playing outside*

	Belgium	Italy	Lithuania	Total
Drawing	8	8	11	27
Interview	7	7	5	19
Total	15	15	16	46

Table 5.64 - Examples of drawings that refer to playing outside.

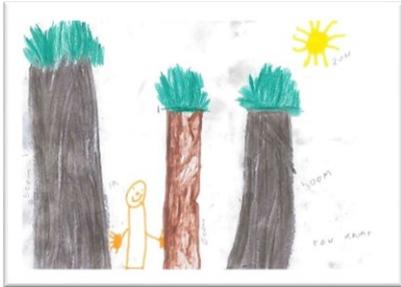
Drawing	Description	Age	Country
	<i>I like to play outside where there are camps. I also drew the sun, because with the sun we can go outside and play in the camp. (Maxime)</i>	6	Belgium
	<i>I drew myself outside, on the grass, because I can play many beautiful games outside: I can play on the slide and I can also climb. (Irene)</i>	4	Italy
	<i>I like to stay in the schoolyard playing with my friends (Sarinus)</i>	5	Lithuania

Table 5.65. Extracts from the interviews that refer to playing outside

Question	Description	Age	Country
Is there anything else you'd like to tell me about your school?	<i>I like to play outside. There I can choose my games. I play with my friends. We think about what we all like to do, for example football, superheroes, ninja (Quin)</i>		Belgium
	<i>I also like the garden, because there we can play freely and hide behind the bushes: we either play hide and seek or chase each other or ... These things. (Giorgia)</i>		Italy
What do you think is missing in this school?	<i>I am missing more toys/games in outside spaces (Karolis)</i>		Lithuania

## *Playing inside*

It was found that some children were referring to ECEC spaces in relation to playing inside. The category was observed in all three countries. The aspects that refer to playing inside were quantified for each country, distinguishing if they emerged in relation to drawings or to the last two questions of the interview. Data are reported in Table 5.66. Some examples of drawings are reported in Table 5.67. Some extracts from the interview are reported in Table 5.68.

*Table 5.66. Aspects emerged in drawings and interviews in each country that refer to playing outside*

	Belgium	Italy	Lithuania	Total
Drawing	10	8	7	25
Interview	9	5	6	20
Total	19	13	13	45

*Table 5.67. Examples of drawings that refer to playing inside.*

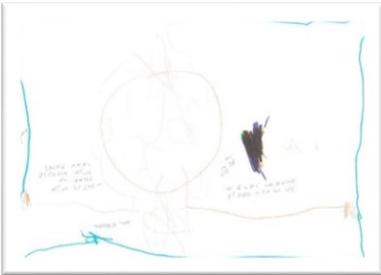
Drawing	Description	Age	Country
	<i>I like to play inside my class. I drew myself and my personal basket and I have a crow on my head.</i> (Hermien)	3	Belgium
	<i>I drew that kind of tower that is in the corridor. Alberto, Chiara and I often play there, for example we play Frozen castle.</i> (Maria Vittoria)	4	Italy
	<i>I like the class because I can play there</i> (Teodoras)	3	Lithuania

Table 5.68. Extracts from the interviews that refer to playing inside

Question	Description	Age	Country
Is there anything else you'd like to tell me about your school?	<i>I like to play inside with cars and I like to be in the entrance (Soubhan)</i>	5	Belgium
What do you think is missing in this school?	<i>A mega-giant pretend-play room, but only for superheroes. And then there is another thing I want to add: a construction room! I am very good at building: I built an ice cream machine. (Davide)</i>	5	Italy
Is there anything else you'd like to tell me about your school?	<i>I like to play with a teddy bear also in the playroom. (Mija)</i>	3	Lithuania

### Observing nature

It was found that some children were referring to ECEC spaces in relation to observing nature. The category was observed in all three countries. The aspects that refer to observing nature were quantified for each country, distinguishing if they emerged in relation to drawings or to the last two questions of the interview. Data are reported in Table 5.69. Some examples of drawings are reported in Table 5.70. Some extracts from the interview are reported in Table 5.71.

Table 5.69 - Aspects emerged in drawings and interviews in each country that refer to observing nature

	Belgium	Italy	Lithuania	Total
Drawing	4	6	4	14
Interview	6	0	0	6
Total	10	6	4	20

Table 5.70 - Examples of drawings that refer to observing nature.

Drawing	Description	Age	Country
	<i>I drew me and my friend Kaat and the treehouse. I am making a mountain with the tree leaves. We also made a little hill for the hedgehogs, and we've put some steps, so that they can get upstairs.</i> (Ilian)	5	Belgium
	<i>I drew me in the garden while I see butterflies</i> (Chiara)	5	Italy
	<i>I drew the rainbow, the grass, the water next to the grass, the rain, this is mud, the rain again... Carrots are growing!</i> (Emilis)	4	Lithuania

Table 5.71 - Extracts from the interviews that refer to observing nature

Question	Description	Age	Country
What do you think is missing in this school?	<i>I miss some flowers, there are not enough flowers here. I would like more sunflowers.</i> (Annabelle)	5	Belgium

### **Experiencing the body**

It was found that some children were referring to ECEC spaces in relation to experiencing the body. The category was observed in all three countries. The aspects that refer to experiencing the body were quantified for each country, distinguishing if they emerged in relation to drawings or to the last two questions of the interview. Data are reported in Table 5.72. Some examples of drawings are reported in Table 5.73. Some extracts from the interview are reported in Table 5.74.

Table 5.72. Aspects emerged in drawings and interviews in each country that refer to experiencing the body

	Belgium	Italy	Lithuania	Total
Drawing	1	4	5	10
Interview	2	2	1	5
Total	3	6	6	15

Table 5.73. Examples of drawings that refer to experiencing the body

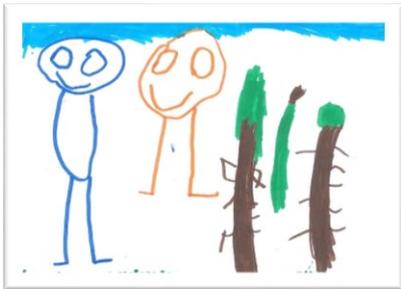
Drawing	Description	Age	Country
	<i>I like to climb the trees outside to play with my friends (Siem)</i>	3	Belgium
	<i>I like outside because there are so many games to play: we go on the slide, we do climbing, we go on the wheels that we have to jump... (Giacomo)</i>	5	Italy
	<i>I like the library because there are stairs that you climb (Varariu)</i>	4	Lithuania

Table 5.74 - Extracts from the interview that refer to experiencing the body

Interview	Description	Age	Country
What do you think is missing in this school?	<i>I like climbing on the trees. It's not allowed in school, so I do it at home (Arthur)</i>	4	Belgium
Is there anything else you'd like to tell me about your school?	<i>I also like to climb. We climb over the roof, which has a long thread and things we can cling to (makes the gesture of holding on with both hands, like ropes) (Giacomo)</i>	5	Italy
What do you think is missing in this school?	<i>I would like that there would be more pillows and a trampoline for jumping in outside spaces. (Toma)</i>	3	Lithuania

### **Learning**

It was found that some children were referring to ECEC spaces in relation to learning. The category was observed in all three countries. The aspects that refer to learning were quantified for each country, distinguishing if they emerged in relation to drawings or to the last two questions of the interview. Data are reported in Table 5.75. Some examples of drawings are reported in Table 5.76. Some extracts from the interview are reported in Table 5.77.

Table 5.75. Aspects emerged in drawings and interviews in each country that refer to learning

	Belgium	Italy	Lithuania	Total
Drawing	5	1	8	14
Interview	3	2	2	7
Total	8	3	10	21

Table 5.76. Examples of drawings that refer to learning

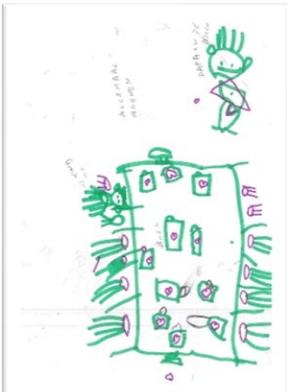
Drawing	Description	Age	Country
	<i>I drew teachers reading morning letters (Teja)</i>	3	Lithuania
	<i>I drew teachers and children doing school work (Nicole)</i>	4	Lithuania
	<i>I drew myself on a chair at the table with a lot of books on the table. There are many chairs for all children. We read books. (Isolde)</i>	4	Lithuania

Table 5.77. Extracts from the interview that refer to learning

Interview	Description	Age	Country
What do you think is missing in this school?	<i>I like to choose the books that I want to read. I like to come to school because I learn a lot. (Lore)</i>	5	Belgium
	<i>A book all for free (Matteo)</i>	5	Italy
	<i>More books (Simonas)</i>	5	Lithuania

### **Caring - teachers**

It was found that some children were referring to ECEC spaces in relation to caring referred to teachers. The category was observed in all three countries. The aspects that refer to caring were quantified for each country, distinguishing if they emerged in relation to drawings or to the last two questions of the interview. Data are reported in Table 5.78. Some examples of drawings are reported in Table 5.79.

*Table 5.78. Aspects emerged in drawings and interviews in each country that refer to caring - teachers*

	Belgium	Italy	Lithuania	Total
Drawing	2	2	3	7
Interview	0	0	0	0
Total	2	2	3	7

*Table 5.79. Examples of drawings that refer to learning*

Drawing	Description	Age	Country
	<i>I drew me and my teacher in the school, waiting for the other children. I like that day very much. (Lore)</i>	5	Belgium
	<i>This is nanny Monica and this is me, we're together in the garden. (Carlo Elia)</i>	4	Italy
	<i>I drew teacher giving food to children. (Tadas)</i>	5	Lithuania

## Caring - friends

It was found that some children were referring to ECEC spaces in relation to caring referred to teachers. The category was observed only in Italy. The aspects that refer to caring were quantified for each country, distinguishing if they emerged in relation to drawings or to the last two questions of the interview. Data are reported in Table 5.80. Some examples of drawings are reported in Table 5.81. Some extracts from the interview are reported in Table 5.82.

Table 5.80. Aspects emerged in drawings and interviews in each country that refer to caring with friends

	Belgium	Italy	Lithuania	Total
Drawing	0	2	0	2
Interview	0	2	0	2
Total	0	4	0	4

Table 5.81. Examples of drawings that refer to caring – friends

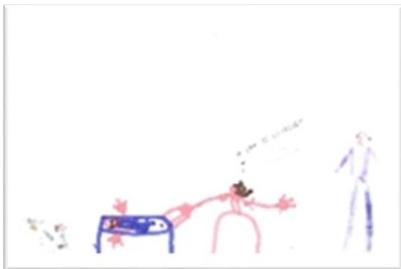
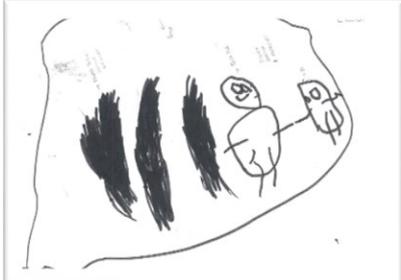
Drawing	Description	Age	Country
	<i>I drew myself in the sleeping room cuddling a little girl (Iris)</i>	5	Italy
	<i>I drew me cuddling a little girl: this is the kiss I give her (Bianca)</i>	5	Italy
	<i>This is nanny Isa and this is me helping with the plates because. I like to be the waiter. (Elliot)</i>	4	Italy

Table 5.82. Extracts from the interview that refer to caring – friends

Interview	Description	Age	Country
Is there anything else you'd like to tell me about your school?	<i>I also like to stay in the sleeping room, to cuddle younger children. And I cuddle the young children. My school friend Bianca goes to the sleeping room, too... Eric didn't fall asleep once, and you know how she made him sleep? She told him the story of Little Red Riding Hood. (Giovanni)</i>	5	Italy

### Withdrawing

It was found that some children were referring to ECEC spaces in relation to withdrawing. The category was observed in all three countries. The aspects that refer to withdrawing were quantified for each country, distinguishing if they emerged in relation to drawings or to the last two questions of the interview. Data are reported in Table 5.83. Some examples of drawings are reported in Table 5.84. Some extracts from the interview are reported in Table 5.85.

Table 5.83. Aspects emerged in drawings and interviews in each country that refer to withdrawing

	Belgium	Italy	Lithuania	Total
Drawing	2	2	0	5
Interview	1	1	2	4
Total	3	3	3	9

Table 5.84. Examples of drawings that refer to withdrawing

Drawing	Description	Age	Country
	<i>I drew one day in which we were just with 2 children in the class (...) I liked that day very much because there were a few children and it was calm. Normally there are too many children and it's noisy. (Lore)</i>	5	Belgium



*With the foam blocks we do a dan with friends, but only few friends because sometimes we are many and then everything is thrown down. And we do it a little tight so that no-one can come in anymore. (Alessandro)*

5 Italy

Table 5.84. Extracts from the interview that refer to withdrawing

Interview	Description	Age	Country
Is there anything else you'd like to tell me about your school	<i>I like to read books. And I like to do it alone. (Toon)</i>	3	Belgium
What do you think is missing in this school?	<i>I miss a room only for resting, not for sleeping. (Alice)</i>	5	Italy
Is there anything else you'd like to tell me about your school	<i>I would like that there would be fewer children in the group. (Arnas)</i>	4	Lithuania

### ***Including the family***

It was found that some children were referring to ECEC spaces in relation to including the family. The category was observed in all three countries. The aspects that refer to including the family were quantified for each country, distinguishing if they emerged in relation to drawings or to the last two questions of the interview. Data are reported in Table 5.86. Some examples of drawings are reported in Table 5.87. Some extracts from the interview are reported in Table 5.88.

Table 5.86. Aspects emerged in drawings and interviews in each country that refer to including the family

	Belgium	Italy	Lithuania	Total
Drawing	3	7	1	11
Interview	5	4	0	9
Total	8	11	1	20

Table 5.87. Examples of drawings that refer to including the family

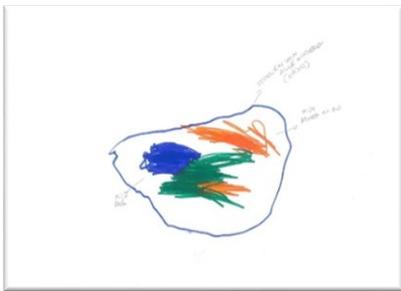
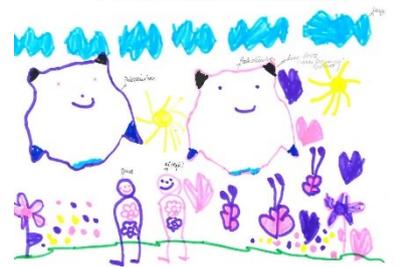
Drawing	Description	Age	Country
	<i>It's me, my daddy, sister, brother and other children in the school. We are in the circle time. I like to play there. (Nour)</i>	4	Belgium
	<i>Me with mom in the garden with a heart and the earth. This garden reminds me of my grannies' house. (Alessandro)</i>	3	Italy
	<i>I drew the school garden, the sky, the sun, the heart, flower, little dots, butterfly, owl, another owl (the owl is the symbol of her class), another sun, the land. These little people are mum and Mija. (Mija)</i>	5	Lithuania

Table 5.88. Extracts from the interview that refer to including the family

Interview	Description	Age	Country
What do you think is missing in this school?	<i>I miss my mommy. I would have liked that my mommy was a teacher. (Noa)</i>	4	Belgium
	<i>I miss the collection of photos that I have at home ...When mom and dad got married (Lea)</i>	5	Italy

## Discussion

The present study identified some main aspects that emerged in most children's drawings and interviews from all the three involved European countries: Italy, Belgium and Lithuania. These aspects have been traced back to categories through which children seem to give meanings to their ECEC spaces. Although the sample is small, it is interesting to note that the categories were found to be balanced in the three countries, with similar frequencies for each category. This first finding is interesting, since it suggests that children belonging to different contexts give the same meanings to ECEC spaces. It is also very interesting to note that playing, observing nature and learning were also the most frequent motivations for children's preferences about space in the second main study, besides the relational aspects that were not investigated in the current study. It seems that of all the possible meanings that children can attribute to space, these are for them the most relevant. The two most frequent categories were related to playing, both inside and outside. This finding is in line with what emerged in the second main study of this doctoral project, on a larger sample of Italian children, where play was found to be the most preferred activity at all. The importance of play in preschool years is confirmed once again by this transnational study: the first meaning that children seem to give to their ECEC spaces refers to the opportunity to play in line with previous literature showing that playing activities are the most engaging in preschool (Torstensson-Ed, 1994; Strander, 1997; Vickerius & Sandberg, 2006).

Another much popular category that emerged from this study is relative to the observation of nature. This finding also adds evidence to the results of the second main study, which demonstrated that observing nature was the most preferred activity of participants, after playing. This transnational study allows to think that this meaning of space, so important in children's experience, isn't peculiar of the Italian context, but it is also relevant in other countries. The importance of natural spaces in ECEC centers has already been discussed in the previous chapters, underlying, in particular, the sense of freedom and independence that children experiment (Cullen, 1993) and the support that natural spaces offer for the development of motor skills (Chow & Louie, 2013; Fjortoft, 2001; Scoditti et al., 2011; True et al., 2017), prosocial behavior (Brussoni et al., 2017), engagement and self-regulation (Kochanowski & Carr, 2014). Once again, the relevance of the natural environment in ECEC centers is confirmed, suggesting the need for investments in outdoor spaces to meet the children's need to enjoy educational experiences in nature.

The learning value of space also emerged among the most popular meanings given by children in all three countries. When asked about ECEC spaces, many children represented or talked about learning activities like reading books at the table or doing school work. Someone also explicit this meaning by saying: *“I like to come to school because I learn a lot.”*. The perception of ECEC spaces as learning environments also was highlighted in the second main study, since learning was found to be among the first reasons for their preferences. This finding may be linked with the debate on the Educare approach; since previous studies have shown how the contemporary presence of a supportive physical environment and secure relationship with the teacher is the most effective factor that enhances learning achievements (Commodari et al., 2013; Guo et al., 2012), the learning value of the space shouldn't be separated by the caring value of the relationships. This allows to argue that ECEC spaces should provide both adequate learning material and a supportive emotional environment to create the best conditions for children's development. The caring value of space also is part of the debate; in the current study it was mainly referred to the care in the relationship with teachers, for example when they give food to children or share intimate moments with them, but in the Italian context it was also found in relation to peer-relationships, especially during the sleeping moment, when older children can cuddle the smaller ones. The fact that children referred to caring moments while asked to describe their favorite space in the school, indicates that this is one of the meanings they attribute to ECEC spaces, and this adds evidence to the need to link education and care toward an Educare approach (Peeters et al., 2018; UNESCO, 2010). From the analysis of the literature it emerged that only a few studies have focused on the way 'routines spaces' (toilet, eating space, sleeping room...) should be organized. There are studies that emphasize the importance of cozy familiar spaces and of the outdoor, underlying the importance of taking into account emotional and caring needs, but still, even the studies that underline this, don't always explicit where the toilet or the sleeping room should be, implicitly still showing the general less attention given to these moments (and thus to a real Educare approach). Nevertheless, both local and international literature suggests to move towards a new integrated approach which includes both educational and caring meanings during all practices in ECEC centers. Considering more specifically ECEC spaces, all this means that (f.e.) the location and organization of 'caring' spaces such as sleeping room, toilet and eating room, have the same importance as the way classes or playing rooms are organized. It means that high-

quality time and space should be given to all the spaces where children live their days in ECEC centers, which means giving importance to all the elements that contribute to their growth in a holistic way.

Among the most frequent categories, it was also found the 'inclusion of family'. This aspect didn't emerge in the second main study, since only a few children included familiars in their drawings. It seems that children like enjoy school moments with parents, siblings and other familiar, as they decide to represent them in their drawings of school spaces and talk about moments with them during the interview; for example, they represented familiars during the morning circle or in the school garden. This finding could be linked to what emerged in the first study of this doctoral project about the parents' experience: the familiars explicated the pleasure to enjoy moments with their children in ECEC spaces, recognizing how certain spaces, ad the ones where welcoming and goodbye moments take place, became very relevant in their routine, being spaces that embrace delicate moments characterized by strong emotions and intimacy. Parental involvement in preschool educational settings has shown to be associated with increased development of learning skills and later academic achievements (Marcon 1999; Temple et al., 2000; Eldridge 2001; Castro et al. 2004; McWayne et al. 2004; Arnold et al. 2008; Halgunseth 2009; Galindo and Sheldon 2012). The fact that children also give meaning to their ECEC spaces in relation to the inclusion of family support this vision. This is a very interesting finding also in the light of the indication from the European international policies, which encourage parental participation and involvement in ECEC centers (European Commission 2015; OECD, 2006, 2012) and the development of integrated early childhood education systems (Gordon et al., 2016).

Another finding in line with the second main study of the doctoral project is the need for withdrawal, which also emerged as one of the main reasons for preferences in indoor spaces. Since in literature children's experience of withdrawal and privacy are less explored than social interaction and participation, this finding adds evidence to the need for more research on this topic. It also suggests that ECEC spaces should provide an adequate environment for private moments since their presence seems to be needed by children (Friedmann & Thompson, 1995; Skånfors et al., 2009). Besides the need for moments alone, in the current study it emerged also the need for moments with a few friends, not too many. Children in big groups seem to experience sensations of confusion, noise and dispersion that threaten their wellbeing during the school day. This finding is supported by previous literature that have identified crowdedness as one of the main factors

affecting children's experience in ECEC centers (Maxwell, 1996; Neill, 1982; Sager et al., 2003; Shapiro, 1975; Stephenson, 2002). This data allows to reflect on how ECEC spaces should favor activities in small groups and facilitate the reduction of noise and confusion in the environment.

Finally, another popular meaning that children give to their ECEC spaces was found to be the opportunity to experience the body: even if some children referred to opportunities to experiment their body in indoor spaces, such as corridors to do run races or stairs to climb, most children referred to such opportunities in outdoor spaces. Children mainly referred to some characteristics of the outdoor environment that facilitate risky-play activities, such as larger spaces and the presence of specific materials and elements such as climbing trees, jumping wheels, clinging threads. This is an important finding also in the light of what emerged by the analysis of both local and international literature: many articles have shown the richness of playing outside and in nature with young children (Ciabotti, 2014; Fjortoft, 2001; Hansen et al., 1997; Steffens, 2014b), also pointing out the importance of outdoor playing and 'risky'-adventurous playing for children's development (Brussoni et al., 2017; Deman et al., 2016; Leereveld, 2008; Steffens, 2014a). The opportunity to take some risks in adventurous play outdoor is in fact seen as a positive factor for the development of motor skills, autonomy and self-esteem (Ciabotti, 2014; Wijffels & Veekamp, 2009). One Belgian publication (Kind & Samenleving, 2018) identifies 10 challenges of playing outside which could be representative of the main findings of the other studies on the topic: 1. Playing together, learning to deal with differences; 2. Looking for adventure and risk (children like to mix pleasure and fear); 3. Being creative, looking for alternatives, making mistakes and try again; 4. Finding own talents, passions, limits by supporting motivation; 5. Physical development, movement; 6. Creating a link with the community; 7. Creating a bond with nature; 8. Enriching positive experiences that influence self-esteem; 9. Developing freedom, having own rules; 10. Developing pleasure. All these data indicate that outdoor space should be a thought place with different offers and the possibility of risks and adventures, to support motor development as well as children's autonomy and self-esteem. Space can support the Educare approach: it should be organized and adapted in order to help children live "caring moments" in an autonomous and pleasant way, underlying the learning-socio-emotional experience of the "caring moments". The potential of outdoor spaces should be exploited more, by reflecting on possible activities to be done outside, allowing children to take some "risks"

in adventurous playing, also setting up the outdoors with different “areas” where children can experiment and explore. Such spaces need to be well thought to maximize the opportunities given to the children.

### **Conclusion**

The current transnational study was aimed to investigate children’s meaning of ECEC spaces in Italy, Belgium and Lithuania. The qualitative findings allow to identify nine main categories through which children seem to give meanings to their ECEC spaces. The categories of meanings were identified in all countries, indicating that children’s vision on ECEC spaces is similar in the three realities and it crosses the borders of the countries. The study underlines the value of ECEC spaces as playing and learning environment, in which the observation of nature and the experience of the body are among the most relevant aspects for children. The research also allows to identify some critical aspects mainly related to the lack of possibility to withdraw and to children’s need to include families in ECEC environment. Although the small sample, the findings may help to get closer to children’s point of view and allow a transnational reflection on the meanings that children give to their ECEC spaces.

## Conclusions

The research project has been developed within the field of environmental issues in educational contexts. Considering the growing interest in the role of physical space in ECEC centers, as a first step it provided a literature review that on one hand allowed to valorize and systematize what has been said so far on the relation between space and education in the early years, and on the other hand allowed to identify the gaps in the field and some aspects little explored which oriented the research design. The project was conceived within a constructivist approach, consistent with the idea that space that is co-constructed and negotiated through perceptions and behaviors of all those who inhabit it (Strong-Wilson & Ellis, 2014; Vuorisalo et al., 2015). Therefore perceptions are fundamental because they convey the meanings that the main actors of the educational context, parents, teachers, assistants, coordinators and children, have co-constructed on space and through which they act in the space. Such meanings were intended as representations, ideas, affects and beliefs aroused by the physical environment which orient the individual and social experience in the space, influencing actions, perceptions and relations, providing the base for the co-construction of the educational environment. Thus, the research project responded to the need to investigate the meanings given to space, by exploring the points of view of adults and children through which ECEC spaces are experienced.

A strength of the current project is the inclusion of the voices of all stakeholders involved: parents, teachers, assistants, coordinators and children. Although previous studies have underlined the importance of taking into account all points of view (Durak, 2009; Gur, 2014; Iwan & Poon, 2018), so far no research has included all these perspectives in a single study. Such approach allowed to have a multifaceted vision on the same topic, addressing the complexity of the matter and avoiding risks of reductionism. Moreover, the perceptions of parents and assistants acquire relevance since very few studies have explored their point of view in literature, while European policies encourage their involvement in ECEC centers' processes (Van Laere et al., 2018, Vanderbroeck et al., 2011). The research project involved them in the investigation of spatial meanings, considering them actors and not spectators of the process: this approach also responds to criticism on the tendency to think *for* parents rather than thinking *with* parents about educational processes (Hughes and Mac Naughton 2000; Rayna and Rubio 2010) and on the different roles of assistants and

teachers, in which the former were found to be seen as those who 'take care' of children and the latter as those who 'educate' them (Peeters et al., 2018).

Another strength of the project is the valorization of the perspective of children about spatial issues. Although the literature review indicated the presence of some literature investigating children's experience of ECEC spaces, a systematic exploration of children's meanings about such spaces has in fact not yet been conducted. Furthermore, the involvement of children as active participants of educational processes is supported by the Convention on the Rights of the Child (The United Nations, 1989) and by UNICEF (2018), by encouraging to give them a voice and listening to their point of view. Therefore, the research project tried to fill the gap in the literature and respond to the need of giving voice to children.

Finally, the research project provides a comparative study between the meanings given to ECEC spaces in three European countries: Italy, Belgium and Lithuania. Considering the lack of comparative studies in the field and the importance of knowledge about perceptions and customs of different educational realities to overcome unilateral perspectives (Iwan & Poon, 2018; Prochner et al., 2008), this is an added value of the current research.

The main findings emerging from the studies allowed reflections that may help teachers, researchers and policymakers in co-design processes aimed at creating ECEC environments that meet the real needs of all actors involved and that support holistic development for children.

The first study on adults' meanings highlighted the complexity of space issues, which include different levels of meanings related to the opportunities given by space in terms of experiences, relationships, thoughts and connections, besides the mere physical aspects. In particular, parents and teachers seem to agree on the importance of space to offer opportunities to play, learn and experience emotions that seem to be the main reason for their preferences. Parents seem to give also great importance to the relational aspects of space and to perceive it as a dimension that provides continuity to children's different life experiences: class and hall, indoors and outdoors, home and school. Teachers seem also to perceive the value of space when it is felt and thought, in order to implement effective educational actions. In their visions, educational actions should be orientated mainly to the emotional wellbeing of children and to their possibility to meet and share experiences with others. The indication of non-functionality as the first reason for non-preferences

may be a good starting point to reflect on re-design processes which should take into account the specific functions of the space, besides the beauty and the welcoming atmosphere.

Since all groups of participants indicated outdoor spaces as their favorite ones and most of them also declared that they may be improved, it may be noticed that outdoor spaces deserve particular attention as spaces with great potential not yet used: they may become learning spaces where experiences are spontaneously lived with pleasure. The fair agreement on the use of outdoor in all climatic conditions may suggest the need to design spaces usable when the weather is not ideal. At the same time, it may be important the cultural meetings with other countries' realities where the climatic conditions normally did not interfere with the use of outdoor spaces. Although the class, the hall and the atelier resulted the favorite ones, and the reasons for preferences indicate the importance given to the emotional wellbeing of children by all groups of participants and to enrichment for children of meeting peers, such spaces were also chosen as the least favorite spaces due to non-functionality, neglect and noise. These findings suggest that these 'common spaces', often seen as passages, secondary to other more defined spaces, are of great importance in daily ECEC center experiences, so they should be thought and designed as well as the other spaces. In particular, they should be both functional and welcoming and facilitate the meeting of children, avoiding excessive noise.

In relation to eating, sleeping and toilet spaces the findings indicate the double value of these places: besides their 'caring' role it emerged their 'educational' role. This finding is interesting as these spaces are mainly considered spaces for care: the awareness of their value as places where important educational experiences take place emerged in both focus groups discussions and questionnaires: the answers of participants revealed the awareness that in eating space children learn to share and socialize, in sleeping space to relax and rely and in toilet space to be autonomous and to know and experience their body. This awareness should be more explicit in the daily school experience and in school programs, in order to recognize the educational value of these spaces and make them facilitators of deep individual and social learning opportunities. The findings on eating, sleeping and toilet spaces, also may support design processes for these spaces, indicating the main characteristic they should have in the vision of all stakeholders.

In relation to spaces for adults, it emerged the great importance of both spaces for families and for staff professionals. The presence of spaces for families lets parents feel thought and really included in the

reality of the ECEC centers, also meeting their need for a calm place to embrace the delicate moments of the separation and reunion, to breastfeed and to have intimate chat with other families. Adequate spaces for teachers, assistants and coordinators would support these professionals in their work by offering a calm place where take some moments of relax during the continuous challenging experience of everyday work. Such spaces are often absent or not adequate in ECEC centers, then their presence should be designed and provided to offer the best experience also for adults in the educational environment.

The second study allowed to explore children's vision about ECEC spaces, suggesting thoughts and reflections on their perceptions. The preliminary study with drawings and tridimensional models showed how different may be the outcomes of research depending on the may be obtained with different instruments. Comparing the first and second tasks for drawings, children provided very different types of representation: a more standardize representation of the building in response to the first task and a more detailed representation of specific spaces in response to the second task. Moreover, comparing outcomes from drawings and tridimensional model it emerged that children highlighted very different spaces and moments: playing spaces and moments were the most represented in drawings, while 'caring' spaces and moments, especially sleeping ones, were the most represented in the tridimensional model.

Concerning representations in drawings, it was interesting to note that in response to the first task the main represented elements were the school building and natural elements as sun, grass and sky. This may indicate that children associated to the concept of 'school' mainly the building taking into account the outdoors. In response to the second task the most represented elements were playing materials, especially outdoor slides, swings and wooden houses, besides natural/archetypical elements. This also confirms the importance of the outdoors for children, the pleasure to stay and play outside, also highlighting their pleasure in playing activities.

Since outdoors were not included in the tridimensional model, this method consented us to explore indoor spaces too; in response to this new task the great majority of children gave more importance to 'caring' then 'playing' spaces; especially sleeping space was found to be the first choice for positioning all the characters: themselves, friends and teachers. It emerged the pleasure to sleep at school and to be cuddled by teachers. Teachers were also positioned in the class and it was interesting to observe that they have been mainly assigned to activities where teachers don't directly interact with kids: it seems that children perceive

their presence and observe their work even when they are not explicitly dedicating moments to them, as supervisors of the scene.

The main study allowed to identify some points to be taken into account in design processes on ECEC spaces. The great preference for outdoor could encourage to give more attention to explore the possibilities of outdoors, letting them become stimulating and thought spaces which favor a good development of children, especially involving natural elements as the observation of nature was found to be one of the favorite activities. The most represented situation of all was playing, both alone and with others in similar percentages. This could mean that both of these moments are important to children during the school day: programs should include both 'in group activities' and the possibility for children to stay alone and play alone. Among the indoors, the second and third most represented spaces were found to be common spaces, like corridor and hall, and the class. This finding may mean that in children's vision it is important staying in 'common spaces' with other children from other classes as well as staying in their own single class with a smaller group of children. These two types of setting should be present in an ECEC center to consent differentiated experiences during the school day. It was also interesting to observe that the majority of children didn't refer to relationship talking about their favorite space: they talk about their own experience not including others but referring to their own pleasure to play or stay in some spaces. The positive emotional climate represented in most drawings suggests that the school is experienced as a good reality by children. This is also confirmed by the balanced use of colors and the central position of the drawings in the sheets provided by the great majority of children, and also emerge observing the most used archetypical elements, which were land line, representing feelings of security, sun and skyline, representing the desire to grow and learn. All these considerations let think that the school is experienced positively by most children participating in the research.

The third study on the investigation of the meanings of space in Italy, Belgium and Lithuania also provides interesting data that would constitute the basis of reflections and interventions. Regarding the exploration through focus groups, the similar sentences and similar concepts used by participants may mean that there are common visions and values about the ECEC spaces across countries. In all three countries the most frequent category emerged to be 'Space that favors experiences', indicating that it seems to be the most important role of ECEC spaces for all participants. On the contrary, the connection between inside and

outside seems to be an appreciated aspect of space, but among the five it is the less used, then probably it may be considered secondary to others, in participant's vision. The differences in the frequency of the categories across the focus groups of the 3 countries seem to be in line with the pedagogical vision of the country emerging by the analysis of the local literature. This is an interesting finding: on one hand, it indicates the need for coherence between space design and pedagogical vision, and on the other hand, it enhances the importance to explore the experiences of space in different countries to broaden personal vision and get a more and more articulated and complex thought on ECEC spaces.

The findings from questionnaires provide further information on the meanings given to space in the three countries and from the different perspectives of parents, teachers, assistants and coordinators. In particular, the similarity and differences among the countries allowed to understand which may be the common points between countries and the different perceptions, thoughts and customs related to the use of space. Among the similarities, there are the choices about favorite spaces: the class was the first choice in all countries and for all groups of participants, and hall and atelier were often the second and third choices. This may indicate a common vision on the importance of the class-level first, often described as 'a second home' for its cozy and safe atmosphere, and of the school-level then, which is characterized by more opportunities to move, explore, meet, share and experience relationships. Although the favorite spaces were similar in all countries, the reasons for preferences were different: Italian participants referred mainly to the emotional experience of children, Lithuanian participants referred mainly to the learning experience of children, and Belgian participants referred to different reasons depending on the role of participants: children's learning experience (parents), adults' investment of time (teachers), adults' enjoy with children (assistants) and children's emotional experience (coordinators). These differences indicate different visions on the value of ECEC physical environment that influence educational actions and arrangement of space.

Also concerning the least favorite spaces, some similarities were found among the countries: the entrance and the corridor were indicated in all countries, often described as too narrow or too crowded and particularly noisy, indicating the need for re-design intervention that valorize the important relational role of these spaces. The findings on the other specific spaces which were found to be critical in each country allow contextual reflections on their improvement, also considering that non-functionality was indicated in all

countries among the first three reasons for non-preferences, showing the direction on which invest to improve ECEC spaces.

In relation to eating, sleeping and toilet spaces, it emerged their inadequacy, especially in Belgium and Lithuania, where the Educare debate is more discussed: the lower value given to these spaces compared to other more recognized ones is reflected in the lower investment on their arrangement. Nevertheless, in these spaces important developmental goals were achieved by children and a great deal of effort is provided by teachers and assistants. Thus, much attention should be given to such spaces, to support an holistic development of children in the direction of an Educare approach. It was interesting to note that the most important aspects that these spaces should provide seemed to be shared by participants of all three countries, underlying the need for calmness, coziness, relax, comfort and security that children should experience to achieve important competences and autonomies in there.

Interesting reflections have also emerged on outdoor spaces, the use of which is different in countries: while in Italy and Belgium outdoors are freely use during the day, in Lithuania the government recommends their use only in specific weather conditions, due to the harsh climate. Among the countries, Lithuania seems to be the less likely to use outdoor spaces in all climatic conditions, while Belgium was found to be the most likely, probably influenced by the near Netherlands where the potential of outdoor spaces is highly encouraged. The influence of Flemish literature on the use of the outdoors for educational purposes may also have influenced Belgian vision on the possibility for risky play, which received the lowest agreement in Italy and Belgium, and the highest agreement in Belgium. All these considerations enhance thoughts and reflection on how the use of ECEC spaces may be influenced by contextual factors, perceptions and habits and how the personal vision may expand in the meet with other realities.

The final study with children of the three countries also provides interesting findings. Although the sample was small, the categories were found to be balanced having similar frequencies in the three countries. The two most frequent categories were related to playing, both inside and outside, confirming the importance of play in preschool years. Observation of nature as another popular choice adds evidence to the great importance of natural outdoor spaces in children's experience. The learning value of space also was among the most popular aspects of space represented by children in all three countries, supporting the need for an adequate environment which allows pleasant and enriching learning experiences. At the same time the caring

value of space emerged, as children referred to care in the relationship with teachers, and in the Italian context also in relation to peers, especially during the sleeping moment, when older children can cuddle the smaller ones.

The choice of some children to represent ‘caring spaces’ as their favorites indicates that these places could be meaningful and important for their growth. Although these spaces are often seen as less important than more specific ‘educational’ spaces in ECEC centers, they represent the setting for important learning experiences about oneself, the world and relationships. Therefore, these spaces would deserve attention from educators and teachers of the ECEC centers. In relation to the Educare debate, it should be observed that teachers were also represented both in ‘education’ and ‘care’ attitudes. The fact that both learning and caring moments and spaces were represented by children adds evidence to the need to link both aspects toward an Educare approach. The representation of familiars in the favorite spaces is another interesting aspect that supports the need for greater parental involvement in ECEC centers and the inclusion of families in their educational processes. Finally, an interesting data concerning peer-relations emerged in all three countries: although many children represent friends in their drawings and talked about the pleasure of playing together, some of them in each country expressed the need of not always being in a big group. Since this data also emerged in the second main study of the doctoral project with a larger sample of children, in children’s vision it seems very important that ECEC spaces would provide opportunities to find intimacy and experience moments of withdrawal.

The research project allows considerations that may help teachers, researchers and policymakers in co-design processes aimed at creating ECEC environments that meet the real needs of all actors involved and that support holistic development for children. The participants showed to have a very articulated and complex perception of ECEC spaces; although there is a general coherence in their visions, some differences emerged between the different stakeholders and among the three countries involved. This evidence indicates the importance of paying attention to the point of view of all people who live the daily school experience. The many findings of the project reveal points of reflection from which future conceptual and methodological orientations can be derived in order to prompt useful reflections for education professionals, researchers and policymakers.

## **Key recommendations for researchers, teachers and policymakers**

Taking into account the main findings emerging from the research project, some main recommendations for researchers, teachers and policymakers may be summarized as follows:

- In designing and arranging ECEC environments, the perspectives of all stakeholders should be considered: designers, teachers, parents and the children themselves. A co-participated design process could contribute to creating spaces suitable for the real needs of those inhabiting them. To ensure the effectiveness of such a partnership, the presence of facilitators would be preferable in order to ensure jargon-free communication.
- In general, ECEC environments should be characterized by specific features that help promote the healthy development of children. They should be salubrious and safe, not chaotic or crowded, characterized by variety and complexity (a variety of materials and arrangements that encourage and facilitate play...) but with a clear spatial definition (legibility of space, clarity of thematic areas...); they should be equipped with materials suitable for the children's age and the proposed teaching objectives; they should have cozy spaces where children can withdraw and find privacy and intimacy, and outdoor spaces characterized by both natural and manufactured elements, designed to broaden the children's opportunities for play.
- Outdoor spaces are the first favorite spaces of both adults and children in ECEC centers, for the opportunities they offer to experience freedom, adventure, challenge and observation of nature. However, they are often perceived as not adequately equipped, especially referring to safety during risky play and protection during bad weather. More investment should be done to improve these spaces in order to let them become safe spaces that provide deep learning and educational experience, besides their use for the free play of children.
- The visibility of the outdoor spaces from the neighborhood solicits conflicting opinions: on one hand this condition is highly appreciated by both teachers and children for the opportunities to feel connected with the world and observe it from a safe place, on the other hand it seems to arouse worries in adults' vision, since the visibility from outside was among the aspects that found the lowest agreement about outdoors. Since the current study did not investigate the reasons for these worries, further investigations

should be done on this topic, in order to provide an outdoor environment that allows safe contact with the surroundings.

- Among indoor spaces, the class was indicated as the first favorite space for its being ‘as a second home’ where many meaningful moments of the ECEC experience take place: this underlines the great importance of this place suggesting dedicating attention to its arrangement and setting, in order to provide the best experience for children, families and staff professionals. Hall and atelier were often the second and third favorite spaces, due to the opportunity they offer to meet children, families and staff professionals, and at the same time they were often criticized for their crowding and noise: this suggests implementing re-design intervention to valorize the important relational role of these spaces.

- Eating, sleeping and toilet space are important spaces in ECEC centers, where children achieve fundamental developmental goals: although they are usually considered ‘less important’ than other more explicit educational ECEC spaces, they in fact convey very important educational and relational meanings. Thus, they deserve more attention in their location and arrangement, to provide a calm and peaceful environment where children can feel safe and supported in their developmental processes.

- Spaces for families have an important role in ECEC centers, mostly related to the need to meet other families, to find a cozy space in the center to enjoy intimate moments during the delicate separation and reunion times, to breastfeed or to learn new things about childhood from reviews available in the room. ECEC centers should provide such spaces, to enhance parental involvement and family inclusion in the educational processes of the services.

- Spaces for staff professionals often seem to be inadequate: teachers and assistants need some relaxing moments during the working day, due to their highly engaging role and coordinators often do not have a dedicated space, even if they have a leadership role in the staff and they have to meet families in delicate moments of transitions. Such spaces should be provided in ECEC centers, to valorize the role of each professional and offer to every worker a place to withdraw and relax sometimes.

- To improve teachers’ awareness of environmental issues, their involvement in reflective practices on this topic could be helpful. The meeting with educational realities of other countries may also be enriching: the involvement of professionals from different pedagogical contexts, employing different

approaches could provide an opportunity to broaden personal visions and stimulate thoughts on the educational potential of the physical environment.

- In line with parents' expectations, the role of ECEC centers should not only be to take care of children, but also to facilitate positive interaction between parents and professionals, families and the community. In this perspective, ECEC services should have physical spaces to facilitate the development of such relationships, i.e. large spaces for groups and smaller spaces for private conversations.
- With regard to research issues, action-research in this field has proven to be an appropriate strategy that has facilitated the advancement of knowledge and led to improvements, contextually, in ECEC environments. Drawings, photographs and creations with construction materials seem to be effective instruments for analyzing children's perceptions of space. Interviews and focus groups seem to be effective instruments for investigating adults' perceptions. In addition, direct measures should be accompanied by ecological observations to help understand the implicit meanings of spaces, beyond those represented and explicit.
- ECEC spaces should not be static and immutable but conceived as dynamic elements, which easily change according to the interests of the actors who inhabit them and their different emerging needs from time to time. Such changes should however preserve a general contextual stability, which is a fundamental element for the creation of a safe environment. Therefore, emerges the need for gradual, participatory, negotiated and situated changes, that take into account the point of view of all stakeholders.



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## Appendix 1

### Relevant information of the included studies and coding system of the literature review (Chapter 1)

Authors (Year) <i>Country</i>	Aim	Instruments and Method [Type of Service] <i>Participant</i>	Main Findings	Code
Acer et al. (2016) <i>Turkey</i>	To evaluate changes in children's play behavior after a classroom redesign intervention.	Observation pre and post-intervention. [1 Nursery school] <i>Children (5 y.o.)</i>	The improved distinction between learning centers and the increased amount of play materials improve the continuity and variety of children's play.	B
Barnett (2016) <i>UK</i>	To explore the process of creating meanings through repeated encounters with evocative objects.	Video-observations + interviews + informal conversations [1 Nursery school] <i>Not specified</i>	Responses to one evocative object (children's play in the fine sand area) illustrate the "turning toward and away" from the object to engage with broader themes. Several signs of the characteristics of effective learning (EYFS) were found in the fine sand area.	B+AP
Beacham (2006) <i>USA</i>	To identify communication barriers facing designers, educators and parents during preschool design.	Focus-group + interviews [1 Preschool] <i>20 adults: educators, designers and parents</i>	Data collected indicated a discrepancy in the perception of communication levels between participant groups and a desire to improve interdisciplinary communication.	AP
Berris & Miller (2011) <i>Australia</i>	To investigate educators' and Parents' perceptions of the effects of p.e. on child development.	Interviews + CPERS [2 Early Learning Centers] <i>4 Educators + 4 parents</i>	Four key themes emerged: Emotional Connection, Experiencing Design, Hub for Community Integration and Future Vision. It emerged the need for a collaborative and jargon-free approach to designing space.	AP
Bers et al. (2018) <i>Australia</i>	To identify design principles of successful early childhood makerspaces (ECMSs).	Action Research: observation of children + interviews and brainstorming with educators [2 ECMSs]	Artifacts in the space stimulate community building. Children explore new ideas and express themselves using novel tools and media.	AP

Børve & Børve (2017) <i>Norway</i>	To investigate educators' perception about gender connotation of spaces.	<i>Children and educators</i> Interviews. [1 kindergarten] 8 educators	Rooms and zone were strongly coded with a message of expectations and intention for the space and user's gender. Gender is interwoven in the p.e.. Materials and play practices produce and reproduce the employees' ideas of gender.	AP
Botsoglou et al. (2017) <i>Greece</i>	To improve learning environments through Mosaic Approach and measure the effects of intervention.	Action-Research: Mosaic approach and ECERS-R pre-post intervention. [1 Preschool] 29 children (4-5 y.o.)	After the co-participatory intervention there were statistically significant changes in six of the seven ECERS-R subscales, included "Space and furnishings". Children's voices can be included in redesign processes.	CP
Brown & Burger (1984) <i>USA</i>	To investigate how p.e. influence preschool children's behaviors on playgrounds.	Observations in 6 different settings. [6 Preschools and daycares] 72 children (3,5-4,5 y.o.)	The most important design characteristics seemed to be: zoning, encapsulation, and the provision of appropriate materials. To positively influence children's behaviors, design potentials should be developed and considered within a broader environmental context	B
Brussoni et al. (2017) <i>USA</i>	To investigate the effects of adding natural materials (Seven Cs) in outdoor play environment.	Observations on 2 different settings. [2 childcare centers] 45 children (2-5 y.o.)	After the intervention depressed affect, antisocial behavior and moderate to vigorous physical activity decreased, while play with natural materials, independent play, and prosocial behaviors increased. Educators observed improved socialization, problem-solving, focus, self-regulation, creativity and self-confidence, and reduced stress, boredom and injury.	AP+B
Chow & Louie (2013) <i>China</i>	To investigate the influence of p.e. on gross motor skills.	Motor skills assessment and observation of p.e. [2 preschools] 239 children (3-6,5 y.o.)	Higher school fees and larger indoor and outdoor physical play areas were associated with better performance in locomotor skills but not in object control skills.	C
Cloward Drown (2014) <i>USA</i>	To investigate the relation between p.e. and dramatic play.	Observation and behavior mapping. [1 Preschool] 24 children (3-5 y.o.)	Environments designed with child-scale constructive play props, a sense of enclosure, and natural surroundings are more likely to support complex dramatic play.	B

Colwell et al. (2016) <i>USA</i>	To investigate how children create their secret hiding places.	Focus group with children and observation of creative process. [1 child development center] <i>10 children (3-5 y.o.)</i>	Children preferred flexible materials (e.g., blankets, bed sheets, cardboard tubes) to create secret hiding places. They worked collaboratively to create their spaces. The created spaces provided refuge for the children.	CP
Cullen (1993) <i>New Zealand</i>	To investigate how children use and perceive outdoor play.	Observations and interviews with children. [3 preschools and 7 preprimary centers] <i>40 children (m.a.: 5 y.o.)</i>	The most frequent outdoor activities were: physical play, creative play and non-play. Teachers' role was to supervise. The majority of children perceived that outdoor play was independent and did not require assistance from the teacher.	CP+B
Dennis et al (2014) <i>USA</i>	To investigate the extent to which Nature Explore and the outdoor Classroom Project produced their intended outcome.	Telephone interviews. [11 child care centers] <i>Teachers and administrators</i>	The most successful environments: maximized choices; provided many distinct spaces, especially child-sized ones; embedded play affordances within pathways and borders; encouraged spatial evolution; supported ongoing stakeholder engagement.	AP
Doctoroff (2001) <i>USA</i>	To reflect on creation of quality environment to promote adequate child development.	Literature review. [Not specified] <i>n.a.</i>	Classroom play environment that is carefully planned to meet the developmental, sensorimotor, behavioral, social, and emotional needs of each child has the potential to enrich and extend the play possibilities for all of the children.	B+C+E
Durak (2009) <i>Turkey</i>	To investigate children's preferences about p.e. and promote adult-child interaction through High/Scope approach	Action-Research. High/Scope approach: creation of a 3d model and drawing of the favorite place. [1 Preschool] <i>11 children (5 y.o.), 2 educators, 1 parent</i>	Children have personalized preferences about p.e.. The activities carried-on give children the sense of belonging to a larger community in which students, teachers and parents share the same values and agree on the same goals.	CP

Falender & Mehrabian (1979) <i>USA</i>	To investigate the effects of p.e. on children development.	Theoretical article. [Daycare centers] <i>n.a.</i>	Day care settings can be ordered in terms of their beneficial-detrimental effects by considering the preference levels that may be assigned to emotions typically elicited by such settings: Excitement/Calm; Comfort/Boredom; Depression/Anxiety; Anger or Frustration).	CP
Fjørtoft (2001) <i>Norway</i>	To investigate the relation between amount of outdoor play and children's motor skills.	Motor skills assessment in 2 different conditions. [2 kindergartens] <i>75 children (5-7 y.o.)</i>	The children using the forest as a playscape performed better in motor skills than the children on the traditional playground. The physical diversity increases the opportunities for learning and development.	C
Friedmann & Thompson (1995) <i>USA</i>	To investigate the effect of two different intimate spaces on children's behavior.	Observations in 4 different conditions. [1 Preschool] <i>Children (3-5- y.o.)</i>	Preschool children used the intimate spaces frequently and stayed in them for varying lengths of time. A significant interaction between intimate space type and subject age was observed.	E
Gayle-Evans (2004) <i>USA</i>	To investigate how multicultural education materials and activities in kindergarten enhance inclusion.	Questionnaires. [Not specified] <i>477 educators</i>	Teachers used bulletin boards in different ways but not to support multicultural education. Many teachers had books about different cultures in their classroom, but only few had books in other languages.	AP
Gillespie (2000) <i>USA</i>	To investigate how American child cares can integrate Reggio Emilia Approach in their practice.	Observations of children, interviews with educators, children and parents. [6 Head Start classrooms] <i>100 children, 21 educators and parents</i>	After the addition of "homey" touches in the house-keeping area it was observed an increase in dramatic play and more appropriate play. After the addition of mirrors, light tables and clear box to store materials, it was observed that children used a wider variety of art materials.	AP+B
Giusti et al. (2014) <i>Sweden</i>	To investigate how p.e. can enhance affinity with the biosphere.	(a) assessment of p.e. (b) assessment of affinity with the biosphere: games and interviews (c) survey for parents.	Preschools with routines closer to nature have children who are more empathetic and concerned for non-human life forms, and more cognitively aware of human-nature interdependence.	E

		[134 Preschools] (a)134 municipal preschools. (b)27 preschool children. (c)27 parents		
Gonzales-Mena (2013) <i>USA</i>	To identify characteristics of p.e. to promote child development.	Theoretical article. [Infant and toddler centers] <i>n.a.</i>	Play environment should be comfortable and homey while offering the right amount of interesting, exploratory learning experiences. Babies benefit less from complex busy toys than they do from manipulating simple play objects in a relaxed manner.	B
Guo et al. (2012) <i>USA</i>	To investigate the relation between physical and psychological environment and literacy growth.	ELLCO (p.e. rating scale); CLASS (psychological environment rating scale); PALS-Pre-k (literacy skills). [38 Preschools] 209 children (3-5 y.o.), 30 educators	Among the features of the literacy p.e., only the quality of literacy area was a positive and significant predictor of children's gains in alphabet knowledge (but not name-writing ability). The presence of writing materials was positively and significantly associated with children's growth in alphabet knowledge and name-writing ability only within the context of high-quality, instructionally supportive classrooms.	C
Gur (2014) <i>Turkey</i>	To identify physical factors of environment which affect center's selection.	Questionnaire. [2 child development centers] 95 educators and parents	In adults' vision, center should be homey, stimulating, safe and child-centered. The appearance of the building's exterior, its location, and the quality of surrounding buildings and other facilities are other important variables in this image.	AP
Havu-Nuutinen & Nikko (2014) <i>Finland</i>	To investigate teachers', parents' and children' perception of preschool in a comprehensive school context.	Questionnaires for educators and parents; interviews with children. [1 Preschool] 121 children, 97 parents, 18 educators	The p.e. is one significant element that affect how well education, instruction, children's play and co-operation can be organized and which factors can be emphasized in a preschool that is under the same roof as the comprehensive school.	CP+AP

Herrington & Studtmann (1988) <i>USA</i>	To investigate the effects of adding natural elements in outdoor environment on children's development.	Observations pre and post intervention. [1 child care center] <i>36 children (2-6 y.o.)</i>	The addition of natural elements encouraged social, emotional and cognitive development. The creation of vegetative rooms enabled children to develop a sense of place within their play yard environment.	B
Ihmeideh e Al-Qaryouti (2016) <i>Oman</i>	To investigate teachers' views and roles regarding children's outdoor play environments.	Observations and Interviews. [15 kindergartens] <i>30 educators</i>	Teachers usually took on the role of supervising in outdoor environment, feeling the need to know more about how to maintain safety criteria. Specific difficulties in carrying on activities in outdoor spaces were found to be: hot climate, a shortage of materials and equipment, a lack of natural surroundings and the short length of time spent outdoors.	AP
Ivan & Poon (2018) <i>China, USA, Indonesia</i>	To investigate architects' and early educators' notions of quality preschool environments.	Comparison of three case studies: ECERS-R, CPERS and interviews [3 Preschools] <i>Architects, centers' manager and educators</i>	Architect's view of a quality learning environment included: layout of classrooms, playgrounds, teachers' lounge, lobby, and so forth. Educators' view included how the space works to support their curriculum and how the design could provide comfortable space for the teaching and learning activities.	AP
Izadpanah & Gunce (2014) <i>Cyprus</i>	To define a theoretical guideline that raises teachers' awareness about the potential of learning spaces and guides them to improve the quality of the p.e.	Literature review. [Preschools] <i>n.a.</i>	High/Scope key principles and experiences should enhance teachers' awareness: p.e. should be safe and stimulating, have an appropriate level of flexibility, provide adequate materials and spaces to social activities, allow children to identify zones and spaces and allow teachers to participate in activities.	AP
Jalili & Shaabani (2016) <i>Iran</i>	To identify features of p.e. that can enhance the creativity of children.	Literature review. [Educational spaces: kindergartens, day care centers, and elementary schools in particular] <i>n.a.</i>	Designing the educational spaces matching children's mentality, open and flexible spaces for their playing, using festive stimulant colors, and an architecture corresponding to their age have an undeniable influence in increasing the creativity in children.	

Jayasuriya et al (2016) <i>USA</i>	To investigate parents' perceptions of outdoor play.	Questionnaires. [12 childcare centers] <i>98 Parents</i>	Parents reported wanting their child to spend significantly more time playing outside during a full day of childcare than the recommended minimum. However, over one-half of parents reported that they did not know how much time their child actually spent playing outside and 43% reported that they did not know their childcare center's outdoor play policies.	AP
Kantrowitz & Evans (2004) <i>USA</i>	To investigate the relation between the ratio of children per activity area and off-task behavior and type of play.	Observations. [3 daycare centers] <i>21 children (4-5 y.o.)</i>	The ratio of children to the number of activity areas in the classroom was positively correlated with off-task time. There is also a marginal, negative correlation to engagement in constructive play.	B
Kennedy (1991) <i>USA</i>	To investigate how architecture influences children's development, differences between children's and adults' perception.	Theoretical article. [Child care centers] <i>n.a.</i>	Four broad, qualitative characteristics of optimal p.e. were identified: they should be homelike, have an unfinished character, have an open relationship to the natural world, and provide an overall variety and balance of kids of spaces.	CP
Kochanowsky & Carr (2014) <i>USA</i>	To investigate the relation between p.e. and self-determination.	Observation and behavior map of children, focus-group with educators. [1 Nature Playscape] <i>65 children (3-5 y.o.)</i>	Environments that are intentionally designed for child-directed play in nature encourage choice-making, problem-solving, self-regulation and engagement. How children interact with the environment hinges on the beliefs, attitudes and guidance techniques of the caregiver.	B+E
Laike (1997) <i>Sweden</i>	To investigate the impact of p.e. on children's mood and behavior.	Assessment of p.e. and psychosocial environment; inventory for children's personality; observations of children's behavior. [9 daycare centers] <i>74 children (3-7,2 y.o.)</i>	The activation level as well as the control of the behavior were related to the individual traits of the children, whereas the directedness and the hedonic tone of the behavior were related to the environment and the situation (meal or free play). The most important quality of p.e. was unity.	E

Larson et al. (1990) <i>USA</i>	To investigate the relation between unit-play complexity of p.e. and child behavior.	Observations. [3 kindergartens] <i>24 children (3-6 y.o.)</i>	Play-unit complexity had a significant relation to play-group size, degree of involvement, amount of pleasurable affect and length of activity segments exhibited in a child's play.	B
Lee et al. (1997) <i>South Korea</i>	Investigate the relation between p.e. and language development.	Observations and assessment of language development + ECERS and I/TERS. [homecares and daycares] <i>60+59 children (1-3 y.o.)</i>	ECERS was the best predictor among daycare environments and teacher child interaction pattern were also found to be significant. Teachers and daycare mothers engaged in better quality of interaction than homecare mothers.	C
Marques & Sperb (2013) <i>Brazil</i>	To investigate children's perception about preschool.	Observation of three play session created ad hoc. [1 Preschool] <i>10 children (5 y.o.)</i>	In relation to conceptions about school, children highlighted play, school activities, characteristics of the p.e., teachers and school rules.	CP
Marshall & Lewis (2014) <i>UK</i>	To investigate educators' beliefs about the impact of the child's environment on language development.	Interviews. [children's centers, nurseries and primary schools] <i>12 educators (children from birth to 5 years and 11 months)</i>	The settings in which the children are situated was considered central in language development. Participants highlighted the need for babies to feel secure, be given attention, be allowed to explore their environment and be exposed to a range of experiences.	AP
Martins & Gonzalves (2014) <i>Brazil</i>	To investigate children's sense of appropriation of space.	Semiotic analysis of drawings. [1 Preschool] <i>108 children (4-6 y.o.)</i>	The first favorite place emerged to be the playground, the second paws the sports court, and the third was the classroom. All drawings confirm the appropriation of the spaces of the preschool, however the appropriation is singular for each child.	CP
Mashburn (2008) <i>USA</i>	To investigate the relation between preschool quality of social and p.e. and language development.	Assessment of language development at beginning and end of the preschool year + ECERS-R. [124 preschools] <i>540 children (m.a.=4 y.o.)</i>	Quality of the p.e. was not associated with children's outcomes at the end of preschool; however, higher quality of p.e. moderated the negative associations between income and academic development and between non-White ethnicity and literacy development.	C

Maxwell (1996) <i>USA</i>	To investigate the effects of home and day care crowding on cognitive and social development	Assessment of cognitive skills; assessment of social and behavioral disturbance; assessment of crowding. [Day care and Head Start] <i>114 children (3-5,5 y.o.)</i>	Children from crowded homes and crowded classrooms were the most negatively affected in terms of behavioral disturbance. In addition, children in crowded classrooms scored lower in the Children's Embedded Figures Test than those in uncrowded classrooms.	CP+C+E
Maxwell (2007) <i>USA</i>	To investigate the relation between p.e. and children's competence.	Assessment of p.e. + assessment of children's cognitive competence and self-reported competence. [8 childcare classrooms] <i>79 children (3-4 y.o.)</i>	P.e. was associated to measures of competency, one of which is a self-perception measure. Younger children's competency, those in the 3-year-olds' classrooms as opposed to the 4-year-olds' classrooms, is most affected by the p.e..	C+E
Maxwell & Chmielewski (2008) <i>USA</i>	To investigate the relation between p.e. personalization and children's self-esteem.	Self-Esteem assessment (SEI; CISE) [2 elementary schools] <i>38 children (m.a.=6,6 y.o.)</i>	On both measures of self-esteem, there was a significant positive effect of classroom personalization for first graders. However, for kindergarteners there was a significant positive effect for only one measure, the CISE.	E
Maynard & Waters (2007) <i>UK</i>	To document teachers' views on the use and potential of the outdoor environment and to document teachers' current outdoor practice.	Observations and interviews with headteachers and teachers. [4 primary schools] <i>Educators</i>	The teachers went outside only in good weather and 'normal' outdoor sessions took place on the school yard: little use was made of natural environments. Only one respondent referred to the learning potential of play and child-initiated activity in the outdoor environment.	AP
McClintic & Petty (2015) <i>USA</i>	To investigate educators' beliefs and practices about outdoor play.	Case Study: observations, interviews, journal questions for educators. [1 Preschool] <i>10 educators</i>	Teachers perceived that the physical design out of the outdoor environment posed limitations for learning activities. Recollections of their own experience provided a shared value of freedom during outdoor play. Yet, during outdoor play teachers displayed an adherence to rules or a "philosophy-reality conflict".	AP

McLaren et al (2011) <i>Canada</i>	To rethink inclusive classrooms for optimal learning.	Literature review. [Kindergartens] <i>n.a.</i>	It emerged a positive link between physical and cognitive development and the ability to move and explore independently in indoor and outdoor environments. Authors propose a non- dualistic framework for re-conceptualizing the ‘body- environment’ interface, where neither the body nor the environment is given primacy.	B
Melhuus (2012) <i>Norway</i>	To investigate children’s and adults’ perceptions about nature as educational practice.	Observations, interviews with children, play, asking children to take photos and drawing maps. [1 Daycare center] <i>13 children (3-6 y.o.)</i>	Children structured the place and the artefacts so that they became part of the children’s understanding of the social life they were a part of. They make connections between the forest space and ‘the modern world’, building bridges between different contexts.	CP+AP
Millei & Gallagher (2011) <i>Australia</i>	To improve bathroom design space through co- design intervention.	Action-Research: focus group, photographs, drawings, brainstorming with children. Interviews with parents. Observations and photos by staff members. [1 Preschool] <i>32 children (3-5 y.o.), 10 staff members and 14 parents</i>	The intervention improved bathroom design flaws. resolve these issues. Children were active in all phases of the research project, as informants, imaginers, designers, and then as builders of their new bathroom. The perspectives offered by participants brought new ways to understand the bathroom as a social and cultural space	CP
Mincey (1982) <i>USA</i>	To investigate the relation between p.e. and child development.	Literature review. [Preschools] <i>n.a.</i>	P.e. should be arranged in such a way that the children have opportunities for exploration, discovery, absorption of ideas and concepts, and free expression of their own thoughts and feelings.	C
Mohamed & Marzouk (2016) <i>Egypt</i>	To investigate the association between preschool classroom quality and children's	Focus Group with educators + ECERS-R + assessment of social-	Two subscales of ECERS-R related to p.e., namely “space and furnishing” and “language and reasoning” predicted the total protective factor of DECA-C. Results	E

	social-emotional problems.	emotional problems (DECA-C). [10 kindergartens] <i>141 children (5-6,5 y.o.)</i>	suggest that p.e. can contribute to prevent social emotional problems.	
Moore (1986) <i>USA</i>	To investigate the effects of spatial definition on behavior.	Observations and assessment of physical and psychological environment. [14 child care centers] <i>2,5-6 y.o. children</i>	Significantly more exploratory behavior, social interaction and cooperation occurred in spatially well-defined behavior settings than in moderately or poorly defined settings. Strong interactions were noted between teacher styles and spatial definition in affecting children's behavior.	B
Morrow (1990) <i>USA</i>	To investigate the relation between p.e. and literacy engagement during play.	Observation pre and post intervention in 3 different experimental conditions and 1 control condition. [13 kindergarten classrooms] <i>170 children</i>	Literacy behaviors increased significantly in all the experimental group over the control group. Thematic play with teacher guidance yielded greatest gains; the provision of books, pencils and paper with teacher guidance yielded the next greatest gains; and thematic play without teacher guidance yielded third greatest gains. The effect of the treatments continued after a delayed period of time.	C
Morrow & Weinstein (1982) <i>USA</i>	To investigate the relation between p.e. and literacy attitude.	Observation pre and post intervention in 3 different experimental conditions and 1 control condition. [13 preschool classes] <i>about 260 children</i>	Literature use from the preintervention period to the postintervention period was significantly greater in all three experimental conditions than in the control condition. However, the changes produced by the three experimental treatments did not differ significantly from one another.	C
Moser & Martinsen (2010) <i>Norway</i>	To investigate educators' perception about how outdoor environment can be a pedagogical space.	Questionnaires (on outdoor space and organization of time, everyday life and p.e.) and observations. [117 kindergartens]	Norwegian children spend a significant amount of time in Kindergarten outdoors, 70% and 31% in summer and winter semester respectively. They also have large outdoor areas in their institutions (approx. 47 m <sup>2</sup> pr. child). Above 80% of the head teachers agree that the outdoor area has secret places where children can play	AP

Nah & Lee (2016) <i>South Korea</i>	To enhance children's participation.	<i>Head teachers and pedagogical leaders</i> Action-Research: circle-time, observations, photographs, teacher-report diary, interviews with children. [1 child care center] <i>25 children (5-6 y.o.) and 1 educator</i>	undisturbed. Norwegian children get some opportunities to independently organize their play. Children were capable of expressing their points of view and could contribute directly to issues that mattered to them if they worked in accordance with "child-centered" methods and were appropriately supported by adults. The educator also changed her perspectives and attitudes toward children's rights and capacities as well as toward outdoor play.	CP
Neill (1982) <i>UK</i>	To investigate the relation between p.e. and child behavior.	Observations, assessment of p.e.: openness; space per child; room group size. [3 nursery school + 2 day nursery] <i>40 children (3-5 y.o.)</i>	Children in the more open play units spent less time on school-oriented activities and received fewer staff contacts but more time moving around, doing nothing, and in aggression and active play. Social interaction was little related to building design but was affected by amount of nursery experience.	B
Neuman & Roskos (1992) <i>USA</i>	To investigate the effects of p.e. on children's literacy behaviors.	Observations pre and post intervention. [2 daycare centers] <i>91 children (3-5 y.o.)</i>	Significant differences were recorded for the intervention group in the frequency, duration and complexity of literacy demonstration in play. Children in the intervention group incorporated literacy objects in more diverse and functional ways in their play, using more explicit language than the nonintervention group.	C
Nevanen et al. (2014) <i>Norway</i>	To investigate how educators and artist perceive kindergartens and schools as art educational environments.	Interviews, final reports, follow-up material from an art project. [kindergarten and first grade school] <i>18 educator and artists</i>	Rooms and indoor equipment were often insufficient and too small for art education, but the artists and teachers found new creative and individual solutions to carry out the activities. The environment did not support lasting and concentrated artwork. A familiar place was seen as an advantage, especially for small children.	AP

NICHD (1996) <i>USA</i>	To identify structural characteristics and caregivers' qualifications associated with positive caregiving behaviors.	Observations during 2 half-days in five types of nonmaternal child care [centers, child care homes, in-home sitters, grandparents, and fathers]. <i>576 children (m.a. = 6 months)</i>	Small group sizes, low child-adult ratios, caregivers' nonauthoritarian child-rearing beliefs, and safe, clean, and stimulating p.e. were consistently associated with positive caregiving behaviors within each of these different types of settings.	E
Prochner et al. (2008) <i>Canada, India and South Africa</i>	To investigate how educational practice balance indigenous culture and globalization.	Observations and interviews with educators. [3 preschool classes] <i>Children (1,5-6 y.o.)</i>	Western preschools had an abundance of materials organized into categories. The basic materials at the Indian preschool remind to the importance given to teacher-child interaction rather than children's play with objects. All the preschools were seen to support indigenous culture, values, and beliefs, in their role of preparing children for formal schooling in a constantly changing world.	AP
Provost et al. (1991) <i>Canada</i>	To investigate the relation between "continuity daycare/home environment" and children's social development.	Assessment of play material and observation of children's behavior. [Homes and daycares] <i>42 children (2-5 y.o.)</i>	When home and daycare centers environments are different from each other in terms of presence of different type of play materials, children show more cooperative and associative play.	E
Rasmussen (2004) <i>Denmark</i>	To investigate children's perceptions about educational places.	(a) photographs taken by children. (b) children guided tour. [Homes, schools and recreational institutions] <i>(a) 88 children (5-12 y.o.)</i> <i>(b) 60 children (5-12 y.o.)</i>	Children can perceive spaces that are invisible to an adult eye: they invent imaginary places, both in natural or designed environments, reinterpreting the meaning and purpose of existing spaces and materials.	CP
Read (2007) <i>USA</i>	To identify external features of child care	Photographs of child care buildings and reflections	The majority of sites included in the study incorporated many physical design elements that create a sense of	CP

	buildings which can promote a "sense of place".	on theories about sense of place. [child care buildings] <i>n.a.</i>	place for children in preschool environments, including small-scale structures, windows, landscaping, natural wall materials, and thresholds.	
Read (2003) <i>USA</i>	To compare the use of color in physical design features associated with the exterior design and interior design of child care centers.	Observations and photographs. [101 child care centers] <i>n.a.</i>	Color was evidenced on the exterior of the centers at just over half of the sample. The interior environments of the child care facilities had warm colors and bright accents in the setting; however, the majority of centers used only white, off-white, or gray on the walls.	CP+AP
Read et al. (1999) <i>USA</i>	To investigate the effects of p.e. on cooperative behavior.	Observations in 4 conditions. [4 half-day preschool classes] <i>30 children (3-6 y.o.)</i>	Differentiation in ceiling height or wall color were related to higher levels of cooperative behavior among preschool children. As well, developmental level and gender were significant predictors of children's cooperative behavior between spatial conditions.	B
Sager et al. (2003) <i>Brasil</i>	To investigate the relation between p.e. and children's interaction.	Assessment of p.e. and observations. [2 preschools]  <i>50 children (5-6 y.o.)</i>	Children established more associative and parallel interaction states in the large playground, and unoccupied and solitary in the small playground. A higher association between interactions and types of play in the small playground was found.	B
Sahin & Türkün Dostoğlu (2012) <i>Turkey</i>	To investigate children's evaluations and expectations about their preschool settings.	Interviews with children. [1 kindergarten] <i>24 children (5-6 y.o.)</i>	Children were able to construct successful verbal statements about their p.e. by referring to their own experience. Designers can obtain important data for the design process by consulting children.	CP
Sahin et al. (2011) <i>Turkey</i>	To investigate teachers' perceptions of the influence of p.e. on classroom management.	Interviews with teachers. [not specified schools] <i>36 teachers</i>	Management should be influenced by: crowdedness, shape of classroom, possibility to display children's work on walls, separation of interest areas, adequate light and temperature, child accessibility to materials, Adequate furniture, equipment and materials.	AP

Scoditti et al. (2011) <i>Italy</i>	To investigate the relation between p.e. and motor development.	Literature review. [Kindergartens] <i>n.a.</i>	Furniture should provide children with metamorphic forms which adapt to their needs and preferences. The planning and design of buildings and spaces dedicated to children should consider the child at the center of the space built.	C
Shapiro (1975) <i>USA</i>	To investigate the influence of p.e. on children's and adults' behavior.	Observations. [17 half day nursery schools] <i>274 children (4 y.o.)</i>	Differences in number of child-teacher contacts were due to class size -total number of children- as well as child-teacher ratio. Teachers' beliefs about what is important for children to learn are expressed by the way they set up and use areas.	B
Shim et al. (2001) <i>USA</i>	To investigate the relation between p.e. and children's play behaviors.	Observations, assessment of child care programs, assessment of p.e. [3 child care centers] <i>41 children (2-5 y.o)</i>	The children were more likely to engage in the most complex form of peer play outdoors than indoors. In outdoor play, the older age group interact with peers more than the younger one. The outdoor playground offered to older preschoolers particular types of play experiences (i.e., functional play and dramatic play) more readily than the classroom.	B
Skånfors et al. (2009) <i>Sweden</i>	To investigate withdrawal strategies of children.	Observations. [1 preschool] <i>21 children (2-5 y.o.) from one preschool</i>	Children, in their peer cultures, construct withdrawal strategies – ‘making oneself inaccessible’ and ‘creating and protecting shared hidden spaces’ – by making use of the preschool's organization of time and space.	CP+E
Stephenson (2002) <i>New Zealand</i>	To investigate the opportunities of outdoor play.	Observations of a case study. [1 child care center] <i>1 child (1 y.o.)</i>	The child often had unlimited access to water for long periods, and his explorations were carried out with a rare intensity and seemed to be deeply satisfying for him. The child used the water was used in many ways.	B
Stern-Ellran et al. (2016) <i>Israel</i>	To investigate the effects of colorful vs. non-colorful play area on structured play.	Observations pre and post intervention in 2 conditions and 3 types of play. [not specified] <i>15 children (3-4 y.o.)</i>	Colorful play surface interfered with preschoolers' structured play, inducing more behaviors indicating disruption in task execution compared with a non-colorful play surface.	C

Storli & Sandseter (2015) <i>Norway</i>	To investigate preschool teachers' perceptions of children's rough-and-tumble play" indoor and outdoor	Questionnaire. [Preschools] <i>138 preschool teachers</i>	Play-fighting and chase games are the dramatic play types most restricted by the preschool teachers, and rough-and-tumble play is significantly less restricted in outdoor environments compared to indoors.	AP
Strong-Wilson & Ellis (2007) <i>Canada</i>	To pursue the implications of "environment as 3rd teacher" to classrooms and teacher education	Literature review. [not specified] <i>n.a.</i>	A Reggio Emilia approach advocates that teachers pay close attention to the myriad of ways that space can be made to "speak" and invite interaction: provocation, marketplace, and other strategies should be introduced by teacher to invite interaction.	AP
Trancik & Evans (1995) <i>USA</i>	To investigate how p.e. can enhance sense of competence in daycare centers.	Literature review. [daycare centers] <i>n.a.</i>	Physical characteristics of daycare centers that may afford increased competency include: control, privacy, complexity, exploration, restoration, place identity, legibility and safety. In addition to the needs of children, it is important to consider the needs of teachers and other daycare center employees.	E
True et al (2017) <i>USA</i>	To investigate the effect of p.e. on motor competence.	Observations, assessment of motor competence. Interviews, measurement of playground and ECERS-R [22 preschools] <i>299 children (3-5 y.o.)</i>	Classroom size/child ratio, teacher education, playground size, electronic media use, and trips to outside organizations emerged as significant predictors of locomotor score and total motor score. The object control model was non-significant.	C
Twardosz et al. (1974) <i>USA</i>	To investigate the effects of open-space on children behavior.	Observations in 2 conditions. [infant and a toddler day care center] <i>children (1 month to 6 y-o)</i>	Open environment increased the visibility of children and educators; reduced the effort required to supervise those who were not immediately visible; did not adversely affect the sleep of either infants or toddlers; did not affect small group pre-academic activities with toddlers.	B+C
Ulset et al (2017) <i>Norway</i>	To investigate the relation between time spent outdoors and cognitive	Assessment of cognitive skills and behavioral problems; Interviews with	It was found a positive relation between outdoor hours and children's digit span scores, and an inverse relation	C+E

	and behavioral development.	parents and centers' manager. [Preschool] <i>526 children (m.a.=4,5 y.o.)</i>	between outdoor hours and inattention-hyperactivity symptoms, controlling for a host of possible confounds.	
Vuorisalo et al. (2015) <i>Finland</i>	To investigate how children and educators construct relational space.	Observations in two different contexts. [1 daycare + 1 preschool] <i>12 children (1-3 y.o.), 3 educators. 21 children (6 y.o.), 3 educators.</i>	Children and educators engage in the process of constructing space from diverse positions and the institutional context is embedded within this process.	CP
Wachs (1989) <i>USA</i>	To bridge the communication gap between researchers and education professionals.	Theoretical article. [child care] <i>n.a.</i>	To bridge the communication gap the discourse should be organized around three principle of environmental actions: (1) physical and social environments are interrelated, (2) different aspects of the environment influence different aspects of development, (3) the impact of the environment is not the same for all children.	AP
Whitehead & Ginsberg (1999) <i>USA</i>	To identify how to create a family-like atmosphere in child care settings.	Literature review. [child care] <i>n.a.</i>	To create a family-like atmosphere in child care settings in large child-care centers the p.e. should be characterized by: cozy spaces, beauty, outdoor spaces and spaces for family interaction. Other important issues are the caregiving climate and the family involvement.	E
Wigth et al (2016) <i>USA</i>	To investigate the relation between between p.e. and environmentally responsible behaviors.	Observation of 2 settings. [1 playscape and 1 traditional playground] <i>64 children (3-5 y.o.)</i>	Several locations on the playscape elicited the highest form of exploration and inquiry: naming parts of nature and representing information. In contrast, on the traditional playground, children demonstrated the same level of inquiry only at a teacher-led activity.	B
Zamani (2016) <i>USA</i>	To investigate the relation between p.e. and children's cognitive play opportunities.	Observations, behavioral map, interviews with children. [1 preschool]	The natural and mixed (natural+manufactured) zones offered a diverse spectrum of cognitive play, were supportive of different learning styles and expanded children's understanding about world. The accessible	CP+B

		<i>36 children (4-5 y.o.)</i>	loose materials inspired children's imagination, social engagement and games. The manufactured zone offered the most functional and non-play behaviors, and was perceived as an unexciting and predictable.	
Zamani (2017) USA	To investigate what stimulates children's cognitive play in outdoor preschools	photo preferences and interviews with children [1 preschool] <i>22 children (4-5 y.o.)</i>	Children mainly enjoyed functional and dramatic play. They mostly preferred mixed behavior settings that incorporated ranges of natural and manufactured elements. Compared to other settings, children found mixed settings provided the most opportunities for functional, constructive, dramatic, and game with rules play.	CP

---

*Note:* p.e. = physical environment; y.o.= years old; m.a.= mean age; n.a.= not applicable; AP= Adults' perception; CP=Children's perception;

B=Behavior; C=Cognition; E=Emotion

## Appendix 2

### Questionnaire

Hi! This questionnaire is addressed to families and professionals (coordinators, teachers, educators, assistants ...) of Early Childhood Education and Care (ECEC) centers. In particular, we would like to collect some information on how the spaces of ECEC centers are experienced and perceived by those who live them daily, in order to make them always better and suitable for the needs of adults and children. This is a short questionnaire, it will take less than 10 minutes to be filled in. You will find some questions about the spaces of your center. You should answer on the basis of your experience: we are interested in your personal opinion, therefore there are no right or wrong answers.

Participation is voluntary. The collected data will be stored and processed in an absolutely anonymous and aggregated form, in accordance with the European privacy legislation (EU) 2016/679 (so-called GDPR).

For any clarification, you can contact the scientific representatives of the project: \*\*\*insert names and contacts\*\*\*

I DECLARE THAT I HAVE READ AND UNDERSTOOD THE ABOVE INDICATED INFORMATION AND AGREE TO PARTICIPATION IN THE RESEARCH AND PROCESSING OF THE DATA PROVIDED

01 I fill out the questionnaire as

- parent or other family member
- educator or teacher
- assistant
- pedagogical coordinator
- other (specify) \_\_\_\_\_

02 Age

\_\_\_\_\_

03 Gender

- male
- female
- other

04 Nationality

- belgian / lithuanian
  - other (specify) \_\_\_\_\_
- 

05 Education

- None
- Primary School
- ...
- ...
- Bachelor degree or Master Level 1
- Master degree or Master Level 2
- PhD

06 Age of the child attending the center (years, months)

\_\_\_\_\_

06 Length of work in ECEC centers (how many years)

\_\_\_\_\_

07 In the compilation I will refer to my experience in ... (if you have experience in multiple centers we ask you to choose only one, the one that is most significant to you or that you know best)

- ...name of the centers about 0-3 (childcare...)
- ...name of the centers for children about 3-6 (preschool...)
- ...name of other relevant centers for children from 0 to 6 years old

08 Name of the center (optional)

---

Now let's start the questionnaire.

The questions you'll find will refer to these topics:

- the space you prefer (3 questions)
- the space you like least (3 questions)
- the eating space (4 questions)
- the sleeping space (4 questions)
- the toilet space (4 questions)
- the outdoor space (5 questions)

It is important that you answer all questions carefully and in the order in which they are proposed.

Thanks for your cooperation!

## A THE SPACE YOU PREFER

---

A1 Is your favorite space an INDOOR space (class, hall, etc ...) or an OUTDOOR space (garden, courtyard, etc ...)?

an indoor space

an outdoor space

---

A2 Among the INTERIOR spaces, which is your favorite space? (you can choose only one option)

- the entrance / welcoming space
- the corridor
- the hall (if present)
- the class of my child
- my class
- another class
- a class
- the sleeping space (if present)
- the eating space (if present)
- the toilet
- the library (if present)
- l'atelier/creative lab
- the space for families (if present)
- the space for educators/teachers (if present)
- the office (if present)
- the windows
- other \_\_\_\_\_

A2bis Within the space you have indicated, is there a particular area you prefer?

- Yes (specify) \_\_\_\_\_
- No

A3 Why is this space your favorite? (you can indicate up to 5 answers)

- Because in this space I can carry out nice activities
- Because in this space children can carry out nice activities
- Because in this space I feel good (e.g. serenity, joy, relaxation ...)
- Because in this space children feel good (e.g. serenity, joy, relaxation ...)
- Because in this space I enjoy nice moments with my child
- Because in this space I enjoy nice moments with children
- Because in this space I can meet other parents/families
- Because in this space I can meet parents/families
- Because in this space I can meet the educators/teachers/assistant
- Because in this space I can meet other educators/teachers/assistant
- Because in this space I can meet other classes
- Because in this space children can meet
- Because in this space children have good relations with other children
- Because I participated in the design and / or realization of this space
- Because in this space I lived the first moments in the center
- Because I spend a lot of time in this space
- Because I feel this space "mine" / I feel at home
- Because in this space from indoor I can see the garden / courtyard or vice versa
- Because in this space I can have contact, even from a distance, with my child when I accompany him and when I go to pick him up (ex: I see him from the windows)

Because in this space I can have contact, even from a distance, with other spaces of the center (ex: I see other classes / common spaces from the window ...)  
Because in this space from the center I can see the outside world (ex: the neighborhood, the

street, passersby ...)

Because in this space I can get information on local events (e.g. concerts, initiatives ...)

Because it is a beautiful and / or thought and / or tidy space

Because it is a bright space

Because it is a silent space

Because it is a functional space: it facilitates the activities that take place there

Other (specify) \_\_\_\_\_

---

A3bis What is the order of importance that you would attach to your answers? (sort from most important to least important by dragging the boxes)

## B THE SPACE YOU LIKE LEAST

B1 Is the space you like least an INDOOR space (e.g.: class, hall, etc ...) or an OUTDOOR space (garden, courtyard, etc ...)?

an indoor space

an outdoor space

---

B2 Among the INDOOR spaces, which is your the space you like least? (you can choose only one option)

- the entrance / welcoming space
- the corridor
- the hall (if present)
- the class of my child
- my class
- another class
- a class
- the sleeping space (if present)
- the eating space (if present)
- the toilet
- the library (if present)
- l'atelier/creative lab
- the space for families (if present)
- the space for educators/teachers (if present)
- the office (if present)
- the windows
- other \_\_\_\_\_

B2bis Within the space you have indicated, is there a particular area you prefer?

- Yes (specify) \_\_\_\_\_
- No

B3 Why do you like this space less? (you can indicate up to 5 answers)

- Because this space hinders my activities (eg: I'm not able to do something, there...)
- Because this space hinders children's activities (eg: children are not able to do something, there...)
- Because in this space I feel bad (es: stress, anxiety, sadness...)
- Because in this space children feel bad (es: stress, anxiety, sadness...)
- Because this space does not facilitate the enjoying of nice moments with my child
- Because this space does not facilitate the enjoying of nice moments with children
- Because this space does not facilitate the meeting with other parents/families
- Because this space does not facilitate the meeting with parents/families
- Because this space does not facilitate the meeting with teachers/educators/assistents
- Because this space does not facilitate the meeting with other teachers/educators/assistents
- Because this space does not facilitate the meeting with other classes
- Because this space does not facilitate the meeting of children
- Because this space does not facilitate good interactions between children
- Because I participated in the design and / or realization of this space
- Because I spend few time in this space
- Because this space does not have a clear definition / connotation, it is not clear what it is used for
- Because this space is neglected, it is not thought
- Because from this space I cannot see the garden / courtyard
- Because in this space I cannot have contact, even from a distance, with my child when I accompany him and when I go to pick him up (ex: I see him from the windows)

- Because in this space I can have contact, even from a distance, with other spaces of the center (ex: I see other classes / common spaces from the window ...)
  - Because from this space I cannot have contact with the outside world (ex: streets / passersby ...)
  - Because in this space I cannot have information on local events (e.g. concerts, initiatives ...)
  - Because it is a not-beautiful and / or not-thought and / or not-tidy space
  - Because it is a not-bright space
  - Because it is a noisy space
  - Because it is a not-functional space (e.g. too large / too small ...)
  - Other (specify) \_\_\_\_\_
- 

B3bis What is the order of importance that you would attach to your answers? (sort from most important to least important by dragging the boxes)

## C THE EATING SPACE

**C1 In my center, the EATING moment takes place...**

- inside the class
- in a common area that is set up every day for the meal
- in a specific room (canteen)

**C2 During the EATING moment, it is important that the space is... (sort the following aspects from most important to least important by dragging the boxes)**

- \_\_\_\_\_ prepared with care
- \_\_\_\_\_ organized with tables for small groups of children (not a single table for many children)
- \_\_\_\_\_ set up with tablecloths
- \_\_\_\_\_ with adequate brightness
- \_\_\_\_\_ with adequate noise level

**C3 Here below you can find some statements. Please tell us, for each statement, how much you agree or disagree.**

	Very agree	Fairly agree	Little agree	Not agree
Children should help set and clear the table for the eating moment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During the meal, children should use glass glasses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During the meal the same food should be offered to all children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During the meal, the educators / teachers / assistants should eat with the children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
During the meal, children should have the opportunity to choose how much to eat (different portions for each child)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**C4 For me the most important thing is that the EATING space allows the children to ... (write the end of the sentence in the box below)**

\_\_\_\_\_

## D THE SLEEPING SPACE

D1 In my center, the SLEEPING moment takes place...

- inside the class
- in a common area that is set up every day for sleeping
- in a specific room (dormitory)

D2 During the SLEEPING moment, it is important that there is ... (order the following aspects from the most important to the least important by dragging the boxes)

- \_\_\_\_\_ a musical accompaniment
- \_\_\_\_\_ a furniture that creates a soft atmosphere (eg: colors of the walls, sheets on the ceiling...)
- \_\_\_\_\_ a comfortable seat also for educators / teachers / assistants
- \_\_\_\_\_ adequate brightness
- \_\_\_\_\_ adequate noise level

D3 Here below you can find some statements. Please tell us, for each statement, how much you agree or disagree.

	Very agree	Fairly agree	Little agree	Not agree
In the sleeping space, educators / teachers / assistants should be close to children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the sleeping space, the beds should be very close together so that the children can touch each other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the sleeping space, the beds should have bars to ensure that the children do not fall	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the sleeping space, the beds should be personalized for each child (e.g. identification stickers)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sleeping spaces should also be set up outdoors (in the garden / courtyard)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

D4 For me the most important thing is that the sleeping space allows children to ... (write the end of the sentence in the box below)

---

## E THE TOILET SPACE

E1 In my center, the toilets are...

- inside the class
- outside the class, in the same building
- outside the class, in another building

E2 In the TOILET space it is important that there is ... (order from most important to least important by dragging the boxes)

- \_\_\_\_\_ an adequate number of toilets
- \_\_\_\_\_ an adequate number of sinks
- \_\_\_\_\_ visibility from the bathroom to the class and vice versa
- \_\_\_\_\_ adequate brightness
- \_\_\_\_\_ adequate safety for children (e.g. for slipping risk)

E3 Here below you can find some statements. Please tell us, for each statement, how much you agree or disagree.

	Very agree	Fairly agree	Little agree	Not agree
In the toilet space there should be dividing walls between the toilet / potties so that the children do not see each other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the toilet space, a waiting-area for children should be set up (e.g. benches)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the toilet space, a play / reading area should be set up (e.g. carpet with books)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the toilet space, the three toilet / sink / diaper-change areas should be distinct and demarcated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the toilet space, children must have free access to toilet paper	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the toilet space, children must have free access to sinks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the toilet space, children must have free access to flush	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the toilet space, children must have free access to potties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the toilet space, children must have free access to personal clothes bags	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

E4 For me the most important thing is that the toilet space allows children to ... (write the end of the sentence in the box below)

---

F Here we are at the last section of the questionnaire. **OUTDOOR SPACES**

F1 In my center, the outdoor spaces are... (you can indicate more than one answer)

- grassy spaces
- paved or asphalted spaces
- other (specify) \_\_\_\_\_
- there are no outdoor spaces

F2 Do you think that the outdoor spaces in your center are adequate?

- Definitely yes
- Not entirely
- Not at all

F3 Do you think it is important that there are outdoor spaces in center?

- Yes
- No
- Maybe (specify why) \_\_\_\_\_

F3a How could outdoor spaces be improved?

\_\_\_\_\_

F3b What are the strengths of the outdoor spaces of your center?

\_\_\_\_\_

F4 Here below you can find some statements. Please tell us, for each statement, how much you agree or disagree.

	Very agree	Fairly agree	Little agree	Not agree
In outdoor spaces there should be the possibility for children to play even some risky-plays (e.g. climbing trees)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In outdoor spaces, structured activities by educators / teachers /assistents for children should be conducted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the external spaces, scientific laboratories / activities should be organized (e.g. collection of natural materials, conversations on the life cycle ...)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The outdoor spaces should be used mainly for the free play of children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The outdoor spaces should not allow visibility to the outside (roads, passersby ...)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

F5 I think children should use the outdoor spaces ... (for each option indicate how much you agree or disagree)

	Very agree	Fairly agree	Little agree	Not agree
even when it's hot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
even when it's cold	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
even when it's windy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
even when it's raining	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
even when it's snowing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

H

If you want to clarify some of your answers or if there is something else you want to tell us about the spaces of your center you can write it below. To conclude the questionnaire **CLICK ON THE ARROW** at the bottom right.

---

**Thank you for taking the time to fill in the questionnaire! Your answers have been recorded and will be very useful in trying to improve early childhood centers even more. Thank you!**

### Appendix 3

#### Graphics of results from Study 4.2

Figure 4.7. Frequencies of the favorite space represented.

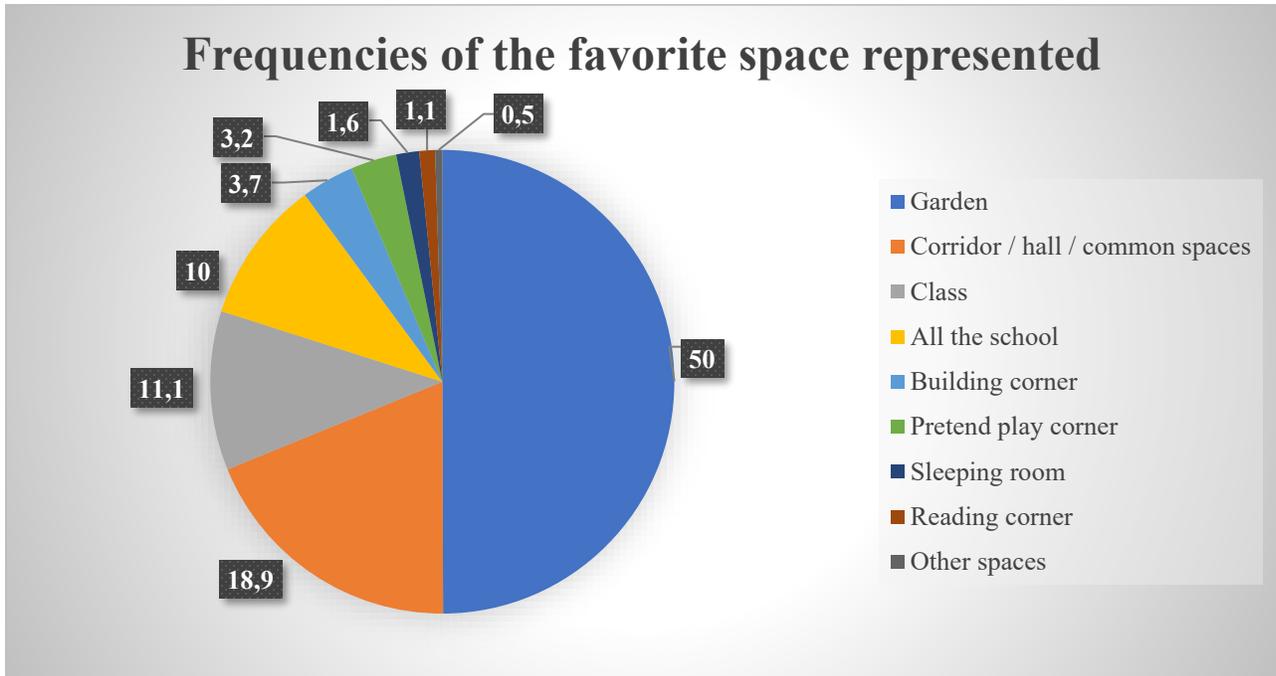


Figure 4.8. Frequencies of the situation represented.

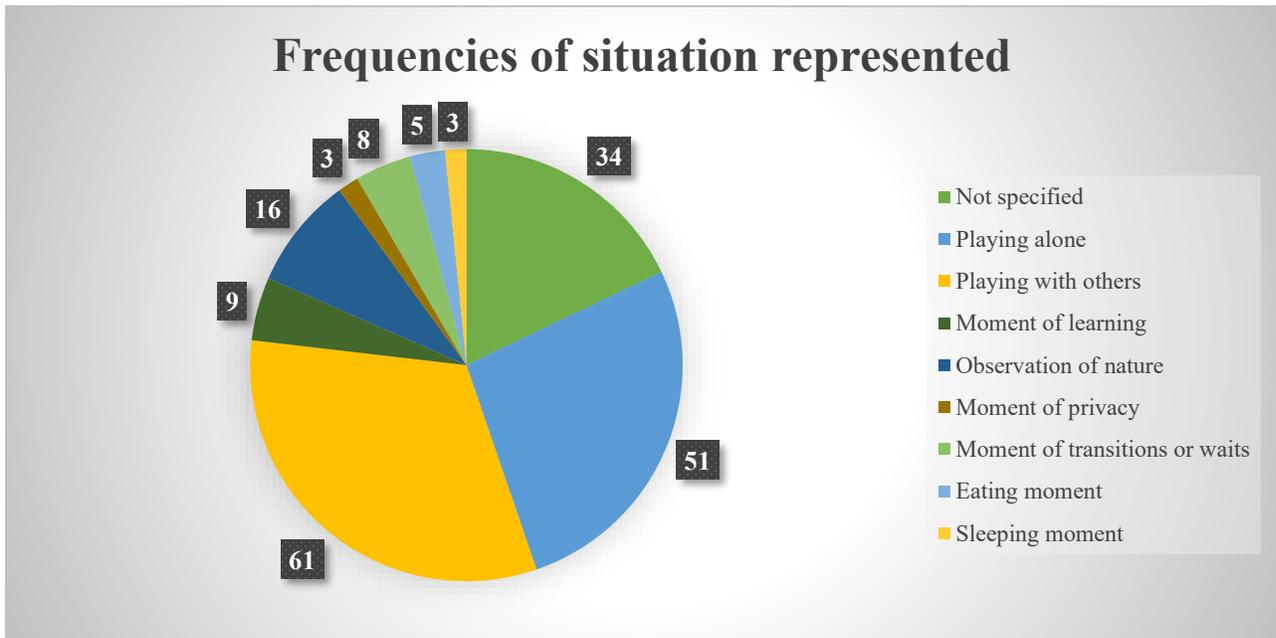


Figure 4.8a - Distribution of frequencies of situation represented for male and female

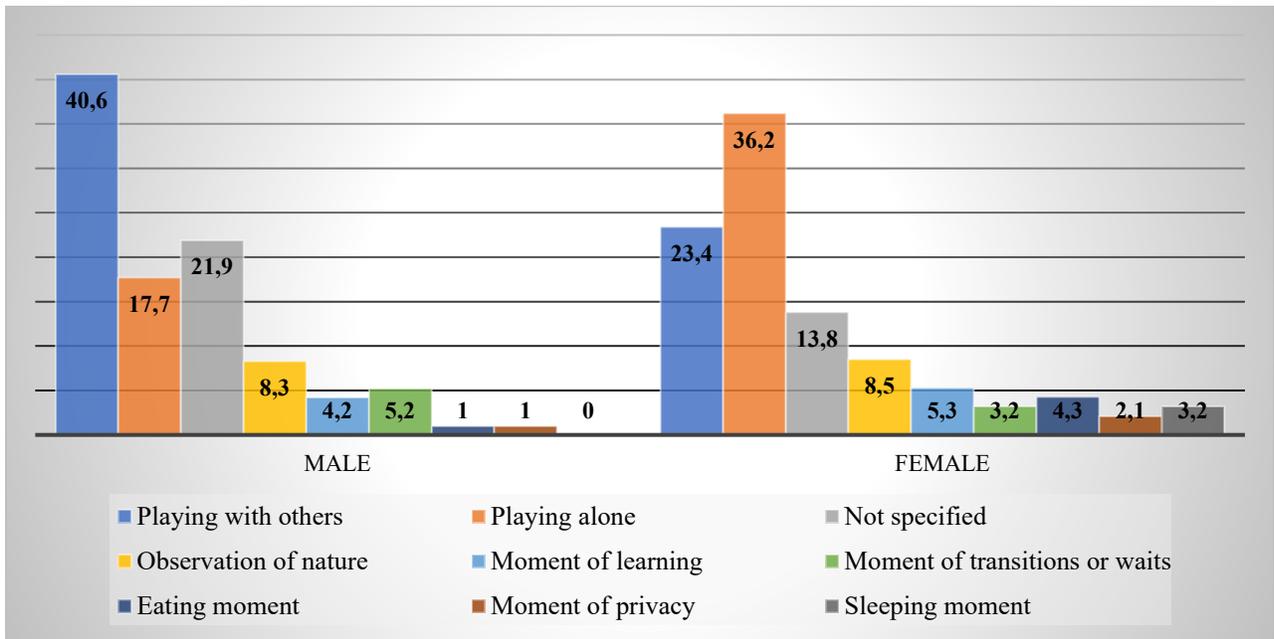


Figure 4.9 - Frequencies of the favorite space - Interview

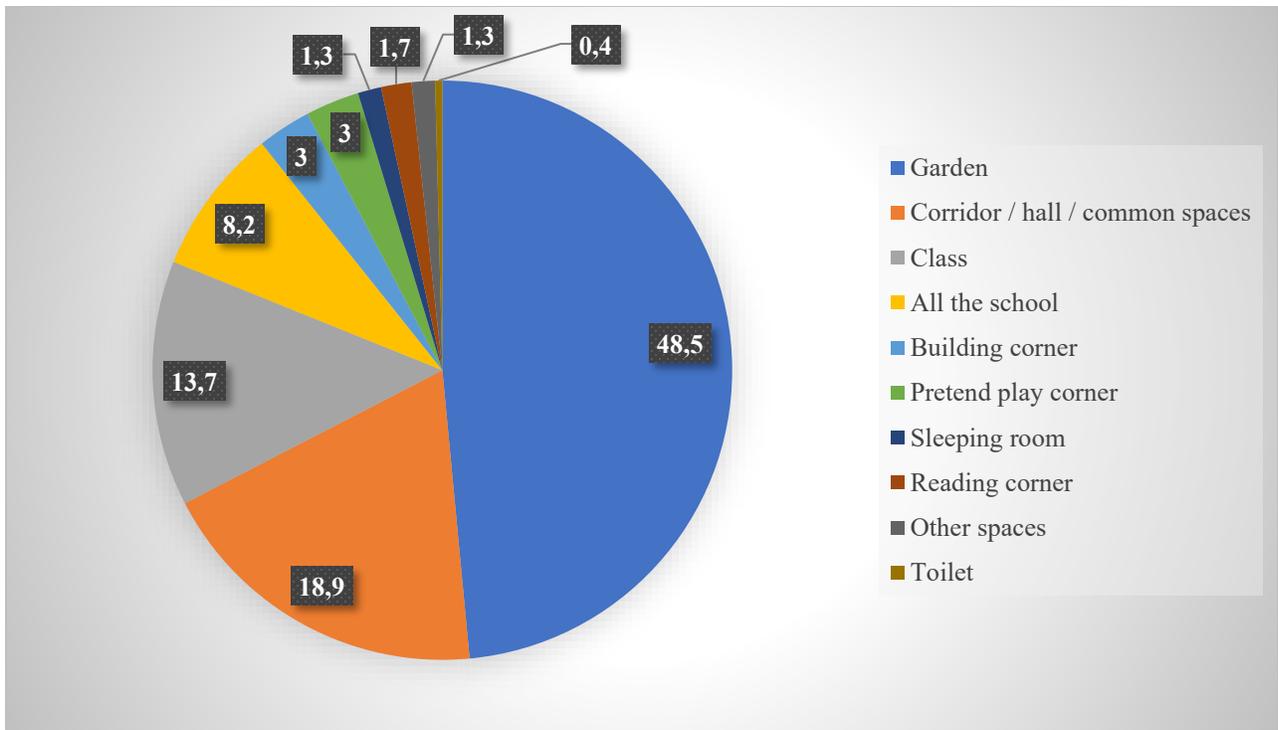


Figure 4.10 - Frequencies of situation represented - Interview

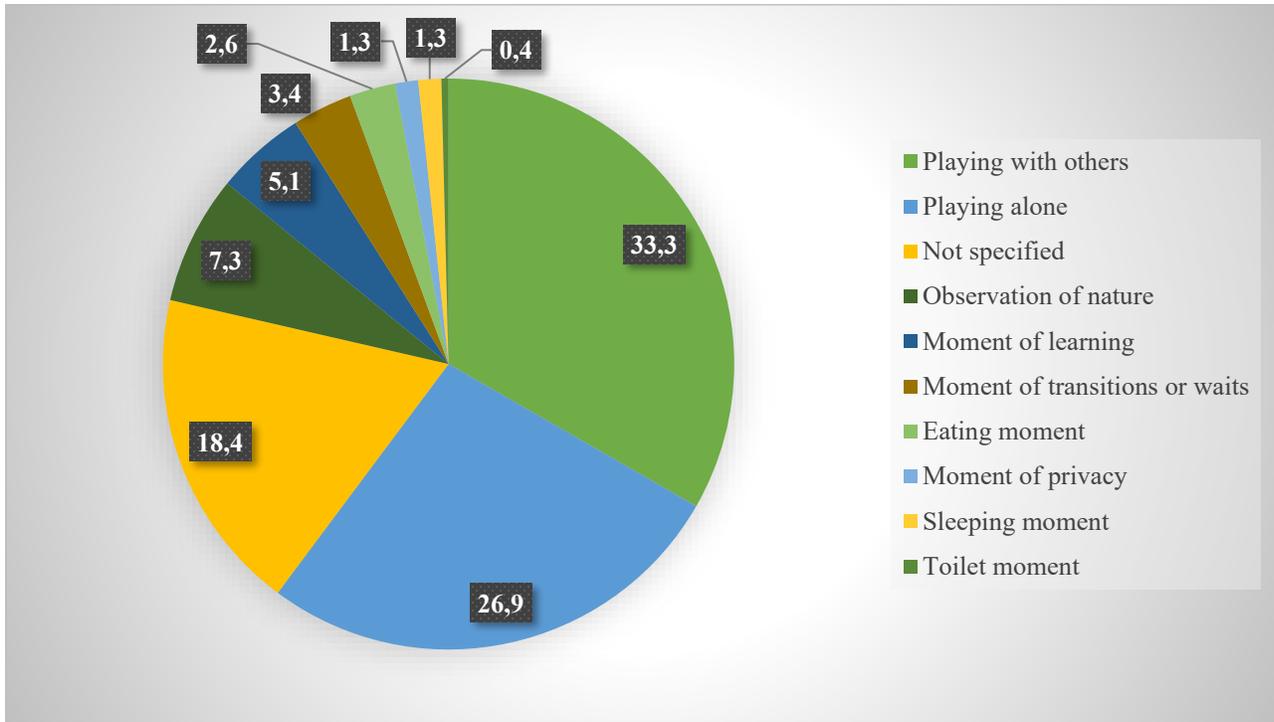


Figure 4.11. Frequencies of motivations – Favorite space

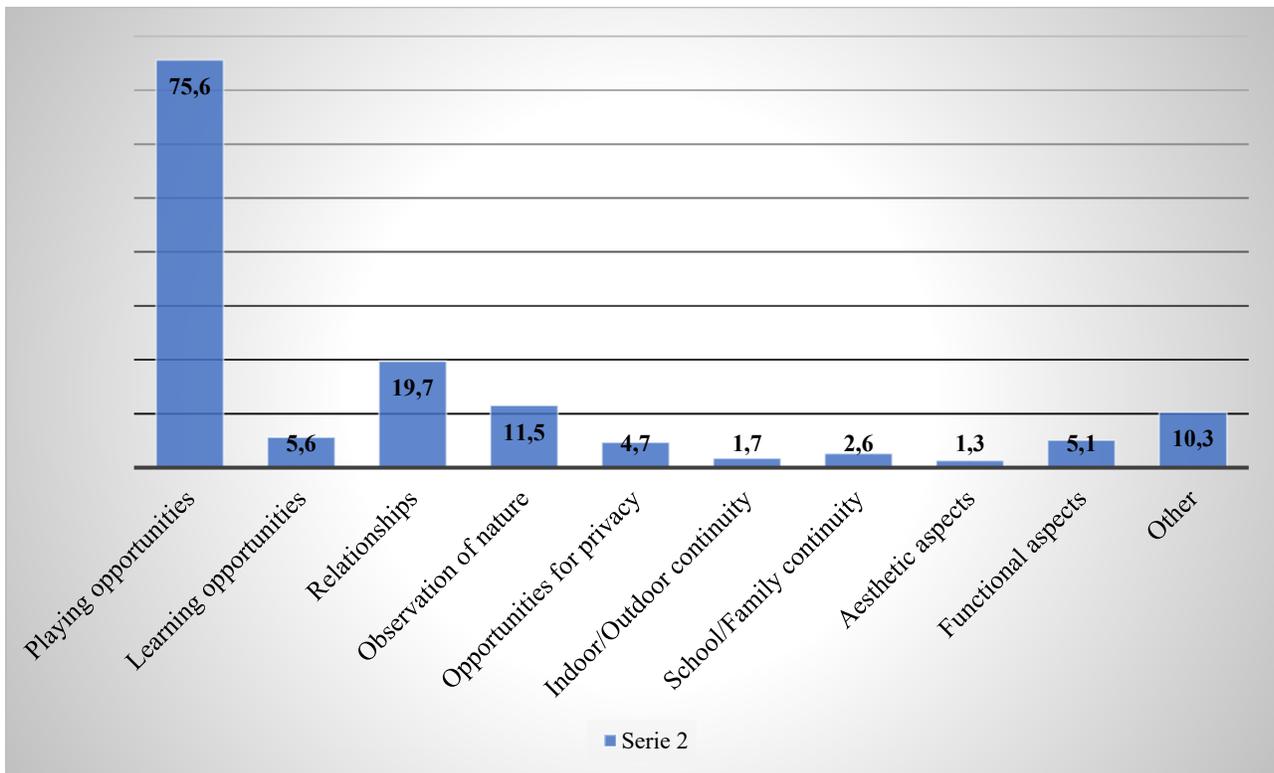


Figure 4.12 - Frequencies of the second favorite space.

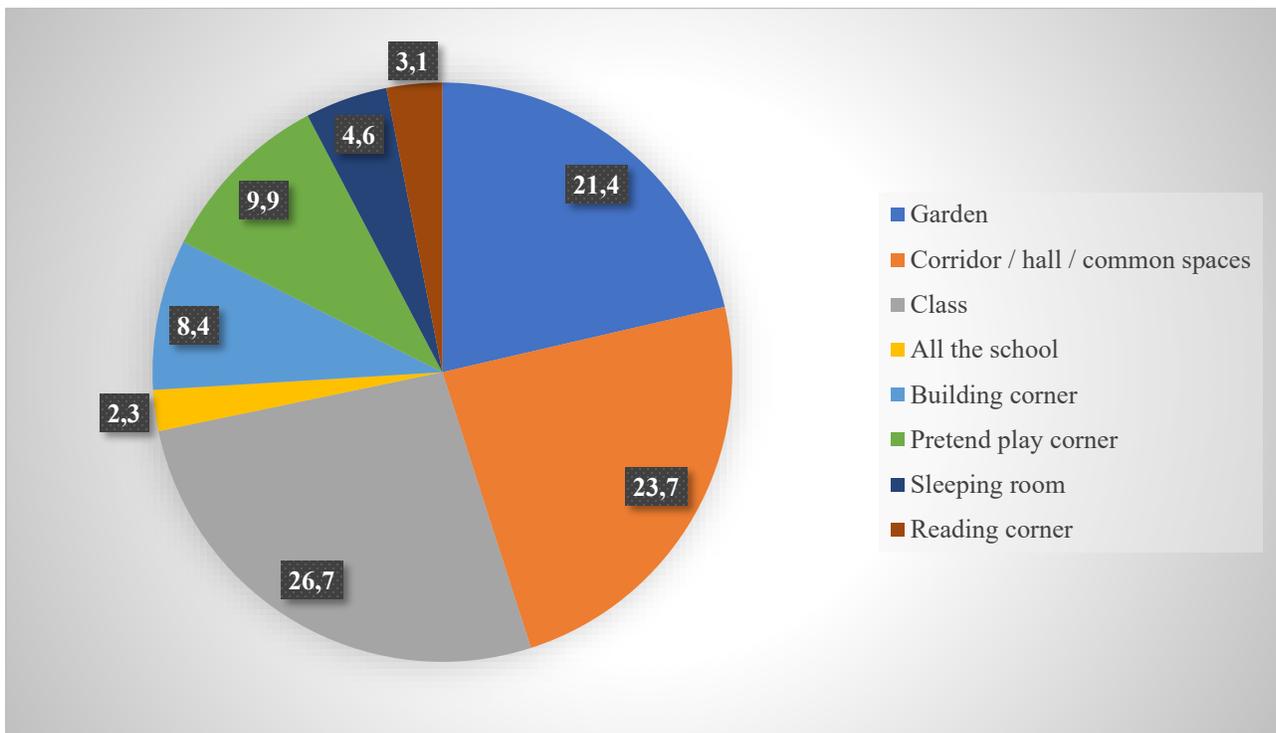


Figure 4.13. Frequencies of the second situation represented.

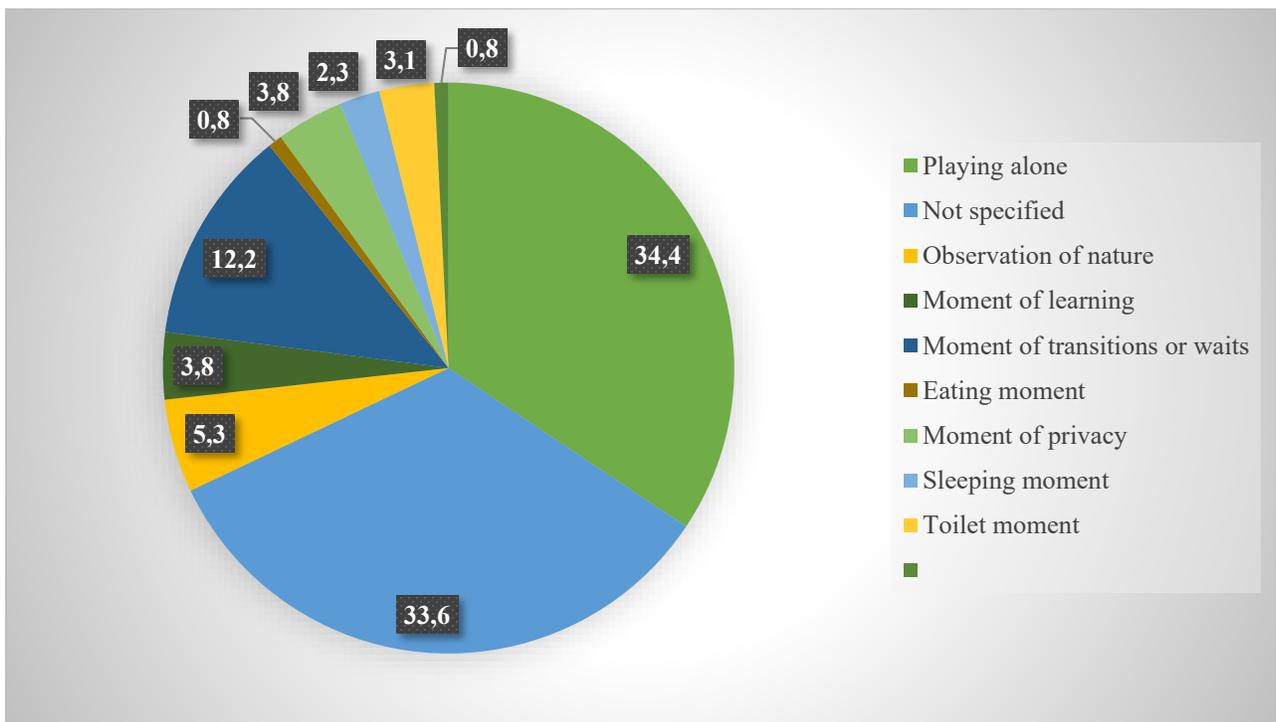
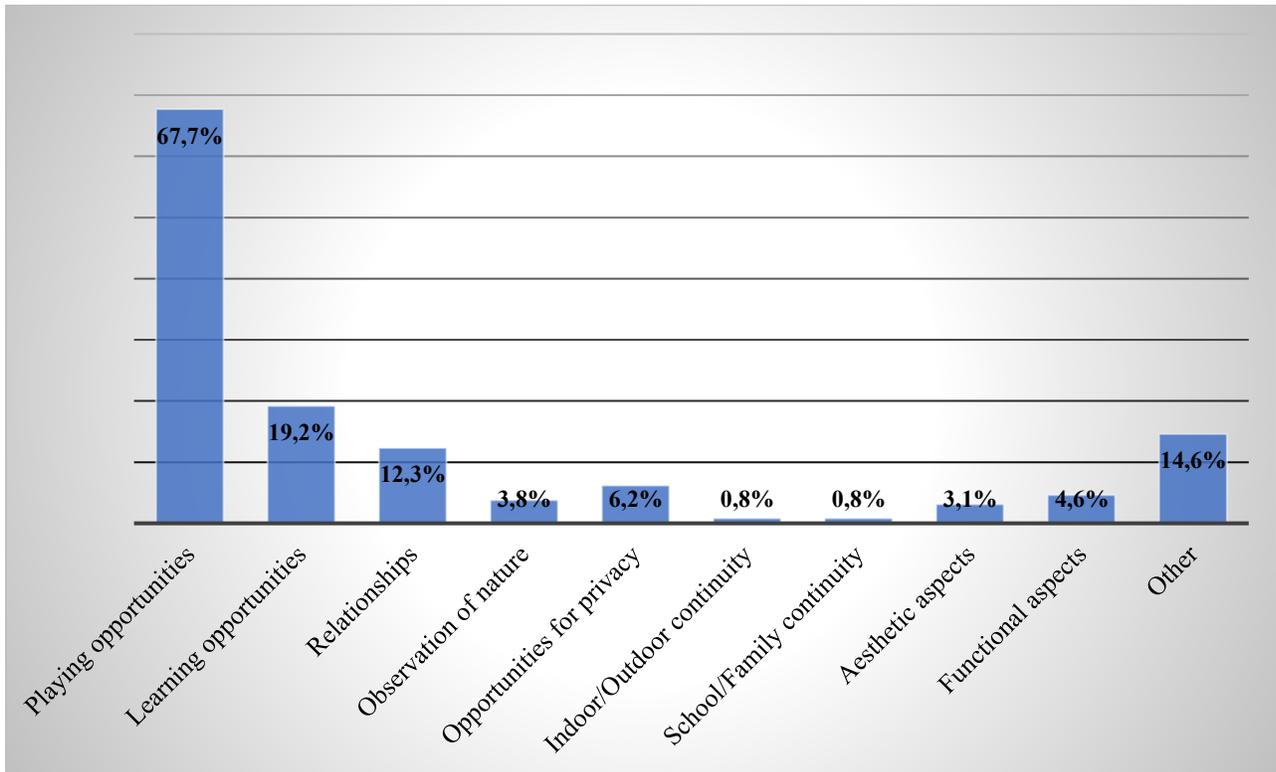


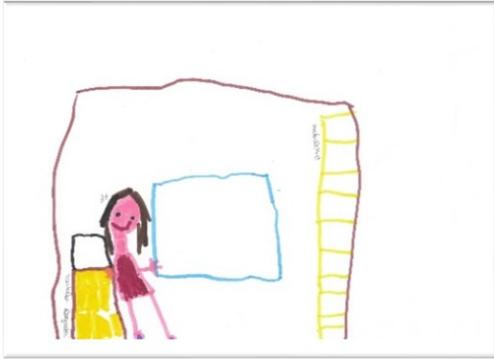
Figure 4.14. Frequencies of motivations – second favorite space



## Appendix 4

### Drawings from Study 4.2

*Drawing 4.13 – Self-representation  
“I drew myself in the building corner” (Alice, 4)*



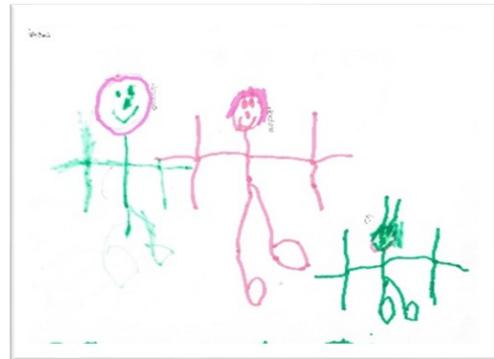
*Drawing 4.14 – Representation of friends:  
“I drew my friends and I running around the  
tree in the school garden singing ring-around-  
the-rosey” (Bianca, 4)*



*Drawing 4.15 – Representation of teachers:  
“I’m here in the school garden with the teacher,  
we’re sitting on the grass looking at the sky” (Livia,  
5)*



*Drawing 4.16 – Representation of familiars  
“I drew me, the nanny and my grandfather in  
the school garden” (Ryan, 4)*



*Drawing 4.17 – Positive emotional climate:  
“This is me in the school garden while I’m picking  
flowers” (Davide, 5)*



*Drawing 4.18 – Negative emotional climate:  
“This is me with a hat on the grass of the school  
garden, with the sun and the sky” (Jacopo, 4)*



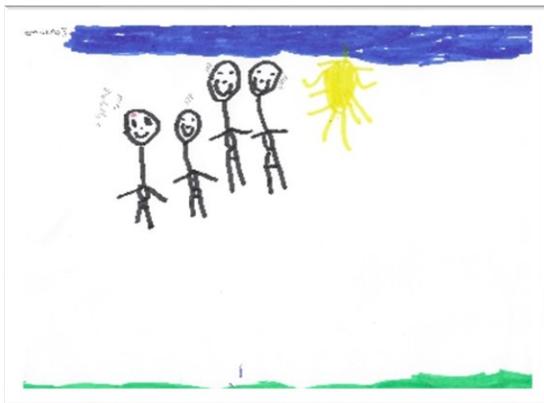
*Drawing 4.19 – Left horizontal position of people  
 “This is me, this is my friend Serena and this is  
 the teacher that tells us what to do” (Emma, 5)*



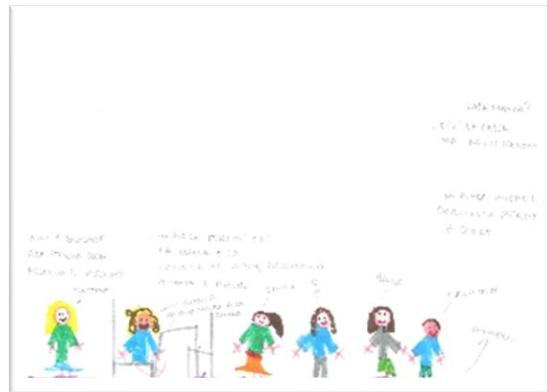
*Drawing 4.20 – Right horizontal position of  
 people “This is me in the corridor” (Federico, 5)*



*Drawing 4.21 – Top vertical position of people:  
 “Me and my friends in the garden”  
 (Alessandro, 4)*



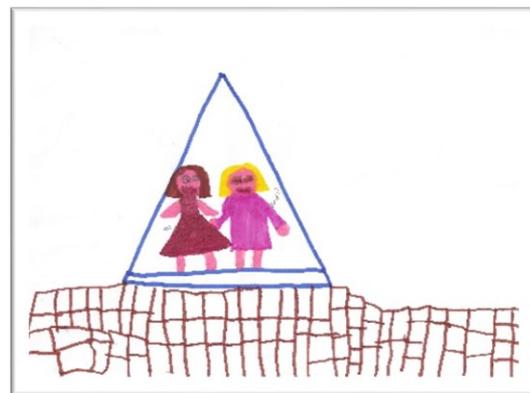
*Drawing 4.22 – Bottom vertical position of  
 people: “Me and my friend in the class, on the  
 floor” (Serena, 5)*



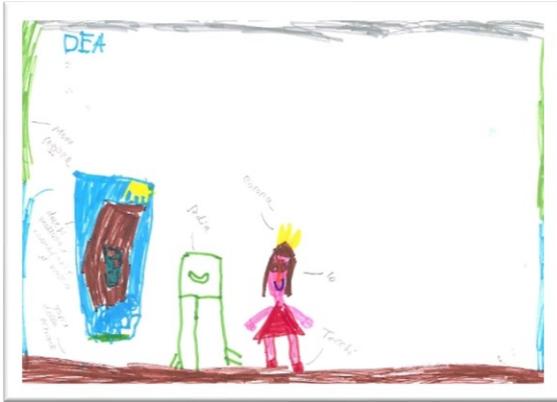
*Drawing 4.23 – Representation of walls  
 “This is me in the corridor near the mirror where  
 I can check if my hairs are well combed”  
 (Giorgia, 4)*



*Drawing 4.24 – Representation of floors:  
 “I drew me and my friend Emma playing inside  
 the pyramid of mirrors and this is the floor of the  
 corridor”*



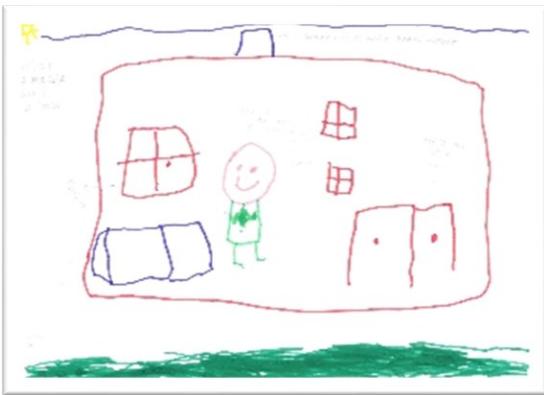
*Drawing 4.25 – Representation of ceilings:  
 “This is me in my class with a crown and high  
 heels shoes” (Dea, 4 y.o.)*



*Drawing 4.26 – Representation of doors:  
 “I drew my friend Emma and I in the hall and this  
 is the door to enter to school” [the little yellow  
 square on the right] (Davide, 4)*



*Drawing 4.27 – Representation of windows:  
 “This is the school, the windows and the door to  
 coming in and going out” (Alessandro, 5)*



*Drawing 4.28 – Representation of indoor  
 furnishings: “I drew all the tables that are in the  
 hall of the school” (Aurora, 4)*



*Drawing 4.29 – Representation of indoor  
 materials: The Lego box. I like it because I can  
 play and build little houses (Imma, 4)*



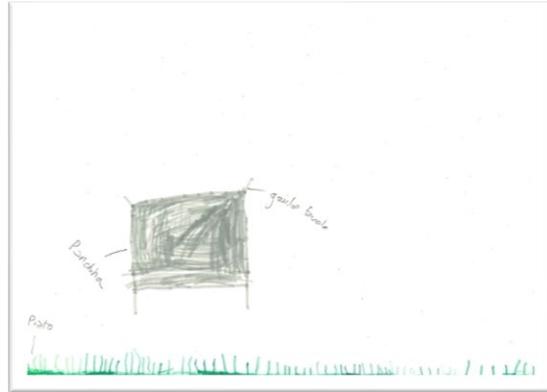
*Drawing 4.30 – Representation of indoor  
 materials: The pyramid of mirrors in the corridor  
 (Matilde, 5)*



*Drawing 4.31 – This is me on the slide in the garden (Catalina, 5)*



*Drawing 4.32 – The bench in the garden. I sit there when I'm tired (Emili, 5)*



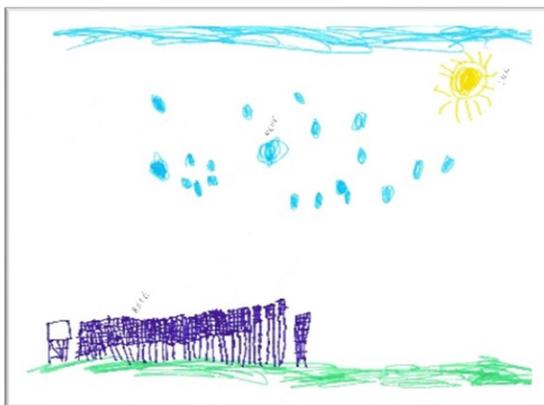
*Drawing 4.33 – Representation of land line  
"I drew the school garden with trees and flowers"  
(Ionela, 4)*



*Drawing 4.34 – Representation of sky line  
"I'm in the school garden looking for wooden sticks  
(Giovanni, 5)*



*Drawing 4.35 – Representation of sun  
"I drew the garden with its fence, the snow, the  
sky and the sun" (Alex, 5)*



*Drawing 4.36 – Representation of trees  
"This is me in the school garden with a tree, the  
sun and the sky" (Ismael, 4 y.o.)*



*Drawing 4.37 – Representation of flowers:  
“This is me in the school garden with my friend  
Matilde while we're picking flowers” (Cristian, 5)*



*Drawing 4.38 – Representation of rainbow:  
“This is me with a rainbow, the clouds, the sky,  
the sun and the school” (Kesha, 5)*



*Drawing 4.39 – Representation of animals  
“This is me and this is my friend Niky, we're in the  
school garden and we're asking for help because  
we're afraid of this spider” (Martina, 5)*



## Appendix 5

### Graphics of results from study 5.2

#### Participants

Figure 5.6 - Participants in the online questionnaires in the three countries

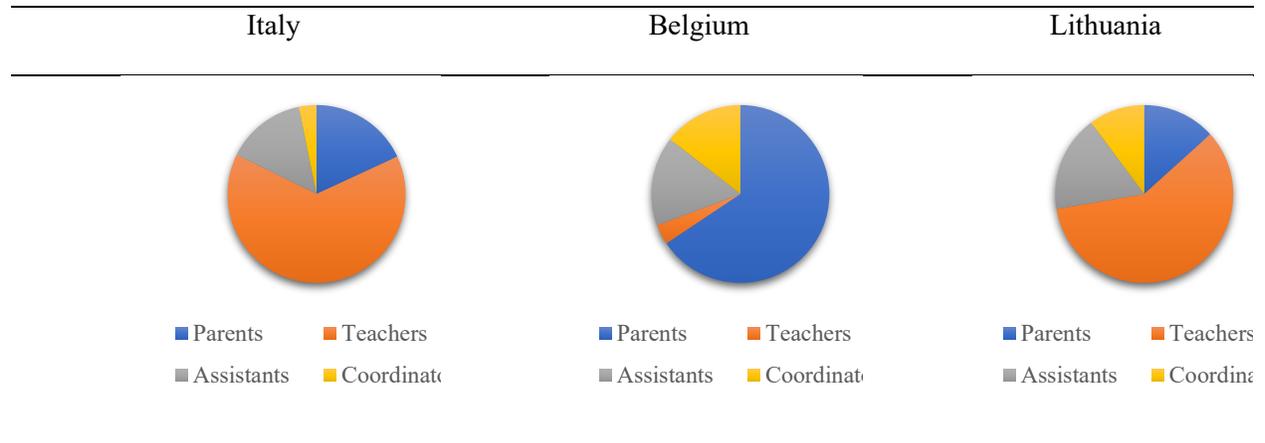
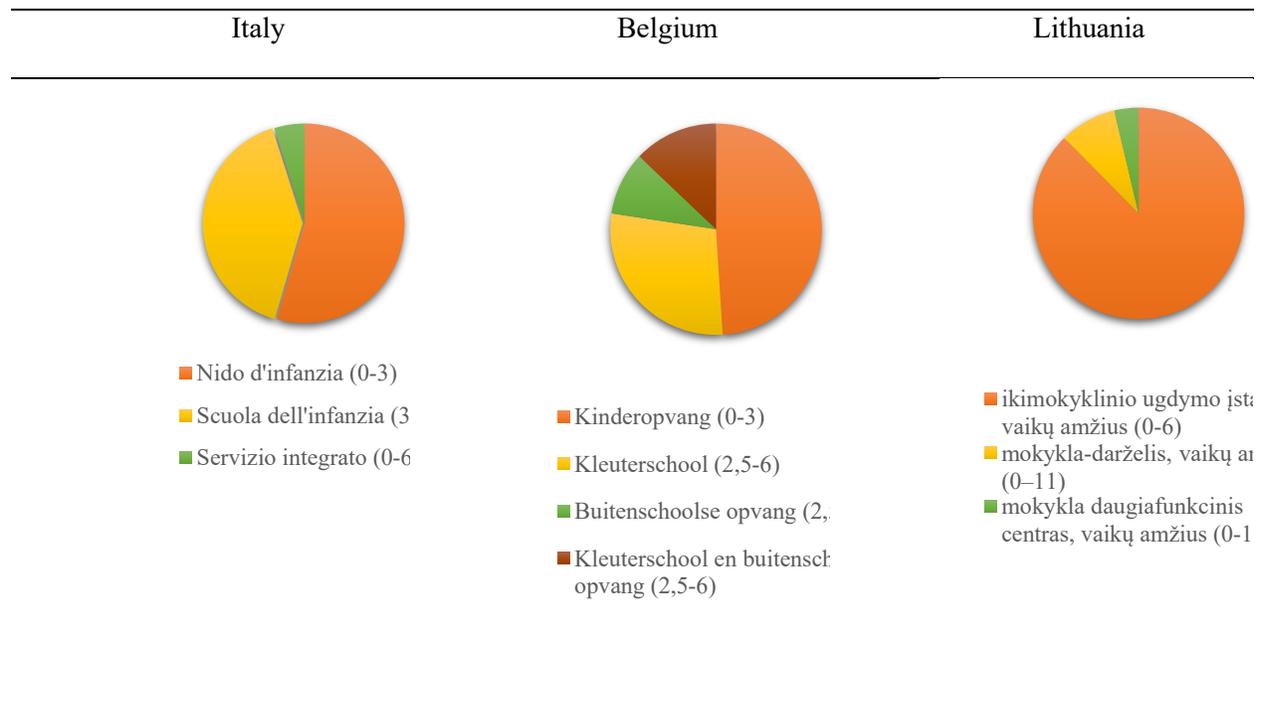


Figure 5.7 - Centers participating in the online questionnaires in the three countries



### Indoor and outdoor location of the favorite spaces

Figure 5.8 – Indoor and outdoor location of the favorite spaces in Italy

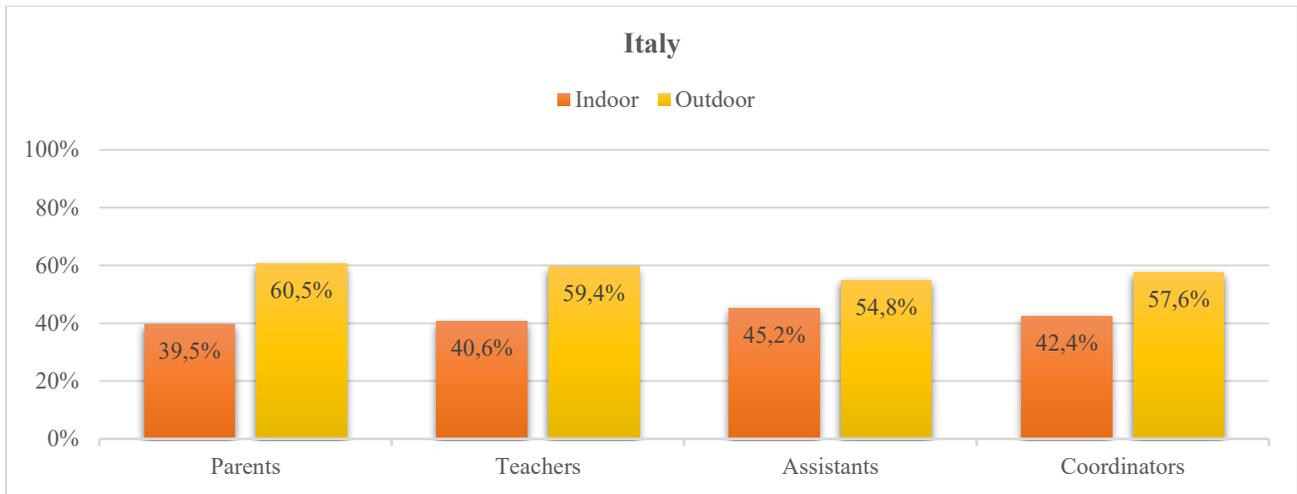


Figure 5.9 – Indoor and outdoor location of the favorite spaces in Belgium

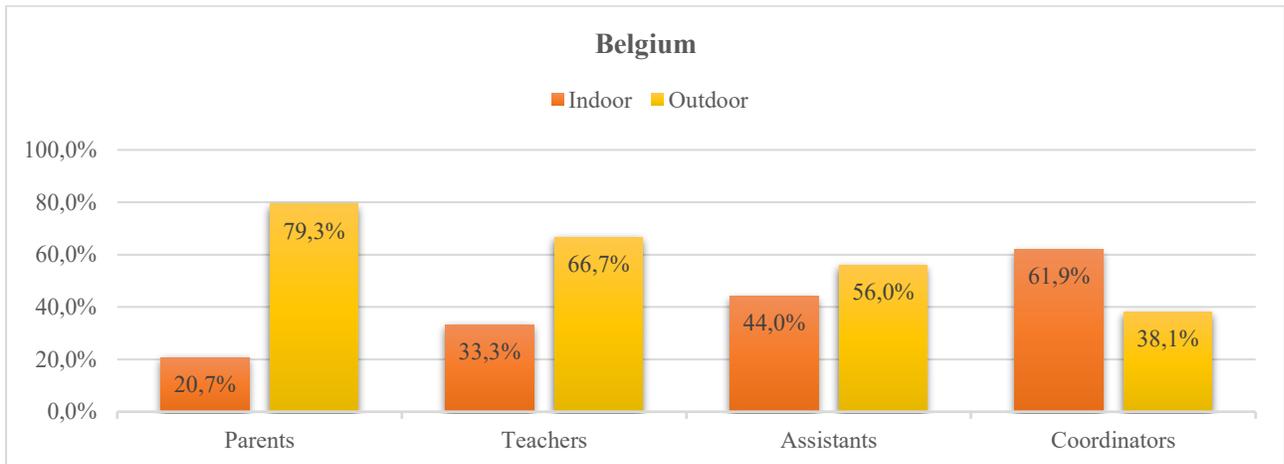
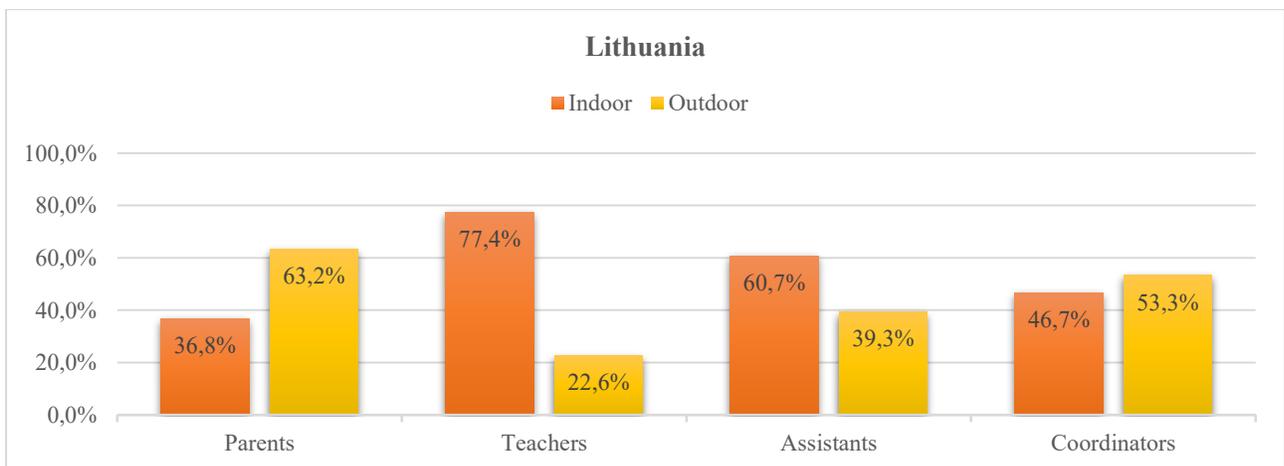


Figure 5.10 – Indoor and outdoor location of the favorite spaces in Lithuania



## Favorite indoor spaces

Figure 5.11 – Preferences about indoor spaces in Italy

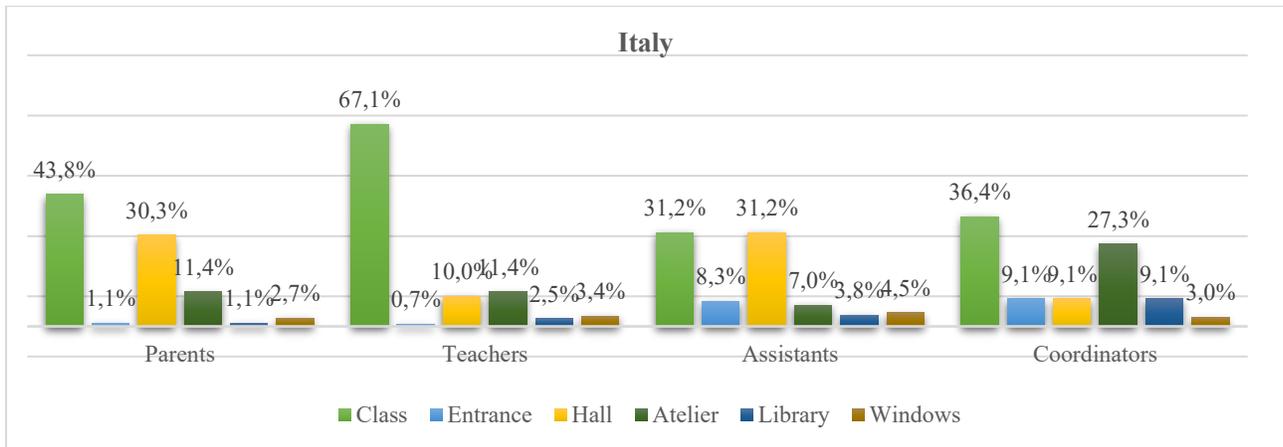


Figure 5.12 – Preferences about indoor spaces in Belgium

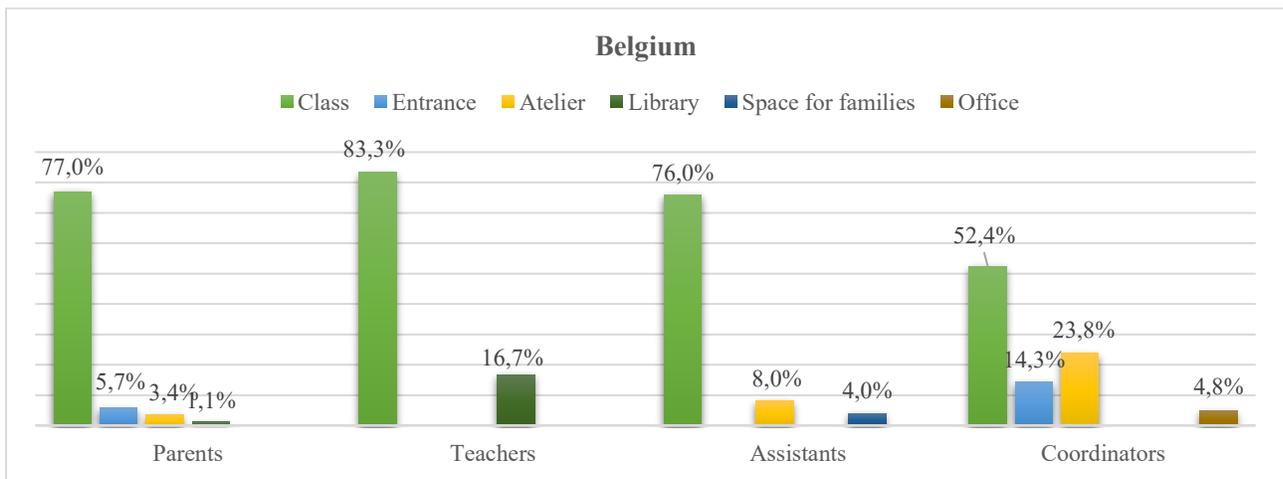
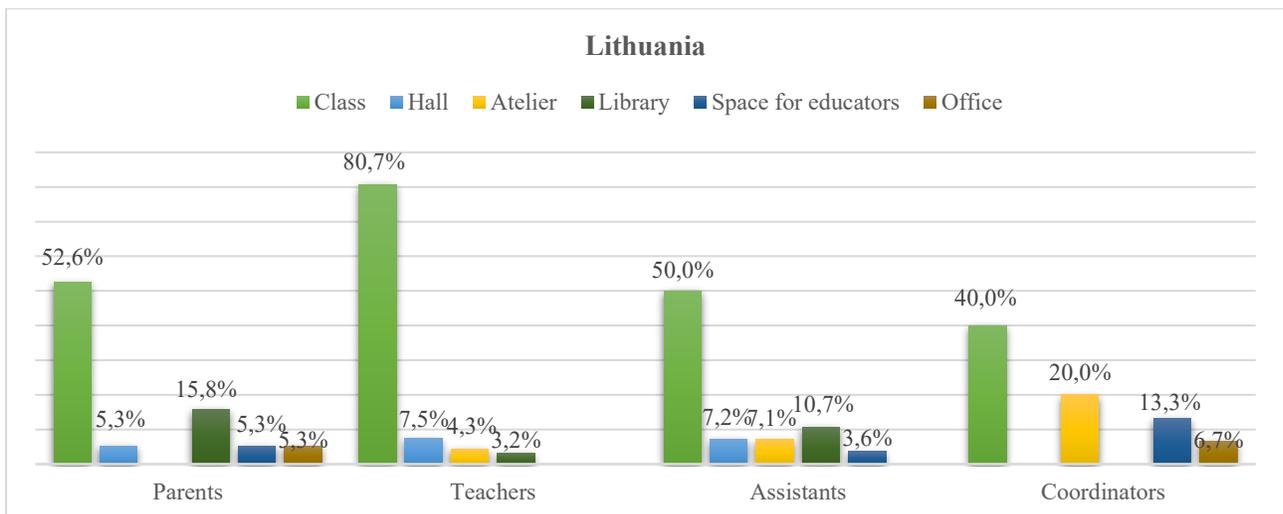


Figure 5.13 – Preferences about indoor spaces in Lithuania



## Main reasons for preferences

Figure 5.14 – Reasons for preferences in Italy

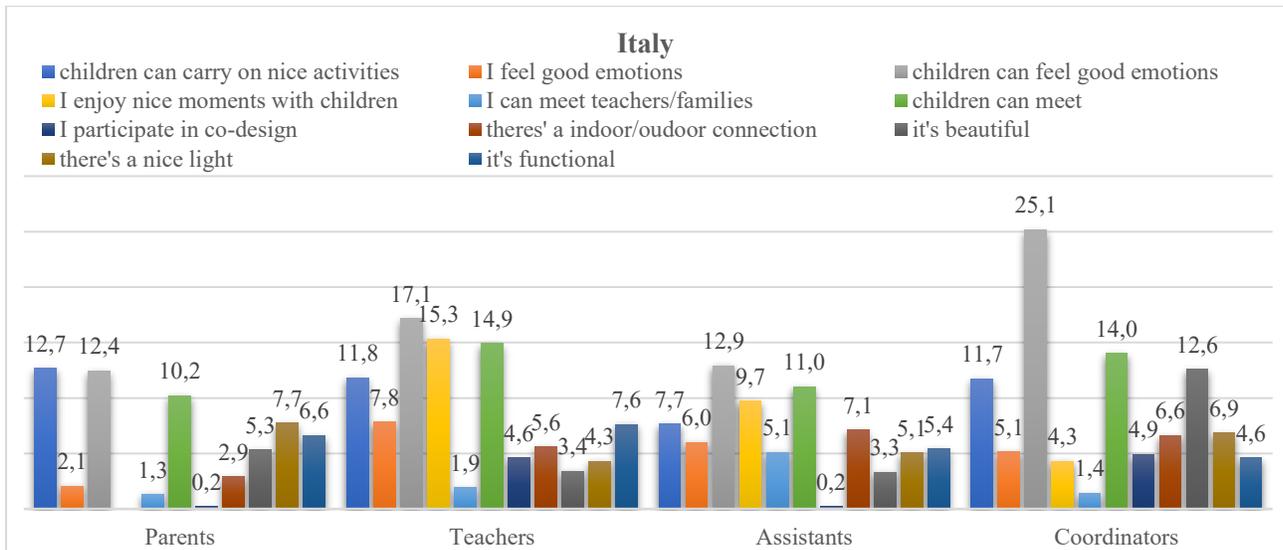


Figure 5.15 – Reasons for preferences in Belgium

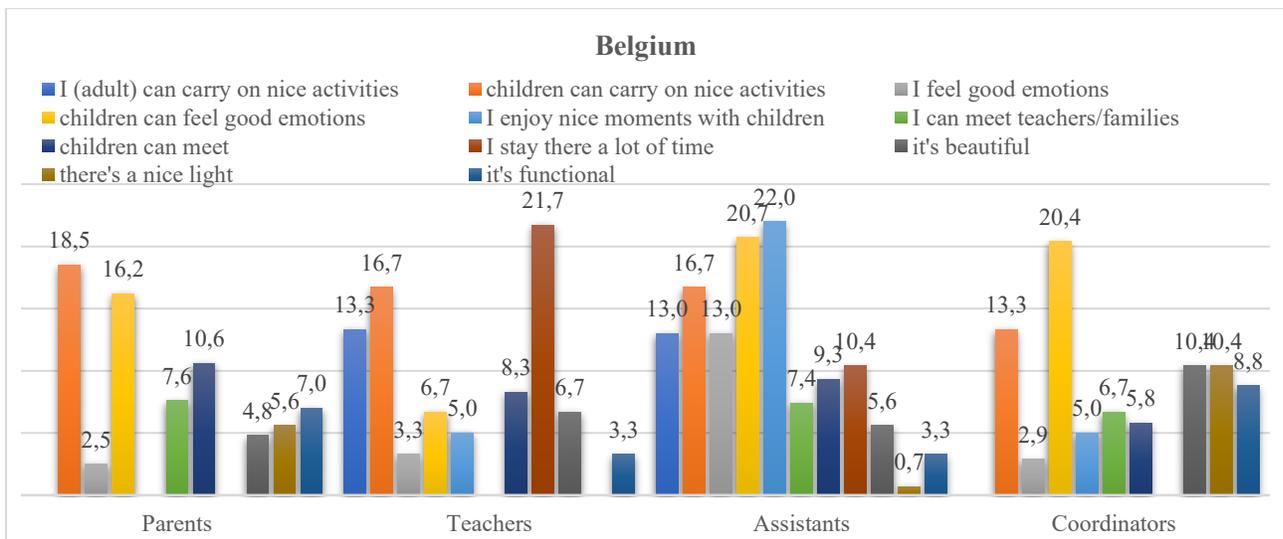
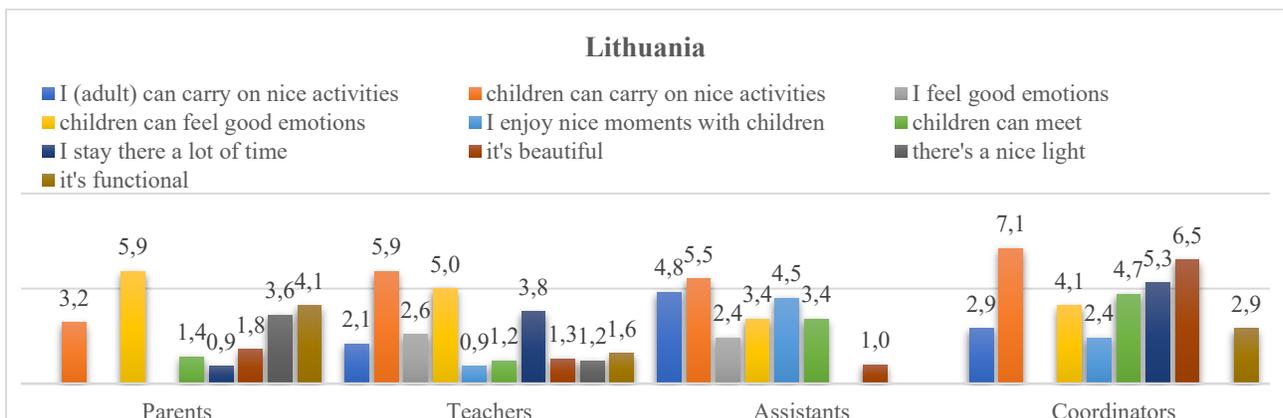


Figure 5.16 – Reasons for preferences in Lithuania



### Indoor and outdoor location of the least favorite spaces

Figure 5.17 – Indoor and outdoor location of the least favorite spaces for each group in Italy

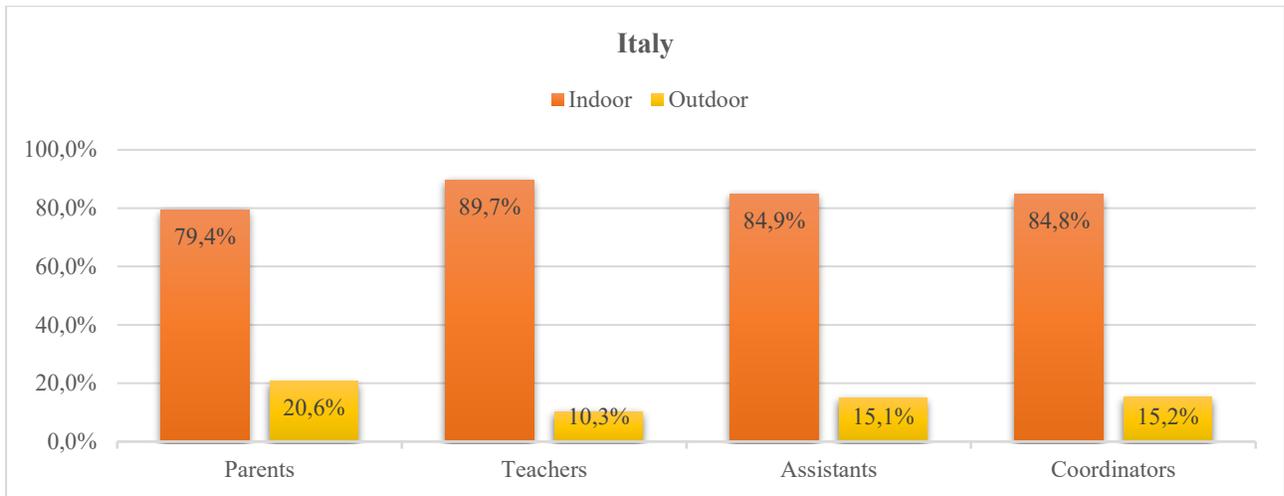


Figure 5.18 – Indoor and outdoor location of the least favorite spaces for each group in Belgium

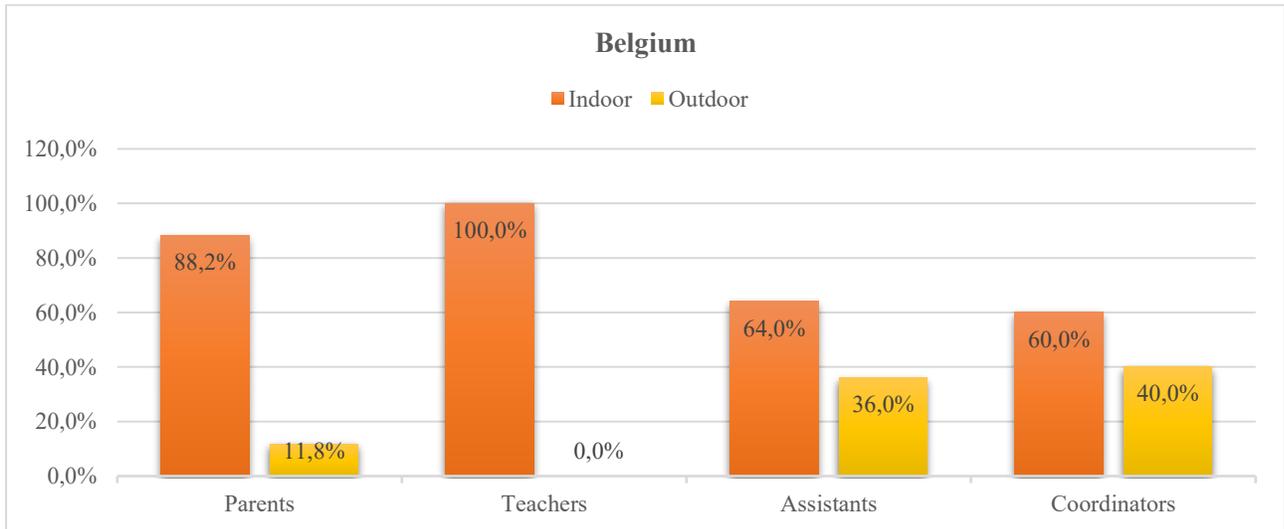
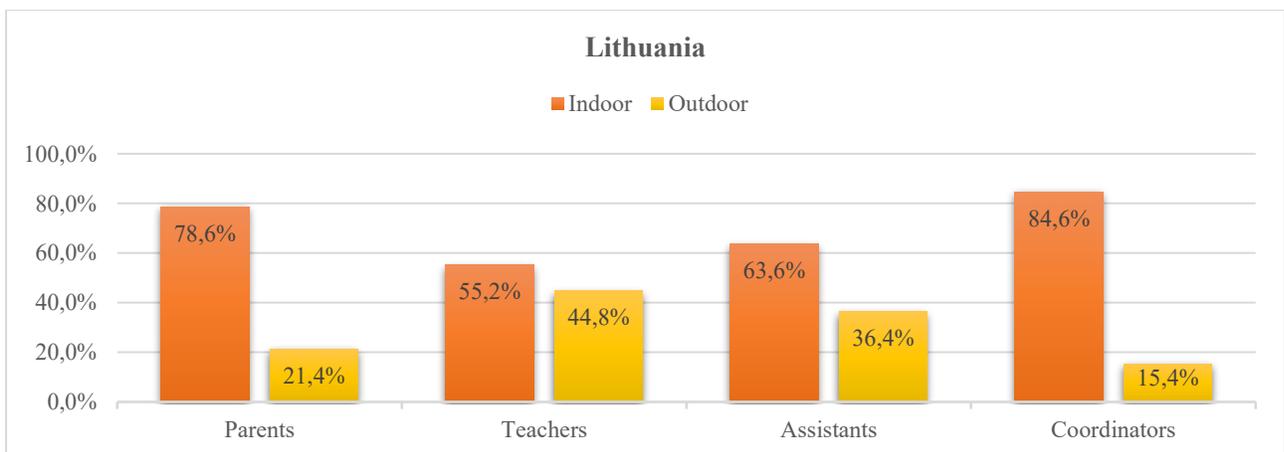


Figure 5.19 – Indoor and outdoor location of the least favorite spaces for each group in Lithuania



## Least favorite indoor spaces

Figure 5.20 - Least favorite spaces for each group in Italy

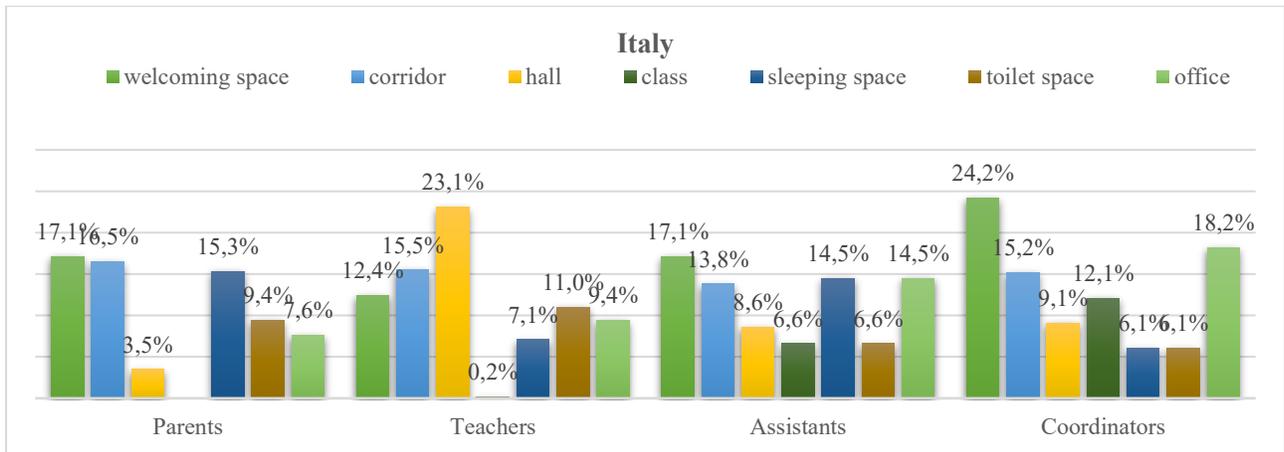


Figure 5.21 - Least favorite spaces for each group in Belgium

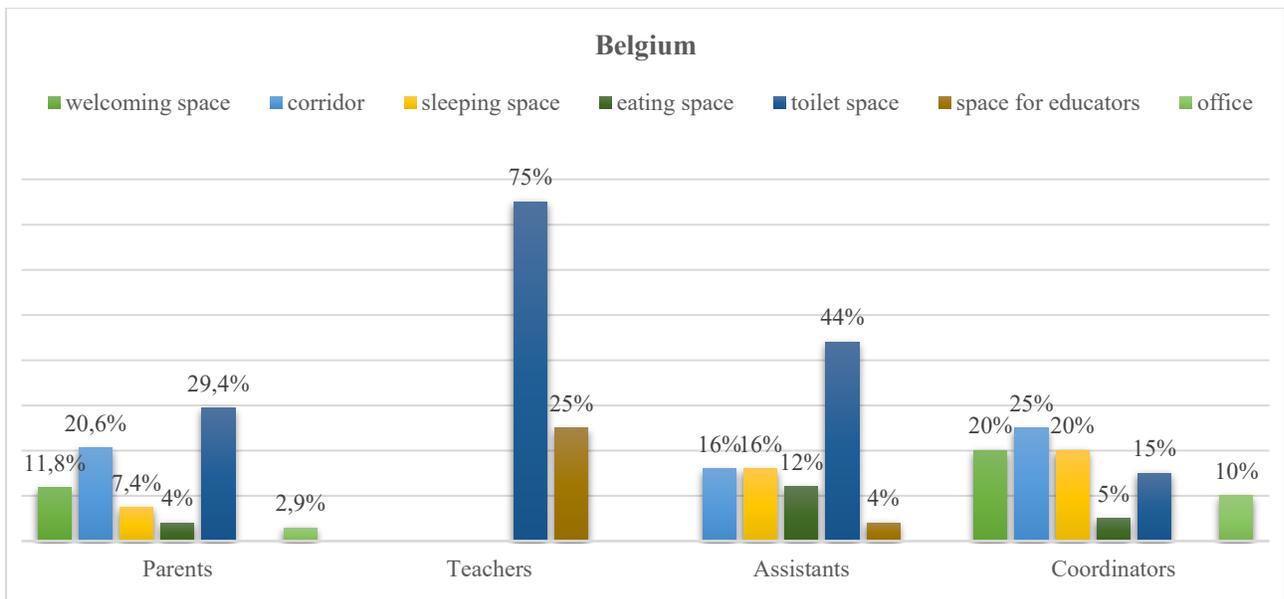
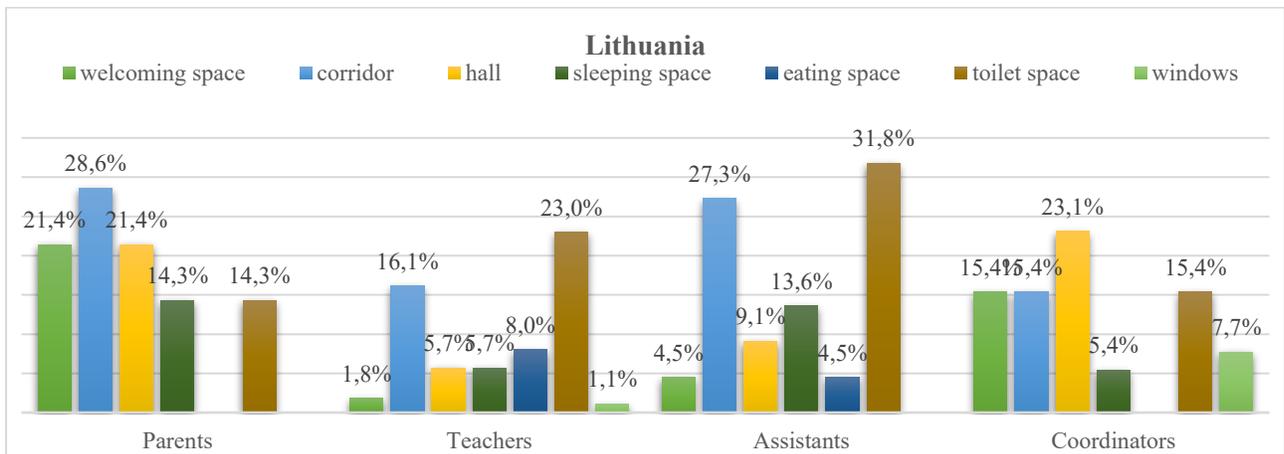


Figure 5.22 - Least favorite spaces for each group in Lithuania



## Main reasons for non-preferences

Figure 5.23 – Main reasons for non-preferences for each group in Italy

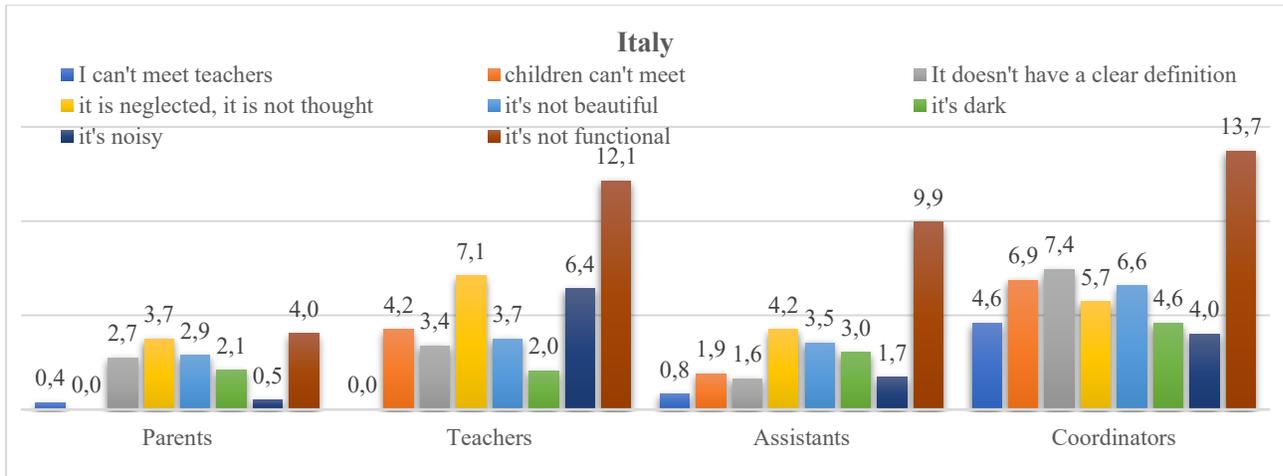


Figure 5.24 – Main reasons for non-preferences for each group in Belgium

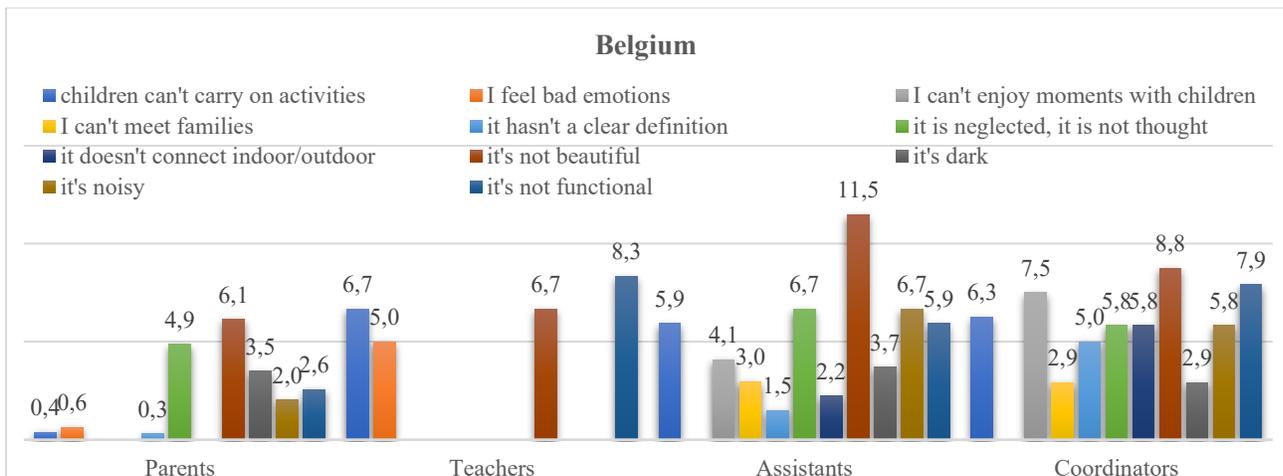
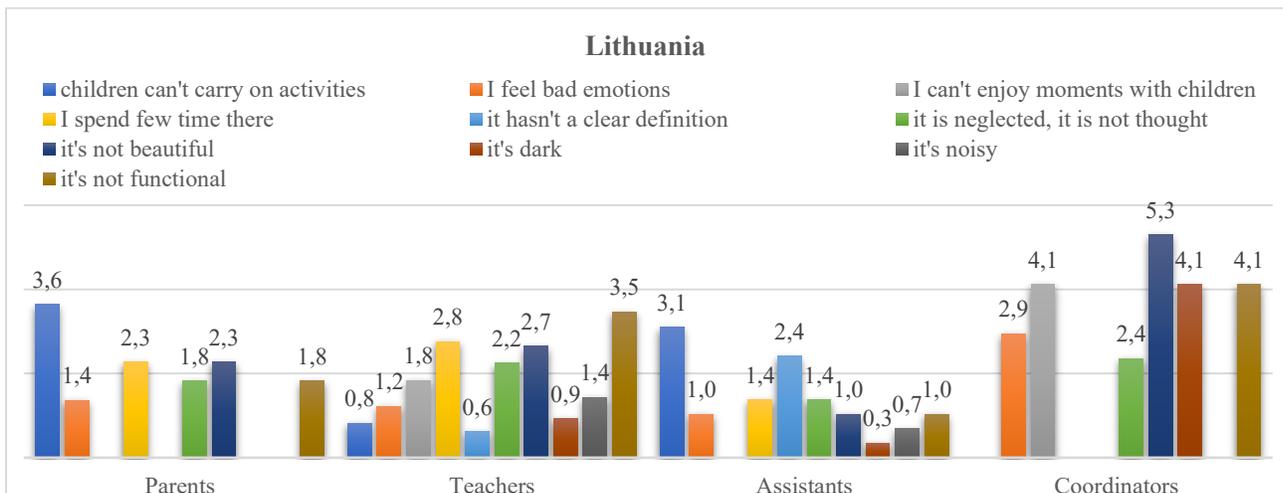


Figure 5.25 – Main reasons for non-preferences for each group in Lithuania



## Location of eating, sleeping and toilet space

Figure 5.26 – Location of the eating room in each country



Figure 5.33 – Location of the sleeping room in each country

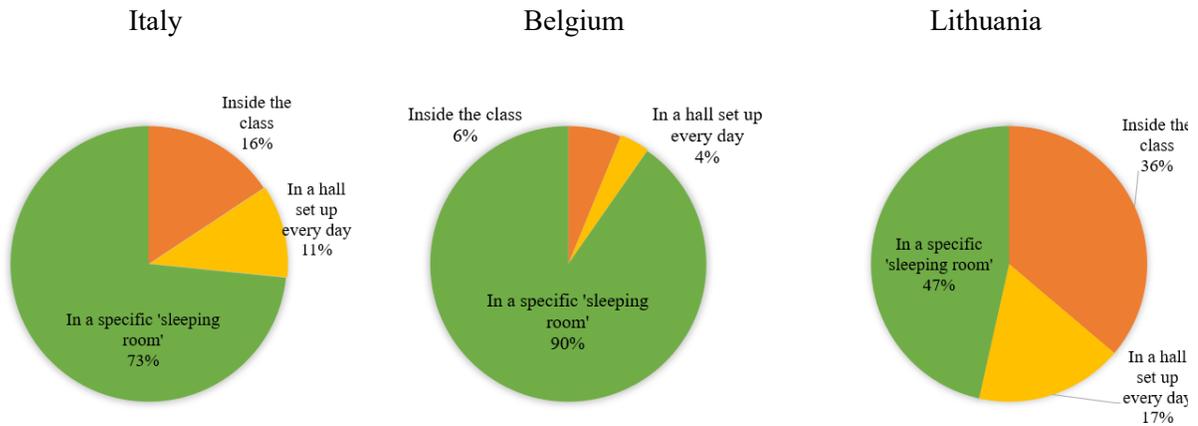
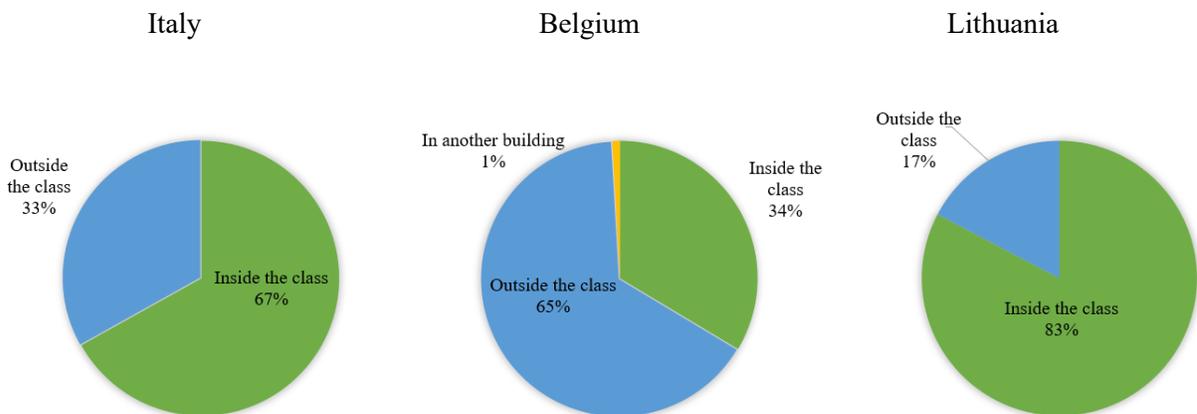


Figure 5.40 – Location of the sleeping room in each country



## Most important aspects of the eating space

Figure 5.27 – Most important aspects of the eating space for each group in Italy

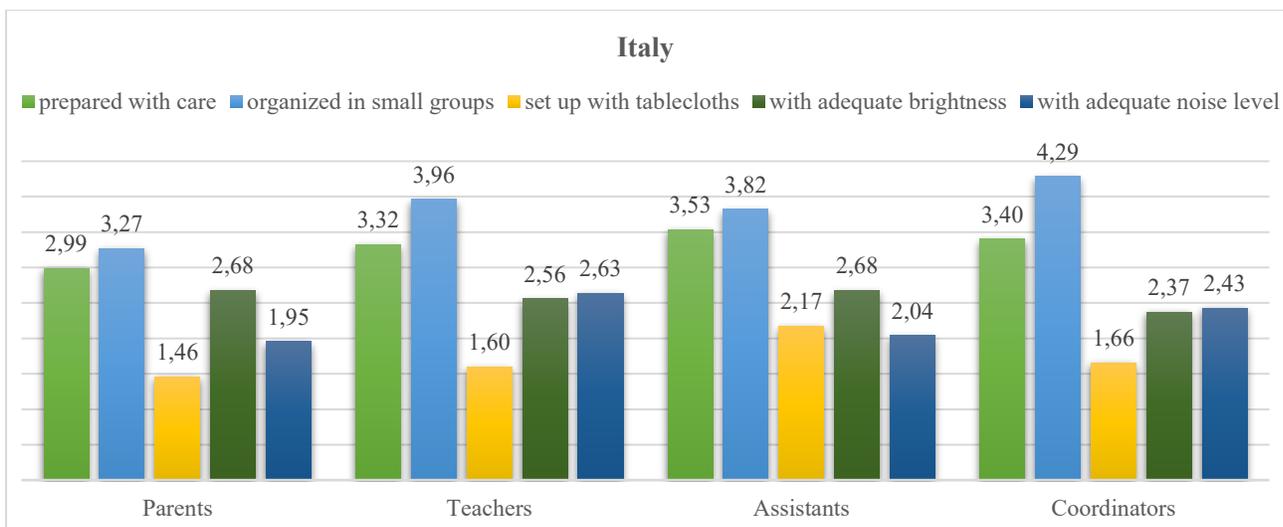


Figure 5.28 – Most important aspects of the eating space for each group in Belgium

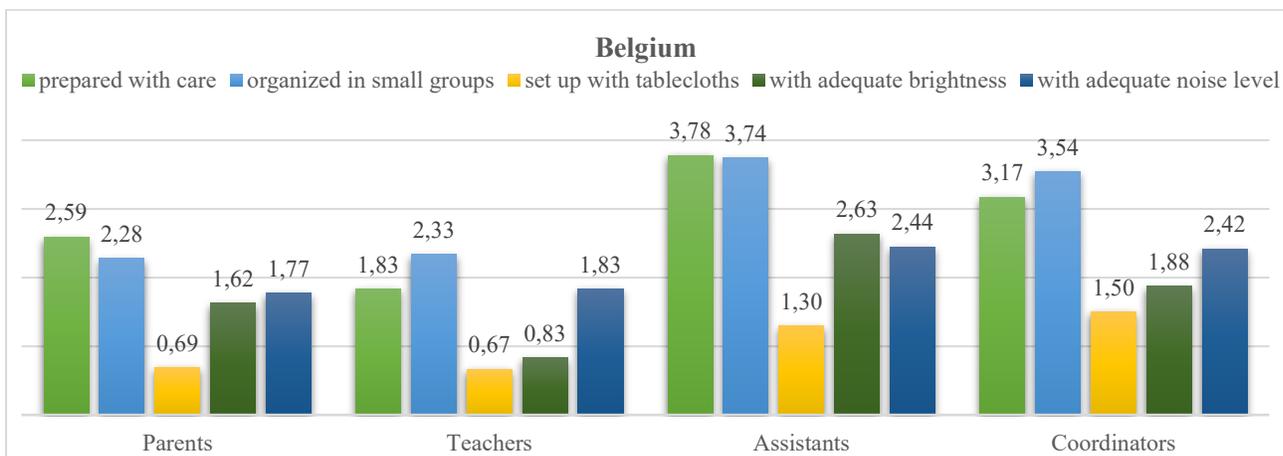


Figure 5.29 – Most important aspects of the eating space for each group in Lithuania

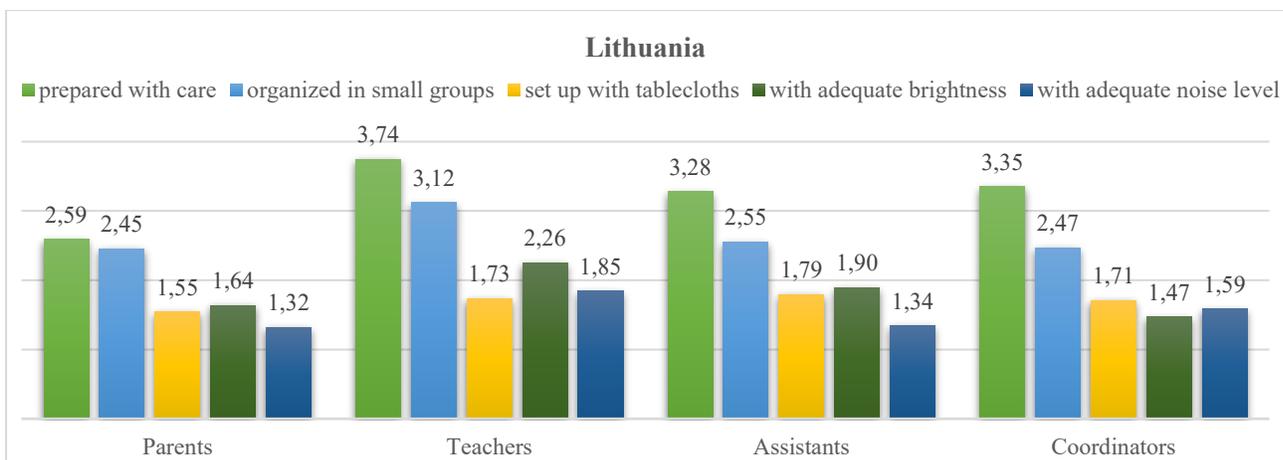


Figure 5.30 – Agreement on statements on eating space for each group in Italy

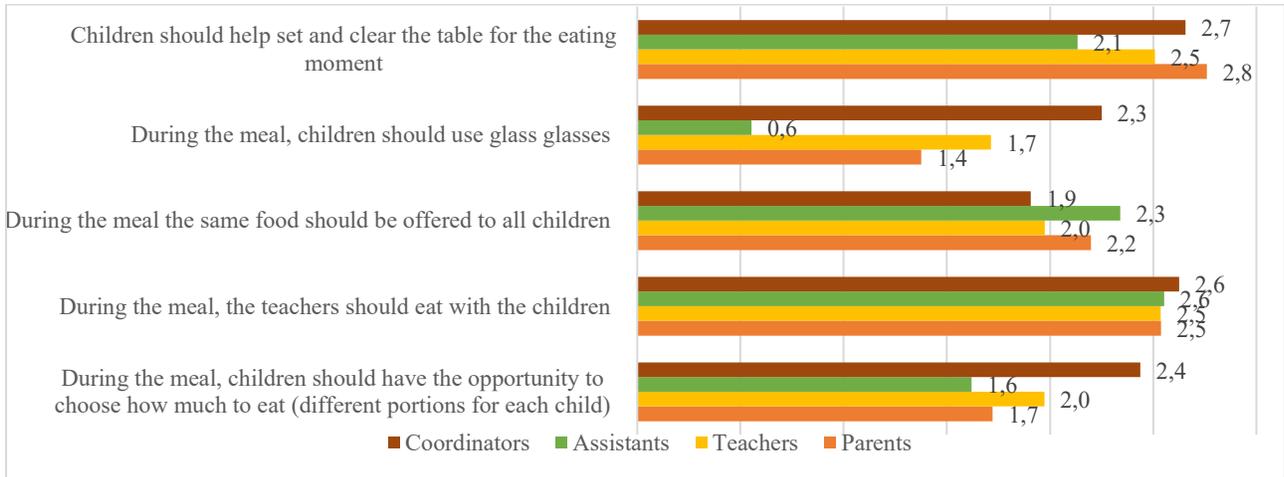


Figure 5.31 – Agreement on statements on eating space for each group in Belgium

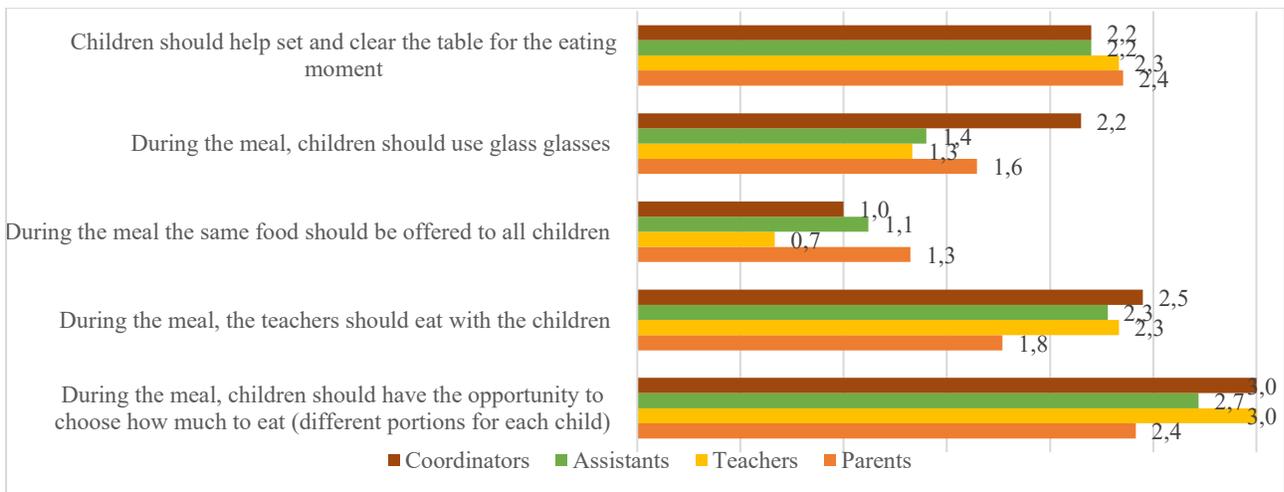
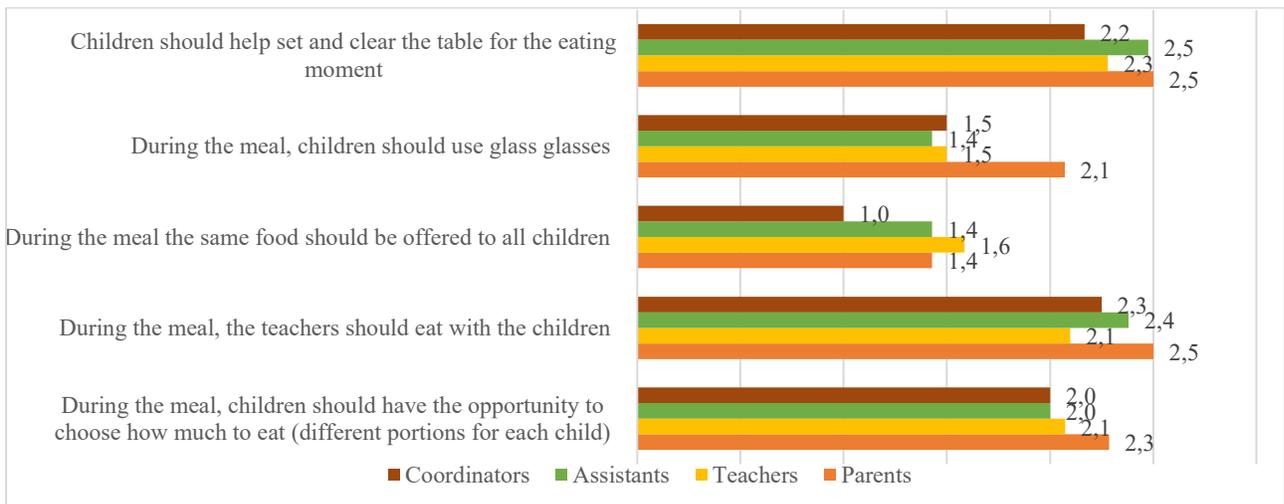


Figure 5.32 – Agreement on statements on eating space for each group in Lithuania



## Most important aspects of the sleeping space

Figure 5.34 – Most important aspects of the sleeping space in Italy

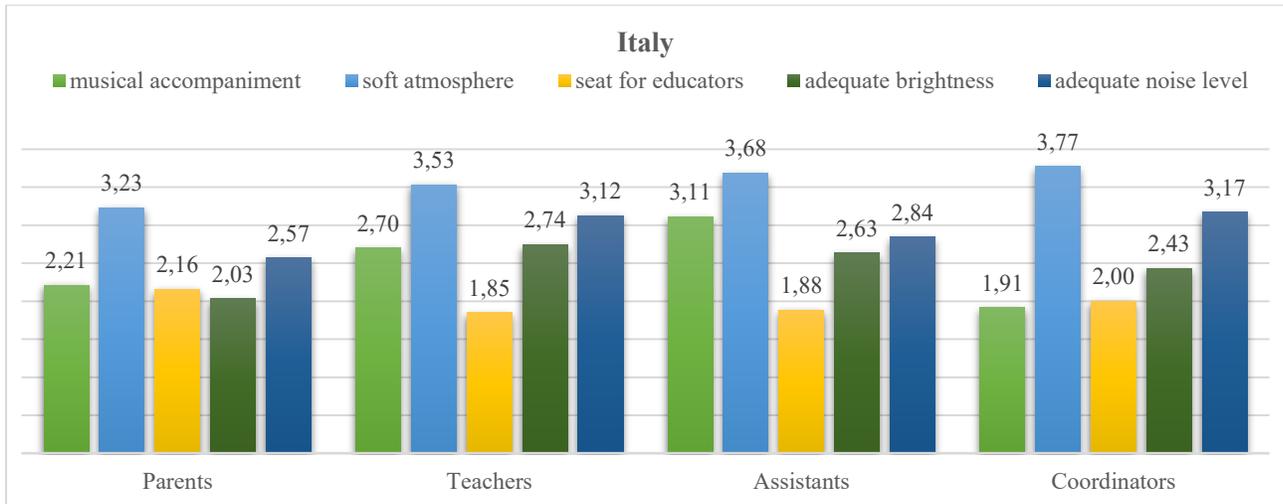


Figure 5.35 – Most important aspects of the sleeping space in Belgium

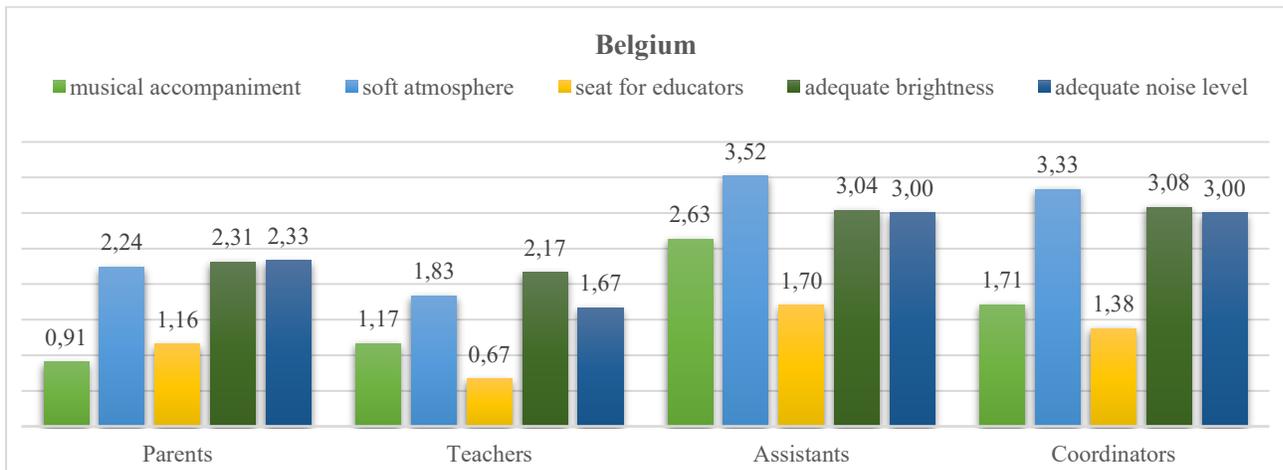


Figure 5.36 – Most important aspects of the sleeping space in Lithuania

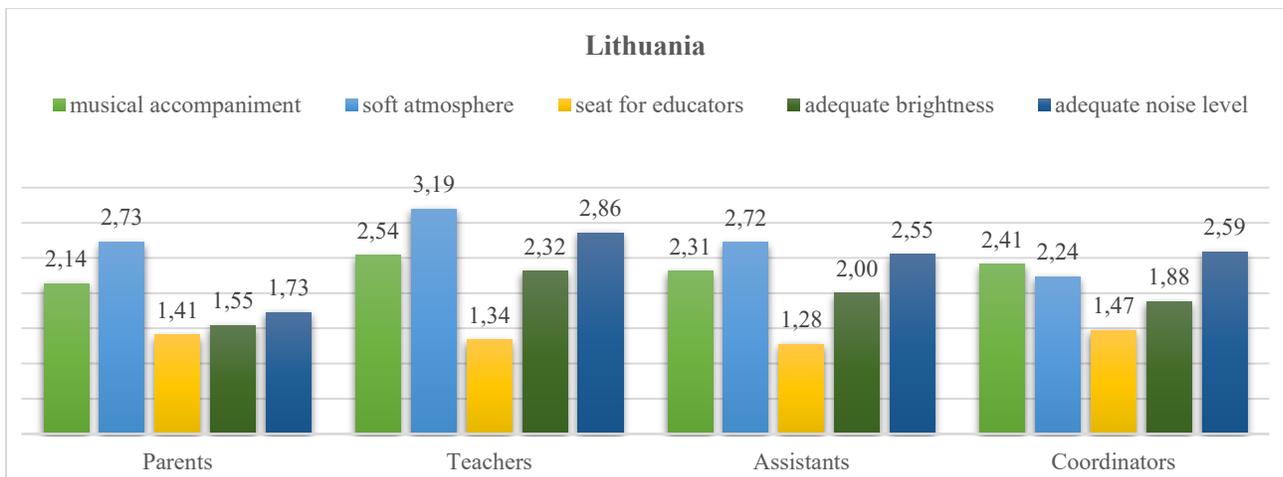


Figure 5.37 – Agreements of statements about sleeping room in Italy

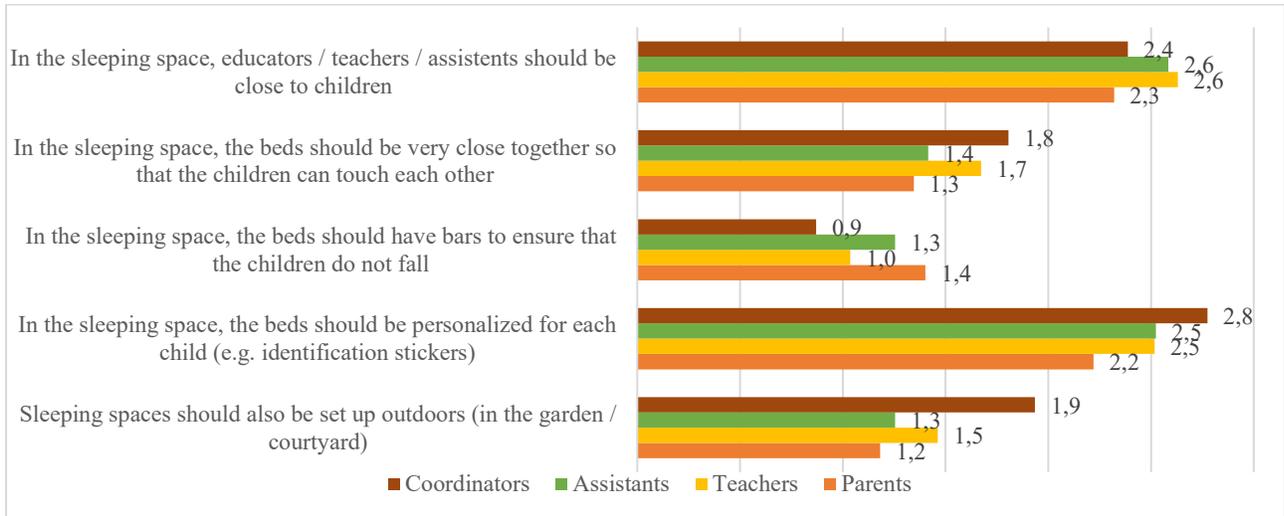


Figure 5.38 – Agreements of statements about sleeping room in Belgium

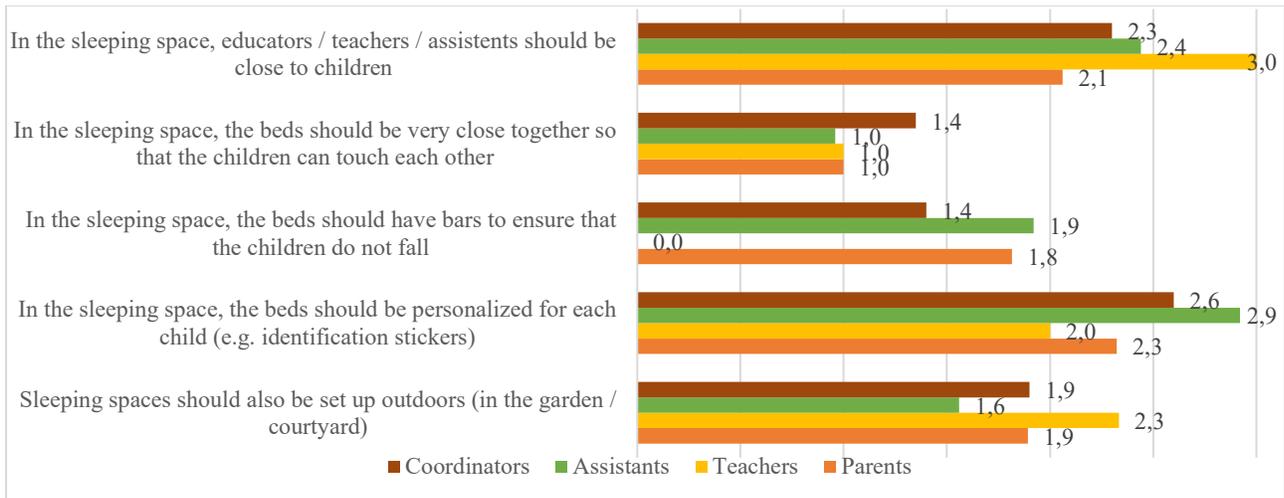
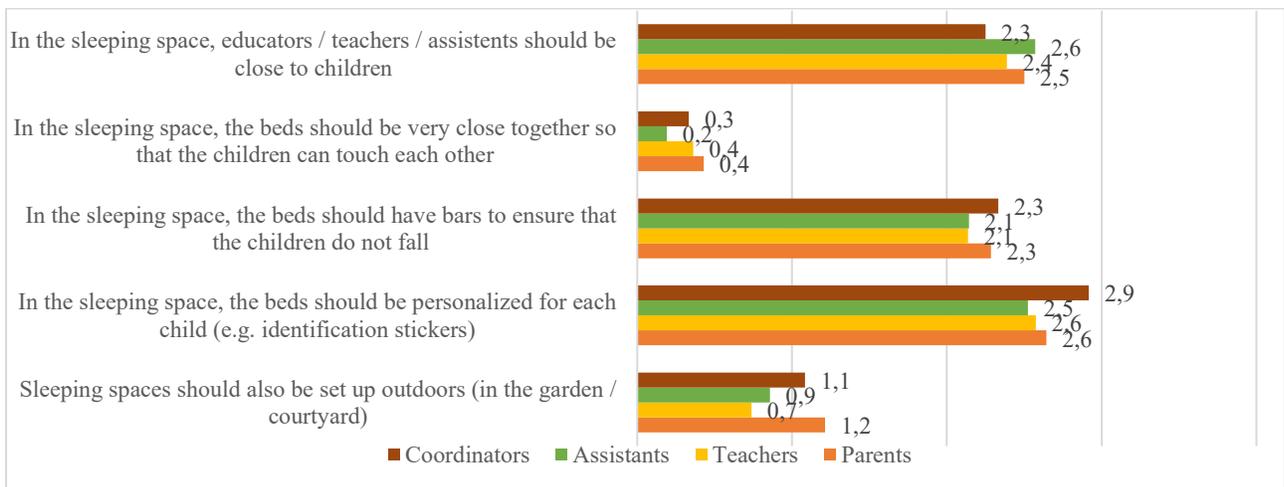


Figure 5.39 – Agreements of statements about sleeping room in Lithuania



## Most important aspects of the toilet space

Figure 5.41 – Most important aspects of the toilet space for each group in Italy

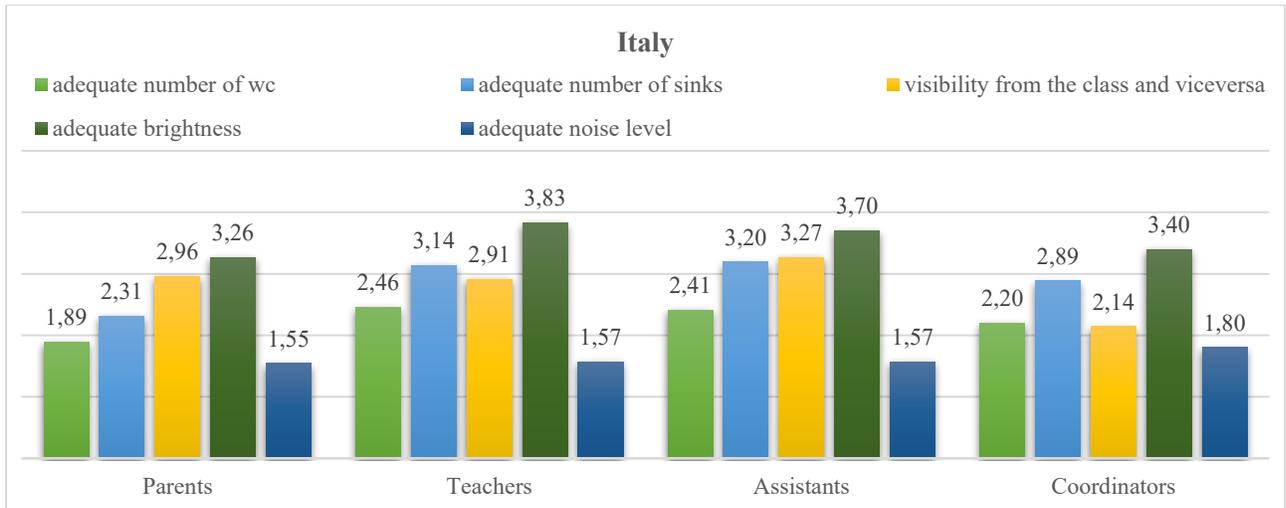


Figure 5.42 – Most important aspects of the toilet space for each group in Belgium

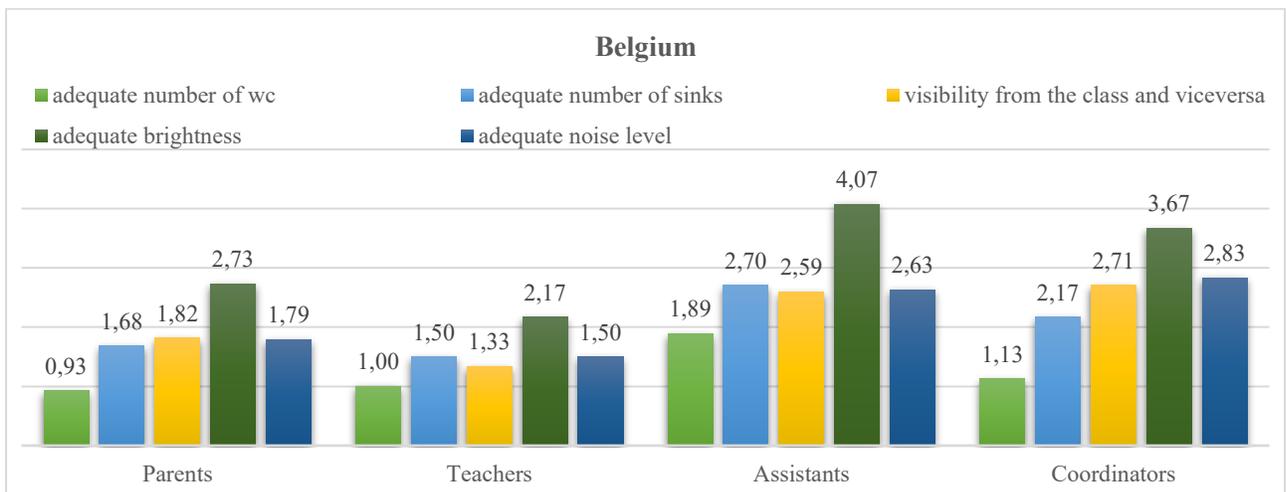


Figure 5.43 – Most important aspects of the toilet space for each group in Lithuania

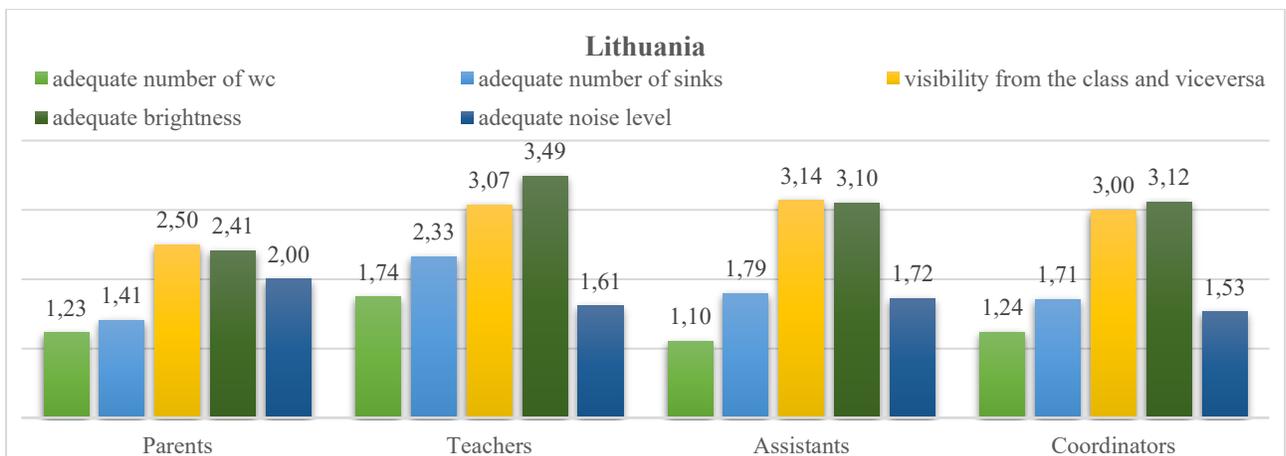


Figure 5.44 – Agreement on statements on toilet space for each group in Italy

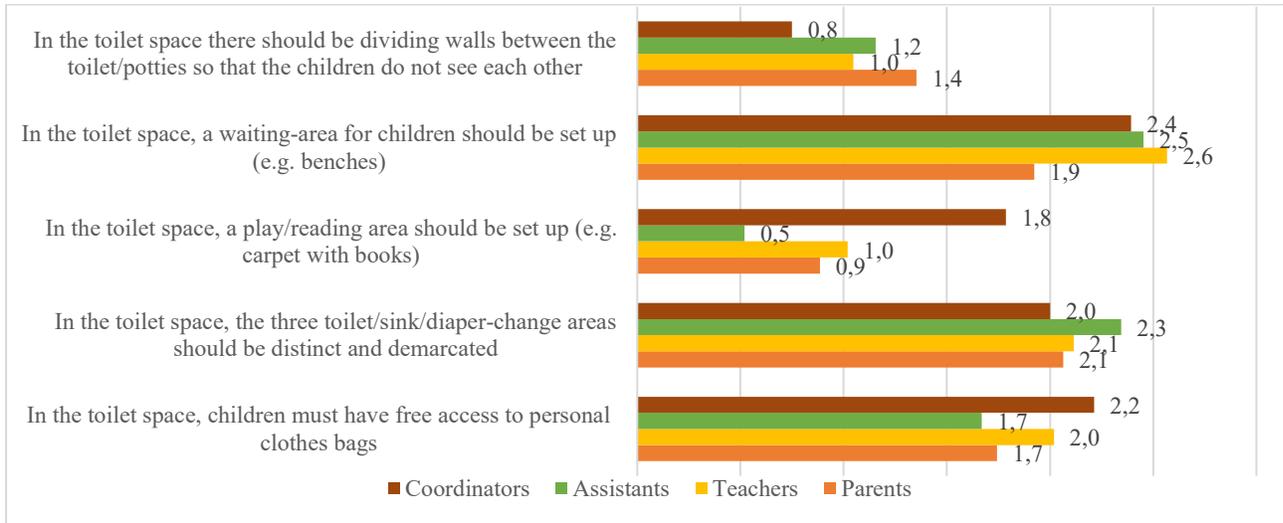


Figure 5.45 – Agreement on statements on toilet space for each group in Belgium

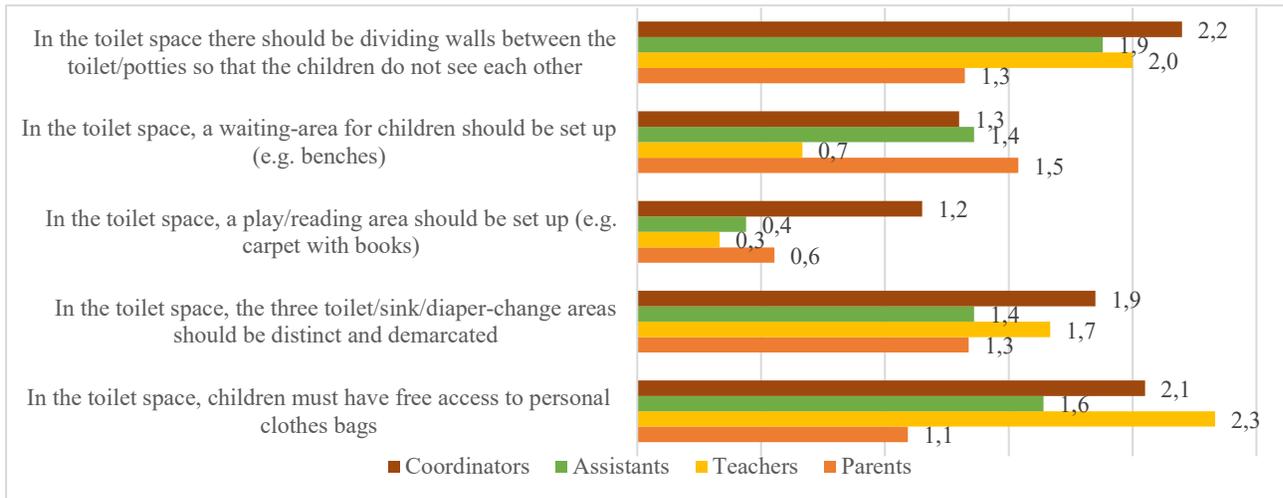
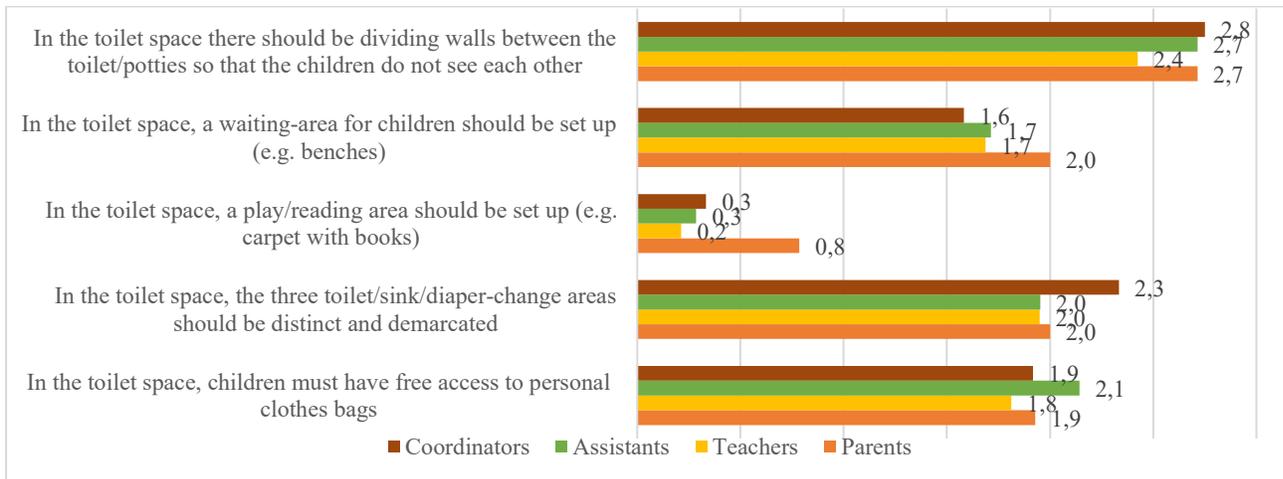
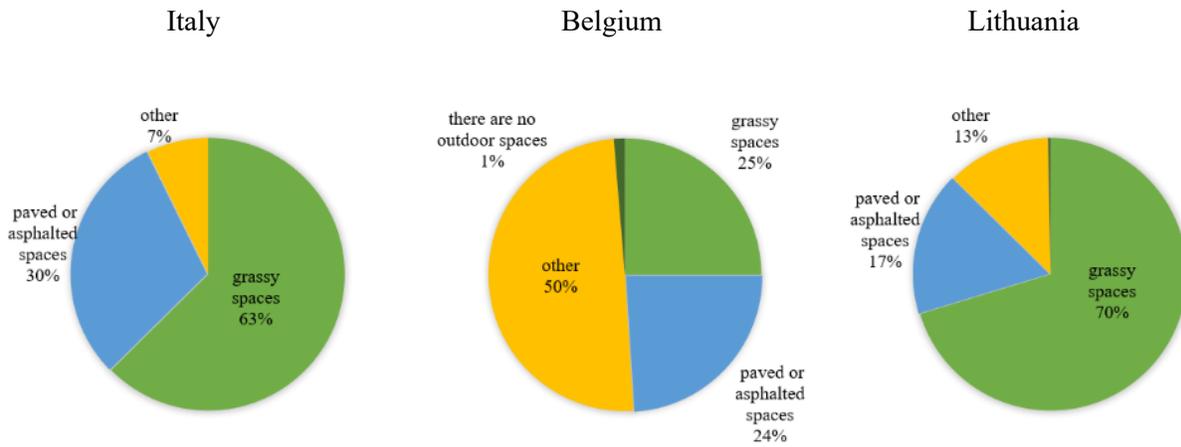


Figure 5.46 – Agreement on statements on toilet space for each group in Lithuania



## Types of outdoor spaces

Figure 5.47 – Types of outdoor spaces in each country



## Perception of adequacy of the outdoor spaces

Figure 5.48 – Perception of adequacy of the outdoor spaces in each country

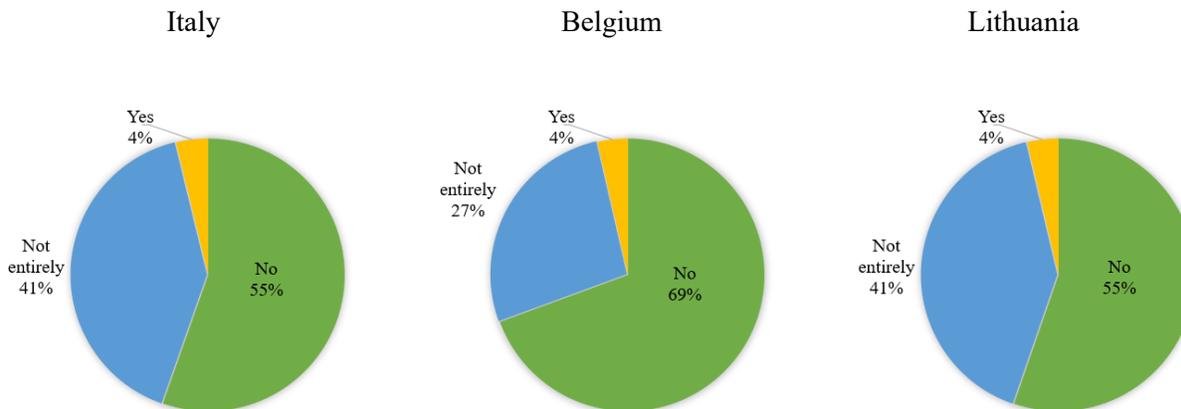


Figure 5.49 - Agreement on statements on outdoor space for each group in Italy

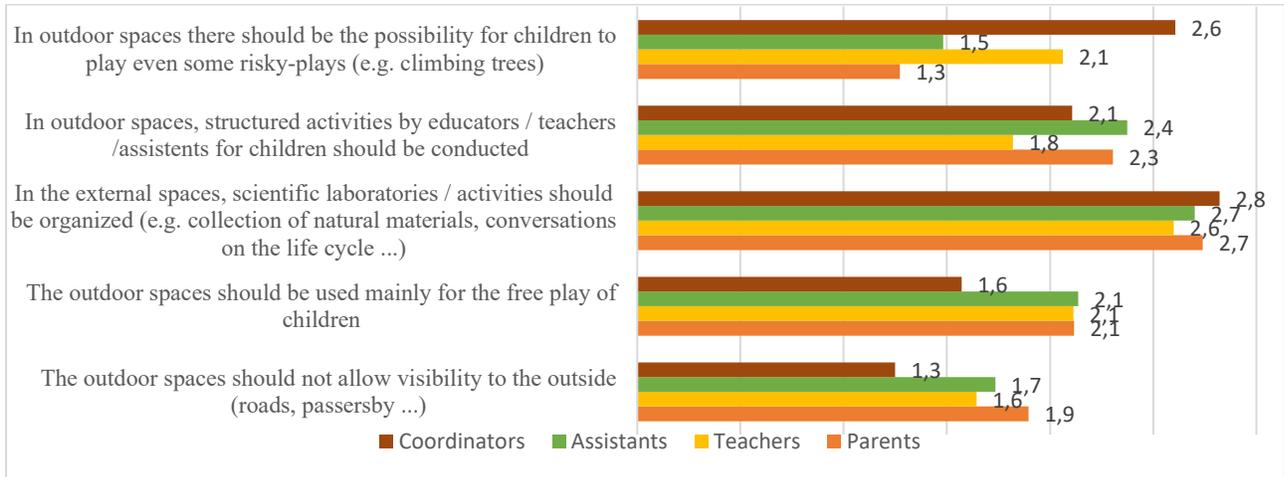


Figure 5.50 - Agreement on statements on outdoor space for each group in Belgium

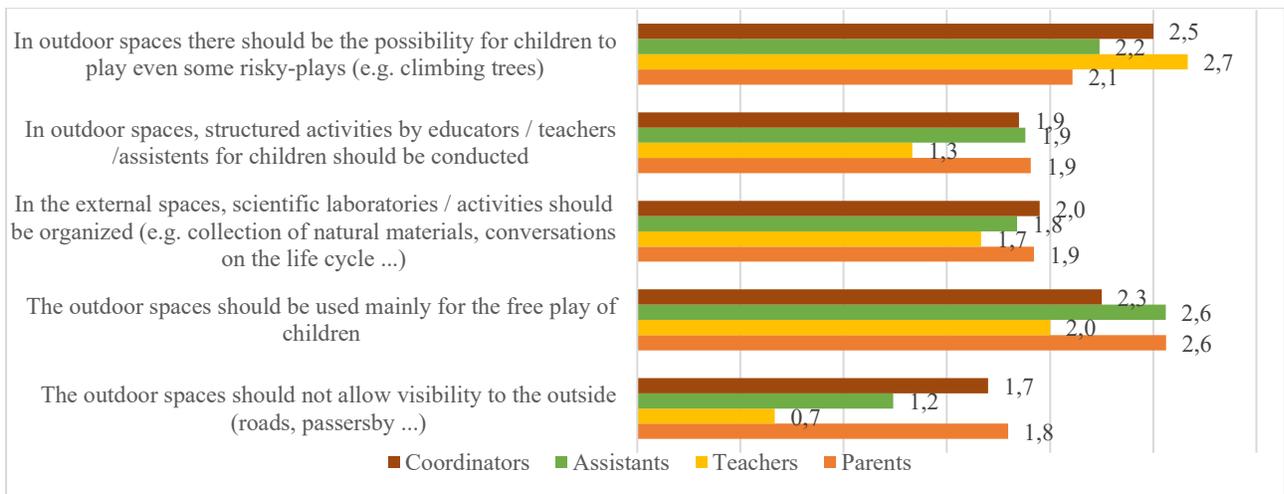


Figure 5.51 - Agreement on statements on outdoor space for each group in Lithuania

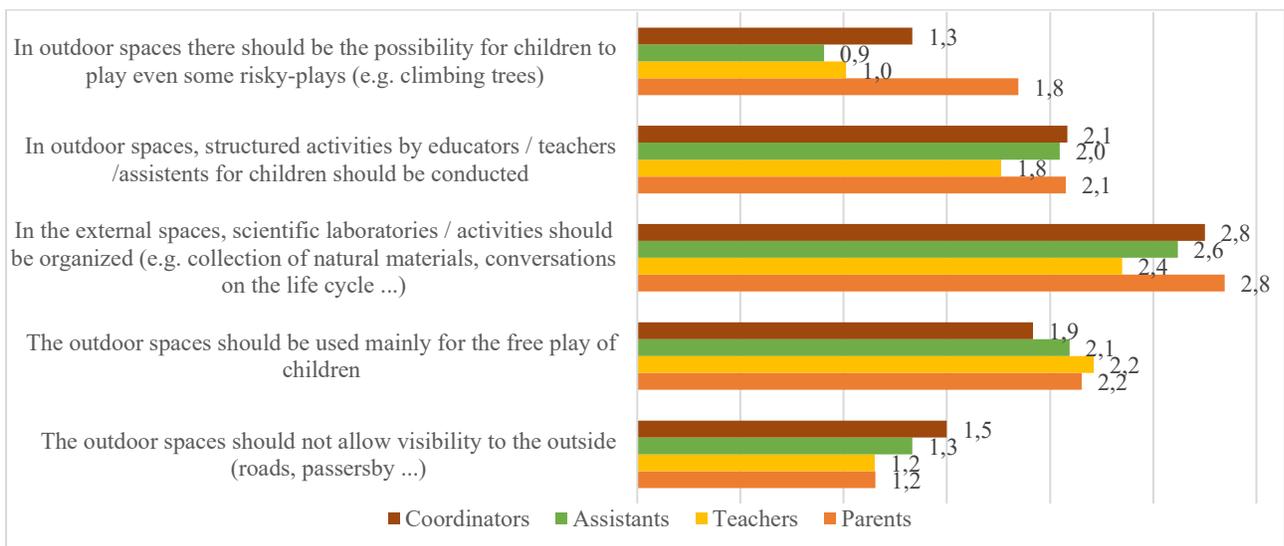


Figure 5.52 - Agreement on statements on the use of outdoors in all climatic conditions in Italy

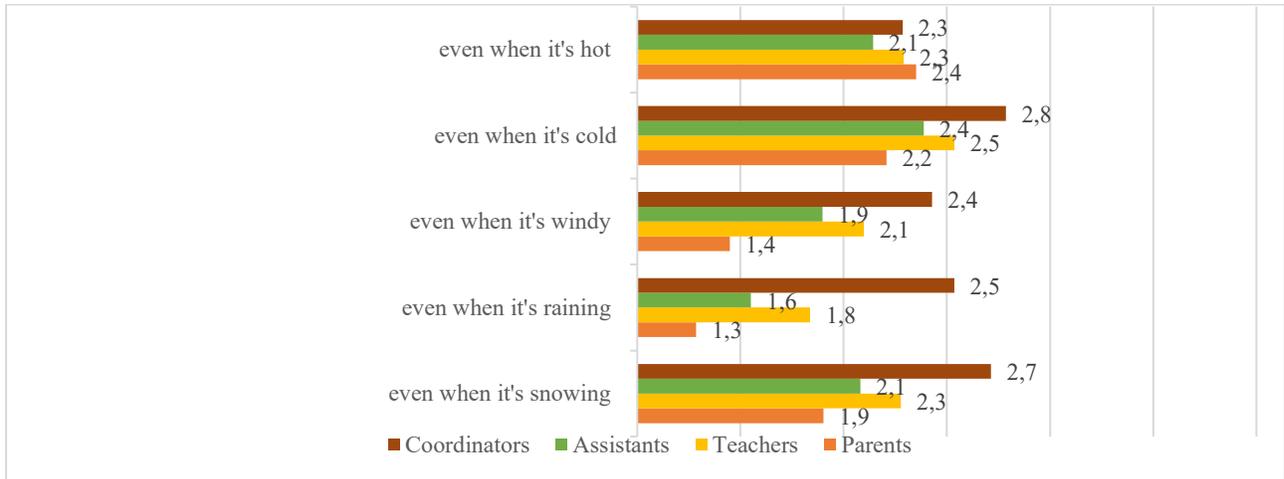


Figure 5.53 - Agreement on statements on the use of outdoors in all climatic conditions in Belgium

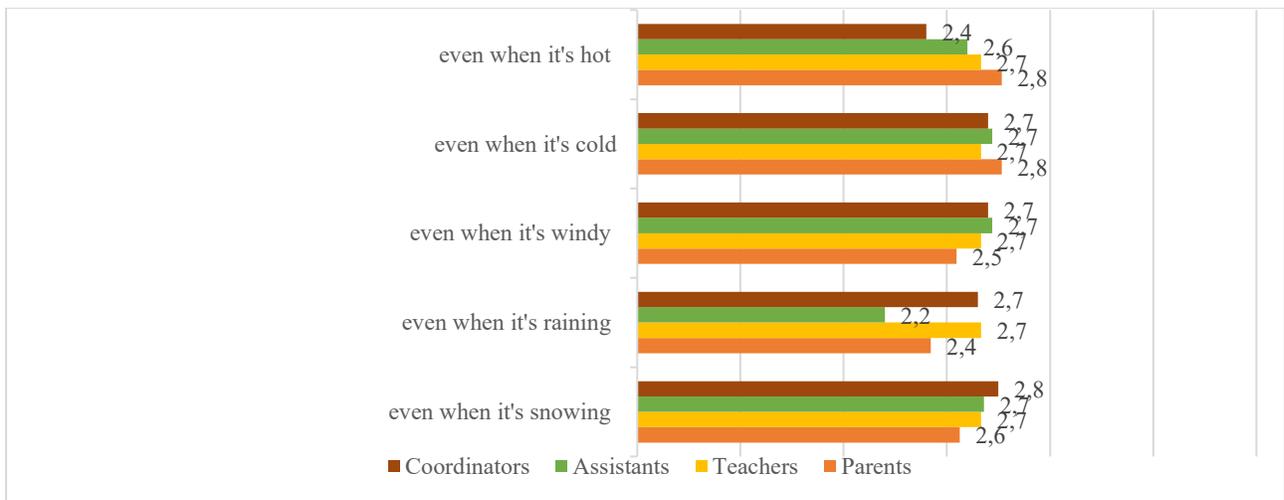
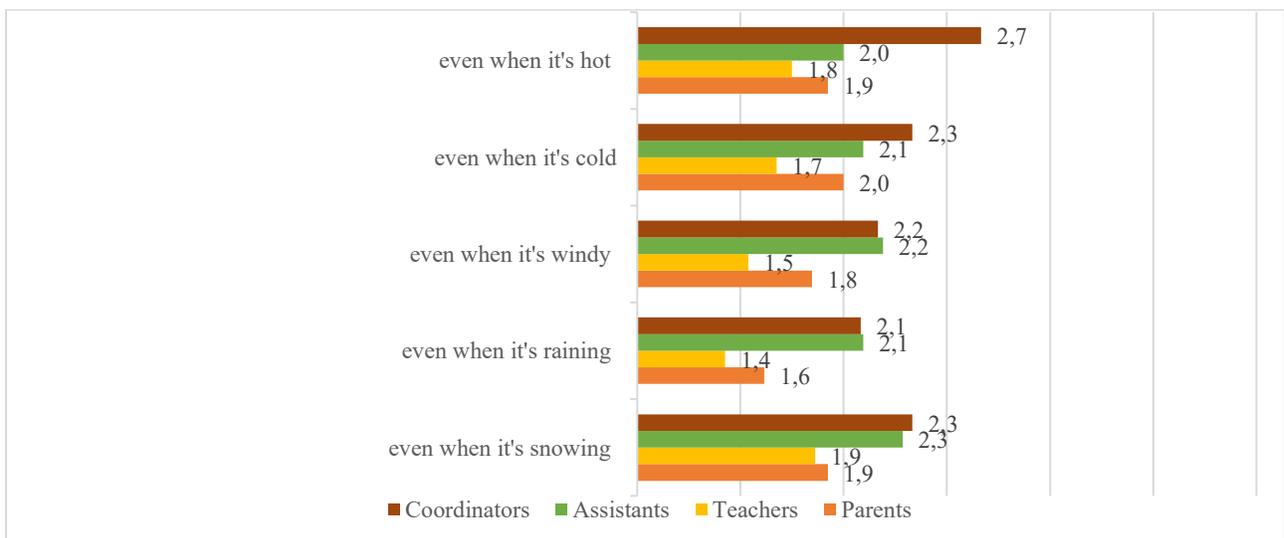


Figure 5.54 - Agreement on statements on the use of outdoors in all climatic conditions in Lithuania



## Appendix 6

### Guidelines for collecting data through children's drawings and interviews in the three countries

#### “The Point of View of Children”

Here below you can find the guidelines to collect data using children’s drawings + interviews.

- **Material:** a white A4 paper (without rows or squares) and markers of various colors.
- **Time:** both the drawing(in group) and the individual interview can take all the time needed.
- **Children’s age:** from 3 to 6 years old.
- **How many children to involve:** at least 30 children for each country.
- **Conductor:** it should be better if drawings and interviews will be conducted by a researcher
- **Deadline to send materials to Sara:** 20 December 2019.

\*drawings, grid, informed consent form.

#### Informed Consent Form

First of all, parents should sign the **informed consent form**, which should contain:

- Child's first and last name
- Gender of the child
- Date of birth of the child
- Nationality of the child
- School and section attended
- Year of attendance at school
- Title of study and profession of the mother
- Title of study and profession of the father
- Date of birth of any other siblings

Then, data collection should be conducted in **two different parts**, described below:

#### First Part: **Drawing – In Group**

##### 1) **Introduce the concept of "place" to the group of children**

*"Your school is great, and it is made up of many places, spaces where you can go, places that are both inside and outside."*

##### 2) **Ask children to draw (in group, but each child doing his/her own drawing)**

*"Now I ask you to think of a place where you like to stay when you are here at school. It can be inside the school or outside in the garden.*

*Okay, have you thought?*

*Now I ask you to draw yourself while you are in this favorite place. If you want you can draw some of your friends or teachers, or just you, as you prefer.*

*When you finish the drawing, you can bring it to me and I'll ask you to tell me about what you drew.*

*All right?" (children's consent)*

##### 3) **When a child ends up, he/she can deliver.**

Write the name of the children on the other side of the paper.

## Second Part: **Individual Interview**

### **Meet each child for an individual interview - audio-record**

The interview should be done after the realization of the drawing, in an isolated room, to promote concentration, to avoid conditioning among children in the answers and to improve the audio quality of the audio-recording.

### **Ask child to indicate:**

1. What was represented (all relevant elements of the drawing must be clear).
2. Who are the people represented and what happens, what they are doing.

Write the indicated elements on the paper

### **Then ask child:**

3. *"So this is a place where you like to stay here at school... And why do you like being here?"*
4. *"What do you think is missing in this school to make it even more pleasant and beautiful for children?"*
5. *"Is there anything else you'd like to tell me/tell me about your school...?"*

Write the answers on the grid.