# INVESTIGATION OF 5-YEAR-OLD PRESCHOOL CHILDREN'S BIOPHILIA AND CHILDREN'S AND THEIR MOTHERS' OUTDOOR SETTING PREFERENCES

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SİMGE YILMAZ

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Approval of the Graduate School of Social Sciences

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Prof. Dr. Tülin Gençöz
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Doctor of Philosophy.

_____

Prof. Dr. Özgül Yılmaz-Tüzün
Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Doctor of Philosophy.

_____

Assoc. Prof. Dr. Refika Olgan
Supervisor

**Examining Committee Members**

| | | |
|---|---|---|
| Assoc. Dr. Sadettin Kirazcı | (METU, PES) | _____ |
| Assoc. Prof. Dr. Refika Olgan | (METU, ELE) | _____ |
| Prof. Dr. Louise Chawla | (CUB, ENVD) | _____ |
| Assoc. Prof. Dr. Çiğdem Haser | (METU, ELE) | _____ |
| Assist. Prof. Arif Yılmaz | (HU, ELE) | _____ |

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Name, Last name : Simge YILMAZ

Signature :

## ABSTRACT

INVESTIGATION OF 5-YEAR-OLD PRESCHOOL CHILDREN'S BIOPHILIA AND CHILDREN'S AND THEIR MOTHERS' OUTDOOR SETTING PREFERENCES

Yılmaz, Simge

Ph.D., Department of Elementary and Early Childhood Education

Supervisor: Assoc. Prof. Dr. Refika Olgan

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The purpose of this study is to investigate 5-year-old preschool children's biophilia (affinity toward nature) and children's and their mothers' landscape preferences. Children's and mothers' landscape preferences are identified by exploring their personal landscape preferences, educational landscape preferences, and the landscapes they would like to visit together. The main sample of this study includes 105 children who are randomly selected from four different preschools. These four preschools are coded as 'natural preschool' and 'non-natural preschool' based on the features of their outdoor environments and the use of such areas. The sub-samples of the study include 20 children and their mothers. Mixed method research strategies, particularly, concurrent triangulation design, are utilized for the current study. The data collecting tools were biophilia measure, which was implemented to the main sample, and children and mothers' landscape preferences questionnaires, which were implemented to the sub-samples. Biophilia measure is accompanied by a series of drawings, which are visuals of each item of the measure. Whereas the open-ended questions in

children's and mothers' landscape preferences questionnaires were asked with the company of sixteen photographs, which represent four different types of outdoor settings (forest, park, water, open field/grassy area). The results of the study showed that the mean scores of children who enrolled different school types were high and differ by only a small margin. Children's biophilia scores did not differ based on their school types and gender. According to the findings, children's and mothers' most preferred landscapes were water settings and parks. Forests, on the other hand, were the least favorite landscapes selected by both groups of the participants. While children mostly considered the affordances of a landscape in their most favorite landscape preferences, mothers focused on the aesthetic and relaxing features of a landscape. Both groups of the participants considered unstructured play opportunities as a most important factor affecting their selections of their educational landscape preferences, and landscape preferences they would like to visit together. The most important reason affecting children's and mothers' preferences of forest settings as their least preferences was related to safety concerns, which are mostly based on physical dangers in a landscape. Bad weather conditions, health problems, transportation problems, other things to do, and safety were reported by both groups of the participants as common barriers against visiting natural landscapes. Different from children, mothers also mentioned about scarcity of natural landscapes in urban cities, inconvenient natural places to go, and lack of time to visit natural landscapes as barriers preventing them to visit natural landscapes.

**Keywords:** Biophilia, children's landscape preferences, mothers' landscape preferences, early childhood education, environmental education

# ÖZ

OKUL ÖNCESİ EĞİTİM KURUMLARINA DEVAM EDEN 5 YAŞ GRUBU ÇOCUKLARIN BİYOFİLİSİNİN VE ÇOCUKLAR İLE ANNELERİNİN AÇIK ALAN TERCİHLERİNİN ARAŞTIRILMASI

Yılmaz, Simge
Doktora, Temel Eğitim Bölümü
Tez Yöneticisi: Doç. Dr. Refika Olgan

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Bu çalışmanın amacı okul öncesi kurumlara devam eden 5 yaşındaki çocukların biyofilisi (doğaya yakınlık) ile çocukların ve annelerinin açık alan tercihlerini incelemektir. Çocukların ve annelerin açık alan tercihleri, her iki grubun da kişisel tercihleri, eğitimsel tercihleri, ve birbirleri ile gitmeyi tercih ettikleri alanlar araştırılarak belirlenmiştir. Çalışmanın ana örneklemi, Ankara ilinde bulunan dört farklı anaokulunundan rastgele seçilmiş 105 çocuktan oluşturmaktadır. Ana örneklemin seçildiği bu dört anaokulu, açık alanlarının özellikleri ve bu alanların kullanımı ile ilgili bazı kriterler göz önüne alınarak, ‘doğal’ anaokul ve ‘doğal olmayan’ anaokul türleri olarak kodlanmıştır. Ana örneklem içinden rastgele seçilmiş 20 kişilik çocuk ve bu çocukların anneleri ise, çalışmanın alt örneklemlerini oluşturmaktadır. Bu çalışmada karma araştırma yöntemleri kullanılmış olup, çalışmanın deseni, eşzamanlı üçgenleme deseni olarak belirlenmiştir. Çalışmada

kullanılan veri toplama materyalleri, ana örnekleme uygulanan biyofili ölçeği ile, alt örneklemlere uygulanan çocukların ve annelerin açık alan tercihleri ölçekleridir. Biyofili ölçeği, her bir ölçek maddesinin somutlaştırıldığı çizimler eşliğinde uygulanırken; açık alan tercihleri ölçeklerindeki açık uçlu görüşme soruları, dört farklı türdeki (orman, park, sulu alan, açık/çimli alan) on altı adet açık alan fotoğrafı eşliğinde uygulanmıştır. Çalışmanın bulguları, her iki farklı okula devam eden çocukların biyofili puanlarının ortalamalarının birbirine yakın ve oldukça yüksek olduğunu ortaya koymaktadır. Çocukların biyofili puanlarının, okul türü ve cinsiyet faktörleri açısından istatistiksel olarak farklılaşmadığı görülmüştür. Çocukların ve annelerin açık alan tercihleri ile ilgili bulgulara göre, her iki grubun da gitmeyi en çok tercih ettiği alanlar su bulunduran alanlar ve parklardır. Ormanlık alanlar ise, her iki grubun da gitmeyi en az tercih ettikleri alanlardır. Çocukların tercihlerinde, kişisel olarak gitmeyi en çok tercih ettiği alanlardaki oyun fırsatları etkili olurken, annelerin tercihlerinde açık alanın estetik ve rahatlatıcı özelliği etkili olmuştur. Her iki katılımcı grubunun eğitimsel tercihleri ve birbirleri ile gitmeyi tercih ettikleri alanların seçiminde en etkili faktör, alanın çocuklara yapılandırılmamış oyun fırsatları sunması olarak belirlenmiştir. Çocukların ve annelerin gitmeyi en az tercih ettikleri ormanlık alanlar ise, katılımcıların bu alanlardaki olası fiziksel tehlikelerden kaynaklanabilecek güvenlik kaygıları ile ilgilidir. Kötü hava koşulları, sağlık problemleri, ulaşım problemleri, yapılacak diğer işlerin olması ve güvenlik kaygıları her iki katılımcı grubu tarafından da açık alanları ziyaret etmelerini engelleyen faktörler olarak belirtilmiştir. Çocuklardan farklı olarak anneler, kentlerde yeterince doğal açık alan bulunmadığını, var olan doğal açık alanların elverişsiz olduğunu ve açık alanlara gitmek için ekstra zamanları olmadığını belirtmişlerdir.

**Anahtar Kelimeler:** Biyofili, çocukların açık alan tercihleri, annelerin açık alan tercihleri, erken çocukluk eğitimi, çevre eğitimi

**I dedicate this work to my unique family members:**

**My grandmother, my all, NURHAN ÜÇOK,**

**The best father in the world MEHMET NİHAT YILMAZ,**

**The most caring and lovely mother AYŞE YILMAZ,**

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**My dear brother KEMAL EYÜBOĞLU,**

**And my coming-soon nephew DEFNE EYÜBOĞLU**

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## TABLE OF CONTENTS

## LIST OF TABLES

## LIST OF FIGURES

# CHAPTER 1

## INTRODUCTION

Biophilia is defined as a fundamental and genetically based human need and propensity, to affiliate with life and lifelike processes (Kahn, 1997). According to several researchers (i.e., Dubos, 1968; Iltis, Loucks, & Andrews, 1970; Kahn, 1997), there is an innate desire in human beings that they need to be close with animals, plants, as well as any kind of natural stimuli such as vegetation, water, the voices and movements of animals, or seasonal changes. Supporting this information, Tilbury (1994) and Kellert (2005) define biophilia as an innate inclination to investigate the natural environment. Of special interest to the current research, biophilia is defined as a genetic foundation for individuals' positive responses or affinity toward nature (Wilson, 1993).

Human beings' tendency to be close with any kind of natural stimuli can be explained through different theories. Many researchers (Appleton, 1975; Coss & Charles, 2004; Orians, 1986; Wilson, 1984) suggest that evolutionary origins of human beings affect their preferences for different features of landscapes. From the evolutionary perspective, human beings have an innate predisposition for savanna-like landscapes including low bushes and groups of trees since such settings provide opportunities either to control the area or to hide from potential hazards such as wild animals or enemies (Appleton, 1975). Falk (1977) stated that there is a strong effect of human beings' evolutionary adaptation to survive on the savannas of East Africa on their landscape preferences. According to Wilson (1984), people seek good and plentiful environments that meet their needs to survive. The human inclination to prefer water as a fascinating feature of landscapes could also be explained by an evolutionary perspective, since water is the basic drink to survive.

Based upon the evolutionary perspective, individuals have genetically tendency to investigate or avoid natural stimulus or environments (Kahn, 1997; Kellert, 2012;

Wilson, 1984). According to Kellert and Wilson (1995), it is accepted that people have genetic predispositions to variety of adaptive responses, including both positive (biophilia) and negative (biophobia) responses to a particular natural stimulus that may end up with either advantages or dangers/avoidances. While these advantageous are associated with something that make human to keep alive such as food, water, and security; dangers/avoidances are related to risk relevant natural stimulus (animals such as snakes and spiders) and situations (height and dark). From this perspective, the development of biophilia or biophobia in children, in very young ages, can be explained through evolutionary perspective. At this point it is important to understand how biophilia or biophobia develops in young children.

The development of biophilia can be observed in children from the very beginning of their life, even when they are younger than two (Moore & Marcus, 2008). Children have an innate desire to explore natural environments and take initiative for their own learning in such settings (Thompson & Thompson, 2007). The underlying reason for children's inclination to investigate nature could be related to its many opportunities and resources, enabling children to feel free and learn through self-determined playing (Rivkin, 1995). According to Chawla (2007), nature offers lots of elements or materials to keep children highly engaged and attentive.

In addition to the rich resources stimulating young children's self-initiated play, creativity, and learning in natural environments, natural environments support young children's whole development (Wilson, 2007). Today, there is a substantial evidence in early childhood education literature showing the contribution of outdoor environments and natural experiences to young children's learning and development (Rivkin, 1995). Many researchers (e.g., Davies, 1996; Louv, 2005) see outdoor environments as valuable for young children's development of gross and fine motor skills, intellectual skills, social skills, and sensory skills. They believe that the whole development of children could be well supported by the outdoors as long as those outdoor areas are appropriate for children's developmental levels (Davies, 1996; Haas, 1996; Henniger, 1993; Louv, 2005; Tannock, 2008).

Biophobia, on the other hand, could be culturally learned phenomenon rather than genetically acquired one since it has an aspect of vicariously acquired responses

(Ulrich, 1993). Although some of the research findings indicated that reactions to fear-relevant natural stimuli could be automatically and unconsciously occur, some of them revealed that such reactions can be learned culturally (Ulrich, 1993). In fact, biophobia is an adaptive feature that individuals can learn aversive reactions to fear-relevant nature stimuli such as snakes, rats, and spiders (Ulrich, 1993).

Studies conducted with both animals and human beings confirmed aforementioned information. Several researchers found that rhesus monkeys have aversive reactions to fear-relevant stimuli including toy snakes; however, they do not have similar response to fear-irrelevant stimuli including toy rabbits (Cook & Mineka, 1989; 1990; Mineka, Cook, & Keir, 1984). Similarly human studies revealed that an individual can learn fearful response to a natural stimuli by observing another person's reaction to similar stimuli. In particular, individuals can acquire aversive reaction to a natural stimulus by observing the unforgettable painful consequences to a response for a natural stimulus (Ulrich, 1993).

In order to make children benefit from the positive effects of nature as and to nurture their love of nature or positive affiliation toward nature, as well as to protect them from the negative consequences of learned fears, children need developmentally appropriate opportunities to experience or to explore the natural environment in the framework of child development and learning principles (Chawla, 2006; Sobel, 2008). Moreover, it is crucial both to enhance such kinds of opportunities for children and to foster their understanding of being an inseparable part of nature in the early years, since children's values, attitudes, as well as the fundamental orientations toward nature begin to be formed in these critical years (Kellert, 1997; Kahn, 2002).

However, today's contemporary world does not offer many opportunities for children for free exploration in nature compared with previous generations (Louv, 2005). Although children prefer to play in unstructured nature settings when they are given the choice (Titman, 1994), their disengagement from nature increases based on some factors (Louv, 2005). Human-dominated environments where natural parts have been diminished over time were one of the most important factors investigated as the cause for children's disconnection from nature (Turner, Nakamura, & Dinetti, 2004). In essence, children have become more sedentary due to spending long hours in front

of the television and computer than outdoors (Clements, 2004). Louv (2005) noticed that even though children have opportunities for spending time outdoors, such environments have barren natural diversity in the contemporary world. According to Bekoff and Goodall (2007) and Louv (2005) perceived dangers and culture were other factors which lead children's disconnection from nature.

Based on these factors, children having less opportunities to experience nature may encounter with 'nature deficit disorders' (Louv, 2008) as well as suffer from physical and emotional well-beings (Wilson, 1993; Kellert, 1993). In addition to negative effects on children, disconnection from nature and having lack of opportunities to spend time in natural outdoors have negative impacts on nature since individuals' lack of connection to nature might show less commitment to protecting the natural world and care for the environment during their future years (Chawla 1999; 2007; Engleson & Yockers 1994; Samways, 2007; Wells & Lekies 2006). To sum up, it is clear that there is a dual connection between human beings and nature. In other words, human well-being strongly depends on the environment's well-being (Wilson, 1993; Kellert, 1993).

According to Stokes (2006), on one hand, such kind of alienation from nature can be considered as a barrier to develop biophilia; on the other hand it could trigger biophobia particularly in younger ages (Orr, 1994; Simaika & Samways, 2010; White, 2004; White & Stoecklin, 1998). Kahn (1997) defined biophobia as a negative affiliation with nature. Orr (1993) and Ulrich (1993) indicated that if there is a genetic tendency to explore the natural stimuli, there is also a genetic tendency to fear to or avoid from natural stimuli in human beings. In summary, it is clear that our genetic behavioral predispositions could have two-fold: it could boost our damaging behaviors to the environment or promote our pro-environmental behaviors that stimulate us to maintain the connection with the natural environment (Gardner & Stern, 2002).

Understanding of the relationship between children's alienation from nature and biophilia could also help us to concentrate on landscape preferences because, in addition to a genetic basis for individuals' positive orientation toward nature as well as their affinity or affective orientation toward nature, biophilia could also be thought of as a fundamental concept affecting adults' and children's outdoor settings or

landscape preferences (Ernst & Tornebene, 2012; Rice & Torquati, 2013; Wilson, 1984). Landscape preferences refer feelings that may elicit individuals' likes or dislikes (Buijs, Elands, & Langers, 2009). According to Falk (1977), evolutionary adaptation of human beings to life on the East Africa's savannas could have a strong impact on their landscape preferences. Specifically, these preferences were associated with affordances as well as safety of the settings. In contrast to evolutionary perspective, Falk and Balling (2009) indicated that individuals' landscape preferences could be affected by enculturation.

Since individuals' biophilia has an impact on their landscape preferences (Ernst & Tornabene, 2012; Rice & Torquati, 2013), it would be important to understand which factors have an effect on biophilia and landscape preferences before explaining the underpinning theories having both concepts.

### 1.1 Related Factors Affecting Biophilia and Landscape Preferences

Based on the previous section, all the factors given following paragraphs can be considered as effective factors affecting both concepts.

The factors that have effects on both biophilia and landscape preferences determined by previous experiences (Chawla, 2007; Cheng, 2008; Herzog, Herbert, Kaplan, & Crooks, 2000), frequency (Moore & Marcus, 2008) and the duration of time spent in nature (Louv, 2008; Moore & Marcus, 2008; Wilson, 1996), the feature of the environment (Kaplan, 1985; Strumse, 1994), the degree to which a setting is natural (Herzog et al., 2000; Purcell & Lamb, 1984; Ulrich, 1986; Van den Berg, Vlek, & Coeterier, 1998), availability to nature (Korpela, Kytta, & Hartig, 2002; Min & Lee, 2006), familiarity with natural landscape (Balling & Falk, 1982; Herzog et al., 2000; Kaplan & Herbert, 1987), diversity of a landscape (DeLucio & Mugica, 1994; Han, 2007; Heath, Smith, & Lim, 2000; Kaplan, 1985a; Palmer, 2004; Purcell et al., 2001; Wohlwill, 1968), and culture (Balling & Falk, 2009; Rice & Torquati, 2013).

Wilson (1996) and Chawla (2007) pointed out that regular, positive, and direct experiences in nature are one of the most important factors affecting the development of young children's biophilia including feeling comfortable in nature, developing

empathy with living organisms in nature, and growing up with a love of nature. Supporting that idea, several researchers (e.g., Kals, Schumacher, & Montada, 1999; Giusti, Barthel, & Marcus, 2014; Palmer, 1993; Stern, 2000; Schultz, 2000) stated that early nature experiences flourish individuals' positive affection towards the natural world. According to Giusti et al. (2014), early and routine nature experiences, even in an urban environment, may have a significant impact on individuals' appreciation for nature even if they couldn't be retrieved by memory. Specific to the results of their research, children's emotional and cognitive affinity with the biosphere were significantly related to their long-lasting positive contact with nature, their attitudinal affinity could also be related to environmental factors (Giusti et al., 2014).

In addition to the positive effects of natural experiences on children's biophilia, Moore and Marcus (2008) indicated that children's regular access to natural outdoor settings in conjunction with the length of time in those settings are significant factors for developing children's positive orientation toward nature. Louv (2008) and Wilson (1996) highlighted the importance of spending sufficient and unstructured time in natural landscapes in early years as a way to develop affinity toward nature as well as positive conservation behaviors.

Children's landscape preferences which indirectly affect their biophilia were also formed based on their living environment. While the reports of children living in urban areas don't prefer natural settings as their favorite places (Korpela et al., 2002; Min & Lee, 2006) children living in rural or suburban areas mentioned natural settings as their favorite places.

Diversity is another factor affecting individuals' landscape preferences since it enriches children's experiences by providing affordances for play (Dyment & O'Connell, 2013; Moore, 1986; Sargisson & McLean, 2012). In particular, many researchers emphasized that natural diversity in an outdoor setting provides children manipulable materials to enrich children's physical and social play (Lucas & Dyment, 2010; Nedovic & Morrissey, 2013; Van Andel, 1990).

At this point, Gibson's (1977; 1979) affordances theory can help us to understand the importance of individuals' landscape preference based on the possible activity opportunities in an environment. According to Gibson (1979) people's behaviors are

formed by what the physical environment offers them; in other words, the affordances of the environment. In fact, children primarily consider the functions of landscapes, the kinds of opportunities that a landscape offers them for playing or performing an action (Gibson, 1979). However, this theory also emphasized that affordances are determined not only by the features of an environment, but also they depend on the particular attributes or abilities of an individual (Gibson, 1979). Therefore, it can be interpreted that the affordances of an environment can vary for different ages.

Heft (1988) elaborated Gibson's theory of affordances and suggested two different approaches to environmental description: the form-based approach and the functional approach. While the form-based approach focuses on the physical characteristics of nature considering its appropriateness for experiences relative to an individual, the functional approach highlights features of an environment that provide different opportunities for action relative to an individual (Heft, 1988). To demonstrate, a tree seems to afford climbing regarding its form, but the action of climbing, which is the function of the tree, depends on the physical attributes of an individual (Heft, 1988). Likewise, grasping an object not only depends on the size of the object, but also the hand-span of the individual who wants to grab that object (Hallford, 1984).

As a result, the theory of affordances helps us explaining children's innate desire to investigate the natural settings and stimulate children's learning by themselves in such environments (Thompson & Thompson, 2007). According to Rivkin (1995) and Chawla (2007) natural environments have different kinds of stimuli (i.e. natural elements or materials) for children to engage in as well as plenty of resources to set and direct their own learning through play.

Similar to the effects of affordances of a landscape, based on diversity in the environment, on individuals' landscape preferences, studies in the literature showed how familiarity is an important factor influencing individuals' landscape preferences (Castonguay & Jutras, 2009; Herzog, et al., 2000; Kaplan & Herbert, 1987). According to Castonguay and Jutras (2009) familiarity affects children's landscape preferences since children stated their favorite places as familiar places in which they live close to

their homes, such as their friends' homes. This result might also show the relationship between familiarity and proximity (Castonguay & Jutras, 2009).

According to Herzog et al. (2000), even if familiarity has an impact on individuals' landscape preferences, those preferences could change with the impact of experiment and socialization. Rice and Torquati (2013) emphasized the importance of familiarity and culture (which is transferred by parents), as two important factors affecting the development of biophilia. Similarly, aesthetic ideals or aesthetic preferences of a culture which could be transmitted by one generation to the other were one of the factors strongly affecting individuals' landscape preferences (Falk & Balling, 2009).

Some critics of an evolutionary perspective highlighted the cultural basis of aesthetic preferences and emphasized that a biological model is not the only approach to explain aesthetic preferences because of the fact that all biological needs are affected by culture (Bunkse, 1978). In other words, in addition to evolutionary theory which is based upon characteristics of human beings, individuals' landscape preferences are mediated by cultural bases (Bourassa, 1990). Vygotsky's developmental approach which explains the relationship between the human mind and behavior might be effective in understanding how culture has an effect on landscape preferences (Vygotsky, 1978). Because Vygotsky (1978) highlighted that human behaviors are not only affected by genetically based on human needs, but also they are affected by cultural environment; thus language and many other cultural means can be a social tool to transfer cultural bases for behavior.

Supporting that idea several researchers (Falk & Balling, 2009; Cosgrove, 1998; Dunnett & Hitchmough, 2008) indicated that individuals' landscape preferences can be explained by the effect of culture, including aesthetic ideals or aesthetic pleasures of landscapes transmitted from one generation to the next. From this perspective landscape preferences are acquired rather than innate. According to Crandell (1993), individuals' landscape preferences are affected by the particular cultural contexts they live in, including customs and traditions. Rice and Torquati (2013) also emphasize the role of culture, which is transferred by parents, as an important factor affecting the development of individuals' positive orientations towards nature.

After understanding individuals' genetic predispositions to variety of adaptive responses (biophilia and biophobia), landscape preferences, and the relations between these concepts based on the theories, the next section talks about the significance of the current research.

## 1.2 The Significance of the Study

The significance of the study includes the significance of investigating children's biophilia, children's landscape preferences, and mothers' own landscape preferences and landscape preferences for their children.

### 1.2.1 The significance of investigating children's biophilia

Although there have been several studies investigating adults' connectedness with nature (Mayer & Frantz, 2004; Nisbet, Zelensky, & Murphy, 2009), the development of children's biophilia, as a basis for children's affinity for nature, has only recently been investigated by Rice and Torquati (2013). The biophilia measure developed by Rice and Torquati (2013) could be seen as a first instrument measuring the development of young children's biophilia. Rice and Torquti (2013) developed this measure to learn how maternal education, family income, and the greenness of school environments affect children's biophilia. They suggested that more factors that could be gathered from children's parents that could be associated with children's biophilia (such as time spent in natural settings beyond the school environment, use of nearby natural landscapes, the characteristics of natural settings where children spend their time, the duration of time children spend in natural landscapes, and the availability of nearby natural landscapes to children's home). In addition, although biophilia and landscape preferences are closely associated with each other (Kaplan & Kaplan, 1989), this relationship is not investigated in the existing literature. Considering these gaps, the current research investigates preschool children's biophilia, and how biophilia and landscape preferences are related with each other.

Moreover, investigating children's biophilia could provide some insights into individuals' treatment of the environment (Howard, 1997). Exploring children's biophilia could reveal their connection to or disconnection from the natural world (Schultz, Shriver, Tabanico, & Khazian, 2004). Schultz (2000) highlighted that understanding how children value and feel toward nature could provide insight about how they will respect and protect it in their future lives. Similarly, Nisbet et al. (2009) pointed out that if children's affinity for nature is known, it suggests their potential to have a sense of responsibility for the environment during their lives.

### 1.2.2 The significance of investigating children's landscape preferences

After understanding what exists in the literature about children's biophilia and the possible implications of understanding children's biophilia, there is also a need to understand what is lacking about children's landscape preferences in the literature and what is the contribution of understanding children's landscape preferences to the literature.

Researchers investigated children's landscape preferences in a variety of environments such as school grounds (i.e. Dyment & O'Connell, 2013; Martensson Jansson, Johansson, Raustorp, Kylin, & Boldemann, 2014; Norodahl & Einarsdottir, 2015), playgrounds (Müderrisoğlu & Gültekin, 2013; Sargisson & McLean, 2012), neighborhoods (i.e. Castonguay & Jutras, 2009; Talen & Coffindaffer, 1999), and different kinds of outdoor settings (Fjortoft, 2004; Tunstall, Tapsell, & House, 2004). They also investigated where and how children prefer to play with asking the reasons for their preferences.

While children's favorite landscapes included natural settings, different kinds of play opportunities in natural environments (Castonguay & Jutras, 2009; Dyment & O'Connell, 2013; Lucas & Dyment, 2010; Martensson et al., 2014; Nedovic & Morrissey, 2013; Norodahl & Einarsdottir, 2015), or affordances in nature to play (Hart, 1979; Fjortoft, 2004; Moore, 1986; Sargisson & McLean, 2012; Tunstall et al., 2004), and aesthetic features (Martensson et al., 2014; Müderrisoğlu & Gültekin, 2013;

Norodahl & Einarsdottir, 2015) were the common factors affecting children's preferences.

Although there seems to be evidence of studies in the literature, several researchers emphasized the need for more research on children's place preferences to play outdoors and the way they use such environments with the reasons for those preferences (Norodahl & Einarsdottir, 2015; Sargisson & McLean 2012; Veitch, Bagley, Ball, & Salmon,, 2006). For example, Veitch et al. (2006), indicated that children's preferred environments for free play and the reasons of their choices of either play environments as well as activities are not well-known in the literature. The researchers indicated that it is important to know children's play environments with the reasons why they would like to play particular settings more than others since this may inform us about how we can increase the opportunities for children's free play. Moreover, investigating children's least favorite places is important as much as investigating their favorite places to create better places for children to play, but there are also limited studies exploring what children do not like in a landscape. Considering these gaps in the literature, the current study investigates urban children's and their mothers' landscape preferences for different types of landscapes including forests, open fields/grassy areas, parks, and other areas that include water. Specifically, the researcher investigates both groups of the participants' most and least favorite landscapes.

With regard to the aforementioned results, investigating preschool children's landscape preferences could be an important guide for early childhood educators as well as environmental educators in terms of preparing early childhood environmental education programs for young children (Ernst & Tornebene, 2012). In essence, investigating children's own landscape preferences could prevent us from preparing outdoor education programs based on the adults' best predictions for children (Simmons, 1998). In other words, investigating young children's landscape preferences could provide information for us in terms of which characteristics of the outdoor settings are more crucial and preferable for young children and which activities could be offered to them by adults to reach the goals of environmental education. In particular, several researchers (i.e., Kaplan, 1984) expressed the

underlying idea about the relationship between the activities and the affordances of the outdoor setting type. According to Kaplan (1984), individuals can evaluate a landscape considering the possible activities or experiences that the setting provides. Moreover, Kaplan and Kaplan, (1989) indicated that the types of a landscape may affect individuals' decisions when they prefer a landscape. As a result, it can be said that not only the features but also the affordances of a landscape should be considered while planning any program related to nature for young children.

Lastly, this research might draw a conclusion that children's landscape preferences suggest potential places for playing and learning. Moreover, the results also find out not only children's resource needs but also barriers against visiting outdoor settings. Therefore, the results of the study could shed light on community planning decisions on how to create landscapes with the greatest possible benefits for both playing and learning (Fjortoft & Sageie, 2000). In other words, children's outdoor setting type preferences may affect decisions of the policy makers and planning authorities, in turn, children's opportunities and use of these settings.

### 1.2.3 The significance of investigating adults' own landscape preferences and adults' landscape preferences for children

Apart from children's landscape preferences, the previous studies also explored adults' own landscape preferences and their preferences for their children. In this regard, many researchers in past years mainly focused on the participants' preferences for the physical features or aesthetic preferences for different kinds of landscapes (Balling & Falk, 1982; Falk & Balling, 2009). The results of the related studies (i.e. Kapan & Herbert, 1987; Han, 2007; Herzog et al., 2000) showed that adults preferred landscapes, which include natural elements such as trees and water.

Together with adults' own landscape preferences, the previous studies have also explained adults' landscape preferences for children. In this regard, researchers studied with either teachers or parents. The researchers studied with teachers (i.e., Norodahl & Johannesson, 2014; Simmons, 1998) found that teachers usually preferred to teach in natural landscapes and they basically considered affordances and safety of an

environment to teach children. Similarly, researchers studied with parents also revealed that parents preferred natural settings where children are offered a variety of play opportunities (Nasar & Holloman, 2013; Veitch et al., 2006). The important factors that affected parents' preferences were safety and facilities of an environment (Nasar & Holloman, 2013; Sallis, McKenzie, Elder, Broyles, & Nader, 1997; Valentine & McKendrick, 1997; Veitch et al., 2006). The current research also aimed to reveal other possible factors' influences on adults', in particular mothers', landscape preferences for their children considering the changes in children's play environment over years.

In addition to parents' increasing control over children's outdoor play, several researchers (Gundersena, Skar, O'Brien, Wolda, & Follo, 2016; Veitch et al., 2006) also indicated that parents are significant mediators of children's access to play, where this occurs, and their preferences will ultimately affect children's use of the environment and play opportunities in the environment. Similarly, Blakely (1994) and Evans (2000) asserted that parents are the competent authorities for selecting children's play environments, it is important to investigate the factors that affect parents' place preferences for their children's play. Supporting this idea, several researchers indicated that children's outdoor play or use of outdoor environments depend on their parents' willingness and time to take them to such places (Brusson, Olsen., Pike, Sleet 2012; Veitch, Salmon, & Ball, 2007; Skar et al., 2016).

Therefore, it is also important to explore parents' preferences and the factors affecting those preferences to increase the opportunities for children's active free play as well as to arrange local policy strategies for children's on behalf of children's play at public outdoor spaces (Veitch et al., 2006). Similarly, a need to explore the factors that influence children's outdoor play and the ways how opportunities/facilities of children's outdoor free play may be increased by either practitioners or policy-makers (Lee, Tamminen, Clark, Slater, Spence, & Holt, 2015), increase the value of investigating parents' landscape preferences.

Although the importance of parents on children's visit and use of outdoor environments emphasized in the literature, there is a lack of study on adults' influence on children's experiences in nature considering their concerns to take children to

natural outdoor settings (Skar et al., 2016). Almost all of the related studies mentioned above were conducted with parents of primary school children (Nasar & Holloman, 2013; Valentine & McKendrick, 1997; Veitch et al., 2006). Therefore, in the current study, it is aimed to study with mothers of preschool children to make a new contribution to the literature. Also, the current research investigates parents' personal and educational landscape preferences since parents play an important role as a supervisor of children's investigation outdoors (Davison & Lawson, 2006). Furthermore, cultural information including values, attitudes, and proscribed individual behaviors could transmit from one generation to the next and be so effective, adaptive, and even lifesaving. In particular, parents could culturally inform their children in terms of the experiences of previous generations (Gardner & Stern, 2002). According to Boyd and Richerson (1983), cultural transmission occurs through language and learning rather than genetic. Since mothers are generally accepted as primary caregivers of their children (Anderson et al., 2003), they may have much influence on their children's play outdoors. Therefore, the current research included preschool children and their mothers as participants.

In addition to studying with new group of the subjects, considering methods of the studies in individuals' landscape preferences, most of the researchers used particular types of landscape photographs, therefore Balling and Folk (1982) emphasized the need for variety in terms of landscape photographs. With regard to this suggestion, the current study investigated mothers' and children's preferences for different types of landscapes including forest, open field/grassy area, water, and park. Regarding the lack of research on children's use of outdoor settings in deep (Veitch, Salmon, & Ball, 2007), the current study included both quantitative and qualitative research to enhance in-depth investigation of attitudes, beliefs, and behaviors of the particular issue (Patton, 2002).

Lastly, several studies have showed that individuals' landscape preferences differ with increasing age with the influence of experiences (Balling & Falk, 1982; Falk & Balling, 2009; Herzog et. al., 2000). Keeping this information in mind, it can be important to find out the differences between children's and adults' landscape preferences in the context of the current research.

Therefore, the following research questions are formulated in order to fulfill the aims of the current study. The first two research questions were responded by 105 children who are the main participants of the current research. The remaining questions were answered by 20 children and their mothers who constitute the sub-sample of the study. All of the following research questions investigating children's, mothers', and both groups of the participants' landscape preferences refer children's and mothers' most and least frequently chosen landscapes:

1. Do children enrolling in natural or non-natural preschools significantly differ based on their biophilia scores?
2. Do children's biophilia scores differ based on gender?
3. What are the children's landscape preferences in terms of outdoor setting type (water, park, open field/grassy area, forest) and levels of human influence (natural, maintained) and their reasons for choosing those preferences?
    3.1. What are the children's personal landscape preferences in terms of outdoor setting type and levels of human influence and their reasons for choosing those preferences?
    3.2. What are the children's educational landscape preferences in terms of outdoor setting type and levels of human influence and their reasons for choosing those preferences?
    3.3. What are the children's landscape preferences they would like to visit with their parents in terms of outdoor setting type and levels of human influence and their reasons for choosing those preferences?
4. What are the children's ideas about the possible activities and the resource needs that they associated with their frequently chosen landscapes (educational landscapes and the landscapes they would like visit with their parents)?
5. How children's biophilia scores differ based on their landscape preferences (personal, educational, with parents) in terms of levels of human influence (natural, maintained)?
6. What are the mothers' landscape preferences in terms of outdoor setting type (water, park, open field/grassy area, forest) and levels of human influence (natural, maintained) and their reasons for choosing those preferences?

6.1. What are the mothers' personal landscape preferences in terms of outdoor setting type and levels of human influence and their reasons for choosing those preferences?

6.2. What are the mothers' educational landscape preferences in terms of outdoor setting type and levels of human influence and their reasons for choosing those preferences?

6.3. What are the mothers' landscape preferences they would like to visit with their children in terms of outdoor setting type and levels of human influence and their reasons for choosing those preferences?

7. What are the mothers' ideas about the possible activities and the resource needs that they associated with their most frequently chosen landscapes (educational and the landscapes they visit with their children)?
8. How do children's and mothers' landscape preferences differ in terms of outdoor setting type (water, park, open field/grassy area, forest) and levels of human influence (natural, maintained)?
9. How do children's and mothers' landscape preferences differ in terms of the reasons of their choosing of those frequently chosen landscapes?
10. How do children's and mothers' perceptions about the obstacles preventing them from visiting natural landscapes differ?

## 1.3 Definitions of Important Terms

The definition of the following terms is necessary to better understand this study:

**Biophilia:** Biophilia is defined as "an innate tendency to focus on life and lifelike processes" (Wilson, 1984, p.1).

**Biophobia:** Biophobia is defined as a "partly genetic predisposition to readily associate, on the basis of negative information or exposure, and then persistently retain fear or strong negative/avoidance responses to certain natural stimuli that presumably have constituted risks during evolution" (Kellert & Wilson, 1995, p.76).

**Affordances:** Affordances refer to the functions provided by environmental objects to an individual (Gibson, 1986).

**Affinity:** Affinity refers emotional connection with and cognitive interest in nature (Kals et al., 1999).

**Landscape preferences:** Landscape preferences refer individuals' affective responses including feelings of liking or disliking for a particular landscape (Buijs, Elands, & Langers, 2009).

**Natural environment:** Natural environment is defined as "environment not designed or cultivated by humans" (Fjortoft, 2004, p. 24).

**Built/Maintained/Man-made environment:** Built environment defined as environments constructed by man to make individuals engage in physical activity: streets, neighborhoods, or parks (Duncan, Goldberg, Noonan, Moudon, Hurvitz, & Buchwald, 2008).

## 1.4 Assumptions of the Study

Participant children and the mothers in the current study were assumed to respond to the questions honestly. Also, both quantitative and qualitative data were assumed to provide accurate data. The researcher also assumes that visual materials used together with the instruments represent both the items of biophilia measure and the categories of landscape preference questionnaires accurately.

## 1.5 Limitations of the Study

One of the main limitations of the current study was the number of participants who answered the landscape preference questionnaires. In order to enrich the data, the number of participants from each group, children and mothers, might be increased. This was not considered for the generalization, but for enhancing diversity within the sample. Moreover, the biophilia measure was applied to 105 preschool children. The number of children might be increased to be able to generalize the results to different groups by other researchers.

The next limitation was that the researcher used 16 photographs to investigate children's and mothers' landscape preferences. All these photographs were taken in the city which the participants live in. Therefore, the results of the present study should be interpreted by considering the particular context in Turkey since studies conducted with participants from different physical and cultural environment might bring different outcomes.

# CHAPTER 2

# LITERATURE REVIEW

To understand what determines individuals' landscape preferences, the researcher searched the literature investigating adults' and children's landscape preferences. In essence this review aimed to investigate what are the features of natural landscapes that adults and children prefer or what they like or dislike in such settings which could be associated with theories of landscape preferences, and the possible factors affecting landscape preferences. Furthermore, this section includes children's biophilia which is closely related with their landscape preferences.

## 2.1 Landscape preferences

This part includes landscape preference studies conducted with both adults and children considering their personal and educational preferences. Adults' and children's personal preferences focus on the physical features of a variety of landscape types. The factors having an impact on adults' and children's landscape preferences were also included. In terms of educational preferences of adults, the studies represent teachers' and parents' landscape preferences for children's outdoor play, including the reasons for their preferences as well as the features of the settings. With regard to children's educational landscape preferences, related research shows children's uses of different kinds of landscapes as well as the reasons for their preferences for particular landscapes.

## 2.2 Individuals' landscape preferences

In this section, related literature about both adults' and children's personal landscape preferences, adults' landscape preferences for children, and children's landscape preferences for different outdoor settings are represented.

### 2.2.1 Adults' and children's personal landscape preferences

To date, there have been a large number of studies focusing on individuals' landscape preferences. These studies has been mostly the scope of research in environmental psychology (Balling & Falk, 1982; Falk & Balling, 2009; De Groot & Van den Born, 2003; Han, 2007; Herzog et al., 2000; Howley, Donoghuea, & Hynes, 2012; Kaplan & Herbert, 1987; Kaplan & Kaplan, 1989; Tyrvainen, Silvennoinen, & Kolehmainen, 2003; Ulrich, 1977, 1983; Van Den Berg et al., 1998). Most of this research aimed to identify individuals' visual/aesthetic preferences for different landscapes, which is mostly important to landscape planning and management (Balling & Falk, 1982; Herzog et al., 2000; Kaplan & Herbert, 1987; Misgav, 2000; Tyrvainen, Silvennoinen, & Kolehmainen, 2003; Ulrich, 1977; Van Den Berg et al., 1998). Since experience increasing with age has an effect on individuals' landscape preferences, some researchers selected participants from a variety of ages including both adults and children (Balling & Falk, 1982: Herzog et al., 2000).

Balling and Falk (1982) investigated individuals' aesthetic preferences for different kinds of natural landscapes categorized into 5 groups, including three types of forests, savanna, and desert. The participants included students in elementary schools, secondary schools, and college; senior adults; and professional foresters. The participants were shown 20 slides depicting different landscapes and asked to rate each scene, considering how much they would like to visit and live in such a setting, using a 6-point Likert scale. The results indicated that the youngest participants preferred savanna-like environments. On the other hand, older participants, from adolescents to

adults, equally preferred savanna-like environments and settings that were familiar to them. One of the most striking results of the study was the effect of experience on individuals' landscape preferences. Individuals' preferences for savanna-like environments, which may arise from the evolutionary background of human beings on the savanna, decreased with increased experience with age. Another important result of this study was that while the youngest group of the participants assessed natural landscapes primarily as a setting to play, older ones primarily considered such settings' appropriateness to live.

In a similar way, Falk and Balling (2009) conducted a study with three samples living in different cultural and environmental settings. The first two groups of participants were 63 children whose ages ranged from 12 to 18. The third group was 37 individuals aged 20 to 39. For the first two groups of participants, the researchers used interviews accompanied by 45 pairs of photographs depicting different types of landscapes: three different types of forest, tropical savanna, and mid-latitude desert. For the third group, they used 20 slides and asked participants to rate those scenes through a 5-point Likert scale considering how much they liked the depicted settings. The purpose of the researchers was to identify the participants' favorite settings which they would like to live in. All the photographs that the researchers used were categorized in the same way they used in their previous research (Balling & Falk, 1982). Results showed that even if the participants were selected from different environmental and cultural settings, overall, they preferred the savanna-type environments as their highest preference. The researchers speculated that participants' preferences were based on the evolutionary theory which emphasized individuals' innate preference for savanna-like environments.

Herzog et al. (2000) investigated landscape preferences of American and Australian participants in different age ranges, from the elementary school level to adulthood. The researchers had 60 photographs representing six landscape categories: rivers, dry lake beds, short eucalyptus trees, cultural images, terraces, and floodplains. They asked participants to rate 60 settings regarding to what extent they liked the setting by using a 5-point scale ranging from not at all to very much. The results revealed that there was a high level of agreement between American and Australian

participants in their preferences. While maintained settings having little or no vegetation were least preferred by participants, settings that including water were among their highest preferences. The results also indicated the effects of familiarity and age on landscape preferences. Since the photographs that the participants rated depicted local environments of Australia, Australian students had greater liking than American counterparts who were not familiar with this environment. The researchers regarded age as a distinctive factor in individuals' landscape preferences. In particular, younger primary students from both cultures had higher preference for savanna-like environments than secondary school students.

Kaplan and Herbert (1987) compared landscape preferences of three groups of American and Australian participants including youths and adults. The researchers asked participants to rate 60 scenes of Western Australian open fields and forests through a 5-point scale (5 = very much; 1 = not at all). Results of the study revealed that Australian participants had higher mean ratings overall than American participants with the effect of familiarity with the local landscape for them. Moreover, individuals from both cultures highly preferred some scenes (including trees and water), which can be explained by an evolutionary perspective.

Han (2007) investigated 274 college students' preferences for six natural landscape categories including three different types of forests, desert, grassy area, and tundra. In order to see the effects of some factors such as complexity, presence of water, and openness, the photographs depicted different landscapes that included those features. The researcher used 48 slides depicting different kinds of landscapes as well as two scales to identify both preferences for the landscapes and the physical features of the preferred landscapes. According to the results, the participants' highest preferences were for tundra and coniferous forests. The participants' two main reasons for their most preferred landscapes were related to these settings' high rate of complexity and large quantity of water features.

With regard to the results of the studies, it is clear that there is no consistent outcome for all the reviewed studies in landscape preferences except for the same method they all used. However, some of the researchers get some common points in landscape preferences. While savanna-like environments were identified as the most

liked type of natural landscape (Falling & Balk, 1982; Balk & Falling, 2009), water was the most preferred element in natural landscapes (Herzog et al., 2000; Han, 2007). On the other hand, researchers revealed individuals' dislikes for a landscape if that setting includes less or no natural elements (Herzog et al., 2000). Furthermore, some of the researchers emphasized the positive effect of familiarity (Falling & Balk, 1982; Falk & Balling, 2009; Kaplan & Herbert, 1987) and complexity (Han, 2007) on landscape preferences. Another important factor impacting landscape preferences was determined to be experience, which increases depending on individuals' age (Falling & Balk, 1982; Falk & Balling, 2009; Herzog et al., 2000). Keeping in mind the effect of experience on landscape preferences, it can be important to emphasize the difference between children's and adults landscape preferences in terms of physical attributes. According to Sebba (1991), children typically consider what a landscape offers for interactions, rather than its aesthetic features whereas adults focus on aesthetic attributes of a landscape. Another point that can be considered is that researchers mostly used photographs of forests, deserts, and savanna-like environments to investigate individuals' landscape preferences. However, Balling and Falk (1982) highlighted the importance and necessity of investigating individuals' landscape preferences for a variety of types of natural landscapes. Therefore, the researcher in the current study used sixteen photographs depicting four different types of landscapes to explore individuals' landscape preferences. Moreover, investigating both children's and mothers' landscape preferences can contribute to understanding the different landscape perspectives of both groups.

### 2.2.2 Adults' landscape preferences for children

For a different perspective for landscape preferences, several researchers explored teachers' uses of landscapes for children's learning (Ernst & Tornabene, 2012; Simmons, 1993, 1998) as well as parents' landscape preferences for their children's play (Nasar & Holloman, 2013; Sallis et al., 1997; Valentine & McKendrick, 1997; Veitch et al., 2006).

Simmons (1998) investigated 59 elementary school teachers' preferences for four different types of landscapes such as deep woods, country parks, urban nature, and rivers, ponds, and marshes. The researcher used a questionnaire as well as interviews as data gathering tools to investigate individuals' perceptions of the potential benefits and dangers of implementing environmental education activities with children in these landscapes. Overall results revealed that teachers preferred natural settings (with the highest rating for deep woods, rivers, ponds, and marshes) over maintained ones for environmental education for children. Although teachers expressed a high level of confidence about the techniques they could use in each type of landscape, they still needed to get training in how to teach in natural settings. Nevertheless, deep woods, rivers, ponds, and marshes were also perceived as most hazardous settings for children's environmental education. The reasons why teachers perceived these settings as hazardous were mostly related to teachers' concerns about how to provide safety, considering poisonous plants, the possibility of getting lost, and classroom management based on a large number of children in class.

Ernst and Tornabene (2012) conducted research with 110 pre-service early childhood teachers to understand their perceptions of landscapes, educational opportunities in different landscapes, and barriers to use landscapes. As an instrument, the researchers used a questionnaire accompanied by photographs depicting four types of landscapes: forests, water, parks, and open fields/grassy areas. According to the results, while the participants perceived playgrounds as most appropriate to achieve their educational goals, mainly due to ease of use (limited boundaries, or clear course of direction) and opportunities for open-ended play, they perceived forests as the least appropriate setting to take children, mainly due to safety concerns, lack of things to do, or difficulty to use such settings. The participants' personally most and least preferred settings were the settings including water (mainly due to the presence of water) and an open fields/grassy areas (mainly due to a lack of affordances), respectively.

Norodahl and Johannesson (2014) interviewed 25 teachers who taught students (ages from 6 to 15) in a preschool and a compulsory school to explore how they use the outdoors for children's learning. When the researchers investigated the places

teachers like to visit or use for children's learning, they found that the teachers' mostly mentioned outdoors beyond school grounds. The common places for both compulsory school and preschool teachers were outdoor settings beyond the school grounds: the forest, grassy areas, moors, and the seacoast. However, the preschool teachers mentioned more outdoor places to teach children, such as a tree garden and different playgrounds in the school neighborhood. The teachers' explanation for the use of those outdoor areas for children's learning included different kinds of learning domains (e.g. music, math, and language), learning through the senses, investigating animals and some natural elements (e.g. water, sand, and mud). Although the teachers were aware of the possible risks outdoors, they believed that they could handle those risks.

The preceding studies investigating teachers' landscape preferences for children focused either on the types of settings that teachers perceive as appropriate for teaching children (Ernst & Tornabene, 2012; Simmons, 1998), or how they use these settings as learning environments for children (Norodahl & Johannesson, 2014). Teachers' perceptions of appropriate settings to teach children varied. While they usually liked to teach in natural environments, in particular forests or water areas (Norodahl & Johannesson, 2014; Simmons, 1998), some teachers still considered maintained areas as more appropriate for teaching (Ernst & Tornabene, 2012). Although safety was a common issue that teachers considered (Ernst & Tornabene, 2012, Norodahl & Johannesson, 2014; Simmons, 1998), some teachers believed that it was not difficult to take children into natural outdoor settings (Norodahl & Johannesson, 2014). Classroom management problems (Simmons, 1998), lack of things to do (Ernst & Tornabene, 2012), or difficulty in using natural settings (Ernst & Tornabene, 2012; Simmons, 1998) could be barriers for teachers to take children into outdoor settings, whereas opportunities for sensory experiences and social interaction (Norodahl & Johannesson, 2014), clear boundaries (Ernst & Tornabene, 2012), and affordances of outdoor environments (Ernst & Tornabene, 2012; Norodahl & Johannesson, 2014) were factors that might influence teachers' perceptions by making natural areas appear attractive places for teaching.

In addition to studies conducted with teachers, there are a few studies investigating parents' place preferences for their children (Nasar & Holloman, 2013;

Sallis et al., 1997; Valentine & McKendrick, 1997; Veitch et al., 2006). According to Davison and Lawson (2006), although parents have critical roles in regulating how children use outdoor settings, that topic hasn't been given adequate importance by researchers.

Nasar and Holloman (2013) investigated characteristics of playgrounds perceived by 4th and 5th grade children and their parents. The researchers asked parents to sort the 15 playground photographs considering their preferences for children's play. Their results showed that seats, fences, and playground type were the prominent playground characteristics preferred by both parents and children. The researchers conducted a second study with a different group of participants including 40 4th and 5th grade children and their parents, to confirm the results of their previous study. Participants were shown selected pairs of playground photographs taken in three different playgrounds and asked about the reasons for their playground choices for play (for children) and their playground choices for their children (for parents). Parents preferred playgrounds with equipment, seats, and soft ground including natural and open areas. The only difference that does not confirm children's preferences in the first study was that children didn't prefer seats in the playground since they needed privacy which enabled them to play freely without being supervised by their parents. As a third study, the researchers observed children's and parents actual preferences in 14 playgrounds. Researchers indicated that the results of the previous two studies could generalize to participants' on-site responses, mainly in terms of fences and playground equipment.

Veitch et al. (2006) interviewed 78 parents having a child in grade 1 to grade 6 about the places where their children played outdoors besides their school ground. Most of the participants (74 %) reported that their child mostly play at their home yard or a neighbor's or friend's house based on either physical (traffic) or social safety (strangers, gangs) concerns for their child in different public outdoor settings. The other places stated by parents as a place for their child's play were bushes, playgrounds, rivers, and parks. Many factors, such as facilities of a place (e.g., play equipment, bike paths, picnic areas, toilets, shaded areas) and presence of peers affected parents' reports about their child's usual play area.

Sallis et al. (1997) interviewed 300 parents, whose children had the mean age of 4.9 to identify the factors affecting their choices of play spaces for their children. Results indicated that safety as well as amenities such as availability of drinking water and wash-rooms, shaded areas, and lighting was the prominent factors affecting parents' selection of spaces for their children's play.

Valentine and McKendrick (1997) investigated the attitudes of parents' with a child aged between 8 to 11 towards opportunities for play for their child in public environments. A vast majority of the parents (95 %) indicated that they restrict children's play outdoors, from public spaces to private gardens, mainly due to their safety concerns about social and physical environments. Similarly, McNeish and Roberts (1995) stated that children mostly play in their home yards where adults can supervise them. Veitch et al. (2006) indicated that playing outdoors for young children depends on parents' time and motivation to take their child to outdoor settings. This shows that children, particular in younger ages, are dependent on their parents to play and investigate outdoor environments.

Researchers investigating parents' place preferences for their children concentrated on both where children play outdoors (Veitch et al., 2006) and which factors affect their choice for their children's play space (Nasar & Holloman, 2013; Valentine & McKendrick, 1997; Veitch et al., 2006). Most of the studies included primary school children's parents as participants (Nasar & Holloman, 2013; Valentine & McKendrick, 1997; Veitch et al., 2006). Parents usually liked home yards (Veitch et al., 2006) or private gardens (Valentine & McKendrick, 1997) where they could supervise their children easily as their children's play spaces. All of the preceding studies showed that physical and social safety hazards were the most prominent factors that influenced parents' place choices for their children (Nasar & Holloman, 2013; Sallis et al., 1997; Valentine & McKendrick, 1997; Veitch et al., 2006). Other places that parents mentioned as appropriate for their children's play included nature environments, including open areas (Nasar & Holloman, 2013), bushes, rivers, playgrounds, and parks (Veitch et al., 2006). Other factors affecting parents place preferences for their children were generally related to the amenities of the settings,

such as seating, shade, play equipment, and toilets (Nasar & Holloman, 2013; Sallis et al., 1997; Valentine & McKendrick, 1997; Veitch et al., 2006).

One of the results of Norodahl and Johannesson (2014) could enlighten us in terms of understanding the importance of parents' place preferences for their children. These researchers found that teachers preferred outdoors beyond school for children's learning. Young children spend most of their out of school time with their parents. It is known that parents are gatekeepers for their young children since young children have lack of autonomy to investigate and use outdoor settings (Davison & Lawson, 2006). One of the other striking points in the literature is that almost all of the preceding studies were conducted with the parents of primary school children (Nasar & Holloman, 2013; Valentine & McKendrick, 1997; Veitch et al., 2006). Considering these points, the current study makes a new contribution by working with mothers of preschool children, investigating their personal landscape preferences and their preferred landscapes for their children. Another important gap in the literature stated by Nasar and Holloman (2013) is that there is a need to investigate how naturalness affects parents' playground choices for their children. Veitch et al. (2006) highlighted that future studies are needed to identify the factors parents consider to take their children outdoors in order to support them to visit and use outdoor play spaces with their children. In light of this evidence and suggestions, the researcher investigates mothers' landscape preferences for their children considering the factors affecting their preferences, as well as asking them which type of landscape they prefer such as forests, parks, open fields/grassy areas, and water.

### 2.2.3 Children's landscape preferences

There are a large number of studies investigating children's preferences for natural elements or environments in different settings, such as school grounds (Dyment & O'Connell, 2013; Lucas & Dyment, 2010; Martensson et al., 2014; Norodahl & Einarsdottir, 2015; Nedovic & Morrissey, 2013; Samborski, 2010), playgrounds (Müderrisoğlu & Gültekin, 2013; Sargisson & McLean, 2012) and favorite places for play (Moore, 1986; Hart, 1979), neighborhoods (Castonguay & Jutras, 2009; Talen &

Coffindaffer, 1999; Van Andel, 1990), and different landscapes (Fjortoft, 2004; Simmons, 1994; Tunstall et al., 2004).

With regard to children's preferences in school grounds, Nedovic and Morrissey (2013) conducted research with 18 three and four year-old preschool children and the school staff to redesign their school ground. The participant children's preferences for their center's ground were investigated through photographs, drawings, and discussion methods. The researchers identified what children would like to see in their school ground as well as how they would like to play in the garden. The results showed that the children mostly preferred to see natural elements, such as water and different kinds of plants, over man-made ones in the garden of their center. They mostly preferred to play with loose parts as well as to participate in different kinds of play that increased their level of social interaction, movement, and creativity. Children also preferred to play with natural elements because they offered increased social interaction among them.

Samborski (2010) studied 349 children ages 6-13 years to investigate their use of school grounds, preferences for school ground elements, and perceptions of school grounds. The participants were selected from two schools having different features in terms of the extent to which the school grounds had biodiversity. The researcher used drawings, questionnaires, and interviews as data gathering tools. The results indicated that children attending the school whose ground had a high rate of vegetation had richer and more complex outdoor experiences as well as more diverse preferences for using their school grounds than children attending the school which had relatively limited and poor vegetation. Also, the school ground which had biodiversity offered more opportunities for children in terms of different kinds of play that supported social interactions. In addition to the impact of type of school grounds on children's preferences for the environment, the researchers also revealed the effects of gender and age on children's preferences. In terms of gender differences, the results revealed that whatever the school grounds include, boys mainly preferred to see a soccer field, dens, and big rocks; while girls mostly preferred to include more natural elements like wildflowers, trees, vegetable and flower gardens, and benches in the school ground. Regarding the effect of age, the results showed that older children highly preferred

asphalt ground which is appropriate for playing soccer as well as some places (e.g., benches or picnic tables) for socializing with their friends.

Martensson et al. (2014) explored 197 children's (aged 10-13 years) use of school grounds, favorite places, and favorite activities in their school grounds. The participants were selected from two schools having different school ground features: one had a big asphalt open space with little green area and the other had a big open grassy area and woodlands. The researcher used children's self-reported documents to identify their favorite places and favorite activities in the school ground. Children, regardless of their school types, mostly preferred different kinds of ball games as their favorite activities. Even if green areas were not frequently used by the participants, they were children's favorite places because of aesthetic attractiveness. The places children preferred on school grounds included both green and built elements. As long as the green outdoor environment afforded physical and social play for children, both genders in all ages found such environments attractive to visit.

Norodahl and Einarsdottir (2015) explored 289 children's preferences for both activities and the environment in their school ground through different kinds of methods such as interviews, touring, and classroom observations. 100 out of 289 children were 4 and 5 year-old, 189 of them were 6 year-old to 9 year-old. According to the results, children in both age groups shared some common ideas for what they wanted to have in their school ground: natural elements, such as grass, trees, or flowers, different kinds of play equipment, secret places, some places to be social with their friends, and more color and aesthetic objects.

Lucas and Dyment (2010) investigated the school ground place preferences of more than 400 children aged 5 to 12 years old. The outdoor spaces included: green space, fixed play equipment, paved sporting courts, paved thoroughfares including walking paths, a canteen courtyard, and a mini oval recreation space. In particular, the researchers focused on the impact of natural parts of the school ground on children's preferences. As an instrument, the researchers used momentary time sampling direct observation. The researchers found that green areas in the school ground were the only area that supported gender equality in terms of the number of girls and boys playing during school recess and lunch break. In fact, both boys and girls liked to engage with

the activities that the natural environment offered them: climbing, exploring, and different kinds of unstructured play.

Dyment and O'Connell (2013) examined where and how preschool children preferred to play in four preschools by using a momentary time sampling observation method. The researchers determined specific areas in the outdoor environments including paths, paved expanses, grass, softfall, sand features, manufactured functional, manufactured constructive, and natural. According to the results, children's most favorite area was a natural one where children could get opportunities for climbing on rocks, playing hide and seek in shrubs, and constructing cubbies, castles or secret places in trees. Therefore, it is clear to see the effect of diversity in terms of natural elements on children's place preferences.

Researchers who are interested in children's preferences for a school ground focused on their preferences for both the environment and the activities. The researchers investigations to understand children's preferences varied: what children liked to see in a school ground (Nedovic & Morrissey, 2013), which natural elements children preferred (Samborski, 2010), which parts of a school ground were children's favorite (Martensson et al., 2014), or which parts of a school ground were preferred by children (Dyment & O'Connell, 2013; Lucas & Dyment, 2010). In order to understand children's activity preferences on a school ground, the researchers explored some questions, such as 'how children like to play?' (Dyment & O'Connell, 2013; Nedovic & Morrissey, 2013), 'what were their favorite activities?' (Martensson et al., 2014; Norodahl & Einarsdottir, 2015), and 'how children use a school ground?' (Martensson et al., 2014; Samborski, 2010). Researchers who explored these questions studied with different age groups of children including preschool, elementary school, and middle school (Dyment & O'Connell, 2013; Lucas & Dyment, 2010; Martensson et al., 2014; Nedovic & Morrissey, 2013; Norodahl & Einarsdottir, 2015; Samborski, 2010). The researchers used a variety of methods including drawing, questionnaire, photography, interview, discussion, self-reported documents, touring, and observation (Dyment & O'Connell, 2013; Lucas & Dyment, 2010; Martensson et al., 2014; Nedovic & Morrissey, 2013; Norodahl & Einarsdottir, 2015; Samborski, 2010). The most important finding that the researchers agreed on was that children of all ages liked

natural elements (e.g.., high vegetation, water, rocks, or shrubs) on their school grounds due to their rich opportunities for different kinds of unstructured play that let them to be social, active, and creative. Even though these studies were conducted with different groups of children, gender and age didn't distinctively affect children's preferences (Lucas & Dyment, 2010; Martensson et al., 2014; Norodahl & Einarsdottir, 2015). In particular, if an environment was natural and provided both social and physical play, it was attractive for boys and girls (Dyment & O'Connell, 2013; Lucas & Dyment, 2010; Martensson et al., 2014; Nedovic & Morrissey, 2013; Norodahl & Einarsdottir, 2015; Samborski, 2010). Considering some of the results of the reviewed research, one thing which can be distinctive for different age groups was that older children preferred ball games, mostly soccer, whereas younger children preferred secret places on the school ground. Lastly, aesthetic attractiveness positively affected children's preferences regardless of their ages (Martensson et al., 2014; Norodahl & Einarsdottir, 2015).

In terms of children's playground preferences, Müderrisoğlu and Gültekin (2013) examined 280 children's playground preferences with regard to aesthetic attributes and safety of the landscapes as well as the type of landscape. The participant children were selected from different grade levels including primary school, secondary school, and high school. The researchers used 20 photographs taken by themselves and categorized into four groups: woodlands, grasslands, wetlands, and urban settings. The participants were asked to give each photograph a weighting of 1-3 (3 being a place that is aesthetic, safe, and preferable for play). According to the results, while children preferred wetlands as the most aesthetic landscapes, they preferred woodlands as their favorite landscapes for playing. The children also indicated that the safety of a landscape decreases as vegetation density increases. Considering gender, female children preferred areas where they could be more social, compared with male children who mostly liked to play in areas where they could be physically active. Age also influenced children's preferences. Younger children preferred areas that included aesthetic features. While younger children preferred to play in areas that included both man-made features as well as urban nature, older children preferred to play in natural landscapes.

Similarly, Sargisson and Mclean (2012) investigated children's preferences for natural elements or built play equipment at 56 playgrounds. The participants' ages ranged from 0-1 to 10 or older. The researcher used an observational time sampling method to record children's behaviors. The total number of observations were 4597, with 634 observations showing that natural elements were preferred more than built ones. The other observations showed although girls used grass more than boys did, the grass was the most preferred natural element by both girls and boys. Neither boys nor girls preferred to use rocks much. The overall usage of water was low for both genders, but when water was available girls preferred to use it more than boys did. Although children's preferences for natural play elements were similar in younger ages, their preferences varied in older ages. The most important factor affecting children's use of natural elements at playgrounds was diversity since the more natural diversity, the more play opportunities children had. Grass was the most favorite natural element used by both genders due to its recreational value. Although both girls and boys preferred to use grass in similar ways (e.g. for sitting, standing, or walking), there was a gender difference in terms of playing on the grass. Boys preferred physical activities, such as ball games or frisbee on grass, more than girls.

Moore (1986) investigated 9-12 year-old children's favorite places by asking them to draw individual maps of their outdoor play areas outside the home after they led him on a field trip around their play areas. Favorite places which emerged from their drawings were open fields, neighborhoods, vegetation, natural and paved ground surfaces, and pathways. The researcher found that natural playgrounds are more attractive for children since these places inspire children to be more creative in their play due to the variety of natural elements that children can manipulate.

Hart (1979) studied children in K-3 and 4-7 grades to understand their favorite places in their town. According to the results, children mostly considered functional properties of their environment rather than social or aesthetic properties in their preferences. In fact, water areas, pathways for cycling, tree houses, open fields, as well as sliding, climbing, hiding, and jumping places were children's most favorite places.

Researchers who investigated children's preferences for playgrounds asked children about their responses to aesthetic features and safety (Müderrisoğlu &

Gültekin, 2013), appropriate landscapes to play on (Moore, 1986; Hart, 1979), and natural elements that they like to see in a playground (Sargisson & McLean, 2012). The age groups of children which the researchers studied ranged from kindergarten to high school (Hart, 1979; Moore, 1986; Müderrisoğlu & Gültekin, 2013; Sargisson & McLean, 2012). In order to investigate children's preferences, the researchers used different methods, such as ranking photographs, observational time sampling, and drawing maps (Hart, 1979; Moore, 1986; Müderrisoğlu & Gültekin, 2013; Sargisson & McLean, 2012). One of the striking results that the researchers found was that children preferred either natural areas or natural elements over built scenes because a natural landscape has diversity for children to investigate and provides affordances for play (Moore, 1986; Sargisson & McLean, 2012). Nevertheless, built areas in a playground were also liked by children, particularly at younger ages (Müderrisoğlu & Gültekin, 2013). Another common point in some studies was that boys preferred the places in which they were physically active (Müderrisoğlu & Gültekin, 2013; Sargisson & McLean, 2012), whereas girls preferred the social areas (Müderrisoğlu & Gültekin, 2013). Lastly, in some cases children's preferences were influenced by either aesthetic features (Müderrisoğlu & Gültekin, 2013), or functional features (Hart, 1979) of a natural landscapes.

Regarding children's preferences in their neighborhoods, Castonguay and Jutras (2009) conducted research with children 7-12 years old to identify which places they liked to visit in their neighborhood. These researchers also aimed to identify the difference between children's favorite places and other places that they used. Children took photographs in their neighborhoods and were interviewed to discuss these photographs to select their favorite places as well as the places they don't like. Older children identified parks and playgrounds as the places where they most liked to go due to their high rate of vegetation and playground equipment. The younger children mostly liked places close to their home because of their familiarity and proximity. Most of the children also mentioned their friends' home as their favorite place because of these places' closeness to their home and opportunities for socialization. Streets and alleys were places children didn't like to visit due to safety concerns. Children disliked

these places because of social and physical safety hazards. There were no gender differences in this study.

Van Andel (1990) investigated primary school children's likes, dislikes, and fears in their neighborhoods. He first conducted a pilot study with 36 children aged 6 to 12. The results of the pilot study showed that children liked playgrounds, playground equipment, and natural elements, but they didn't like the streets because of the potential dangers. It is important to note that children's reports never included natural elements as their dislikes. In the subsequent main study, Van Andel (1990) studied 140 children of the same age and investigated their likes, dislikes, and fears as well as the reasons for their preferences by using interview and mapping techniques. The results showed that children liked playgrounds and green areas, including open fields and trees because of opportunities for different kinds of activities triggering social interaction between children and natural attributes. The places that children either disliked or feared were streets with high traffic density.

Talen and Coffindaffer (1999) investigated the preferred neighborhood plans of 248 children aged kindergarten to second grade. The researchers used a drawing method, asking the participants to draw their ideal neighborhood on a basic map. The results showed that the participants recognized availability, diversity, and social interaction as their favorite qualities for their final neighborhood plans. Age and gender were the other factors that affected children's plans. Girls considered more diversity in their plans than boys. Even though younger children could conceptualize their neighborhood, they didn't include any spatial elements in their plans whereas elder children did. In particular, children at preschool level depicted their neighborhood through drawing non-spatial elements such as animals, people, and moving items.

Researchers interested in children's preferences in neighborhoods asked children about the places they like to visit in their neighborhood (Castonguay & Jutras, 2009). They also asked about children's likes, dislikes, and fears in their neighborhood (Van Andel, 1990), and their ideal neighborhood (Talen & Coffindaffer, 1999). Researchers also investigated the reasons for children's preferences (Castonguay & Jutras, 2009; Van Andel, 1990). They studied a variety of children ranging from kindergarten to

middle school (Castonguay & Jutras, 2009; Talen & Coffindaffer, 1999; Van Andel, 1990). The techniques that the researchers used included ranking photographs, interviews, and drawing maps (Castonguay & Jutras, 2009; Talen & Coffindaffer, 1999; Van Andel, 1990). One of the prominent findings was that even though children of all ages preferred places where they can socialize, younger children focused more on socialization (Castonguay & Jutras, 2009; Talen & Coffindaffer, 1999). Playgrounds and parks were children's favorite places because they had green areas (Castonguay & Jutras, 2009; Van Andel, 1990) and opportunities for stimulating social interaction between children and nature (Van Andel, 1990). Other prominent factors affecting children's preferences were availability (Castonguay & Jutras, 2009; Talen & Coffindaffer, 1999), familiarity (Castonguay & Jutras, 2009), and diversity (Talen & Coffindaffer, 1999). Also, safety was the most important factor that affected the dislikes of children of all ages about their neighborhoods (Castonguay & Jutras, 2009). In particular, children considered streets as their dislikes because these places have potential for dangers that might inhibit their play (Castonguay & Jutras, 2009; Van Andel, 1990).

Simmons (1994) conducted a study with 8-9 year-old children to investigate how they perceive nature, differentiate different kinds of landscapes, and how they like, dislike, and use landscapes. The researcher used photographs of different landscapes and asked 316 children to rate to what extent they liked or disliked each place. Then, she interviewed 58 out of 316 children to investigate their reasons for their preferences for a set of nature photographs categorized as a school site, urban nature, interpretive paths, rivers, ponds, marshes, and deep woods. In particular, children were asked about what they liked and disliked in these natural scenes as well as how they used these settings. Children mostly preferred school sites and urban nature as their favorite landscapes. Children liked a playground, trees, and open areas in the school site. The most attractive things related to urban nature were trees, city scenes including big buildings, and a statue. Other things that children liked were open spaces, water, and animals. Children's dislikes about the nature depicted in the photographs were mostly related to potential physical or social dangers arising from nature (e.g. falling trees or

kidnapping) as well as inefficient infrastructure (e.g. shelters, water fountains, or shaded areas).

Tunstall et al., (2004) conducted a study with children aged 9-11 years to identify their perceptions of two river landscapes. Children took photographs depicting what was important and interesting for them in these settings, and answered a questionnaire, and discussion questions. Results revealed that the participants mostly considered the aesthetic features of the settings and recognized trees as the most appealing element of the landscapes. The participants also recognized the affordances of the river landscapes regarding their opportunities for manipulable and adventurous play opportunities, on the condition that the rivers were clean, available, and safe. In terms of gender, particular elements of the environment, such as greenery, flowers, and man-made elements were preferred by girls rather than boys. Also, boys enjoyed cleaning trash out of rivers, whereas girls didn't because of possible dangers. There was no gender difference in children's place preferences for playing, but the types of play were different for boys and girls. Girls liked to climb trees, swing, play hide and seek, and different kinds of social activities such as picnics, sitting, or talking with each other, whereas boys liked physically active games, such as ball games, running, or bicycling. Age was another factor affecting children's preferences. During the discussion of the children's photographs, younger children liked more specific elements, such as trees or plants and concentrated on them, whereas elder children saw the scenes in a broader and aesthetic sense.

Fjortoft (2004) investigated how playing in natural environments affect 5, 6, and 7 year-old children's physical development. The researcher used observation and other methods from landscape ecology. Although the researcher's main purpose was to understand the impact of playing in nature on children's motor development, there were some important results related to the scope of the current study. Children mostly used forests for functional play, based on physical activities such as running, climbing, throwing, rolling, or sliding. The children also preferred construction play when they used loose parts in the forest for particular activities, such as building a shelter or dens by using tree branches. Other activities that the children preferred were playing hide and seek, and fantasy play in an area of prickly juniper bushes. The researcher

observed that there were almost no gender differences in children's play in natural environments. Children of both gender preferred symbolic play which gave them opportunity to play together. However, the forms of fantasy-related play varied for boys and girls. Boys preferred to play cowboys or pirates more than girls who preferred playing house.

Researchers who investigated children's preferences for different landscapes asked them what they like/dislike in a landscape and their reasons for these preferences (Fjortoft, 2004; Simmons, 1994; Tunstall et al., 2004). Researchers studied with different age groups of children in the 5- to 11-year-old age range (Fjortoft, 2004; Simmons, 1994; Tunstall et al., 2004). Data collection instruments included interviews, in some cases accompanied by photographs taken by children or researchers, questionnaires, discussions, observations, and methods from landscape ecology (Fjortoft, 2004; Simmons, 1994; Tunstall et al., 2004). One of the common points that the researchers agreed on was that children mainly considered the affordances of a landscape (Fjortoft, 2004; Tunstall et al., 2004). Researchers indicated that while gender didn't affect children's place preferences for play, it did affect children's preferences for the type of play and for the features of the landscape (Tunstall et al., 2004). In particular, boys preferred only physical play, whereas girls preferred both physical and social play (Tunstall, et al., 2004). Also, the girls liked more natural elements than boys (Tunstall et al. 2004). Children of all ages liked both natural and built elements in a landscape (Simmons, 1994; Tunstall et al., 2004). However, older children mainly considered the whole picture of a landscape focusing on aesthetic features; whereas younger children concentrated on specific natural attributes in a landscape, such as trees, open space, or water (Tunstall et al., 2004). Also, safety and sufficient infrastructure (Simmons, 1994) as well as availability and cleanliness (Tunstall et al., 2004) were some of the factors that affect children's play area preferences.

The researchers investigated children's landscape preferences in different types of outdoor settings including school grounds, neighborhoods, and playgrounds. Müderrsioğlu and Girti-Gültekin (2013) suggested investigating children's landscape preferences and their reasons for these preferences by presenting different types of

landscapes to them. The reviewed studies showed the reason for children's preferences and where and how they like to play. However, Norodahl and Einarsdottir (2015) indicated that there have been relatively few studies about where children want to be when outdoors and how they use outdoor environments. Similarly, Sargisson and McLean (2012) stated that there is a need to understand how children use a particular environment and where they can get opportunities for both natural elements and man-made equipment. Castonguay and Jutras (2009) also suggested that it is important to understand what attributes of the environment are favored by children. Additionally, it is known that children consider both positive and negative features of an environment (Titman, 1994). Therefore, it is important for designers or educators to know not only what children like, but also what they don't like in an outdoor environment to optimize environments for their use (Van Andel, 1990). There are also relatively few studies investigating children's dislikes for different kinds of landscapes (Castanguay & Jutras, 2009; Simons, 1994; Van Andel, 1990). Regarding the gap in the literature, this study investigates urban children's and their mothers' landscape preferences by presenting them different kinds of landscapes such as forests, open fields/grassy areas, parks, and other areas that include water. The researcher investigates both children's likes and dislikes, and the effects of some factors on children's preferences: familiarity, direct experience in nature, and availability.

### 2.3 Similarities and differences in adults' and children's landscape preferences

In terms of identifying similarities and differences in adults' and children's landscape preferences, we should consider two points: their perspectives regarding physical characteristics of landscapes and their use of landscapes.

With regard to children's and adults' perspectives regarding physical characteristics of landscapes, children tend to prefer savanna-like environments more than adults (Balling & Falk, 1982; Falk & Balling, 2009; Herzog et al., 2000). However, when adults are given a chance to select different types of landscapes, they also demonstrate a significant preference for savanna-like environments more than other environments (Falk & Balling, 2009). This similarity and difference can be

explained by an evolutionary perspective emphasizing individuals' genetic tendency to prefer savanna-like environments (Balling & Falk, 1982; Falk & Balling, 2009; Kaplan & Herbert, 1987). However, differences in preferences result from experience, age, or familiarity (Balling & Falk, 1982; Herzog et al., 2000). Another difference is that adults perceive landscapes as a background for what they do whereas children perceive it as a setting which stimulates or encourages them to explore and experience (Balling & Falk, 1982; Sebba, 1991). In terms of their use of landscapes, children and adults considered landscape facilities. While children considered the variety of play opportunities in a landscape (Balling & Falk, 1982; Dyment & O'Connell, 2013; Lucas & Dyment, 2010; Martensson et al, 2014; Nedovic & Morrissey, 2013; Samborski, 2010), the most appealing thing for adults was the amenities a landscape has (Nasar & Holloman, 2013; Sallis et al., 1997; Veitch et al., 2006).

It is interesting that children and parents shared some of the same likes and dislikes regarding landscape preferences. While parents liked places which were safe for their children (Nasar & Hollaman, 2013; Sallis et al., 1997), children disliked settings having potential physical or social hazards (Castanguay & Jutras, 2009; Simons, 1994; Van Andel, 1990). This showed that safety was a common factor considered both by adults and children in their landscape preferences.

### 2.4 Children's biophilia

Researchers studying in the fields of eco-psychology and evolutionary psychology suggested that we as human beings are genetically programmed to affiliate with the natural world including all living organisms (White & Stoecklin, 1998). Evolutionary psychologists defined biophilia as humans' emotional and genetically determined affiliation with the natural world (Wilson, 1984). Wilson (1993) asserted that biophilia, which is a positive response of humans to nature, refers to a genetically based human need to connect with nature. It can be interpreted that biophilia and nature connectedness are intertwined concepts.

Nature connectedness is an old concept in the fields of ecology and ecopsychology (Frantz & Mayer, 2014). Leopold (1949) stated that: "We abuse land

because we regard it as a commodity belonging to us. “When we see land as a community to which we belong, we may begin to use it with love and respect” (p, viii). According to this quotation, we can say that if we feel connection with nature and see ourselves as a part of it, rather than apart from it, we might develop a sense of love for nature which might reflect in our behaviors.

According to Kahn, Severson, and Ruckert (2009), most human behaviors that represent our innate desire for nature can be explained by an evolutionary perspective: our ancestors’ responses to nature were genetically mediated to increase their chance of survival and we still have similar responses to nature in today’s world. Therefore, it can be said that biophilia shapes our behaviors as a response to nature, and makes us feel a part of the natural world. Similarly, Lewis (1996) stated that humans’ biologically programmed affinity for nature has still been guiding and forming their response to nature in today’s urban societies.

When given a choice among different sorts of landscapes, individuals either prefer natural environments over maintained scenes or maintained environments including trees, water, and a variety of vegetation over maintained scenes which do not have such attributes (Kaplan & Kaplan, 1989). These preferences can be explained through the biophilia hypothesis. This shows that biophilia and landscape preferences are very close concepts.

In their empirical studies with adults, researchers mostly concentrated on the concept of a connection with nature rather than biophilia. Several researchers developed an instrument and used it to measure adults’ connection to nature (Dutcher, Finley, Luloff, & Johnson, 2007; Kals et al., 1999; Mayer & Frantz, 2004; Nisbet et al., 2009; Schultz, 2001). Some concepts used by these researchers were ‘connectivity with nature’ (Dutcher et al., 2007), ‘emotional affinity toward nature’ (Kals et al., 1999), ‘connectedness to nature’ (Mayer & Frantz, 2004), ‘nature relatedness’ (Nisbet et al., 2009), and ‘inclusion of nature in self (Schultz, 2001). Although these researchers used these concepts differently, they had the similar purpose of measuring individuals’ connection with nature.

Understanding of both the development of biophilia in human beings and the cultural basis of the human-nature affiliation could be seen as a starting point for

researchers to investigate children's biophilia (Kahn, Severson, & Ruckert, 2009). To explore culture and biophilia, Kahn and his colleagues investigated the environmental reasoning and values of 7 to 19-year-old children in suburban areas and in a variety of cultures, such as African-American (Kahn, & Friedman, 1995), Brazilian (Howe, Kahn, & Friedman, 1996), and Portuguese (Kahn & Lourenço, 2002). The main topics investigated by Kahn and his colleagues were: air and water pollution, parks, open fields, vegetation, forests, and animals. Based on the results of these studies, the researchers indicated that children valued parks and open fields, animals, and vegetation. It mattered to children that pollution might harm the aesthetics of nature as well as all living and non-living things (e.g. water) in nature. Another result of these studies was that almost all children believed that the things that have an impact on the environment might also affect them. Children also had moral relations with nature and gave innate value to nature.

In addition to investigating children's moral reasoning and values, several researchers developed measures of children's connection with nature (Cheng, 2008; Larson, Green, & Castleberry, 2011; Kalvaitis & Monhardt, 2012, 2015; Rice & Torquati, 2013; Zhang, Goodale, & Chen, 2014). Cheng and Monroe (2012) developed a measure of connection to nature for elementary school children. This measure contained four major factors: enjoyment of nature, empathy for creatures, sense of oneness, and sense of responsibility. The researchers investigated about 5500 4$^{th}$ graders' connection to nature by using the instrument. Results revealed that there was a positive relationship between children's connection to nature and several factors, such as previous experience in nature, children's perceptions of their parents' value of nature, nearby nature, and environmental knowledge.

Larson et al. (2011) developed a measure to investigate the environmental orientations of children aged 6 to 13 toward nature. Their instrument aimed to measure children's attitudes towards nature, which is out of the scope of the current research, but the measure revealed two components of environmental orientation: eco-affinity and eco-awareness. Eco-affinity items asked participants about their personal interests in nature as well as their tendencies for pro-environmental behaviors. The researchers interviewed 254 children to explore their relationship with nature. The results showed

that there was not a significant relationship between children's eco-affinity and basic environmental knowledge. However, children who spent more time in nature or had more direct experience in nature had more interest in nature and more potentials for pro-environmental behaviors in the future than children who didn't have such experiences.

Zhang, et al. (2014) explored whether children's biophilia, biophobia, and conservation attitudes are affected by their contact with nature. The researchers used 12 photographs of wild animals, which were carefully selected from different animal groups, to investigate biophilia, biophobia, and attitudes towards the conservation of animals in 1119 children aged 9-10. During the application of the instrument, each participant observed the animals in the questionnaire for a few minutes and they were asked if they liked or disliked each animal in the questionnaire. The researchers coded children's answers for their likes, no feeling, and dislikes as 1, 0, -1, respectively. The results revealed that children's biophilia was positively affected by interaction with nature whereas biophobia was negatively affected by such contact.

Cheng (2008) developed the Children's Connection to Nature Index for 4th grades by building on previous research (Mayer & Frantz, 2004; Musser & Malkus, 1994; Schultz, 2000). It is a 16-item 5-point scale (5= strongly agree) whose items focus on three main dimensions: personal enjoyment of nature, concern for living creatures, and perceptions of human-nature affinity. The instrument was applied to 1432 $4^{th}$ graders by the researcher. The results showed that there was a positive and significant relationship between nature connectedness and perceived family values, previous experience in nature, environmental knowledge, and nature near home. In particular, family members who transmit their values about nature to their children significantly affected children's attitudes and behaviors. Furthermore, children who spent more time in nature and had more previous experiences in nature had a higher level of connection to nature.

Kalvaitis and Monhardt (2015) interviewed 68 children aged 6-12 years old. They asked children about the relationship between humans and the environment. Results showed that children had a deep sense of affinity for nature, which was strongly related to their previous experiences in nature. Children indicated that they

liked or loved nature because it provides them with a variety of opportunities for play, learning, aesthetic appreciation, freedom, and relaxation. Furthermore, most of the children reported that their affinity for nature was affected by their families, animals in nature, and special/favorite places in nature. Although children of all ages considered nature an environment to experience with their family, experiencing nature with parents and siblings was most important for increasing younger children's connection with nature.

Kalvaitis and Monhardt (2012) explored the relationship with nature of 176 children aged 6 to 11. The researchers asked each participant to draw a picture of himself/herself while doing something outdoors and write narratives depicting their pictures. The results showed that all children's relationship with nature was mediated through play. Moreover, children in all grades felt themselves as a part of nature; so they had a positive relationship with nature. Children felt affinity for nature as much as they felt connected to their families. However, there were variations in children's visual and written work in terms of activities, settings, and people. Younger children focused more on family members, friends, pets, and animals whereas older children emphasized activities, enjoying the view, or natural settings.

Rice and Torquati (2013) developed an 11-item interview to measure preschool children's biophilia by asking them about their preferences for being outdoors, sensory enjoyment of nature, contact with nature, and curiosity about nature. The researchers used the scale with 114 preschool children to investigate whether there is a relationship between their biophilia scores and the level of greenness in the outdoor play environment of the preschools where they were enrolled. The researchers also investigated whether some demographic factors, such as maternal education and family income, have an effect on children's biophilia. Results showed that there was no significant difference between children's biophilia scores considering the level of greenness of the outdoor play environments of the early childhood centers they attended. The results also revealed that children's biophilia was affected neither by maternal education nor by family income. Since this is the first instrument measuring young children's biophilia, the researchers suggested different variables that might have an impact on children's biophilia, as an area for further research.

Although the researchers used different instruments to measure children's affinity for nature, there were two common elements in these measures, including enjoyment of nature (Cheng, 2008; Cheng & Monroe, 2012; Rice & Torquati, 2013), and empathy for creatures (Cheng, 2008; Cheng & Monroe, 2012). The results of all reviewed studies showed that previous experience is the prominent factor which impacts children's connection with nature. In particular, children who spent more time in nature and had more previous experiences in nature had a stronger connection to nature. Several studies revealed that parents might significantly impact children's connection with nature. For example, Kalvaitis & Monhardt's studies (2012, 2015) showed that children emphasized their families when they reflected on their ideas about human-nature affinity. Considering different age groups, children's parents and siblings had more influence on younger children's connection with nature (Kalvaitis & Monhardt, 2012). Other factors that influence children's connection with nature were nature near the home and environmental knowledge (Cheng, 2008; Cheng & Monroe, 2012).

Except for Kalvaitis and Monhardt's studies (2012; 2015) and Larson's et al. study (2011), all researchers of the aforementioned studies used quantitative research methods to investigate children's connection to nature. Therefore, it could be revealing to supplement quantitative data with qualitative data since it provides a more comprehensive and holistic picture (Creswell, 1994). One of the other striking points that emerged from the reviewed studies is that almost all of them were conducted with primary school children rather than preschool children. Although we can consider that nature connectedness and biophilia are similar concepts, there was no study specifically investigating preschool children's biophilia except for Rice and Torquati (2013). Therefore, the suggestions of their study for further research had an important influence on the current research. In particular, the researchers indicated that there is a need to investigate the effects of different factors on biophilia, such as duration of time spent in natural areas beyond school and the role of access to nature at home. Considering these suggestions, this study investigates children's biophilia, how biophilia relates to their landscape preferences, and which factors significantly affect

children's biophilia including previous experience, familiarity, nature near home, and the frequency and duration of children's visit to natural landscapes.

Additionally, parents have a key role in either transmitting their values and ideas about nature to their children (Kals et al., 1999; Kellert, 2002; Rice & Torquati, 2013), encouraging them to connect with or love nature (Chawla, 1998, 1999; Tanner, 1998) and managing children's access to nature, time spent in nature beyond school, and the type of natural landscape where children spend time. Therefore, it will be a significant contribution to the literature to explore mothers' landscape preferences, the factors influencing mothers' landscape preferences, and the relationship between mothers' and children's landscape preferences.

## 2.5 Summary

In the existing literature, the researchers explored children's preferences by asking them about their likes, dislikes, preferred natural elements, favorite places, activities, play, and their use of physical outdoor settings (Castonguay & Jutras, 2009; Hart, 1979; Martensson et al., 2014; Moore, 1986; Sargisson & Mclean, 2012; Van Andel, 1990). The common factor that makes children fascinated by nature was that natural settings have diversity which enriches children's play or experiences (Dyment & O'Connell, 2013; Moore, 1986; Sargisson & Mclean, 2012; Talen & Coffindaffer, 1999). There was not a consistent finding indicating the effects of other factors, such as age, gender, socialization, aesthetic features, familiarity, and availability on children's preferences (e.g., Balling & Falk, 1982; Castonguay & Jutras, 2009; Lucas & Dyment, 2010; Norodahl & Einarsdottir, 2015; Samborski, 2010; Talen & Coffindaffer, 1999; Tunstall, 2004). Norodahl and Einarsdottir (2015) indicated that there is a need to investigate the places where children want to be as well as their use of outdoor settings. Some researchers also suggested exploring how children use an outdoor environment which affords both natural and man-made elements (Sargisson & Mclean, 2012) and children's favorite characteristics in an outdoor environments (Castonguay & Jutras, 2009). In order to build an optimal environment for children, it is also important to know what children don't like in an outdoor setting. However, the

existing literature shows that children's dislikes were not as commonly investigated as children's likes (Castanguay & Jutras, 2009; Simons, 1994; Van Andel, 1990).

The researchers who investigated parents' place preferences for their children focused on the places where children play outdoors (Veitch et al., 2006) and the factors which affect parents' preferences (Nasar & Holloman, 2013; Valentine & McKendrick, 1997; Veitch et al., 2006). Most of the researchers studied the parents of primary school children to investigate their place preferences for their children (e.g., Nasar & Holloman, 2013; Valentine & McKendrick, 1997; Veitch et al., 2006). Nasar and Holloman (2013) indicated that there is a lack of research about which factors are considered by parents to take their children outdoors. Considering the issues that the existing literature has not addressed, the current study explores preschool children's and their mothers' landscape preferences by presenting them different kinds of landscapes such as forests, open fields/grassy areas, parks, and other areas that include water. The researcher also investigates both groups of participants' likes and dislikes, as well as the effects of some factors on their preferences: previous experience in nature, familiarity, and availability.

Another gap in the literature was related to children's biophilia. Only one study was found that investigated children's biophilia (Rice & Torquati, 2013). These researchers stated that there is a need to investigate the effects of different factors, such as availability of nature near home, frequency and duration of time spend in natural outdoor settings on children's biophilia. Although there is evidence indicating a close relationship between biophilia and landscape preferences (Kaplan & Kaplan, 1989), this issue remained unsettled in the existing literature. The current study explores children's biophilia, the relationship between biophilia and landscape preferences, and the possible factors that affect children's biophilia, including nature near home, and the frequency and duration of children's visit to natural landscapes.

# CHAPTER 3

# METHODOLOGY

The content of this chapter is composed of the design of the study, the description of the participants, research instruments, information about the pilot study, and the data collection and data analysis procedures.

## 3.1 The design of the study

In this study, both quantitative and qualitative research methods were used to measure five-year-old preschool children's biophilia, which is the degree to which they feel an affinity for nature, as well as to understand children's and their mothers' landscape preferences. For the quantitative data, a main sample of 105 five-year-old preschool children answered items on a measure of biophilia and preferences for being outdoors, sensory enjoyment of nature, curiosity about nature, and interacting with nature. For the qualitative data a sub-sample of 20 children were randomly selected from the sample of 105, their mothers were interviewed to understand their landscape preferences, and their teachers were also asked about their centers' outdoor activities in nature.

According to Creswell (1999), it is appropriate to use mixed method research when we use both quantitative and qualitative data together to provide a better understanding of the research problem than either type by itself. Also, mixed-method research is used when one type of research, either qualitative or quantitative, is not enough to address the research problem or answer the research questions (Creswell, 1999). The mixed method concurrent triangulation design, which is the most common and well-known type of mixed method design used by the researchers across

disciplines, consists of one-phase: quantitative and qualitative methods are implemented concurrently. This design has a variety of names given by different researchers such as 'parallel study' (Tashakkori & Teddlie, 1998), 'simultaneous triangulation design' (Morse, 1991), 'convergence model' (Creswell, 1999), and 'concurrent triangulation design' (Creswell, Plano Clark, et al., 2003). Regardless of the name, since the concurrent triangulation design requires separate collection and analysis for quantitative and qualitative data, but brings the separate results together to interpret in overall results (Creswell, Plano Clark, et al., 2003), it is the most appropriate type of mixed method design for the current research Creswell, Fetters, and Ivankova (2004) summarized the procedure of the concurrent triangulation design in three steps: First, data about the topic of interest is collected using both quantitative and qualitative research methods separately; second, the data analysis for both types of data are implemented independently by the researcher and the individual initial results may be directly compared with each other; third, the researcher interprets two sets of results as a combination to understand to what extent they are related to each other regarding the purpose of the study.

### 3.2 The settings

The participant children were randomly selected from four public preschools located in the same district of Ankara. The four preschools were purposively selected. Two of those preschools were classified as 'natural' and the remaining two of the preschools were classified as 'non-natural'. While natural preschools provide children large open space where children can observe or interact some natural components such as trees, grasses, or small bushes and these schools' schedules let children spend regular time at outdoors, non-nature preschools don't have such qualities and schedules. The researcher selected almost the same number of children from both groups of preschools: In particular there were 50 children coming from natural preschools and 55 children coming from non-natural preschools.

These participants were selected for this study based on whether they enrolled in a natural or non-natural preschool. Natural and non-natural preschools had different

schedules for letting children spend time outdoors. While children enrolling in natural preschools have at least two hours outdoor play time almost every day, the non-natural preschools have just an hour outdoor play time in a week or in two weeks. Both natural preschools had similar outdoor environments as well as similar schedules to use the outdoor environments actively.

The first natural preschool has one big building with all classes connected and surrounded by a big garden which the participant children actively use (See figure 3-1). The whole school garden is completely fenced. There are three open areas to the school. The first side includes the school's entrance door with a nice brick pathway including shrubs and trees. The right side of the entrance contains a long tree lined walkway that stretches the full length of the school. That side also has an access to the second side including a playground with climbing toys, swings, seesaws, and spring activated animal rides. Adjacent to the main playground there is a smaller area for children to play, including monkey bars and a plastic castle for climbing and sliding. This playground has plenty of room to run, including sand and grass. On the left side of the entrance there is an elevated grassy area with lots of trees for shade. Also, there is a small slide and picnic tables for children to use for eating or different kinds of table activities which include crafts, and painting. This area is also big enough to involve the children in gross motor activities. In the school building there is a door giving access to the covered outdoor area which provides shade. In this area, there are lots of play materials such as ride-on cars, play houses, rocking toys, small swings, and picnic tables. Also, the ground is covered by bricks to make it easier to ride cars and bicycles.

Figure 3-1: Photographs of first nature school

The second natural preschool has a big building surrounded by a big grassy outdoor area which is completely fenced (See figure 3-2). At the entrance of the school, there is a long paved walkway lined with colorful planter boxes. On the right side of this walkway there is lush grass including animal sculptures, art sculpture, and lots of trees and big plants. On the left side of the walkway, there is a big sculpture of Atatürk (founder and first President of the Republic of Turkey), a few animal sculptures, a couple of trees and flowers. Along the left side of the school building, there are lots of big trees covered by animal shaped fabric, benches, colorful tires grouped together to make a flower bed, a playhouse, colorful tires for playing and keeping the plants,

gourds hanging from trees like wind chimes, little boulders, and climbing equipment. On the right side of the building, there is uninhabited space with weeds. In the back side of the building there is a small grassy area with a few trees and plants. The back side also includes playground equipment including swings, slides, and climbing and balancing bars. Along the back there is a concrete wall which is painted half way where children actively use it to represent their art works. There is also a wooden climbing wall attached to the concrete wall.

Figure 3-2: Photographs of second nature school

Both non-natural preschools shared similar qualities regarding their outdoor environments and had similar schedules for active use of the outdoor environments. The third preschool is a non-natural preschool placed in a busy area of the city surrounded by apartments (See figure 3-3). This structure is a multi-level school. The school garden is fenced and landscaped with roses, grass and small trees. Also, the entrance of the school includes a big cartoon sculpture. The only used outdoor play area of the school is the right side of the building. This area is very narrow and cramped. The floor covering is made of artificial grass without plants or trees. In this area there are limited plastic materials including swings, a slide, a play house, a small tunnel, and a small ride-on toy.

Figure 3-3: Photographs of first non-nature school

The fourth preschool (See figure 3-4) is also a non-natural preschool which has got a relatively small non-natural backyard where children have a little chance to play with each other. A grass-green artificial flooring covers all over the bottom that finishes at the borders of the yard. The playground has got a very small amount of

greenery around itself that includes mostly grass, some thin bushes, and a few bunches of flowers. It has got a metal door at the corner of the fences that enflames the L-shaped area. There are also several seedlings on the greenery. Behind the metal fences, a pavement and a street start outside. The borders of the playground are the fences. The other side of the playground is the school wall that has windows with flags and a few ornaments.

Figure 3-4: Photographs of second non-nature school

### 3.3 The participants

The main sample was 105 five-year old middle-class children attending early childhood education programs supervised by the Ministry of National Education in Turkey. These children were randomly selected from four schools, which are purposively selected for the current study. Considering the demographic information of children, while 59 out of 105 children were female, 46 of them were male. All of

the children were 5-year-old. Additionally, 50 out of 105 children had been registered to natural school, while remaining 55 children had been registered to non-natural ones.

The sub-samples were 20 mothers (5 randomly selected from each preschool) and their children. A random selection of 20 names out of the 105 mothers' names was made and all 20 mothers accepted to participate in the second phase of the data collection of the current research. Although most of the participant children reported that they spend time outdoors with both of their parents, all their reports included that mothers were always with them when they spend time outdoors. Therefore, only mothers were chosen based on children's reports during the interviews.

Three out of 20 mothers were between the ages of 31-35. The number of working mothers either in natural or non-natural preschools were 8 out of 10 and 7 out of 10, respectively. Eleven were between the ages of 36-40, and six were between the ages of 41-45. Eighteen of 20 mothers graduated from a university and two of them graduated from high school. The locations where all the participants live are urban areas, including different districts of Çankaya in Ankara.

With regard to the demographic information of the other sub-sample including 20 children, 10 out of 20 children were female, and the remaining children were male. While half of the children (10 out of 20) were enrolled natural preschools, the remaining half of them were enrolled non-natural preschools (See table 3-1).

Table 3-1: Demographic information of the participants

| | Total number of participants | Age | Gender | | Type of school | |
|---|---|---|---|---|---|---|
| | | | F | M | N | n-N |
| Children | 105 (main sample) | 5 years | 59 | 46 | 50 | 55 |
| | 20 (sub-sample) | 5 years | 10 | 10 | 10 | 10 |
| Mothers | 20 | 3 (31-35 year-old) | 3 | | | |
| | | 11 (36-40 year-old) | 11 | | 10 | 10 |
| | | 6 (41-45 year-old) | 6 | | | |

*F: female, M: male, N: nature school, and N-n: non-nature school

More details about the sub-groups of the participants revealed that almost all of the participating children and the others had previous experience in, availability to, and familiarity with the natural environment (Table 3-2).

Table 3-2: The frequency table of whether the participants having previous experience in, familiar with, and available to natural landscapes

| | Previous experience (f) | Familiarity (f) | Availability (f) |
|---|---|---|---|
| **Children** | | | |
| Yes | 14 | 15 | 14 |
| No | 6 | 5 | 6 |
| **Mothers** | | | |
| Yes | 19 | 20 | 14 |
| No | 1 | 0 | 6 |

In addition, the detailed information about the participants' frequency of visit to as well as the duration of visits in natural landscapes can be seen on table 3-3.

Table 3-3: The frequency table of the participants' frequency and duration of the visit to the natural landscapes

| **Frequency of the visit to the natural landscapes** | **Children (with parents)** | **Children (at school)** |
|---|---|---|
| Everyday | 11 | 10 |
| several times a week | 6 | 0 |
| once a week | 2 | 5 |
| 1-3 times a month | 0 | 5 |
| **Duration of the visit to the natural landscapes** | **Children (with parents)** | **Children (at school)** |
| 15-30 min | 0 | 0 |
| 31-60 min | 12 | 5 |
| 1-2 hours | 4 | 10 |
| More than 2 hours | 4 | 5 |

## 3.4 Research Instruments

Three research instruments that were used in this research are explained in detail as follows.

### 3.4.1 Children's biophilia measure

One of the data gathering instrument used in this study is "Children's Biophilia Measure" that contains 22 items. By using this instrument the researcher aimed to

understand the children's biophilia, the extent to which they feel an affinity for nature. Interview items explored children's preferences for being outdoors, enjoyment of sensorial aspects of nature, curiosity about nature, and interacting with nature (See table 3-4). Concerning the face validity of the instrument, the researchers of the original study contacted with four experts from different fields including early childhood educators, landscape architectures, and environmental educators (Rice & Torquati, 2013). The interview had good face validity based on the pilot with 15 children. In essence, the participating children perceived the interview as some sort of a game, so much so that, they wanted to play it a second time. Second time around, these children responded the interview questions exactly in the same way of the first time. Moreover, children's reported experiences overlapped with the character (puppet) which accompanied the interviewers during the interview. The puppet, which was a gender-neutral character, was used to facilitate children's responses to the interview questions. Furthermore, the original interview which has an adequate reliability (Cronbach's alpha coefficient= .63) was developed by Rice and Torquati (2013) and adapted into Turkish by the researcher and an early childhood education expert. During the adaptation process of the original measurement, two-way translation method was used. First, three early childhood experts translated the items of the measurement into Turkish. Later, the same items were re-translated into English. During this process, the experts also considered the cultural appropriateness of the items. In the end, there was a consensus between the experts that one item in the questionnaire needed revision. The item about watching squirrels and rabbits outdoors was changed to watching cats and dogs, which the participants had a high possibility of meeting and watching outdoors in Turkey. In the original study, Rice and Torquati (2013) used role-playing interviews with puppets during the data collection process. In this study, the researcher and an early childhood education expert developed concrete visual material for each interview item, with pictures illustrated by an artist. Each participant child was asked "Which boy/girl is like you?" .The researcher used the same scoring method as seen in the original study investigated by Rice and Torquati (2013). Children's responses for the biophilic items were assigned a value of 1, and their responses for the non-biophilic items were assigned a zero.

Table 3-4: Sample items from biophilia measure for each category

| Categories | Biophilic Item | Non-Biophilic Item |
|---|---|---|
| Preference for being outdoors | This boy/girl likes to play outside | This boy/girl likes to play inside |
| Enjoyment of sensorial aspects of nature | This boy/girl likes to listen to birds singing | This boy/girl doesn't like to listen to birds singing |
| Curiosity about nature | This boy/girl likes to learn about wild animals | This boy/girl isn't interested in wild animals |
| Interacting with nature | This boy/girl likes to play with sticks, leaves, and pine cones | This boy/girl doesn't likes to play with sticks, leaves, and pine cones |

### 3.4.2 The questionnaire for investigating children's landscape preferences

The second research instrument is the Children's Landscape Preferences Questionnaire used with a set of 16 photographs to investigate the sub-sample of children's (nc=20) landscape preferences (See table 3-5). The scale consisted of sixteen questions including demographic information (1 question), dichotomous yes-no questions (3 questions), multiple choice questions (2 questions), and open-ended questions (10 questions). Questions related to children's demographic information and dichotomous questions included the information about gender as well as whether or not the children have previous experience in, availability to, and familiarity with the natural environment. Multiple choice questions were related to the frequency of visit to natural landscapes and the duration of visits in such environments. The choices related to the frequency of visits to natural landscapes were gathered in five categories which are every day, several times a week, once a week, 1-3 times a month, and infrequently. Moreover, the choices related to the duration of the visits in natural landscapes were categorized into four, including 15-30 minutes, 31-60 minutes, 1-2 hours, and more than 2 hours.

Table 3-5: Sample questions from children's landscape preferences questionnaire

| | |
|---|---|
| **Personal landscape preferences** | Which three places would you personally most like to visit? Why did you select these three photos? |
| **Educational landscape preferences** | Which three places would you want to visit with your teacher and your classmates?<br>Why did you select these three photos? |
| **Landscape preferences with parents** | Which three places would you want to visit least with your parents? Why did you select these three photos? What about these places/photos make them the ones you want to visit least with your parents? |
| **Possible activities in most preferred landscapes** | For each of the three photos you selected, please indicate what you would do with your teacher and your classmates in a place like this. |
| **Resource needs in most preferred landscapes** | For each of the three photos you selected, please indicate what you would need when you visit such a place like this with your parents. |
| **Barriers against to visit natural landscapes** | Considering all those photographs, is there anything to prevent you from visiting the natural landscapes with your teacher and your classmates? If yes, please indicate the obstacles that might prevent you from visiting such kinds of settings/places with your teacher and your classmates. |

The questionnaire was originally prepared for pre-service preschool teachers and each question was accompanied by a set of 16 photographs in the original study (Ernst & Tornebene, 2012). The optimal number of photographs for investigating individuals' landscape preferences was explored in several studies (Kaplan & Kaplan, 1989; Kaplan, 1973; 1977; 1999). In these studies with adults, the researchers found that four to five photographs were appropriate for each type of landscape. Research investigating children's landscape preferences has also confirmed that four to five is the appropriate number of photographs. For instance, Simmons (1994) conducted a study with nine-year-old children to investigate their preferences for nature. Simmons (1994) used 30 photographs divided into 7 categories such as school site settings, urban nature, or open fields.

The researcher took new photographs for the current research instead of using the already existing ones developed by several researchers (Ernst & Tornebene, 2012; Simmons, 1994). The reason of taking new photographs was related to the differences in different local outdoor settings. The current research would be conducted in Turkey and the other related studies were conducted in USA. In fact, the photographs that the researchers used in their own studies were taken in USA and represent their local

environment considering vegetation and any other natural stimuli. Therefore, the photographs used in the current research were taken by the researcher and represented the local outdoor settings of the city which the participants live in. This might increase the reliability of the data gathered from the current participants.

In the current study, 16 photographs are used with both preschool children and their mothers. To decide which 16 photographs would be used in this research, first, the researcher took 65 photographs that represented four categories of natural settings (water, open-field/grassy area, park, and forest) in approximately even numbers. Half of the pictures in each category showed maintained landscapes and half showed the landscapes in their natural state. Then, the researcher printed 12 sets of the photographs to give to 12 experts, asking each expert to sort the images as being maintained or natural as well as belonging to one of the four categories (water, open field/grassy area, park, and forest). The experts who the photographs were delivered were from different fields such as science education (n=3), early childhood education (n=7), and environmental education (n=2). After getting feedbacks from each expert, the researcher and an expert from early childhood education compared all the preferences and identified the most preferred four photographs for each category to finalize 16 photographs used in the research.

With regard to the characteristics of the photographs, all were taken by the researcher considering some critical points. Because there could be differences in participants' preferences if the photographs are taken in different seasons, all of them were taken in the same season, late spring. None of the photographs included any striking stimuli such as people, an animal, or an object to prevent participants' lack of focus to the content of the photograph (Ernst & Tornebene, 2012; Kaplan, 1977; Kaplan & Kaplan, 1989).

With regard to the content of the photographs, the researcher took a set of 16 photographs depicting different natural landscapes that participants could see around the city where they live. Similar to the study conducted by Ernst and Tornebene (2012), each of the 4 sets of 16 photographs was coded as forest, open field/grassy area, water, or park. Each of the 16 photographs was also coded as natural or maintained as suggested by Ernst and Tornebene (2012) and Kaplan (1985). Each 4 sets of

photographs of different types of outdoor settings have 2 natural and 2 maintained settings.

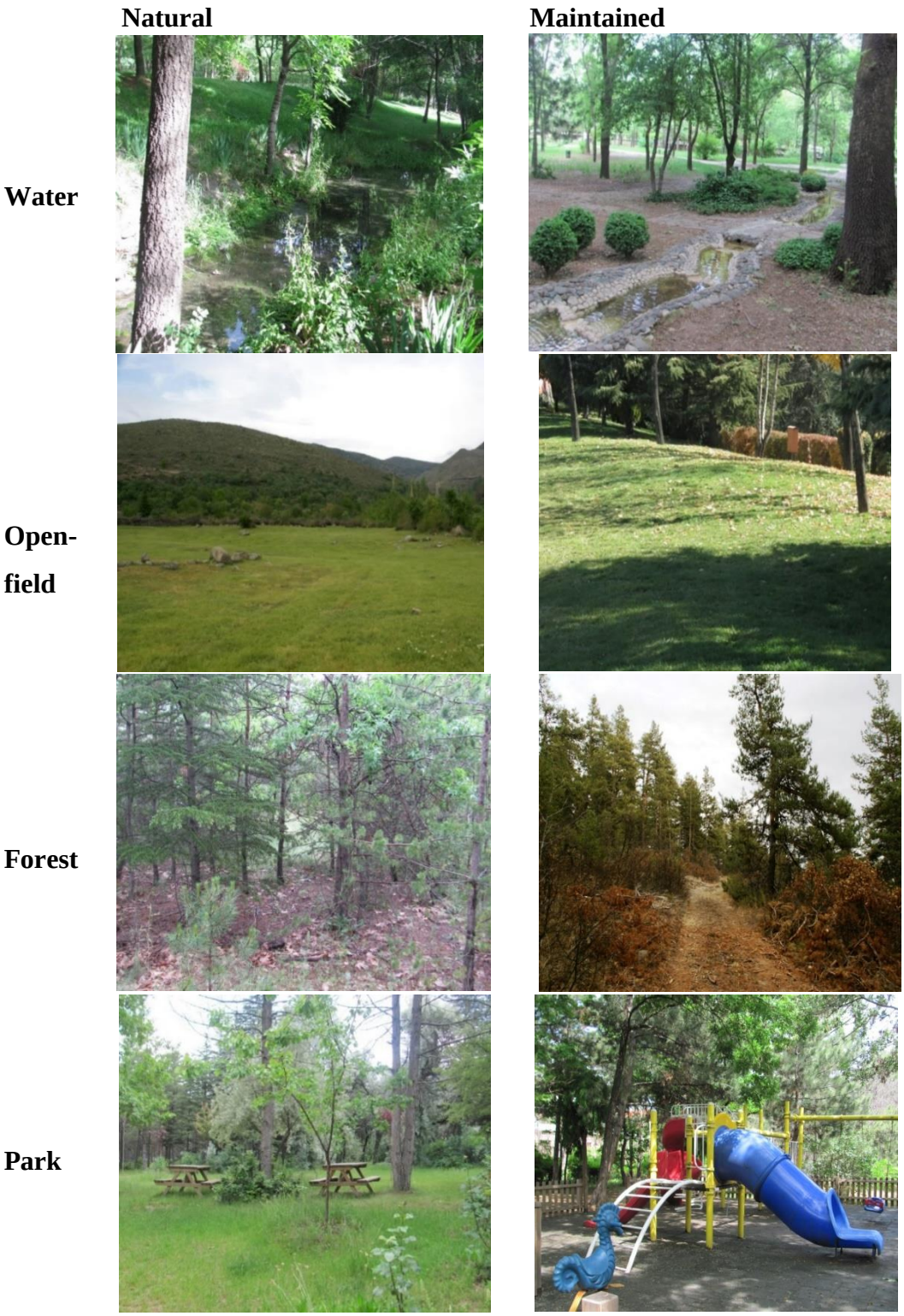



Figure 3-5: Example photographs representing each category

### 3.4.3 The questionnaire for investigating mothers' landscape preferences

The third questionnaire used in the current research investigated mothers' landscape preferences (See table 3-6). The mothers' landscape preferences questionnaire was prepared to be similar to the questionnaire used with the children. There were 3 demographic information questions, 6 dichotomous questions, 4 multiple choice questions, and 10 open-ended questions. In addition to asking about their natural experiences, mothers were also asked about natural experiences with their children.

Table 3-6: Sample questions from mothers' landscape preferences questionnaire

| | |
|---|---|
| **Personal landscape preferences** | Which three places would you personally least like to visit? Why did you select these three photos? |
| **Educational landscape preferences** | Which three places you would want most by the teacher of your child to bring the children in his/her class in a place like this? |
| **Landscape preferences with children** | Which three places you would want to visit least with your children? Why did you select these three photos? What about these places/photos make them the ones you want to visit least with your children? |
| **Possible activities in most preferred landscapes** | For each of the three photos you selected, please indicate what you would do with your children in a place like this. |
| **Resource needs in most preferred landscapes** | For each of the three photos you selected, please indicate what your children with their teachers and classmates would need when they visit such a place together. |
| **Barriers against to visit natural landscapes** | Considering all those photographs, is there anything to prevent you from visiting the natural landscapes with your children? If yes, please indicate the obstacles that might prevent you from visiting such kinds of settings/places with your child. |

## 3.5 The pilot study

The aim of the pilot study was to test the comprehensibility and clarity of the biophilia measure and its pictures, as well as the interview questions of children and their mothers to investigate their landscape preferences. The pilot study was conducted

with six children and their mothers and they were selected to have similar characteristics to the participants in the main study itself. While three out of six children were enrolled in a natural preschool, the remaining three were enrolled in a non-natural program. During the pilot study, the researcher read the questions to the participants and if necessary she revised or extended some questions to make them more clear and comprehensible. The researcher audio-taped the responses of the participants and transcribed them. After transcription, the researcher and another expert from early childhood education analyzed the pilot data to create themes, sub-themes and initial codes. There was a full consensus between coders based on the results, suggesting the reliability of the research.

The pilot study provided many advantages for the researcher in terms of testing comprehensibility and the clarity of the interview questions, which are important for increasing the validity of the instrument. With regard to the content, appropriateness, and representativeness of the pictures accompanied by each item in the biophilia measure, everything was clear and understandable for the children. It was also clear that the photographs made the items more concrete and understandable. Moreover, children were willing to respond to questions accompanied by pictures. The implementation of the biophilia measure took 15-20 minutes with each child.

With regard to the interview questions investigating children's landscape preferences, most of the children did not understand the question about whether there were any obstacles to visiting natural landscapes with their mothers as well as their teachers and classmates. Therefore, the researcher revised those questions as follows: "Is there anything to prevent you from visiting the natural landscapes with your parents?" and "Is there anything to prevent you from visiting the natural landscapes with your teacher and your classmates?" The tool investigating children's landscape preferences took 35-40 minutes to implement with each child. Similarly, most of the mothers did not understand the question about obstacles to visiting natural landscapes with their children. Therefore, the researcher revised the question as follows: "Is there anything to prevent you from visiting the natural landscapes with your children even if you would like to visit those settings together?"

Additionally, the question asking mothers about the possible things that they could need for spending time with their children in their three most preferred settings was extended as follows: Do you need to bring anything with you to spend time or to make any activity with your children when you visit your most preferred landscapes with him/her? While the tool investigating mothers' landscape preferences took 30-35 minutes to implement with each mother, all the implementation process for three measures took 15 days, including eighteen individual meetings, or approximately 37 hours in total.

### 3.6 Data collection procedures

Before the data gathering procedures, there were a variety of requirements that the researcher completed: Getting ethical permission from the Middle East Technical University Ethical Commission, applying for permission from the Ministry of National Education in Ankara, contacting early childhood education centers' managers and teachers to work with children, and contacting mothers to ensure their volunteer participation in the study.

After receiving permission from the Middle East Technical University Ethical Commission and Ministry of National Education in Ankara, the researcher contacted the early childhood education center managers as well as teachers in order to give them some information about the purpose of the study and to get their permissions to work with children in their classes. Through the guidance of the teachers, the researcher sent consent forms to the parents of 5-year-old children and got their permission and voluntariness to work with children in their classes as well as themselves.

During the data collection process, each participant child was read the items one by one and shown two pictures for each item of the biophilia measure by the researcher. While one of those pictures represented the biophilic attitude toward nature, the other one represented the biophobic attitudes. For instance, "This boy/girl likes to play in creeks and lakes" (biophilic), or "This boy/girl does not like to get wet and dirty" (biophobic) (See figure 3-6). The sex of the child in each picture was matched to the gender of each child participating in the research. After each item was

read and the related pictures were shown, each participant was asked “Which boy/girl is more like you?” and “Why?

Figure 3-6: Example item of the biophilia measure

During the implementation of the questionnaire investigating the sub-sample of 20 children’s landscape preferences, the children were asked to share their general ideas about the meaning of nature and natural landscapes. They were asked if they had any previous experiences in natural landscapes on their own, if they have natural landscapes to visit around their neighborhoods or not. Participants having such kinds of landscapes in their neighborhoods were also asked to describe the characteristics of those particular settings. Then, the researcher asked if the children visit natural landscapes in their daily life or not. The children were also asked to indicate the most frequent accompanying adult when they visit these landscapes in their neighborhoods. This information helped the researcher decide which parent should answer the questionnaire about parents’ landscape preferences. Children were also asked whether they had any direct experience with natural landscapes together with their accompanying adult or not. Children responding to this question positively were also

asked about what kind of experiences they had in that particular setting. Lastly, there were two additional questions about the frequency and the length of time that children spent outdoors. Those two questions related to children were asked to adults to get more reliable answers. In fact, in order to gather information about children's frequency of visits to natural landscapes and the duration of visits to in such environments with their parents, children's mothers were asked about the frequency of visit to natural landscapes together with their children. Then the mothers were also asked the duration of exposure to natural landscapes with their children. Similarly, in order to get information about children's frequency of visit to natural landscapes and the duration of visits to in such environments with their teachers and classmates, the necessary information was gathered from the teachers of the participant children.

After getting this information from the children and their teachers, the researcher individually asked the following questions accompanied by 16 photographs to the same 20 children. Each child was asked to select three landscapes that they would like to visit most and three landscapes that they would like to visit least. After selecting their most and least favorite places they were asked to explain the reasons for their choices.

Then, each child was asked to select three landscapes that they would like to visit most and least with their mothers, and they were asked what type of activities they would like to do as well as what type of things they would like to bring with them during the visit. Then, each child was asked if there were anything to prevent them from visiting natural landscapes with their mothers. In order to understand participant children's educational landscape preferences, each child was asked to select three landscapes that they would like to visit most and least with their teachers and their classmates, what type of things they would like to do, and what they would like when they visit those kinds of landscapes. Lastly, each participant child was asked if there were anything to prevent them from visiting those kinds of landscapes with their teacher and classmates.

With regard to investigating the mothers' landscape preferences, the participants' demographic information such as age, educational level, and the landscape type (natural or non-natural) where they grew up were obtained by using the questionnaire.

The questionnaire also included two open-ended questions asking participants to describe the meaning of nature as well as natural outdoor settings. The questionnaire also included yes-no questions and multiple choice questions. Mothers were asked if they had any previous experiences in natural settings by themselves or with their children. Then, the researcher asked if they have similar landscapes in their neighborhoods or not. Mothers who responded to that question positively were asked about the characteristics of the landscape that they have in their neighborhoods. Then, the researcher asked mothers if they visited natural landscapes by themselves or with their children in their daily life, and the frequency and length of these visits.

The researcher asked other questions with the particular set of 16 photographs, similar to the questions with the set of 16 photographs used with the children. The questions were developed by the researcher and an early childhood education expert to get parallel responses from both mothers and their children. However, when children were asked where they would like to go with their parents, mothers were asked about their preferred landscapes for visits with their children as well as their children with their teachers.

### 3.7 Data analysis procedures

Data analysis procedures includes both quantitative and qualitative data analysis methods.

#### 3.7.1 Quantitative data analysis

As a quantitative data analysis, descriptive statistics was used for calculating children's biophilia scores as well as children's and mothers' landscape preferences.

##### 3.7.1.1 Descriptive statistics

The participant children's biophilia scores as well as children's and their mothers' most and least preferred outdoor settings were identified via descriptive

statistics, based on the 'biophilia measure', 'a questionnaire investigating children's landscape preferences', and 'a questionnaire investigating mothers' landscape preferences' measures. During the data analysis process, biophilic and biophobic responses of each participant were assigned a value of one or zero, respectively. A total biophilic score was computed for each participant through the sum of the total number of answers.

In order to understand the most and least preferred outdoor settings as a place where the participant children personally wanted to visit by themselves and with their parents or with their teacher and classmates, their landscape preferences were entered into SPSS as a number written in the back sides of each photograph. Additionally, the participants' mothers' most and least outdoor settings as a place where they wanted to visit by themselves and with their children or the places they considered as a good place for their children to visit with their teachers and classmates, were entered into SPSS in a similar way used for children's preferences. Then, the frequencies of both personally and educationally most and least preferred landscapes of children and their mothers were obtained via descriptive statistics. Thus, the researcher could understand whether or not there was an overlap between the children's and their mothers' landscape preferences.

Additionally, in order to understand how children's biophilia differ based on their landscape preferences, as a first step children's most and least frequently chosen 3 landscape preferences (personal, educational, and with parents) were coded in terms levels of human influence (natural, maintained). However, since the participants selected three most and least favorite landscapes, the researcher needed to develop new categorization to code some of the unstable participants' landscape preferences.

Considering the details of the categorization, each participant's most and least 3 favorite landscape preferences was coded as '0' (maintained) or '1' (natural). Then, their most and least favorite preferences were compared. After the comparison, each participant's landscape preferences were codes as '0', '1' or '2'. Each of these three numbers (0, 1, and 2) referred maintained, natural, and undecided, respectively. This means children whose preferences were coded as '0' and '1' have either natural or non-natural landscapes preferences. Preferences coded as 2, indicates that children

neither have natural nor non-natural landscapes; in other words they are uncertain about their decisions. For example, if a participant's preferences for natural landscapes more than non-natural landscapes in his/her most preferred three landscapes and non-natural landscapes were more than natural landscapes in his/her least preferred three landscapes, it was coded as 1 (natural). If a participant's preferences for non-natural landscapes more than natural landscapes in his/her most preferred three landscapes and natural landscapes were more than non-natural landscapes in his/her least preferred three landscapes, it was coded as 0 (maintained). Moreover, if a participant's preferences for natural landscapes more than non-natural ones in both his/her most and least favorite landscapes, it was coded as 2 (undecided). Similarly, if a participant's preferences for non-natural landscapes more than natural ones in both his/her most and least favorite landscapes, it was coded as 2 (undecided) as well (See table 3-7).

Table 3-7: Examples of the coding of the participants' 3 most and least favorite educational landscape preferences in terms of levels of human influence (natural, maintained, or undecided)

| Educationally most preferred three landscapes | | | Educationally least preferred three landscapes | | | Total educational landscape preferences |
|---|---|---|---|---|---|---|
| 1 | 0 | 1 | 1 | 0 | 1 | 2 |
| 1 | 1 | 1 | 1 | 0 | 1 | 2 |
| 0 | 1 | 1 | 1 | 0 | 1 | 2 |
| 0 | 0 | 1 | 1 | 0 | 1 | 0 |
| 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| 0 | 1 | 1 | 1 | 0 | 1 | 2 |
| 0 | 1 | 1 | 1 | 1 | 0 | 2 |
| 0 | 0 | 0 | 0 | 1 | 0 | 2 |

* '0' refers maintained, '1' refers natural, and '2' refers undecided

After deciding children's landscape preferences in terms of levels of human influence, the mode score of the participant children's biophilia scores was calculated and each child's biophilia level was defined based on the mod score as a reference point.

#### 3.7.1.2 Inferential statistics

As another quantitative data analysis method, independent sample t-test was used to identify if children's biophilia scores differ by school type.

##### 3.7.1.2.1 Independent sample t-test

In order to understand whether children enrolling in natural or non-natural preschools significantly differ on their biophilia scores, independent sample t-test was conducted based on 'biophilia measure' as well as classification of children's school grounds. Each of the children was coded into two categories in terms of their enrollment of the natural or non-natural school. In fact, children who enrolled in natural preschools and non-natural preschools were coded as 1 and 0, respectively to be used in the analysis.

Similarly, independent sample t-test was also conducted to explore if children's biophilia scores differ based on their gender. Children's gender was coded as 0 and 1 for males and females, respectively to be used in the analysis.

### 3.7.2 Qualitative data analysis

All of the interview audio-types were transcribed at the beginning of the data analysis procedure. After that, as suggested by Creswell (2007), data analysis was done by both the researcher and one expert from early childhood education studying at Middle East Technical University, independently. Since the questionnaires measuring both children's and mothers' landscape preferences were open-ended, the researcher and the expert focused on to identify some common phrases, words, and sentences to

form codes based on the participants' responses to these questionnaires. Then, the coders compared their codes to get commonalities and differences between both groups of participants' codes by expecting almost a full agreement (Creswell, 2007). In fact, the codes were compared to increase the validity of the findings of the current research. The coded line segments as well as codes created by the coders were the same; therefore, there was a full consensus between the two independent coders.

During this process, both children's and mothers' reports were read by the researchers. After that, the main issues about children's and mothers' landscape preferences that appear in the explanations were summarized. Furthermore, the researcher compared both groups of the participants' reports to identify some common phrases, words, and sentences.

### 3.8 Summary of method

The summary of method includes two different tables. The first one includes the information of the participants and the name of the research instruments that are specifically implemented to each group (See table 3-8).

Table 3-8: Research instruments

| **Participants** | **Research instruments** |
|---|---|
| 105 preschool children | Biophilia measure |
| Sub-sample of 20 children | Children's landscape preference questionnaire |
| 20 mothers of the children in the sub-sample | Mothers' landscape preference questionnaire |

The second table includes the research questions of the study, data gathering methods to response each research question, data source, and the types of variables and data analysis methods that is used to analysis the collected data (See table 3-9).

Table 3-9: Research questions, data collection methods, data source and data analysis

| **Research Questions** | **Data Collection** | **Data Source** | **Variable Types/and Data Analysis** |
|---|---|---|---|
| Do children enrolling in natural or non-natural preschools significantly differ based on their biophilia scores? | BM<br>Observations of school grounds<br>Classification of school grounds as natural and non-natural | Quantitative | Descriptive Statistics<br>DV (biophilia scores)<br>IV (school ground type)<br>Independent Sample T-test |
| Do children's biophilia scores differ based on gender? | BM | Quantitative | |
| What are the children's landscape preferences in terms of outdoor setting type (water, park, open field/grassy area, forest) and levels of human influence (natural, maintained) and their reasons for choosing those preferences? | CLPQ | Quantitative<br>Qualitative | Descriptive Statistics |
| What are the children's ideas about the possible activities and the resource needs that they associated with their frequently chosen landscapes (educational landscapes and the landscapes they would like visit with their parents)? | CLPQ | Qualitative | Qualitative data analysis |
| How do children's biophilia scores differ based on their landscape preferences (personal, educational, with parents) in terms of levels of human influence (natural, maintained)? | BM<br>CLPQ | Quantitative | Descriptive Statistics (Mod) |
| What are the mothers' landscape preferences in terms of outdoor setting type (water, park, open field/grassy area, forest) and levels of human influence (natural, maintained) and their reasons for choosing those preferences? | MLPQ | Quantitative | Descriptive Statistics |
| What are the mothers' ideas about the possible activities and the resource needs that they associated with their frequently chosen landscapes (educational and the landscapes they visit with their children)? | MLPQ | Qualitative | Qualitative data analysis |
| How do children's and mothers' landscape preferences differ in terms of outdoor setting type (water, park, open field/grassy area, forest) and levels of human influence (natural, maintained)? | CLPQ<br>MLPQ | Quantitative<br>Qualitative | Descriptive Statistics |

Table 3-9: (cont'd)

| | | |
|---|---|---|
| How do children's and mothers' landscape preferences differ in terms of the reasons of their choosing of those frequently chosen landscapes? | CLPQ<br>MLPQ | Qualitative data analysis |
| How do children's and mothers' perceptions about the obstacles preventing them from visiting natural landscapes differ? | CLPQ<br>MLPQ | Qualitative data analysis |

BM: Biophilia Measures, CLP: Children's Landscape Preferences Questionnaire, MLP: Mothers' Landscape Preferences Questionnaire, DV: Dependent Variable, IV: Independent Variable

# CHAPTER 4

# FINDINGS

This chapter presents the findings regarding of the data analyses that explored 5-year-old children's level of biophilia and children's and their mothers' outdoor setting preferences. In essence, while results included both children and mother participants' landscape preferences independently, similarities and differences in both groups of the participants' landscape preferences considering the research questions were presented as well.

## 4.1 Children's biophilia scores by their school types and gender

Results showed that children's biophilia scores in terms of school type were pretty close and high averages with the mean scores 7.84 (SD=2.15) and 8 (SD=1.87) for children enrolling non-natural and natural preschools, respectively (See table 4-1).

Table 4-1: Children's biophilia scores by school type

| Descriptive Statistics | | | | | |
|---|---|---|---|---|---|
| Biophilia scores | N | Mean | Minimum | Maximum | SD |
| Natural | 50 | 8 | 2 | 11 | 1.87 |
| Non-natural | 55 | 7.84 | 3 | 11 | 2.15 |
| Overall | 105 | 7.9 | 2 | 11 | 2 |

After calculating children's biophilia scores, the independent sample t-test was conducted to explore if there is a statistically significant difference in biophilia scores of children enrolling nature or non-nature preschools. The interpretation of the

independent sample t-test is done in two steps: Firstly, the homogeneity of variance between children enrolling nature and non-nature preschools was determined using Levene's test for equality of variances. In the current study the significance value was .38, which was greater than .05. Therefore, the assumption of the equal variances was assumed. Secondly, there was no significant difference in biophilia scores for children enrolling non-natural preschools (M=7.84, SD=2.15) and children enrolling natural preschools (M=8, SD=1.87); *t (103)* =.41, *p*=.68 (two-tailed). The magnitude of differences in the means (mean difference= .16 95% CI: - .62 to .94 was small (eta squared= 0.01). Table 4-2 presents the summary of independent sample t-test for biophilia scores by school type. To sum up, it is meaning that children's biophilia scores did not differ based on the school type by whether they enrolling nature or non-nature preschools.

Table 4-2: Independent sample t-test for biophilia scores by school type

| Levene's Test Equality Variances | | | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig | t | Df | Sig (2-tailed) | Mean Dif. | Std Error Dif. | 95% interval of the difference | |
| | | | | | | | | | Lower | Upper |
| Total biophilia scores | Equal variances assumed | .78 | .38 | .41 | 103 | .68 | .16 | .38 | .-62 | .94 |
| | Equal variances not assumed | | | .41 | .97.5 | .69 | .16 | .39 | .-62 | .94 |

The independent sample t-test was also conducted to explore if children's biophilia scores differ based on gender. Results showed that children's biophilia scores in terms of gender were pretty close and high averages with the mean scores 8.13 (SD=1.87) and 7.76 (SD=2.15) for male and female children, respectively (See table 4-3).

Table 4-3: Children's biophilia scores by gender

| Descriptive Statistics | | | |
|---|---|---|---|
| Biophilia scores | N | Mean | SD |
| Male | 46 | 8.13 | 1.87 |
| Female | 59 | 7.76 | 2.15 |

The interpretation of the results of the independent sample t-test is done in two steps: Firstly, the homogeneity of variance between male and female children was determined using Levene's test for equality of variances. In the current study the significance value was .25, which was greater than .05. Therefore, the assumption of the equal variances was assumed. Secondly, there was no significant difference in biophilia scores for male (M=8.13, SD=1.87) and female children (M=7.76, SD=2.15); *t (103)* =.94, *p*=.35 (two-tailed). The magnitude of differences in the means (mean difference= .37 95% CI: - .41 to 1.15 was small (eta squared= 0.001). Table 4-4 presents the summary of independent sample t-test for biophilia scores by gender. To sum up, it is meaning that children's biophilia scores did not differ based on children's gender.

Table 4-4: Independent sample t-test for biophilia scores by gender

| Levene's Test Equality Variances | | | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | F | Sig | t | Df | Sig (2-tailed) | Mean Dif. | Std Error Dif. | 95% interval of the difference | |
| | | | | | | | | | Lower | Upper |
| Total biophilia scores | Equal variances assumed | 1.28 | .25 | .94 | 103 | .35 | .37 | .39 | .-41 | 1.15 |
| | Equal variances not assumed | | | .96 | 102.5 | .34 | .37 | .38 | .-39 | 1.13 |

## 4.2 Children's Most and Least Favorite Landscape Preferences in terms of Three Different Cases (personal, educational, and with parents)

This section includes the results of children's most and least preferred personal landscapes, the landscapes they would and would not like to visit with their teachers and classmates, and the landscapes they would and would not like to visit with their parents.

### 4.2.1 Children's most and least frequently chosen personal landscape preferences

The three settings marked by the highest frequencies of responses were selected by children as being their most favorite personal preferences. These were Setting 8 (a playground on a manmade rectangular pavement), Setting 5 (a water stream in a man-made concrete water bed with small stones on the edges), and Settings 3&10 (shallow and still water with grassy floor & wide open grassy field on the natural ground and no path), scoring n=13, n=11, and n=6, respectively (Settings 3 and 10 were selected by the same number of children participant children as their third most preferred personal settings). The three settings with the highest frequencies of responses selected by children as being their least favorite personal preferences were Settings 1&16 (open forest with no path & forestry area with a high density of young trees), Setting 12 (forestry area divided by an earth road that goes up to a hill), and Setting 7 (wide open grassy field with and no path), scoring n=12, n=10, and n=8, respectively (Settings 1 and 16 were selected by the same number of children participants as their first least preferred personal setting). Children's most and least favorite personal landscapes can be seen in the table 4-5.

To investigate the characteristics of children's most and least preferred personal settings in detail, children's preferences were first coded in terms of outdoor setting type (water, open field/grassy area, forest, and park) and levels of human influence (natural and maintained), and then frequencies were calculated. As seen on the table 4-6 and table 4-7, while most children selected an outdoor setting which included some water feature (setting type) and was maintained (levels of human influence) as their most favorite choices, they selected settings which included forest (setting type) and maintained (levels of human influence) as their least favorite preferences.

Table 4-5: Children's most and least preferred outdoor settings

| Children's Most Preferred Settings | | |
|---|---|---|
| **Personal settings** | **Educational settings** | **The settings children would like to visit with their parents** |
|  Photo #8 (n=13): playground on a manmade rectangular pavement |  Photo #8 (n=12): playground on a manmade rectangular pavement |  Photo #2 (n=12): natural park with picnic tables |
|  Photo #5 (n=11): water stream in a man-made concrete water bed with small stones on the edges |  Photo #13 (n=11): streaming water with some green vegetation on the edges |  Photo #5 (n=9): water stream in a man-made concrete water bed with small stones on the edges  Photo #8 (n=9): playground on a manmade rectangular pavement |
|  Photo #3 (n=6): shallow and still water with grassy floor  Photo #10 (n=6): wide open field with full of grass and no path |  Photo #5 (n=9): water stream in a man-made concrete water bed with small stones on the edges |  Photo #10 (n=7): wide open field with full of grass and no path |

Table 4-5: (cont'd)

| Children's Least Preferred Settings | | | | | |
|---|---|---|---|---|---|
| **Personal settings** | | **Educational settings** | **The settings children would like to visit with their parents** | | |
|  |  |  |  |  |  |
| Photo #1 (n=12): open forest with no path | Photo #16 (n=12): forestry area with a high density of trees | Photo #1 (n=16): open forest with no path | Photo #1 (n=13): open forest with no path | Photo #12 (n=13): forestry area divided by an earth road | Photo #16 (n=13): forestry area with a high density of trees |
|  |  | |  | | |
| Photo #12 (n=10): forestry area divided by an earth road | Photo #7 (n=14): wide open field with full of grass and no path | | Photo #7 (n=8): wide open field with full of grass and no path | | |
|  |  |  |  | | |
| Photo #7 (n=8): wide open field with full of grass and no path | Photo #12 (n=11): forestry area divided by an earth road | Photo #16 (n=11): forestry area with a high density of trees | Photo #6 (n=4): earth road with high density of colorful leaves on trees on both sides | | |

### 4.2.2 Children's most and least frequently chosen educational landscape preferences

Similarly, frequencies of responses selected by children as their three most and least preferred educational settings were used to establish their preferences as to the settings which they would like to visit with their teacher and classmates. The three settings with the highest frequencies of being selected by children as their most favorite educational preferences were Setting 8 (a playground on a manmade rectangular pavement), Setting 13 (streaming water with some green vegetation on the edges), and Setting 5 (a water stream in a man-made concrete water bed with small stones on the edges), scoring n=12, n=11, and n=9, respectively. The three settings with the highest frequencies of being selected by children as being their least favorite educational preferences were Setting 1 (open forest with no path), Setting 7 (wide open grassy field, and no path), and Settings 12&16 (forestry area divided by an earth road that goes up to a hill & forestry area with a high density of young trees), scoring n=16, n=14, and n=11, respectively. (Settings 12 and 16 were selected by the same number of children participants as their third least preferred educational settings). Table 4-5 presents the summary of children's most and least favorite educational landscape preferences with the calculated frequencies.

With regard to the outdoor setting type (water, open field/grassy area, forest, and park) and levels of human influence (natural and maintained) for their educationally most conducive settings, children's preferences fell into the categories of water (setting type) and maintained (levels of human influence). Children also selected the settings that fell into the categories of forest (setting type) and maintained (levels of human influence as their least favorite preferences when it comes to visiting the settings with their teacher and classmates (See table 4-6 and table 4-7).

### 4.2.3 Children's most and least frequently chosen landscape preferences that they would like to visit with their parents

The three settings with the highest frequencies of responses selected by children as their most preferred landscapes to visit with their parents were Setting 2 (natural park with picnic tables), Setting 5&8 (a water stream in a man-made concrete water bed with small stones on the edges & a playground on a man-made rectangular pavement), and Setting 10 (wide open grassy field on the natural ground and no path), scoring n=12, n=9, and n=7, respectively. (Settings 5 and 8 were selected by the same number of children participants as their second most preferred settings which they would like to visit with their parents). The three settings with the highest frequencies of responses selected by children as their least favorite preferences to visit with their parents were Settings 1&12&16 (open forest with no path & forestry area divided by an earth road that goes up to a hill & forestry area with a high density of young trees), Setting 7 (wide open grassy field and no path), and Setting 6 (earth road with high density of trees with colorful foliage on both sides), scoring n=13, n=8, and n=4, respectively. (Settings 1, 12, and 16 were selected by the same number of children participant children as their first least preferred settings which they would like to visit with their parents). The summary of children's most and least favorite landscapes that they would like to visit with their parents can be seen with the calculated frequencies in table 4-5.

With regard to the outdoor setting type (water, open field/grassy area, forest, and park) and levels of human influence (natural and maintained), children's most preferred landscapes that they mostly would like to visit with their parents fell into the categories of park (setting type) and natural (levels of human influence). Moreover, children's least preferred landscapes that they would not like to visit with their parents belonged to forest (setting type) and both maintained and natural (levels of human influence) (See table 4-6 and table 4-7).

### 4.2.4 Evaluation of children's most and least frequently chosen landscapes in terms of outdoor setting types and levels of human influence for all four cases

Based on the descriptive results indicated above (See table 4-4), it seems that there are some overlaps in children's different kinds of landscape preferences. In essence, Setting 5 (water stream in a man-made concrete water bed with small stones on the edges) was the common setting which children would like to prefer to visit personally, educationally, and with parents. Moreover, Setting 8 (a playground on a manmade rectangular pavement) was among the settings which children would like to visit personally, educationally and with their parents. Setting 2 (a natural park with picnic tables) was the landscape which children would only like to visit with parents. Setting 3 (shallow and still water with grassy floor) was also the landscape which children would like to visit only personally. Setting 10 (wide open field with full of grass on the ground and no path) was among the settings which children would like to visit personally, and with their parents. Lastly, Setting 13 (streaming water with some green vegetation on the edges) was the landscape which children would like to visit only with their teacher and classmates.

Regarding children's least preferred landscapes, all three settings 1&12&16 (open forest with no path & forestry area divided by an earth road that goes up to a hill & forestry area with a high density of young trees) selected by children as their least preferred personal settings were also selected as their least preferred settings that they would like to visit with the teacher and classmates, and with parents. Furthermore, while Setting 7 (wide open grassy field and no path) was among children's least preferred settings in all cases, Setting 6 (earth road with high density of colorful leaves on trees with colorful foliage on both sides) was the only one which they would not like to visit with parents.

Since there was no common setting considering children's most and least preferred landscapes in terms of photo numbers of the particular settings, no comparison can be made. Based on this result it can be said that there is a consistency

between children's selections of their most and least preferred landscapes. In other words, children could clearly differentiate their selections for most and least favorite landscapes.

To investigate the characteristics of children's most and least preferred settings in detail, children's responses were coded in terms of outdoor setting type (water, open field/grassy area, forest, and park) and levels of human influence (natural and maintained). With regard to the total frequencies of children's most favorite landscapes in terms of outdoor setting type, most children selected an outdoor setting that included a water feature. Moreover, park settings had the same frequencies with water settings as children's favorite outdoor setting types in all cases. Furthermore, open fields/grassy areas were also among children's most favorite landscapes except in the settings they would like to visit with their teacher and classmates. There was no forest setting among children's most favorite preferences for any of the three cases. On the other hand, with regard to the total frequencies of children's most favorite landscapes in terms of levels of human influence, the frequency of maintained outdoor settings that children would like to visit in all cases was slightly more than natural ones. Table 4-6 presents the summary of children's most favorite landscapes that they would like to visit in all three cases in terms of both outdoor setting type and levels of human influence with the calculated frequencies.

Table 4-6: Frequency of children's most frequently chosen landscapes by outdoor setting type and levels of human influence

| | Children's selecting setting as personal preference | Children's selecting settings as educational preference | Children's selecting setting to visiting with their parents | Total (f) |
|---|---|---|---|---|
| ***Outdoor setting type*** | | | | |
| Water | 17 | 20 | 9 | 46 |
| Park | 13 | 12 | 21 | 46 |
| Open field/grassy area | 6 | 0 | 7 | 13 |
| Forest | 0 | 0 | 0 | 0 |
| ***Levels of human influence*** | | | | |
| Maintained | 24 | 21 | 18 | 63 |
| Natural | 12 | 11 | 19 | 42 |

With regard to the total frequencies of children's least favorite landscapes in terms of outdoor setting type, forest settings had the highest frequency for all cases. Moreover, open fields/grassy areas were among children's least favorite landscapes. On the other hand, considering the total frequencies of children's least favorite landscapes in terms of levels of human influence, the frequencies of the maintained settings in children's least favorite preferences in all cases were more than natural ones. Table 4-7 presents the summary of children's least favorite landscapes that they would like to visit in all three cases in terms of both outdoor setting type and levels of human influence with the calculated frequencies.

Considering children's most and least frequently preferred landscapes together in terms of outdoor setting type, it was clear that the landscapes having some water and park settings were children's most favorite ones. Moreover, since open field/grassy areas were included in both children's most and least favorite outdoor settings in different cases, it cannot be certainly said that children do like or do not like to visit open field/grassy areas. Lastly, forest settings did not included in children's most favorite landscapes in any case, but such settings had the highest frequency in children's least favorite landscapes. Therefore, it is clear that children do not prefer to visit forest settings. On the other hand, considering children's most favorite preferences in terms of levels of human influence, the frequency of maintained outdoor settings that children would like to visit in all cases was more than natural ones. However, the results also revealed that the frequencies of the maintained settings in children's least favorite preferences in all cases were far more than natural ones. Therefore, there is no certain conclusion that children like to visit either natural or maintained landscapes. In other words, children seemed to like both natural and maintained landscapes to visit in different cases.

Table 4-7: Frequency of children's least frequently chosen landscapes by outdoor setting type and levels of human influence

| | Children's selecting setting as personal preference | Children's selecting settings as educational preference | Children's selecting setting to visiting with their parents | Total (f) |
|---|---|---|---|---|
| ***Outdoor setting type*** | | | | |
| Forest | 34 | 38 | 43 | 115 |
| Open field/grassy area | 8 | 14 | 8 | 30 |
| Park | 0 | 0 | 0 | 0 |
| Water | 0 | 0 | 0 | 0 |
| ***Levels of human influence*** | | | | |
| Maintained | 32 | 38 | 39 | 109 |
| Natural | 10 | 11 | 17 | 38 |

## 4.3 Children's ideas about the reasons of their most and least frequently chosen landscape preferences

In this section, the results for the children's most and least preferred personal landscapes, educational landscapes, and the landscapes that they would or would not like to visit with their parents are represented.

### 4.3.1 Children's ideas about the reasons of their most and least frequently chosen personal landscape preferences

Children's responses to the questions about the characteristics of their most and least preferred personal settings were used to determine the reasons that make these settings their most and least attractive personal choices. The most frequent reason as to why Settings 8, 5, and 3&10 were the most preferred personal settings was that these settings offer various kinds of opportunities for children to engage in different kinds of unstructured play activities (n=21), including playing with natural elements such as soil, tree branches, stones and water (10); vigorous activities such as running and jumping (6), playing with personal toys which they brought to the settings (5), The

remaining coding together with the calculated frequencies are given in Table 4-8. Participants' responses reflecting their ideas about the reasons of their most favorite personal settings were represented below through the examples from their reports. The abbreviations Pc refers the particular number of the child participants, the second P in accordance with the numbers refers the number of the particular photograph used as a data collection material for the current study.

> "I would play with toys in the park and I would have so much fun." ($P_c$1, P8)
> "It is a nice place to go on a picnic. I can bring my truck from home to play with it in this setting. I can fill my toy truck with stones and water and ride it." ($P_c$18, P5)
> "If I visit such a setting, I would play with water and stones. I would play skipping stones game. I would find a flat stone around and throw it across water and watch how it bounces off the surfaces." ($P_c$10, P3)

On the other hand, the most frequent reason as to why Settings 1&16, 12 and 7 were the least preferred personal setting was associated with safety hazards (n=30). The safety hazards that children reported were the possibility of injuries (n=14) and to getting lost (n=2) that high density of trees, tree branches, and bushes may lead to (n=12), and desolated environment where there is high possibility to come across see dangerous wild animals around (2). The remaining coding together with the calculated frequencies is given in Table 4-8. Some of the reports of the children about the reasons of their least frequently chosen personal setting preferences were as follows:

> "There are thorns around. They might sting us. We cannot play comfortably." ($P_c$20, P1)
> "There are too many bushes and stones. I can fall down and any part of my body may bleed." ($P_c$4, P12)
> "This place seems very scary because of very mountainous area. There might be wild animals that may hurt us." ($P_c$19, P7)

### 4.3.2 Children's ideas about the reasons of their most and least frequently chosen educational landscape preferences

In order to determine children's ideas about the reasons of their most and least preferred educational settings, their responses to the questions about the characteristics of their most and least preferred settings to visit with their teacher and classmates were investigated.

The reason why Settings 8, 13, and 5 were most preferred educational settings was about the opportunities that these settings may offer children for unstructured play (n=32) including playing with playground toys (n=12), playing with natural elements (such as stones, water, or soil) they may find in these settings (n=12), and toys they may bring from their school (n=8). Table 4-8 summarizes the remaining coding with the calculated frequencies. Some of the examples of the participant children's ideas about the reasons of their most favorite educational settings were as follows:

"I would play in the playground with my friends. We would have so much fun." ($P_c$6, P8)
"I would build a ship by using leaves and put it on water to watch it floating." ($P_c$4, P13)
"We would put our hands and feet into the water. We would play water war." ($P_c$8, P5)

On the other hand, the most frequent reason why Settings 1, 7, and 12&16 were children's least preferred educational settings was related to possible safety hazards in such settings (n=38) which is mainly related to physical injuries based on high density of trees, tree branches, and bushes (n=35), and the possibility to come across wild animals in the desolated environments (n=3). The remaining coding together with the calculated frequencies are given in Table 4-8. Some of the reports of the children about the characteristics of their least preferred educational settings were as follows:

"We may catch onto thorns and we may be hurt." ($P_c$11, P1)
"Our hair may get tripped in tree branches. We cannot sit on the ground because the branches and thorns may prick us." ($P_c$6, P12)
"This place may be dangerous because we might come across wild animals and they may catch and bite us" ($P_c$6, P16)

Table 4-8: The reasons of children's most and least frequently chosen landscape preferences

| Reasons for *most* preferred (frequency) | Reasons for *least* preferred (frequency) |
|---|---|
| ***Personal preferences*** | |
| Opportunities for engaging different kinds of unstructured play activities (21) | Safety hazards (30) |
| Opportunities for children to have fun and playing with playground toys (13) | Inappropriate ground/environment making to move/play hard (15) |
| The presence of water (9) | Lack of greenery (7) |
| The presence of both water and green space (5) | Lack of things to do/not attractive for children (6) |
| Familiar/accessible to home (2) | Unfamiliarity (2) |
| | Lack of place to sit (1) |
| ***Educational preferences*** | |
| Opportunities for unstructured play (32) | Safety hazards (38) |
| Opportunities for children to have fun (12) | Inappropriate ground/environment making to move/play hard (16) |
| Opportunities for unstructured learning about nature (9) | Lack of greenery (8) |
| Opportunities for structured play (2) | Lack of things to do/not attractive for children (7) |
| | Unfamiliar/too far away from home (1) |
| ***Preferences to visiting with their parents*** | |
| Opportunities for unstructured play (37) | Safety hazards (32) |
| Opportunities to go on a picnic (13) | Lack of greenery (10) |
| Opportunities for unstructured learning about nature (6) | Lack of things to do/not attractive for children (8) |
| Familiar/accessible to home (4) | Inappropriate ground/environment making to move/play hard (7) |
| | Unfamiliar/too far away from home (2) |

### 4.3.3 Children's ideas about the reasons of their most and least frequently chosen landscapes that they would like to visit with their parents

Children's responses to the questions about the characteristics of their most and least preferred settings which they would like to visit with their parents were used to identify the reasons that make these settings as their most and least preferred choices. The main reason why children selected Settings 2, 5&8, and 10 as the most appropriate ones to visit with their parents was related to the affordances of the settings for children's unstructured play (n=37). Children mostly reported that these settings were appropriate to play with playground toys freely (n=16), playing with natural elements (n=12) and personal toys (n=5), and getting involved vigorous activities such as running, jumping, and climbing (n=4). The remaining coding

together with the calculated frequencies are given in Table 4-8. Quotation of the participant children's ideas regarding the reasons of their most preferred landscapes that they would like to visit with their parents were exemplified below:

"I would bring my toys to play in this setting. For example, we would sit at a picnic table with my baby dolls. The huts of my babies would be under the tables and above it would be the roof; we would go around the roof to explore the environment together." ($P_c$17, P2)
"I love sliding over and over again." ($P_{c7, P8}$)
"I would bring my toys such as a ball, a kite, and a toy truck to this place to playing." ($P_c$2, P10)

On the other hand, the most frequent reason why settings 1&12&16, 7, and 6 were selected by children as the least preferred ones to visit with their parents was associated with safety hazards (n=32). Safety hazards that children reported included the possible injury risks because of high density of trees, tree branches, and bushes (n=27), the possibility of getting lost in desolated environment (n=3), the possibility to come across wild animals which may hurt people (n=1), and the possibility of injury because of the possible risk of falling trees (n=1). The remaining coding together with the calculated frequencies are given in Table 4-8. Some of children's reports about the settings as their least favorite landscapes they would like to visit with their parents were as follows:

"There are too many braches in this setting. If we fall down, we would get injured." ($P_c$16, P1)
"Since there is not enough open space, we cannot move or play freely." ($P_c$2, P16)
"Since there is a slope, we cannot play comfortably. Our balls will keep escaping constantly or we may fall down while going up." ($P_c$1, P12)
"There are stones around. I might prick the stones and fall down if I want to run around the settings." ($P_c$13, P7)
"I cannot play here; a car might pass and hit me." ($P_c$6, P6)

## 4.4 Children's ideas about the possible activities and the resource needs that they associated with their most frequently chosen landscapes

Children's most frequently preferred activity was determined based on their responses for the open-ended questions regarding what would they do in the settings they selected as their favorite three choices to visit with their parents, and their teacher and classmates. The most frequently quoted activity that children would like to practice at all settings they would like to visit with their parents as well as their teacher

and classmates was unstructured play (i.e., playing with toys and natural elements). The other activities including, picnicking, unstructured learning about nature, and structured activities were also common for children considering their preferred activities they would like to do either with their parents or their teacher and classmates. In both cases, children's reports included making a paper boat as an art activity, or investigating plants or animals as a science activity for structured activities with either parents or with the teacher. Moreover, their reports also included watching a paper boat while floating or a leaf floating as an example for unstructured learning about nature. The only difference in both cases was the frequency of the activities indicated by children. All of the coding together with calculated frequencies can be seen in tables 4-9 and 4-10.

Table 4-9: Frequency of possible activities that children can undertake in the settings they mostly preferred with their parents

| Activities | Park | Forest | Water | Open field /grassy area | Total by activity *(f)* |
|---|---|---|---|---|---|
| Unstructured play | 14 | - | 10 | 13 | 37 |
| Picnic | - | - | 6 | 6 | 12 |
| Structured activities | - | - | 4 | 4 | 8 |
| Unstructured learning about nature | - | - | 4 | - | 4 |
| Total by activity considering outdoor setting type (f) | 14 | | 24 | 23 | |

With regard to the outdoor setting type, there was no activity that children would like to experience in forest when they visit outdoor setting with their parents. In essence, most often children voiced their preferences as to doing some activities in the landscapes that fell into the categories of water, and park, respectively. Moreover, there was no activity that children would like to do in forest settings or open fields/grassy areas when they visit such settings with their teacher and classmates. In fact, children reported that they would mostly like to practice their preferred activities with their teachers and classmates in the settings including some water and a park setting, respectively. Table 4-9 and Table 4-10 represent the outdoor setting types that

children would engage in different kinds of activities either with their parents or the teachers and the friends with the calculated frequencies, respectively.

Table 4-10: Frequency of possible activities that children can undertake in the educationally most conducive settings by outdoor settings type*

| Activities | Park | Forest | Water | Open field /grassy area | Total by activity *(f)* |
|---|---|---|---|---|---|
| Unstructured play | 13 | - | 35 | - | 48 |
| Unstructured learning about nature | - | - | 8 | - | 8 |
| Structured activities | - | - | 3 | - | 3 |
| Picnic | - | - | 2 | - | 2 |
| Total by activity considering outdoor setting type (*f*) | 13 | - | 48 | - | |

* Each participant could give more than one suggestion for activities.

Children's reports with regard to the resources they would need in their most preferred settings were coded as materials and safety. The most frequently needed resources that children would like to bring to the settings when they visit the settings with their parents and with their teacher and classmates were common and included picnic supplies and toys. Moreover, other resource needs were also almost common for both cases and included specific equipment to make an activity (such as craft materials, microscopes, and bags/jars for collecting nature items), and an umbrella or a hat. All of the coding for the resource needs that children would need when they visit their most favorite landscapes with their parents were summarized in table 4-11.

Table 4-11: Required elements for the children to bring to their most preferred setting to visit with parents*

| Required elements to bring to the setting | Required to achieve their educational outcomes (*f*) |
|---|---|
| ***Materials*** | |
| Picnic supplies | 17 |
| Personal toys | 16 |
| Field equipment specific to activity | 7 |
| Mat to sit on | 6 |
| Only nature without any specific material is sufficient | 3 |
| Camping supplies | 3 |
| Camera | 1 |
| ***Safety related*** | |
| Umbrella or hat to providing shaded area | 3 |

* Each participant could give more than one suggestion for activities.

When children's reports were compared for both cases, they indicated that natural materials in natural outdoor settings would be enough for them to play only when they visit such settings with their parents. In other words, children would not need extra material in natural outdoor settings when they visit such environments with their parents. Lastly, the extra materials that children would need when they visit the settings with their parents rather than their teacher and classmates were a mat to sit on, camping supplies (including a tent, sleeping bag, and foods), and a camera. All of the coding for the resource needs that children would need when they visit their most favorite landscapes with their teachers and friends were summarized in table 4-12.

Table 4-12: Required elements for the children to bring to their most preferred setting to visit with the teacher and classmates

| Required elements to bring to the setting | Required to achieve their educational outcomes (*f*) |
|---|---|
| ***Materials*** | |
| Toys | 14 |
| Picnic supplies | 12 |
| Equipment specific to different activities | 14 |
| ***Safety related*** | |
| Umbrella or hat to providing shaded area | 1 |

## 4.5 Children's biophilia scores based on their landscape preferences in terms of levels of human influence

In order to understand how children's biophilia differ based on their landscape preferences (personal, educational, and with parents), children's most and least 3 landscape preferences were coded as natural or maintained. After this coding, children's landscape preferences were gathered into three categories, which are natural, maintained, and undecided. The details of the categorization can be seen in chapter 3, on table 3-5).

After defining children's landscape preferences in terms of levels of human influence, the mod score of the participant children's biophilia scores was calculated and found as 7 (See table 4-13).

Table 4-13: The mod score of children's biophilia scores

| Biophilia scores | |
|---|---|
| N | 20 |
| Mode | 7.00 |
| Std. Deviation | 1.91669 |
| Minimum | 4.00 |
| Maximum | 11.00 |

After the mod score was calculated, it was taken as the reference point. Then, the mod score was taken as the reference point to decide the level of children's biophilia. While children whose biophilia scores were less than 7 were attributed to lowly biophilic, children whose biophilia scores were more than 7 were attributed to highly biophilic (See table 4-14). To sum up, it can be said that most of the children were highly biophilic regardless of having different landscape preferences in terms of levels of human influence.

Table 4-14: Children's levels of biophilia based on their landscape preferences in terms of levels of human influence*

| Children's personal landscape preferences | Children's educational landscape preferences | Children's landscape preferences they would like to visit with their parents | Children's biophilia scores | Children's levels of biophilia |
|---|---|---|---|---|
| 2 | 2 | 2 | 4.00 | Lowly biophilic |
| 2 | 2 | 2 | 9.00 | Highly biophilic |
| 2 | 2 | 2 | 7.00 | Highly biophilic |
| 2 | 2 | 2 | 8.00 | Highly biophilic |
| 2 | 2 | 2 | 11.00 | Highly biophilic |
| 2 | 2 | 2 | 8.00 | Highly biophilic |
| 1 | 2 | 2 | 7.00 | Highly biophilic |
| 2 | 2 | 0 | 10.00 | Highly biophilic |
| 2 | 2 | 2 | 9.00 | Highly biophilic |
| 0 | 2 | 1 | 11.00 | Highly biophilic |
| 2 | 2 | 2 | 6.00 | Lowly biophilic |
| 2 | 0 | 2 | 6.00 | Lowly biophilic |
| 0 | 2 | 2 | 10.00 | Highly biophilic |
| 0 | 0 | 2 | 7.00 | Highly biophilic |
| 0 | 0 | 2 | 7.00 | Highly biophilic |
| 2 | 2 | 0 | 7.00 | Highly biophilic |
| 0 | 0 | 2 | 10.00 | Highly biophilic |
| 2 | 2 | 0 | 8.00 | Highly biophilic |
| 2 | 0 | 0 | 8.00 | Highly biophilic |
| 2 | 2 | 2 | 5.00 | Lowly biophilic |

*1 (natural), 0 (non-natural), 2 (undecided).

## 4.6 The mothers' most and least frequently chosen landscape preferences in terms of three different cases (personal, educational, and with children)

This section includes the results of mothers' most and least preferred personal landscapes, the landscapes they would and would not like for their children to visit the settings with their teachers and classmates, and the landscapes they would and would not like to visit with their children.

### 4.6.1 The mothers' most and least frequently chosen personal landscape preferences

The three settings with the highest frequencies of responses selected by mothers as being their three favorite personal choices to visit were Setting 13 (streaming water with some green vegetation on the edges), Setting 6 (earth road with high density of trees with colorful folige on both sides), and Setting 2, scoring n=12, n=10, and n=9, respectively. The three settings with the highest frequencies of responses selected by mothers as being their least favorite personal choices to visit were Setting 12 (forestry area divided by an earth road that goes up to a hill), Setting 16 (forestry area with a high density of young trees), and Settings 1&8 (open forest with no path & a playground on a man-made rectangular pavement), scoring n=11, n=10, and n=8, respectively. (Settings 1 and 8 were selected by the same number of participant mothers as their third least preferred personal settings). Table 4-15 summarizes the participant mothers' most and least landscape preferences in all cases.

Table 4-15: Mothers' most and least frequently chosen outdoor settings

| Mothers' Most Preferred Settings | | | | |
|---|---|---|---|---|
| **Personal settings** | **Educational settings** | | **The settings children would like to visit with their parents** | |
|  |  | |  | |
| Photo #13 (n=12): streaming water with some green vegetation on the edges | Photo #8 (n=14): playground on a manmade rectangular pavement | | Photo #8 (n=12): playground on a manmade rectangular pavement | |
|  |  | |  |  |
| Photo #6 (n=10): earth road with high density of colorful leaves on trees on both sides | Photo #2 (n=12): natural park with picnic tables | | Photo #2 (n=8): natural park with picnic tables | Photo #13 (n=8): streaming water with some green vegetation on the edges |
|  |  |  |  |  |
| Photo #2 (n=9): natural park with picnic tables | Photo #3 (n=7): shallow and still water with grassy floor | Photo #10 (n=7): wide open field with full of grass and no path | Photo #3 (n=7): shallow and still water with grassy floor | Photo #10 (n=7): wide open field with full of grass and no path |

Table 4-15: (cont'd)

| Mothers' Least Preferred Settings | | |
|---|---|---|
| **Personal settings** | **Educational settings** | **The settings children would like to visit with their parents** |
|  Photo #12 (n=11): forestry area divided by an earth road |  Photo #12 (n=16): forestry area divided by an earth road |  Photo #12 (n=13): forestry area divided by an earth road |
|  Photo #16 (n=10): forestry area with a high density of trees |  Photo #16 (n=11): forestry area with a high density of trees |  Photo #15 (n=10): two ornamental pools with dry reeds and small stones inside |
|   Photo #1 (n=8): open forest with no path / Photo #8 (n=8): playground on a manmade rectangular pavement |  Photo #13 (n=8): streaming water with some green vegetation on the edges |   Photo #1 (n=9): open forest with no path / Photo #16 (n=9): forestry area with a high density of trees |

To explore the characteristics of the most and least frequently chosen personally preferred settings in detail, mothers' responses were also coded considering outdoor setting type (water, open field/grassy area, forest, and park) and levels of human influence (natural and maintained). With regard to the most frequently chosen personal preferences, most of the participants selected an outdoor setting which included a water feature (setting type) and natural landscapes (levels of human influence), while the least frequently chosen setting included forest (setting type) and was maintained (levels of human influence). The remaining frequencies of mothers' most and least preferred settings by outdoor setting type and levels of human influence can be seen in tables 4-16 and 4-17.

### 4.6.2 The mothers' most and least frequently chosen educational landscape preferences

Similarly, frequencies of mothers' responses as to their three most and least preferred educational settings were used to establish which settings were perceived by them as the most and least appropriate for their children to visit with the teacher and classmates. According to the results, the three settings with the highest frequencies of responses selected by mothers as their favorite educational settings were Setting 8 (a playground on a manmade rectangular pavement), Setting 2 (a natural park with picnic tables), and Settings 3&10 (shallow and still water with grassy floor & wide open grassy field on the natural ground and no path), scoring n=14, n=12, and n=7, respectively. (Settings 3 and 10 were selected by the same number of mother participants as their third most preferred educational settings). The three settings with the highest frequencies of being selected by mothers as being their least favorite educational settings were Setting 12 (forestry area divided by an earth road that goes up to a hill), Setting 16 (forestry area with a high density of young trees), and Setting 13 (streaming water with some green vegetation on the edges), scoring n=16, n=11, and n=8, respectively.

To investigate the participants' ideas about the characteristics of educationally most conducive settings in more detail, the participants' responses were also coded

regarding outdoor setting type and levels of human influence. Considering the responses for educationally conducive settings, while a park (setting type) and natural (levels of human influence) were perceived as the most appropriate by mothers for their children to visit with the teacher and classmates, forest (setting type) and maintained (levels of human influence) were perceived as the least appropriate educational choice. The remaining frequencies of the mothers' most and least preferred educational settings classified by outdoor setting type and levels of human influence are given in table 4-16 and table 4-17.

### 4.6.3 The mothers' most and least frequently chosen landscapes that they would like to visit with their children

The three settings with the highest frequencies of responses selected by mothers as being their favorite settings which they would like to visit with their children were Setting 8 (a playground on a manmade rectangular pavement), Settings 2&13 (a natural park with picnic tables & streaming water with some green vegetation on the edges), and Settings 3&10 (shallow and still water with grassy floor & wide open grassy field on the natural ground and no path), scoring n=12, n=8, and n=7, respectively. (While Settings 2 and 13 were selected by the same number of mother participants as their second favorite educational settings, Settings 3 and 10 were selected by the same number of mother participants as their third favorite ones). The three settings with the highest frequencies of responses chosen by mothers as their least preferred settings which they would like to visit with their children were Setting 12 (forestry area divided by an earth road that goes up to a hill), Setting 15 (two ornamental pools with dry reeds and small stones inside), and Settings 1&16 (open forest with no path & forestry area with a high density of young trees), scoring n=13, n=10, and n=9, respectively.

With regard to the outdoor settings type and levels of human influence, mothers' preferences as to a place which they would like to visit with their children were analyzed and frequencies were calculated. The results showed that while a park (setting type) and natural (levels of human influence) were perceived as most

appropriate to visiting with their children; forest (setting type) and maintained (levels of human influence) were perceived as the least appropriate ones. The remaining frequencies of mothers' most and least frequently chosen settings categorized by outdoor setting type and levels of human influence are given in tables 4-16 and 4-17.

### 4.6.4 Evaluation of mothers' most and least frequently chosen landscapes in terms of outdoor setting types and levels of human influence for all four cases

Based on the descriptive results indicated above (See table 4-15), it seems that there are some overlaps in mothers' preferences as to different kinds of landscapes. To demonstrate, Setting 2 (a natural park with picnic tables) was the common setting both mothers would like to visit personally and they would also prefer for their children to visit with their teacher and classmates. While Setting 13 (streaming water with some green vegetation on the edges) was among mothers' most frequently chosen landscape preferences except for their educational choices, Setting 3 (shallow and still water with grassy floor) was among their most preferred settings except for their personal choices. Moreover, Settings 8 (a playground on a manmade rectangular pavement) and 10 (wide open grassy field on the natural ground and no path) were the common settings which they would like to visit with their children and for their children to visit with their teacher and classmates. Also, Setting 6 (earth road with high density of trees with colorful foliage on both sides) was the setting which mothers would personally like to visit.

With regard to the least preferred settings, Setting 12 (forestry area divided by an earth road that goes up to a hill) and Setting 16 (forestry area with high density of young trees) were commonly the least preferred settings which mothers would not like to prefer to visit at all. Moreover, Setting 1 (open forest with no path) was among the least preferred settings of mothers except for their educational preferences. While Setting 8 (a playground on a manmade rectangular pavement) was selected by mothers as being the only one of their own least preferred personal settings, Setting 13 (streaming water with some green vegetation on the edges) was only among their educational settings. Setting 15 (two ornamental pools with dry reeds and small stones

inside) was also reported by mothers as the only one among their least favorite settings which they would like to visit with their children.

When mothers' most and least preferred settings were compared, it was clear that Setting 13 (streaming water with some green vegetation on the edges) was among their most preferred settings except for their educational choices and it was only among their least preferred educational settings. Furthermore, Setting 8 (a playground on a manmade rectangular pavement) was among mothers' educational preferences and the settings which they would like to visit with their children, but it was among their least favorite personal choices.

To investigate the characteristics of mothers' most and least preferred settings in detail, their responses were coded in terms of outdoor setting type (water, open field/grassy area, forest, and park) and levels of human influence (natural and maintained). With regard to the total frequencies of mothers' most favorite landscapes in terms of outdoor setting type, park settings had the highest frequency. Moreover, the landscapes having some water was the second outdoor setting type preferred by mothers for all cases. Furthermore, forest settings were also among mothers' most favorite landscapes except in their educational preferences and the landscapes to visit with their children. Open fields/grassy areas were also among the mothers' most favorite landscape preferences except in their personal landscape preferences. On the other hand, with regard to the total frequencies of mothers' most favorite landscapes in terms of levels of human influence, the frequency of natural outdoor settings that they would like to visit in all cases was far more than maintained ones. Table 4-16 presents the summary of mothers' most favorite landscapes that they would like to visit in all three cases in terms of both outdoor setting type and levels of human influence with the calculated frequencies.

Table 4-16: Frequency of mothers' most frequently chosen landscapes by outdoor setting type and levels of human influence

| | Mothers' selecting settings as personal preferences | Mothers' selecting settings as educational preference | Mothers' selecting setting to visiting with their children | Total (f) |
|---|---|---|---|---|
| ***Outdoor setting type*** | | | | |
| Park | 9 | 26 | 20 | 58 |
| Water | 12 | 7 | 15 | 34 |
| Open field/grassy area | 0 | 7 | 7 | 14 |
| Forest | 10 | 0 | 0 | 10 |
| ***Levels of human influence*** | | | | |
| Maintained | 10 | 14 | 12 | 36 |
| Natural | 21 | 26 | 30 | 77 |

With regard to the total frequencies of mothers' least favorite landscapes in terms of outdoor setting type, forest settings had the highest frequency for all cases. Moreover, water settings were among mothers' least favorite landscapes except in their personal landscape preferences. Similarly, park settings were also among the mothers' least preferred landscapes except in their personal landscape preferences. On the other hand, considering the total frequencies of mothers' least favorite landscapes in terms of levels of human influence, the frequencies of the maintained settings was more than natural ones in all cases. Table 4-17 presents the summary of mothers' least favorite landscapes that they would like to visit in all three cases in terms of both outdoor setting type and levels of human influence with the calculated frequencies.

Considering mothers' most and least frequently preferred landscapes together in terms of outdoor setting type, it was clear that the landscapes having some water and park settings were mothers' most favorite ones. Moreover, since forest settings were included in both mothers' most and least favorite outdoor settings in different cases, it cannot be certainly said that mothers do like or do not like to visit forest settings. Lastly, since open fields/grass areas did not included in mothers' least favorite landscapes in any case, it can be certainly said that open fields/grassy areas would be preferred by mothers in some cases. On the other hand, considering mothers' most favorite preferences in terms of levels of human influence, the frequency of natural outdoor settings was more than maintained ones in all cases. The results also revealed

that the frequencies of the maintained settings was more than natural ones in children's least favorite preferences in all cases. Therefore, there is a certain conclusion that mothers would prefer to visit natural landscapes over maintained ones.

Table 4-17: Frequency of mothers' least frequently chosen landscapes by outdoor setting type and levels of human influence

| | Mothers' selecting setting as personal preference | Mothers' selecting as educational preference | Mothers' selecting setting to visiting with their children | Total (f) |
|---|---|---|---|---|
| ***Outdoor setting type*** | | | | |
| Forest | 29 | 27 | 31 | 87 |
| Water | 0 | 8 | 10 | 18 |
| Park | 8 | 0 | 0 | 8 |
| Open field/grassy area | 0 | 0 | 0 | 0 |
| ***Levels of human influence*** | | | | |
| Maintained | 19 | 24 | 23 | 66 |
| Natural | 18 | 11 | 18 | 47 |

## 4.7 The mothers' ideas about the reasons of their most and least frequently chosen landscape preferences

In this section, the results for the mothers' most and least preferred personal landscapes, educational landscapes, and the landscapes that they would or would not like to visit with their children are represented.

### 4.7.1 The mothers' ideas about the reasons of their most and least frequently chosen personal landscape preferences

The coding of the participant mothers' reports to the questions about the characteristics of their most and least preferred personal settings were used to determine the reasons that make these settings their most and least preferred personal choices. The most frequent reasons as to why Settings 13, 6, and 2 were mothers' most

preferred personal settings were that these settings seemed not only natural (n=22), but also relaxing that might give a sense of calmness and peace (n=23). The remaining coding together with the calculated frequencies are given in table 4-18. Some of the participant mothers explained their ideas about why they selected particular settings as their most favorite ones in the following excerpts:

> "Being in such a setting which offers combination of water and green would give me a peace of mind." ($P_m$12, P13).
> "I would feel good and relax in such a natural green field where I could watch running water and hear its' splashing." ($P_m$2, P13)
> "If I were in such a setting, I would feel the effect of being close to nature that would give me a sense of relaxation and peace." ($P_m$11, P6)
> "It is a beautiful and natural place to relax and take a rest." ($P_m$1, P2)

On the other hand, the most frequent reason as to why Setting 12, 16, 1&8 were the least preferred personal settings was associated with safety hazards (n=34). In essence, while most of the participants (n=24) mentioned the risk of physical injuries because of high density of trees, tree branches and bushes, a few of them (n=5) mentioned desolated environment where they might come across and feel afraid of wild animals (n=5). The remaining coding together with the calculated frequencies are given in table 4-27. Some of the reasons of mothers' least frequently chosen preferences for the particular settings were as follows:

> "The ground is not suitable even for walking around. This setting is subject to risks of possible injuries to different body parts because of the possibility of falling down from the slope; besides dry tree branches may sting to our body." ($P_m$3, P12)
> "I would feel like I am going to find myself attacked by a wild dog or a wolf attacks and nobody would hear my screams in such a setting." ($P_m$ 2, P16)
> "This setting has some characteristics that make it dangerous and difficult to see around; such as having a slope, and a lot of bushes." ($P_m$20, P1)

### 4.7.2 The mothers' ideas about the reasons of their most and least frequently chosen educational landscape preferences

In order to determine the mothers' ideas about the reasons of their most and least preferred educational settings, their responses to the questions about the characteristics of their frequently selected landscapes for their children to visit with their teachers and

classmates were investigated. The reason why Settings 8, 2, and 3&10 were the most preferred educational settings was that there were lots of opportunities for children to experience unstructured play (n=34) in such settings. Unstructured play, that was reported as the reason by almost half of the participants, referred to playing with playground toys (n=18). Another frequent unstructured activity that mothers educationally preferred for their children was free play with natural materials such as stones, leaves and water (n=16). The remaining coding together with the calculated frequencies are given in table 4-18. Some of the examples of the participant mothers' ideas about the reasons why they selected some particular settings as their most favorite educational settings were as follows:

> "Since playground toys are appealing to children, children may have opportunities to have fun and play with their friends freely." (Pm3, P8)
> "A beautiful area where children can play with a ball and fly their kites." (Pm12, P2)
> "Children can move or run comfortably in such a wide open area." (Pm15, P10).

On the other hand, the most frequent reason why Settings 12, 16, and 13 were mothers' least preferred educational settings was related to safety hazards (n=39). The most frequently reported safety hazards by mothers were possible injuries of body parts because of the high density of trees, tree branches and bushes (n=21), desolated environment that increases the risk of getting lost (n=10), and possible dangers related to water (n=8). The remaining coding together with the calculated frequencies are given in Table 4-18. Some of the reasons for mothers' least frequently chosen preferences for the particular settings were as follows:

> "The ground in this setting is not appropriate for children to play on. Also, the existence of dry bushes and shrubs, and a slope would increase the risk of the falling down and children may get injured." ($P_m$3, P12)
> "The setting seems to be desolated, remote and dangerous. Also, if any accident happens, there would be no one running to help. Therefore, this place is not appropriate for children to visit as a whole class." ($P_m$13, P16)

Table 4-18: The reasons of mothers' most and least frequently chosen landscape preferences

| Reasons for *most* preferred (frequency) | Reasons for *least* preferred (frequency) |
|---|---|
| ***Personal preferences*** | |
| Setting seemed relaxing (23) | Safety hazards (34) |
| Setting seemed natural (22) | Lack of green/barren environment (15) |
| Opportunities for engaging different kinds of activities (14) | Inappropriate ground/environment making to move hard (10) |
| The presence of both water and green space (10) | Lack of things to do/not attractive (6) |
| Beauty of the scenery (5) | Frequent visit to similar settings/setting seemed usual (6) |
| | No place to sit (2) |
| ***Educational preferences*** | |
| Opportunities for unstructured play (34) | Safety hazards (39) |
| Opportunities for children to having fun (14) | Lack of greenness/barren environment (6) |
| Opportunities for structured learning about nature (13) | Lack of things to do/not attractive for children (4) |
| Opportunities for unstructured learning about nature (9) | Inappropriate ground/environment making to move/play hard (3) |
| Opportunities to go on a picnic (10) | |
| Safe (6) | |
| The presence of shaded areas (3) | |
| ***Preferences to visiting with their children*** | |
| Opportunities for unstructured play (35) | Safety hazards (36) |
| Presence of water (15) | Inappropriate ground/environment making to move hard/play (23) |
| Opportunities for children to having fun (12) | Lack of greenness/barren environment (11) |
| Opportunities to go on a picnic (11) | Lack of things to do/not attractive for children (4) |
| Opportunities for unstructured learning about nature (8) | Too much human influence (4) |
| Setting seemed natural (6) | No shaded (2) |
| | Frequent visit to similar settings/setting seemed usual (1) |

### 4.7.3 The mothers' ideas about the reasons of their most and least frequently chosen landscape preferences they would like to visit with their children

With regard to the reports of the mothers about the characteristics of their most and least frequently chosen landscapes to visit with their children were used to define the reasons that make those settings appealing or uncomfortable ones.

The most frequent reason why mothers selected Settings 8, 2&13, and 3&10 as being the most appropriate ones to visit with their children was related that such settings enable children to experience unstructured play (n=35) such as, playing with

playground toys (n=12), physical activities including running (n=7), playing with personal toys including ball and kite (n=8), and playing with natural elements including stones and water (n=8). The remaining coding together with the calculated frequencies are given in Table 4-18. Quotations of the participant mothers' ideas regarding the reasons of their most preferred landscapes that they would like to visit with their mothers were exemplified below:

> "This is a place where my child can play with the playground toys freely and have a good time as well." (Pm3, P8).
> "This setting may enable my child to have fun. For example, my child can throw the stones into the water, soak his feet and hands in the water, and jump in the water." (Pm15, P13).
> "This is a natural and wide place to jump a rope, play a ball, and run freely." (Pm7, P10).

However, the most frequent reason why settings 12, 15, and 1&16 were selected by mothers as the least appropriate ones to visit with their children was related to safety issues (n=36), including unfavorable terrain and high density of trees, tree branches, and bushes that may lead to physical injury of any parts of the children' bodies, (n=30), desolated environment in which the participants might come across wild animals (n=5), and the possibility of encountering poisonous insects in the environment (n=1). The remaining coding together with the calculated frequencies are given Table 4-18. Some of the reasons for mothers' least frequently chosen preferences for the particular settings to visit with their children were as follows:

> "Dry trees, tree branches make this setting dangerous and prevent children from moving comfortably." ($P_m$4, P12)
> "My child wants to get into the water, but I don't want her to do it since the water seems dirty and there are lots of stones and reeds that might sting her feet." ($P_{m4,}$ P15)
> "I cannot ensure my child's safety at all in such an area where I cannot even ensure my own safety." ($P_m$10, P16)

## 4.8 The mothers' ideas about the possible activities and resource needs they associated with their most frequently chosen landscapes

To explore what activities mothers associated with their most preferred outdoor settings, responses were coded based on their responses to the open-ended questions regarding their favorite three settings they would like to visit with their children as well as the settings they chose for their children to visit with their teacher and

classmates and frequencies were calculated. For all settings mothers would like to visit with their children and for the settings they would prefer their children to visit with the teacher and classmates, the most frequently listed activities were unstructured play, unstructured learning about nature, picnicking, and structured activities, respectively. Moreover, the order of the frequencies of mothers' reports for these activities were different in both cases. The frequencies of all of the possible activities that mothers can undertake with their children in their most favorite settings to visit with children were given in table 4-19 as following.

Table 4-19: Frequency of possible activities that mothers can undertake with their children in their most preferred settings to visit with children

| Activities | Park | Forest | Water | Open field /grassy area | Total by activity *(f)* |
|---|---|---|---|---|---|
| Unstructured play | 23 | - | 19 | 17 | 59 |
| Unstructured learning about nature | - | - | 14 | - | 14 |
| Picnic | 8 | - | 1 | 2 | 11 |
| Structured activities | - | - | 2 | - | 2 |
| Camping | 1 | - | 1 | - | 2 |
| Total by activity considering outdoor setting type (*f*) | 32 | - | 37 | 19 | |

** Each participant could give more than one suggestion for activities.

As seen on the table 4-19, mothers' reports had higher frequency for unstructured/free play in the settings they would like to visit with their children than in the settings that their children visit with their teacher and classmates (see table 4-20). Oppositely, mothers' reports about structured activities for children in the settings they visit with their teacher and classmates was more frequent than children's structured activities in the settings they visit with their parents. Lastly, camping was the activity that mothers only indicated as a possible activity that they would like to do with their children in their most preferred settings. The remaining coding of the possible activities that mothers can prefer for their children to practice with their teachers and classmates are given in table 4-20 with the calculated frequencies.

With regard to the outdoor setting type, there was no activity that mothers would prefer their children to practice in forest either for the settings that they would like to visit with their children or for the settings they would like their children to visit with the teacher and classmates. In fact, with regard to the outdoor setting type, there was no activity that mothers would prefer their children to practice in forest either for the settings that they would like to visit with their children or for the settings they would like their children to visit with the teacher and classmates Furthermore, with regard to the outdoor setting type, there was no activity that mothers would prefer their children to practice in forest either for the settings that they would like to visit with their children or for the settings they would like their children to visit with the teacher and classmates.

Table 4-20: Frequency of possible activities that mothers can prefer for their children to practice with their teachers and classmates*

| Activities | Park | Forest | Water | Open field /grassy area | Total by activity *(f)* |
|---|---|---|---|---|---|
| Unstructured play | 26 | - | 12 | 8 | 46 |
| Unstructured learning about nature | 5 | - | 7 | 2 | 14 |
| Picnic | 4 | - | 2 | 4 | 10 |
| Structured activities | 4 | - | 4 | - | 8 |
| Total by activity considering outdoor setting type (*f*) | 39 | - | 25 | 14 | |

* Each participant could give more than one suggestion for activities.

Furthermore, mothers' reports with regard to the resources they would need in their most preferred settings were also categorized as materials and safety. Considering the materials category, picnic supplies and specific equipment for the activities (i.e., bags/jars to collect nature items and craft materials) were common in mothers' reports for both cases, their frequencies were different. While picnic supplies had the highest frequency in mothers' reports that they would need such materials in the settings they would like to visit with their children, specific equipment for the activities had the highest frequency in their reports as the materials that the teachers and children would need (See table 4-21 and table 4-22).

Table 4-21: Required elements for mothers to bring to their children to the most preferred setting to visit with them

| | **Frequency of the required elements** |
|---|---|
| ***Materials*** | |
| Picnic supplies | 19 |
| Personal toys | 18 |
| Equipment specific to different activities | 11 |
| Camera | 3 |
| Camp supplies | 3 |
| Backpack | 1 |
| ***Safety related*** | |
| Appropriate and/or spare clothes | 16 |
| Umbrella and/or sunshade | 4 |
| First aid kit | 2 |

Moreover, camp supplies, backpack, and camera were also the common materials that mothers would need in both cases. Different from the common resource needs that mothers indicated in both cases, personal toys were included in mothers' reports as a resource need only for the settings they would visit with their children. Also, mat/chair to sit on was another resource need indicated by mothers only if their children visit the settings with the teacher and classmates. More importantly, mothers also indicated that there was no need for extra material when their children visit the natural outdoor settings with the teacher and classmates.

With regard to safety related needs, the need for the extra adult supervision had the highest frequency in mothers' reports for the settings their children visit with the teachers and classmates. Mothers didn't indicated that they would need extra adult to supervise their children when they visit the landscapes together with their children. The rest of safety related resource needs were common in mothers' reports for both cases. These resource needs were first aid kit and appropriate/spare clothes and/or shoes. All of the coding for the resource needs with calculated frequencies are given in Tables 4-21 and 4-22.

Table 4-22: Required elements for mothers to bring to their most preferred setting to visit with their children's teacher and classmates

| | Frequency of the required elements |
|---|---|
| ***Materials*** | |
| Equipment specific to different activities | 20 |
| Picnic supplies | 18 |
| Only nature without any specific material is sufficient | 10 |
| Mat/chair to sit on | 3 |
| Camera | 2 |
| Camp supplies | 1 |
| Backpack | 1 |
| ***Safety related*** | |
| Extra adult to supervise | 11 |
| First aid kit | 10 |
| Appropriate and/or spare clothes and/or shoes | 7 |
| Sun protection | 4 |

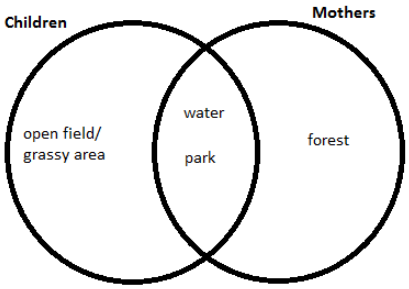
## 4.9 The similarities and differences between children's and mothers' most and least frequently chosen landscape preferences

This part included the similarities and differences in both group of participants' preferred outdoor settings in all cases (personal, educational, and with parents/children,) in terms of the numbers given each photograph, outdoor setting type, and levels of human influence. To understand this part clearly, it is important to remind that the researcher asked the participants to select three most and least preferred landscapes by showing sixteen photographs. Since the frequencies that either children or mother participants' selections for a particular photograph could be the same, in some cases, there were more than three photographs as the participants' most and least favorite setting. As a result, this situation might lead to differences in total number of frequencies of the participants' favorite landscapes in terms of either outdoor setting type or levels of human influence.

Considering the similarities and differences in children's and mothers' most preferred three landscapes in terms of photograph numbers, there was no common landscape as far as personal preferences of both groups of the participants are concerned. However, with regard to the outdoor setting type, the landscapes having

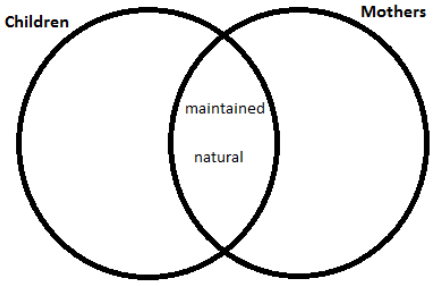
some water as well as park settings were among both children's and mothers' most favorite personal outdoor settings. Furthermore, different from each other, while children personally liked to visit open fields/grassy areas, their mothers also personally liked to visit forest settings (See figure 4-1).

Figure 4-1: Similarities and differences in children's and mothers' most preferred personal landscapes in terms of outdoor setting type




Considering the participants' most favorite personal landscapes in terms of both photograph numbers and levels of human influence, both maintained and natural landscapes were among the favorite personal landscapes of both groups of the participants (See figures 4-2 and 4-3).

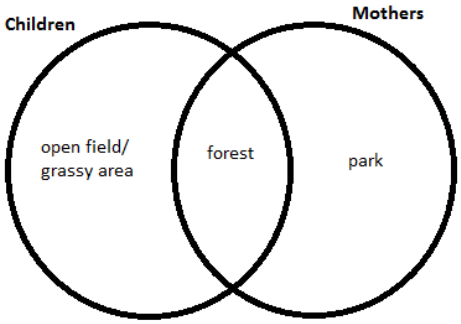
Figure 4-2: Similarities and differences in children's and mothers' most preferred personal landscapes in terms of levels of human influence



Considering the similarities and differences in children's and mothers' personally least preferred three landscapes in terms of the photograph numbers of each settings, Settings 1 (forest, natural), 12 (forest, maintained), & 16 (forest, natural) were common settings selected by both groups of the participants. Moreover, each group independently selected some particular settings as one of their least preferred personal settings. In fact, while Setting 8 (park, maintained) was among only mothers' least favorite personal settings, Setting 7 (open field/grassy area, natural) was among only children's least favorite personal settings.

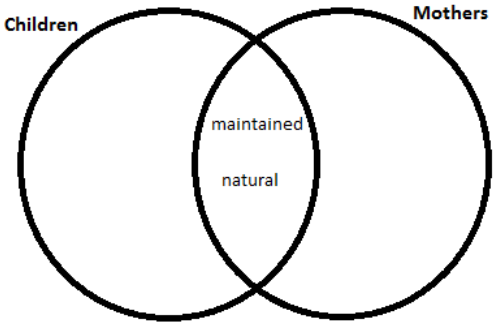
Furthermore, considering the least favorite landscapes in terms of outdoor setting type, both groups of the participants agreed that they don't like to visit forest settings personally. Additionally, different from children, mothers indicated that they personally don't like to visit park settings, in particular parks having playground toys. Also, different from mothers, children indicated that they don't like to visit open fields/grassy areas (See figure 4-3).

Figure 4-3: Similarities and differences in children's and mothers' least preferred personal landscapes in terms of outdoor setting type




Considering the participants' least favorite personal landscapes in terms of both photograph numbers and levels of human influence, both maintained and natural landscapes were among both groups of the participants' least favorite landscape preferences (See figures 4-4).

Figure 4-4: Similarities and differences in children's and mothers' least preferred personal landscapes in terms of levels of human influence

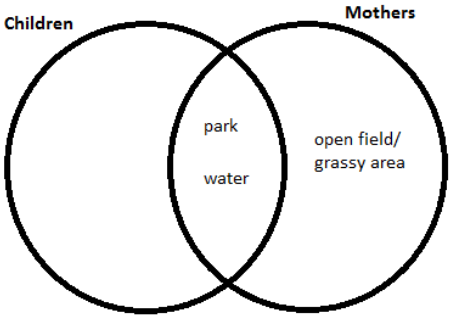



In order to come up with the clear results about the similarities and differences in both the participant children's and mothers' personal landscape preferences, their most and least favorite personal settings were analyzed together considering either outdoor setting type or levels of human influence. According to the results, water and park were the outdoor setting types that both groups of the participants personally preferred to visit. Different from each other, while children personally liked to visit open fields/grassy areas, their mothers also personally liked to visit forest settings. On the other hand, considering the participants' personal landscape preferences in terms of levels of human influence, since both groups of the participants' most and least favorite personal landscapes included both natural and maintained landscapes, it cannot be said that children and mothers personally do like or do not like to visit maintained or natural settings.

Considering the similarities and differences in children's and mothers' educationally most preferred three landscapes in terms of the photograph numbers of each settings, Settings 8 (park, maintained) was the common setting selected by both groups of the participants. Moreover, each group independently selected some particular settings as one of their most preferred ones. In fact, while Setting 13 (water, natural) and Setting 5 (water, maintained) were among only children' most favorite educational settings, Settings 2 (park, natural), 3 (water, natural), and 10 (open field/grassy area, natural) were among only mothers' most favorite personal settings.

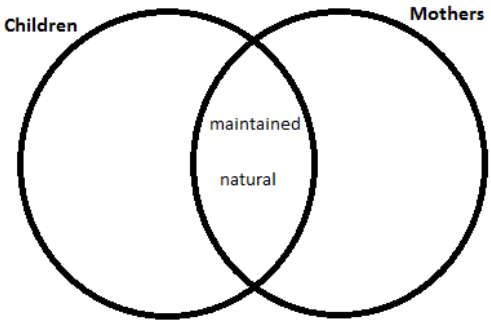
However, with regard to the outdoor setting types, the landscapes having some water as well as park settings were common among both groups of the participants' most favorite educational outdoor settings. However, different from children, mothers also preferred open fields/grassy areas for their children to visit with the teachers and classmates (See figure 4-5).

Figure 4-5: Similarities and differences in children's and mothers' most preferred educational landscapes in terms of outdoor setting type



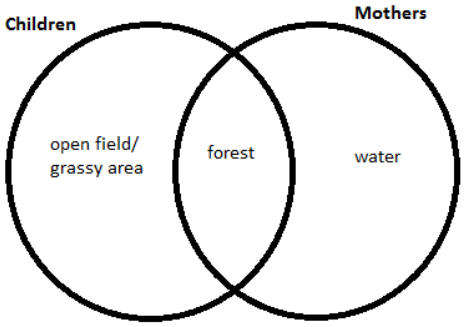

Considering the participant children's most favorite educational landscapes in terms of both photograph numbers and levels of human influence, both children and mothers preferred both maintained and natural landscapes among their favorite educational landscape preferences (See figures 4-6).

Figure 4-6: Similarities and differences in children's and mothers' most preferred educational landscapes in terms of levels of human influence



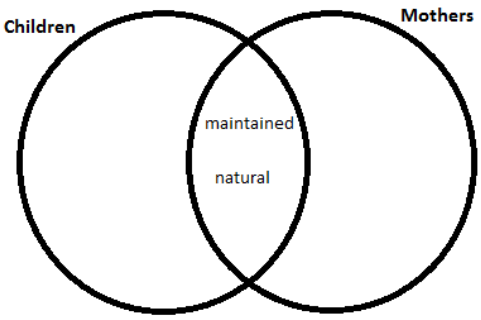
Considering the similarities and differences in children's and mothers' least preferred three landscapes in terms of photograph number, Settings 12 (forest, maintained) and 16 (forest, natural) were common photographs of landscapes as far as educational preferences of both groups of the participants are concerned. However, with regard to the outdoor setting types, both children and mothers commonly preferred forest settings as their least preferred educational outdoor setting type. Moreover, different from mothers, open fields/grassy areas were also among children's least educational landscape preferences. Also, different from children, the landscapes including water were among mothers' least landscape preferences for their children to visit with their teachers and classmates (See figure 4-7).

Figure 4-7: Similarities and differences in children's and mothers' least preferred educational landscapes in terms of outdoor setting type




Considering the participants' least favorite personal landscapes in terms of both photograph numbers and levels of human influence, both maintained and natural landscapes were among both groups of the participants least favorite landscape preferences (See figures 4-8).

Figure 4-8: Similarities and differences in children's and mothers' least preferred personal landscapes in terms of levels of human influence

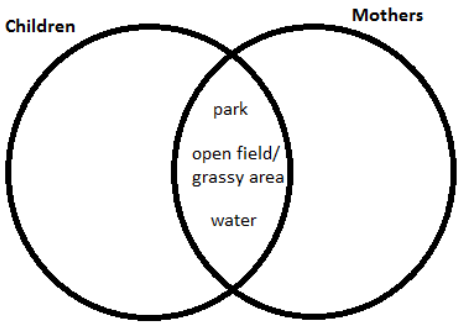



In order to come up with the clear results about the similarities and differences in both the participant children's and mothers' educational landscape preferences, their most and least favorite educational settings were analyzed together considering either outdoor setting type or levels of human influence. According to the results, water and park were the outdoor setting types that both groups of the participants educationally preferred to visit. However, since water settings were among mothers' both educationally most and least favorite landscapes, it cannot be clearly said that mothers educationally like or do not like to prefer water settings. Moreover, while open fields/grassy areas were among only mothers' favorite educational outdoor setting type, such settings were among the least preferred landscapes selected only by children to visit with their teachers and classmates. Lastly, since forests were included only in both groups of the participants' least favorite educational landscape preferences, it can be said that children and mothers do not educationally prefer forest settings. On the other hand, considering the participants' educational landscape preferences in terms of levels of human influence, since both groups of the participants' most and least favorite educational landscapes included both natural and maintained landscapes, it cannot be said that children and mothers educationally do like or do not like to visit maintained or natural settings.

Considering the similarities and differences in children's and mothers' most preferred landscapes that they would like to visit together in terms of the photograph numbers of each settings, Settings 2 (park, natural), 8 (park, maintained), and 10 (open

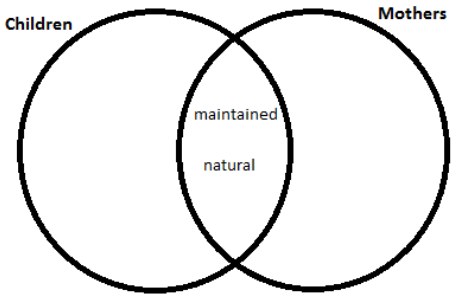
field/grassy area, natural) were the common settings selected by both groups of the participants. Moreover, each group independently selected some particular settings as one of their most preferred ones. In fact, while Setting 5 (water, maintained) was among only children' most favorite settings to visit with their parents, Settings 3 (water, natural) and 13 (water, natural) were among only mothers' most favorite settings to visit with their children. However, with regard to the outdoor setting types, park, open field/grassy area, and water were common outdoor setting types for both groups of the participants (See figure 4-9).

Figure 4-9: Similarities and differences in children's and mothers' most preferred landscapes that they would like to visit together in terms of outdoor setting type



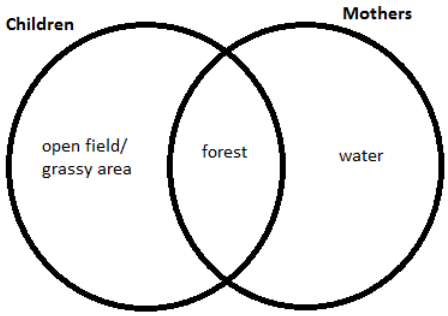

Considering the participants' most favorite landscapes to visit together in terms of both photograph numbers and levels of human influence, both maintained and natural landscapes were among both groups of the participants' landscape preferences that they would like to visit together (See figure 4-10).

Figure 4-10: Similarities and differences in children's and mothers 'most favorite landscapes that they would like to visit together in terms of levels of human influence



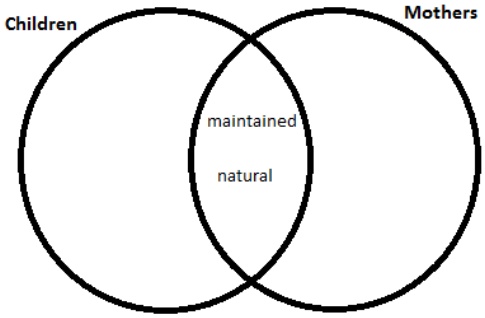

Considering the similarities and differences in children's and mothers' least preferred landscapes to visit together as a group in terms of photograph number, Settings 1 (forest, natural), 12 (forest, maintained), and 16 (forest, natural) were common. Moreover, while Setting 6 (forest, maintained) and Setting 7 (open field/grassy area, natural) were among the preferences of only children, Setting 15 (water, maintained) was only selected by mothers as one of their least landscape preferences to visit with their children. However, with regard to the outdoor setting types, forest was the participants' common least preferred outdoor setting type that they would like to visit as a group. Each group has also had an additional outdoor setting types as their least preferences to visit together. While children did selected open fields/grassy areas as one of their least preferred outdoor setting types to visit with their parents, mothers did selected the landscapes having some water as their least preferences to visit with their children (See figure 4-11).

Figure 4-11: Similarities and differences in children's and mothers' least preferred landscapes that they would like to visit together in terms of outdoor setting type




Considering both groups of the participants' least favorite landscapes to visit together as a group in terms of both photograph numbers and levels of human influence, both natural and maintained landscapes were among both groups of the participants' landscape preferences (See figure 4-12).

Figure 4-12: Similarities and differences in children's and mothers' least favorite landscapes that they would like to visit with together in terms of levels of human influence




In order to come up with the clear results about the similarities and differences in both the participant children's and mothers' most and least favorite landscapes were analyzed together considering outdoor setting type or levels of human influence. According to the results, park, water, and open field/grassy area were the common outdoor setting types that both groups of the participants preferred to visit together as

a group. Moreover, it is clear that children would like to visit park and water settings with their parents. However, since open fields/grassy areas were among both most and least favorite landscapes that children would like to visit with their parents, it cannot be said that children do like or don't like to visit open fields/grassy areas with their parents. Furthermore, since water settings were among mothers' both most and least favorite landscapes that they would like to visit their children, it cannot be clearly said that mothers like or don't like to prefer water settings to visit with their children. On the other hand, considering the children's and mothers' most favorite landscapes that they would like to visit together in terms of levels of human influence, both groups of the participants landscape preferences included both natural and maintained settings.

### 4.10 The similarities and differences in children' and mothers' ideas about the reasons of their most and least frequently chosen landscape preferences

In terms of personal preferences, both groups of the participants shared common and different ideas. Since children and parents do not share any common setting in terms of photograph numbers as their most preferred ones, the participants focused on different characteristics of the landscapes selected by them. While mothers emphasized the relaxing atmosphere of the settings that they chose, children concentrated on the affordances of their preferred ones. However, similar to children's reports, one of the factors that affect mothers' personal preferences was also the opportunities for the different kinds of activities in their favorite personal settings. The presence of both water and greenery was also common for both groups of the participants in terms of their personal preferences. Different from mothers, having fun in the settings, familiarity of the settings, and the presence of water in the settings were the factors impacting children's personal preferences. Different from children, mothers mentioned about the beauty of the scenery and the naturalness of the settings.

On the other hand, since the participants have some common landscapes as their least favorite personal preferences (Settings, 1, 12, & 16) they shared some common points in terms of the characteristics of their least preferred landscapes. Both groups of the participants perceived safety hazards as a risk factor preventing them from

wanting to visit natural outdoor environments. While the possibility of injuries based on the high density of trees, tree branches, and bushes and desolated environment where they might come across wild animals were common reasons that influenced the preferences of both groups of the participants, being afraid of getting lost was among the reasons reported only by children. Lack of greenery, inappropriate ground/environment making to move/play hard, and lack of place to sit were the other common factors affecting both groups of the participants' least personal preferences. However, the familiarity was the factor that affecting both groups of the participants least favorite landscapes in a different way. While children wouldn't like to visit unfamiliar landscapes personally, mothers thought in an opposite way. Familiarity to a setting had negative impact on mothers' landscape preferences because mothers were personally unwilling to visit usual outdoor settings they frequently see.

In terms of educational preferences, since mothers and children shared only one common educational setting [Setting 8 (a playground on a manmade rectangular pavement)], they declared common reasoning regarding the characteristics of the particular setting. In fact, mothers' ideas included children's. Both groups of the participants focused on the opportunities that the setting may offer for children's unstructured play. In fact, the participants indicated that the particular setting was appropriate for playing with playground toys freely as well as playing with the natural materials such as stones and sticks around the environment. However, playing with toys that children may bring from the school was only reported by mothers. Moreover, opportunities for children to have fun as well as unstructured learning about nature were also the other common factors affecting both groups of the participants' preferences for favorite educational landscapes. Different from children, opportunities for structured learning about nature, opportunities to go on a picnic, safety, and the presence of shaded areas were the factors affecting mothers' favorite landscapes for their children to visit with their teacher and classmates.

On the other hand, since mothers and children chose two common settings (Settings 12&16) in terms of their least preferred educational setting, they also shared common reasons which influenced their preferences. Both mothers and children reported the possibility of falling down that may lead to injuries in any of the body

parts based on the high density of trees, tree branches, and bushes, as well as the possibility to come across wild animals that would be dangerous for children. However, different from children, mothers focused on the desolated environments that might make it easy to get lost. Lack of greenery, lack of things to do, and inappropriate ground/environment making hard to move were another common factors affecting both groups of the participants' preferences for their least favorite educational landscapes. Different from mothers, children also mentioned about unfamiliarity as a negative factor affecting their educational landscape preferences. Children's such kinds of expressions confirm their ideas about their least favorite personal landscapes.

Since children and mothers chose particular common settings (Settings 2, 3, &10) as being their most preferred landscapes to visit together, they had some common points in terms of the reasons for selecting these settings. Both groups of the participants concentrated on the affordances of the settings for children's unstructured play. The types of the unstructured activities that the participants reported included playing with different materials including toy and natural elements, and engaging physical activities. Opportunities for going on a picnic and opportunities for unstructured learning about nature were the other common factors affecting both groups of the participants' landscape preferences that they want to visit together. Different from mothers, children mentioned about familiarity as a positive factor affecting their most favorite settings they would like to visit with their parents. Additionally, there were some points that was only reported by mothers as factors affecting their ideas about their favorite landscapes that they would like to visit with their children. These factors were the presence of water, opportunities for children to have fun, and naturalness of the settings.

On the other hand, since mothers and children indicated some common settings (Settings 1&12&16) as their least favorite preferences to visit together, they shared some common reasons why they would not prefer to visit these particular settings. They agreed that these settings were not safe due to the risk of falling down based on the high density of trees, tree branches, and bushes; and the risk of coming across wild animals in such desolated environments. Moreover, while the possibility to be bitten by poisonous insects was only reported by mothers, the possibility of falling trees that

may lead to injuries was only asserted by children. Inappropriate ground/environment making to move/play hard, lack of greenness/barren environment, and lack of things to do/not attractive to children were the other common factors affecting both groups of the participants' least favorite landscapes that they preferred to visit together. Different from mothers, children don't like to visit unfamiliar landscapes with their parents. Furthermore, different from children, mothers also mentioned about the lack of shaded areas, too much human influence, and their frequent visit to similar settings as negative factors affecting their least favorite landscapes they would visit with their children.

### 4.11 Obstacles preventing children and mothers from visiting natural landscapes

In order to determine obstacles preventing them from visiting natural outdoor settings, mothers' and children's responses to interview questions were coded and frequencies were calculated (Table 4-23). Children's ideas about the obstacles to the use of natural settings were common for visiting a particular setting either with their parents or with their teacher and classmates. The most frequent obstacle was associated with bad weather conditions (n=13). Other obstacles that children reported were health problems, issues about the transportation, safety related issues, and other things that children had responsibility to fulfill.

Similar to children, mothers thought that bad weather conditions were the most important obstacle preventing them from visiting natural landscapes with their children and preventing the teacher from bringing children to such kinds of settings. However, other obstacles that mothers indicated were a little bit different for these two situations; visiting the setting with their children or children's visit the settings with their teacher. Mothers asserted that lack of time, health problems, other things that they had to do, tiredness, disagreement with their spouses related to visiting natural settings as a family, lack of convenient places to visit, scarcity of natural outdoor settings in the city, and safety concern were perceived by them as obstacles preventing them from visiting natural outdoor settings with their children. Moreover, lack of parental support, lack of time, health problems, transition problems, the number of children,

safety concerns, and inconvenient places to bring children were reported by mothers as obstacles preventing the teacher from visiting natural outdoor settings with children.

As it is clear from the mothers' reports, there are some common points in both situations. In fact, bad weather conditions, lack of time, health problems, safety related issues, and lack of convenient places to visit were the common obstacles making visiting natural outdoor settings difficult for parents to visit the settings with their children and for teachers to visit the settings together with children.

Considering the similarities and differences between mothers' and children's reports about the obstacles preventing them from visiting natural landscapes, there were some common obstacles which were reported by both parents and children. These barriers were the risk of health problems, safety concerns, and other things both groups of the participants had responsibility to do. Different from the children, there were some obstacles reported only by mothers such as lack of time, tiredness, disagreement between parents, inconvenient natural places to go, and scarcity of natural settings in the city.

Table 4-23: Children's and mothers' ideas about the obstacles to the use of natural outdoor settings

| **Barriers** | | | | |
|---|---|---|---|---|
| **Children** | With their parents (f) | | With their teacher and classmates (f) | |
| | Bad weather conditions | (13) | Bad weather conditions | (13) |
| | Health problems | (11) | Health problems | (11) |
| | Transportation problems | (4) | Transportation problems | (4) |
| | Safety concerns | (4) | Safety concerns | (4) |
| | Other things to do | (3) | Other things to do | (3) |
| **Mothers** | With their children (f) | | With their children's teacher and classmates (f) | |
| | Bad weather conditions | (14) | Bad weather conditions | (11) |
| | Lack of time | (11) | Lack of parental support | (10) |
| | Health problems | (9) | Lack of time | (10) |
| | Other things to do | (7) | Health problems | (8) |
| | Tiredness | (7) | Transportation problems | (5) |
| | Disagreement between parents | (6) | Number of children | (4) |
| | Inconvenient natural places to go | (5) | Safety concerns | (4) |
| | Scarcity of natural settings in the city | (4) | Inconvenient places to go | (3) |
| | Safety concerns | (2) | | |

# CHAPTER 5

# DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

The final chapter focuses on the implications and recommendations based on the findings of the current study. Since some of the findings support each other, the discussion for these related research questions are combined to make the discussion more comprehensive and to avoid unnecessary repetition for the readers. The research questions investigated the difference between children's biophilia and school type and gender, for example, are discussed together since the results are interrelated. Similarly, since children's biophilia is related to their landscape preferences; findings concerning these research questions are discussed in the section of children's landscape preferences. For instance, the findings of the similarities and differences in children's and mothers' most and least preferred landscapes and the reasons of their particular preferences discussed together with their preferences for the activities and resource needs in their preferred settings. Then, the obstacles preventing both children and their mothers' visit to natural landscapes are discussed. Implications for the study are discussed under three sections based on the areas of concern: landscape/city planners; administrators, teachers and parents; and finally, the teacher education programs. The final part of the chapter concludes with recommendations for further studies.

## 5.1 Children's biophilia

The results of the study showed that children's biophilia scores were close to each other and regardless of their enrollment to natural or non-natural preschools. The mean scores of the groups were almost the same. As suggested by the biophilia hypothesis (Kahn, 1997), these results might show that children, particularly in young

ages, genetically have high propensity towards biophilia. In essence, children's biophilia instinctively and generally unconsciously emerges from very beginning of their lives (Wilson, 1984). According to Moore and Marcus (2008), biophilia which is a genetic inclination to explore the natural environment, is affected by culture and experiences. In fact, children's biophilia begins to be modified as their experience increase in years with the effects of age and culture (Moore & Marcus, 2008).

This study also investigated the effects on several variables on children's biophilia including school type (natural or non-natural based on the level of naturalness of the school ground), and gender. Results revealed that children's biophilia scores do not differ based on their enrollment in natural or non-natural preschools. Consistent with the results of this research, Rice and Torquati (2013) found that there is no difference in young children's biophilia scores depending on the level of naturalness of the outdoor play areas at their early childcare centers. Furthermore, according to the results, there is no difference in children's biophilia scored based on gender. Both boys and girls liked to engage in the activities that the natural environments could afford (Lucas & Dyment, 2010). A natural landscape attract children's attention regardless of their gender, based on the aesthetic attributes of the environment (Martensson et al., 2014; Norodahl & Einarsdottir, 2015) and the way of using natural elements in play was similar in both boys and girls, particular in younger ages (Sargisson & Mclean (2012). However, boys' and girls' play might vary with the increasing age (Sargisson & Mclean, 2012).

Although the results of the current study and the discussion above indicated that children's biophilia did not differ based on school type and gender, getting high levels of biophilia scores might have some environmental and education implications. According to Howard (1997), understanding children's biophilia could help us to understand individuals' treatment to the environment as well as their level of connectedness to the natural world (Schultz, Shriver, Tabanico, & Khazian, 2004). Based on this result, it can be said that the participant children of this study might be highly connected to the natural world. The participant children's high connection with the natural world might show us that children valued nature and had feelings to respect and protect it in the long run (Schultz, 2000; Nisbet et al., 2009).

## 5.2 Children's most and least frequently chosen landscape preferences in terms of outdoor setting type and the reasons of their landscape preferences

According to the results, there are several common points considering children's landscape preferences for three different cases (personal landscape preferences, educational landscape preferences, and landscape preferences they would like to visit with their parents). In all cases, children's most favorite outdoor setting types were the landscapes including some water and the park settings. The frequency of children's selections for these two settings was the same (n=46). Water or park settings were not included in children's least favorite settings in all three cases. Open fields/grassy areas were also among children's most favorite landscapes except for the settings they would like to visit with their teacher and classmates. However, children scored open fields/grassy areas very high as their second least favorite landscapes. Lastly, the forest settings were not among children's most favorite preferences for any of the three cases; in fact, these particular settings had the highest frequency with regard to children's least favorite landscape preferences.

The results of many previous studies shared similar points with the results of the current research in terms of children's preferences for water in a landscape and the reasons of their preferences (Mahidin & Maulan, 2012; Müderrisoğlu & Gültekin, 2013; Hart, 1979; Tunstall et al., 2004). According to Tunstall et al. (2004) water areas give children opportunities for adventure play that they can shape, form, or manipulate the natural elements freely. In a similar way, White and Stoecklin (1998) highlighted that children can manipulate the things around the natural environment including water since nature provides diverse materials, which might stimulate children's unstructured play. The participant children's own reports, which explained the reasons of their most favorite landscapes, might also be another explanation for their preferences of the landscapes including water. In fact, the participant children indicated that the opportunities for engaging different kinds of unstructured play activities was one of the factors affecting their landscape preferences positively. For example, they

indicated putting their hands or feet into the water and enjoy as well as playing water war as unstructured play in water settings. In their reports, children also mentioned about the opportunities for unstructured learning about nature as a factor affecting their preferences to visit outdoor settings either with their teacher and classmates or with their parents.

In addition to unstructured play and unstructured learning about nature, opportunities for structured activities in a landscape was another factor affecting children's landscape preferences. In fact, the only outdoor settings type that children indicated that they would like do structured activities was water. The structured activities that children reported included art and science activities including making a paper boat, exploring plants and animals either with parents or teachers and classmates. The participant children might think water settings as more appropriate to do such kind of activities rather than other settings. The children's ideas regarding structured activities might be affected by their outdoor activity experiences either with the teachers and classmates at their childcare centers or with parents in different kinds of outdoor environments. As found in Rickinson, Dillon, Teamey, Morris, Choi, Sanders's (2004) study, teachers of the participant children might implement only science activities at outdoors rather than integration of different kinds of outdoor activities to the whole school curriculum. Moreover, children's outdoor experiences at school might affect their experiences during out of school visits to natural environments with their parents.

Moreover, children's own reports emphasizing the presence of water, the presence of water and green space together, and beauty of a scenery as another reason for explaining of their preferences for the landscapes including water. In essence, children's expressions seems to make us to think the idea that the physical appearance of a landscape might influence children's landscape preferences. This approach is supported by different studies with similar findings. For instance, presence of water in a landscape was aesthetically pleasing for children (Müderrisoğlu & Gültekin, 2013). According to Tunstall et al. (2004), water and some other natural elements including trees were the attributes that may appeal children's attention in a landscape.

The park category turned out to be one of the children's most favorite ones. Parallel with the results of the current study, Van Andel's study (1990) also showed that children preferred playgrounds, particularly which include some green spaces, one of their favorite outdoor environments. Similarly, Castonguay and Jutras (2009) found that children preferred to visit park settings, including playgrounds, due to the high rate of vegetation and opportunities for playing with playground toys. Another underlying reason of children's preferences for park settings might be associated with the idea that children might engage in a variety of social interactions either with each other or with the natural attributes in park settings including playground equipment and some part of green areas (Van Andel, 1990).

Children's preferences for park settings can also be observed through their self-reports. When asked about the reasons of the selections of their most favorite landscapes, children associated their preferences for the park settings with the opportunities for having fun in such environments. In particular, while explaining the reasons of their preferences, the majority of the participating children reported that having fun in a landscape was an effective factor that influence their personal and educational landscape preferences. Parallel with the participant children's ideas, several researchers (American Academy of Pediatrics, 2006; Müderrisoğlu & Gültekin, 2013) indicated that the opportunities for having fun in a landscape was an important factor as much as the unstructured play opportunities in a landscape and both affect children's landscape preferences. Staempfli (2009) also highlighted that children would like to play in playgrounds, which give them opportunities for unstructured, child-directed play with the feelings of fun and enjoyment.

Regarding the open field/grassy area category, it was found that children do not have certain preference to visit such environments. This result shows that open fields/grassy areas might be the landscapes that children either would like or would not like to visit at times. This might be explained through children's self-reports about the reasons of their most and least favorite landscape preferences. Children seem to be attracted to places where they can move freely. If there were nothing to attract children's attention in a landscape, on the other hand, they would not like to visit such environments. Majority of the participating children reported, "There is not much

things to do" in such an environment. Children's uncertainty about their preferences for open fields/grassy areas is also apparent in the current literature, since several studies offered conflicting explanations for the reasons of children's preferences for open fields/grassy areas.

For example, Researchers (Willenberg, Ashbolt, Holland, Gibbs, MacDougall, Garrard, & Waters, 2009) found that children generally prefer open fields/grassy areas because such environments offer low risk of getting physical injuries and provide comfortable environment for children's gross motor activities such as running and playing ball games. Similarly, Fjortoft and Sageie (2000) asserted that open fields or the landscapes with low density of vegetation (such as bushes and shrubs) are appropriate places for children's physical activities including a variety of games such as catching, running, and hide and seek. From another perspective, Fjortoft and Sagei (2000) highlighted that; children's play activities highly depended on the structure of a landscape including slope and roughness, as well as the diversity of natural elements. Since there is no variability or diversity in open fields/grassy areas, such places seem not appealing for the participant children to play. Therefore, open fields/grassy areas might be among the participant children's least favorite outdoor settings.

When it comes to forest category, the findings revealed that children did not prefer to visit forest settings. In fact, it was their least popular choice to visit. As children reported the reasons of their least favorite landscapes, they focused on safety related issues. The possibility of getting physical injures, based on the attributes of the landscape, affected children's preferences. Children participating in the current study mentioned about the possibility of physical dangers in outdoor settings. Possible physical injuries of body parts based on the high density of vegetation, possibility to getting lost in a desolated environment, the possibility to come across wild animals were the some of the concerns mentioned during the interviews. Another reason of the children's unwillingness to visit forest settings was related to the inappropriate environment for children's play. Since the high density of vegetation including trees, tree branches makes moving or playing hard, the participant children would not prefer to visit such environments. However, the underlying idea in children's reports about

their own restrictions for playing in forest settings was also related to the physical safety hazards in such settings.

Consistent with the result of this study, several researchers indicated the possible physical dangers in a natural landscape based on high density of vegetation and the possible risks of falling trees (Müderrisoğlu & Gültekin, 2013; Simmons, 1994). In essence, the participant children asserted that since there are variety kinds of physical dangers in forest settings, they could not play comfortably in such environments. According to Gibson (1977), functions of a landscape have impact on children's landscape preferences. In other words, children prefer the landscapes that afford play (Fjortoft & Sagei, 2000). According to Fjortoft and Sagei (2000), children's play in a landscape based on the diversity of play offers in a landscape. Therefore, in the current study, the forest settings seemed not safe to children due to inappropriate environment for variety of play activities based on the attributes of the physical characteristics of the settings. Although the participating children found forest setting both unsafe and inappropriate environment for playing, the findings of the research study conducted by Müderrisoğlu and Gültekin (2013) revealed that children found forest settings not safe, but appropriate environments for playing.

Considering children' responses about the reasons for their selections of their least favorite landscapes, familiarity was one of the important factors affecting children's landscape preferences positively. Supporting that result, while explaining the reasons for their selections of their least favorite landscapes, children indicated that, they would not like to visit unfamiliar outdoor settings. Moreover, the participant children associated accessibility with familiarity. In fact, they would prefer to visit familiar outdoor settings that have an easy access from their home. Consistent with this result, Castonguay and Jutras (2009) indicated that outdoor settings that are familiar to children and close from their home were their favorite places. Children's preferences for familiar and available landscape were associated with the opportunities for having social experiences with friends in a safe environment (Depeau, 2001; Harden, 2000). As a result, since forest settings might be neither familiar to the participant children nor accessible from their home, such settings were among one of their least favorites.

On the other hand, according to the results of the children's most and least favorite landscape preferences in terms of levels of human influence, the total frequency of maintained outdoor settings that children would like to visit in all cases (n=63) was more than natural ones (n= 42). However, the results also showed that the total frequency of the maintained settings (n=109) in children's least favorite preferences was far more than natural ones (n=38). As a result, children had no specific preference regarding to visit either natural or maintained landscapes.

The participant children's selection of maintained settings as their most favorite preference can be explained through the aesthetic features of such settings. According to several studies (Martensson et al., 2014; Müderrisoğlu & Gültekin, 2013; Simmons, 1994; Tunstall et al., 2004), the attractiveness of the physical environment was an effective factor in children's preferences as much as the affordances of the settings for both physical and social play.

Children's preferences of maintained landscapes that they would like to visit with their teacher and classmates can be explained with the diversity in the environment. According to Noradohl and Einarsdottir (2015), different types of play equipment as well as other maintained environmental elements might affect children's landscape preferences. In addition, according to Grahn (1991), a maintained environment may include some examples of natural elements and affordances for children's unstructured free play. Therefore, the participating children might focus on these features while selecting their favorite landscapes to visit with their teacher and classmates. From another point of view, the participant children's preferences for maintained landscapes to visit with their teacher and classmates might be related to social factors including having friends and peers to play with in. In fact, the presence of other children to play as well as children's play as a group in an outdoor environment is a significant factor encouraging children's play (Holt, Lee, Millar, & Spence, 2015; Valentine & McKendrick, 1997; Veitch et al. 2006; Tucker, Gilliland, & Irwin, 2007).

On the other hand, the participant children's preferences for maintained settings as their least preferences indicate that they might also prefer natural landscapes to visit. Children's preferences for natural settings might be explained by biophilia.

Realizing one of the results of the current research was that most of the participating children's biophilia scores were high and did not affected by their school type and gender. In other words, children have an affinity towards nature regardless of their gender or the school type (having natural outdoor environment, having non-natural outdoor environment) they enrolled in. These results might be interpreted as since young children have high levels of biophilia, they have an affinity towards nature. Therefore, their landscape preferences in terms of level of human influence might include natural landscapes. Consistent with the results of the current research several researchers showed children's preferences for natural settings (Nedovic & Morrissey, 2013; Norodahl & Einarsdottir, 2015; Samborski, 2010; Sargisson & McLean, 2012). According to the results, children's self-reports emphasizing the importance of the affordances of a landscape or different play opportunities which a landscape offer for them could help to explain their preferences for natural landscapes. According to Nedovic and Morrissey (2013), children preferred natural settings over maintained ones. In particular, playing with natural elements, opportunities for different kinds of activities, and opportunities for social interactions with their peers were effective factors in children's preferences for natural settings (Nedovic & Morrissey, 2013). Additionally, since natural environments provide children different kinds of opportunities for creative and manipulative play (Sargisson & McLean, 2012), the participant children might prefer such settings over maintained ones. Moreover, the participant children's outdoor setting type preferences might be affected by the diversity in the landscapes. According to Samborski (2010), natural environments have biodiversity that might offer different play opportunities increasing social interaction among children. Similarly, Norodahl and Einarsdottir (2015) found that children preferred natural settings since such environments have different kinds of natural elements that they could play individually or with their friends. Furthermore, several researchers (i.e., Dyment & O'Connell, 2013; Lucas & Dyment, 2010) highlighted that children prefer natural environments because such environments stimulate children's curiosity for investigation of the environment as well as their willingness for unstructured free play such as climbing on trees or rocks.

## 5.3 Mothers' most and least frequently chosen landscape preferences in terms of outdoor setting type and the reasons of their landscape preferences

Several common points have risen from the analysis of the results regarding mothers' landscape preferences for three different cases (personal landscape preferences, educational landscape preferences, and landscape preferences they would like to visit with their children). With regard to all cases, the participant mothers' preferences for outdoor setting types were, from the most favorite to the least, park settings (n=58), the landscapes including some water (n=34), open fields/grassy areas (n=14), and forest (n=10), respectively.

Water settings were reported only in two cases as the least favorite educational landscape preference and the landscape preference to visit with their children. Open fields/grassy areas, on the other hand, were among the mothers' most favorite educational landscape preferences and the landscape preferences to visit with their children. While forest settings were reported by mothers as their least favorite settings for all cases, open fields/grassy areas were never included in their least favorite preferences.

It was found that mothers would prefer park settings in all cases except in their personal landscape preferences. This result reveals that the participant mothers would prefer park settings for their children to visit with them as well as with their teachers and classmates, but not for themselves to visit alone. Similar to these results, Nasar and Holloman (2013) found that parks, in particular parks having playground equipment as well as with a part of open areas and natural areas, were parents' favorite outdoor settings for their children. Mothers' selections of park settings might be explained through their self-reports about the reasons of their selections of their most favorite educational landscapes as well as their favorite landscapes that they would like to visit with their children. The participant mothers indicated that since their children could have variety of opportunities for unstructured free play including playing with playground toys and natural elements in park settings, and moving and

running comfortably in open spaces which included within park settings. Another point that mothers focused on related to their preferences for park settings was that children could have fun and socialize with their friends. The opportunities for picnicking was another factor affecting mothers' selections for their most favorite educational landscapes and the landscapes that they would like to visit with their children. The participant mothers' reasons for their preferences were consistent with the studies, indicating that parents prefer parks, playgrounds, and bushes for children who could play and interact with both playground equipment and natural materials and could have an opportunity for socializing in such environments including picnicking (Veitch et al., 2006). According to Maxwell, Mitchell, and Evans (2008), children's experiences in playgrounds help them to engage in vigorous activities as well as to interact with nature, which, in turn, nurture their development and learning. From this viewpoint, the participant mothers might consider that they can contribute to children's development and learning through gross motor activities and nature experiences in playgrounds.

Additionally, according to Maxwell et al. (2008) play is an enjoyable activity that children do not have to have particular target to have fun. Considering this, the participant mothers might only think children's feeling of enjoyment and having fun themselves or with friends during play activities in playgrounds. As pointed out by some scholars (Wallach, 2000; Wilkinson, 2001), safety is one of the most important criteria as much as enjoyment and fun in the design of playground environments. Therefore, the participant mothers seemed to consider that playground environments are one of the best outdoor environments that enhance both safe and entertaining outdoor experiences for children.

Since the participant mothers did not prefer to visit park settings personally, this might be a disincentive for them to bring their children into such settings. Therefore, it is also important to discuss the reasons why mothers would not prefer park settings personally. The participant mothers' self-reports about the reasons for their least favorite landscape explain this result. Mothers asserted that lack of greenery and lack of natural elements in park settings was one of the factors that affect their least preferred settings. Since there was relatively nothing that attract mothers' attention to

visit park settings personally, their preferences for park settings in other cases might be related to make their children happy or to have good time in such places. Moreover, the participant mothers indicated that lack of place to sit as well as lack of shaded areas in an outdoor setting were other factors affecting their least favorite personal landscapes.

The reason of the participant mothers' unwillingness to visit playgrounds shared similar points with the research studies in the related literature. Consistent with the results of the current study, Loukaitou-Sideris and Stieglitz (2002) found that one of the reasons of individuals' unwillingness to visit some landscapes was associated with lack of possibilities for variety of activities as well as age-appropriate facilities. These researchers, in particular, asserted that playgrounds are designed for young children; therefore, even older children do not prefer to visit such places because of the lack of things to do. Moreover, since seating and shaded areas are considered by the parents as the important amenities in playgrounds, the lack of those amenities might affect the participant mothers' preferences negatively (Nasar & Holloman, 2013; Sallis et al., 1997; Valentine & McKendrick, 1997; Veitch et al., 2006).

Another reason of the mothers not preferring park settings is that such settings seemed very familiar to them that they visit frequently. Individuals might prefer the landscapes that they were familiar with (Herzog et al., 2000; Samborski, 2010). However, in some cases, familiarity might negatively affect individuals' landscape preferences; in fact, individuals might not select familiar landscapes as their favorite places to visit (Park, Shimojo, & Shimojo, 2010).

With regard to the evaluating the participant mothers' most and least favorite landscape preferences together in terms of the water category, the results revealed that although mothers would prefer water settings as their favorites in all cases, they would not prefer such settings to visit with their children as well as for their children to visit with the teachers and the classmates. Parallel with this result, water areas were among the favorite landscapes of parents in Veitch et al.'s (2006) study. Similarly, several researchers (Han, 2007; Herzog et al., 2000) asserted that water was the most favorite natural element affecting adults' landscape preferences. Several research studies (Kaplan, 1982; 1989) revealed the importance of water for individuals in three ways:

one was related to individuals' biological connection with water; the second was related to waters' positive influence on people's feelings including feeling relax, calm, and peace, in all ages, and the last one was associated with the positive visual effect of water. Individuals' biological connection with water can be explained through evolutionary perspective. In fact, individuals have an innate desire to prefer landscapes having water because it is a basic need to keep human alive (Wilson, 1984).

The participating mothers' own expressions about the reasons of their personal preferences for landscapes that have some water might be explained through the relaxing effect of water which help to create an atmosphere that may give a sense of calm and peace. Mothers' preferences of water settings with their children or for their children to visit with the teachers and classmates were included both in most and least of their preferred landscape preferences. The reasons of the mothers' preferences for water settings in each case might be explained their self-reports emphasizing the variety of opportunities for different kinds of activities in such settings. In fact, mothers' main reasons for preferences for water settings were related that water settings offer possible opportunities for unstructured play, unstructured learning about nature, and picnicking. Similar results were found in different research studies. According to Tunstall et al. (2004), water settings are appropriate environments for relaxing as well as to socializing through different activities including having a conversation with friends, and picnicking. Tunstall, Tapsell, and House (2007) indicated that water itself could be considered as a playground, providing children variety of activities like running, standing, jumping, and walking in it. Matthews (1995) stated that water settings might provide different kinds of play materials (such as mud, stick, and pebbles) for children to manipulate. According to Tunstall, Tapsell, House, & Whomsley, 2001), water is an appealing and enjoyable natural element that give children opportunities to going in and getting wet. In addition to this, the landscapes having some water provide opportunities for children's imaginative play as well as risky play that children cannot usually have such opportunities in formal play areas (Tunstall, et al., 2007).

On the other hand, the participating mothers' preferences for water settings as their least preferences either to visit with their children themselves or for their children

to visit with the teacher and classmates might be associated with their concerns about children's safety. Supporting this result, Gundersen et al. (2016) found that water areas including rivers, streams, and lakes are the landscapes rarely used by children because of parental restrictions based on safety concerns. Some studies suggest that children's access to free play independently was restricted by their parents' safety concerns (Brussoni, et al., 2012).

Considering the participant mothers' most and least favorite landscape preferences together in terms of the category of open field/grassy area, results were interesting. Such settings were included only in the mothers' most favorite educational landscape preferences and the landscapes that they would like to visit with their children as well. The participant mothers' such kind of preferences were related that the affordances of the environment for unstructured play and picnicking. Moreover, mothers seemed to think that open fields/grassy areas are safe places for children's free play including jumping, running, and catching. This result might be related that grass surfaces seemed preferable play environments that enhanced children's vigorous activities including running or playing ball games (Willenberg et al., 2009). Additionally, such environments seemed to have low risks of injury, which certainly lessen the participant mothers' safety concerns (Willenberg et al., 2009).

With regard to the forest category, mothers selected such settings as their favorite personal landscape preferences. On the other hand, forest settings were included in the participant mothers' least favorite ones in all cases. As a result, it can be concluded that mothers would not prefer forest settings for their children to visit with them as well as with their teachers and classmates. Mothers' personal preferences for the forest settings for adults might be explained through evolutionary perspective. According to researchers (i.e., Appleton, 1975; Wilson, 1984), since trees provide individuals to control the environment by letting them to hide from potential dangers including animals or strangers, individuals have an innate tendency to prefer such environments. Another perspective might also explain the participant mothers' preferences for forest settings. Scholars such as Nowak, Crane and Dwyer (2002) noted that, forest settings are aesthetically pleasing and healthy environments that increase individual's connectedness with nature.

On the other hand, forests had the highest frequency in total considering mothers' least preferred outdoor settings in all cases. This confirms that mothers' did not like the idea that their children would visit forest settings either together with them or with their teachers and classmates. This result, in particular, makes mothers' concerns about children' safety stronger. The reasons of the participant mothers' concerns about safety are associated with physical injuries based on high density of vegetation in forest settings. Many mothers consider the possibility of coming across wild animals as well as getting lost in a desolated environment very dangerous. Other studies support these results by pointing out mothers' anxiety and overprotective supervision of their children to keep their children away from the physical injuries (Dal Santo, Goodman, Glik, & Jackson, 2004). According to Sandseter (2009), adults' having overprotective supervision of their children in nature settings might be influenced by culture. For example, in Scandinavian countries, adults or caregivers are aware of the benefits of risk taking in natural environments, as well as encouraged to experience natural landscapes in all weathers from the beginning of very young ages (Sandseter, 2009). However, in Turkey there might be cultural concerns about parents' overprotective supervision of their children in natural landscapes and lack of knowledge about the importance of taking risks in child development and learning.

According to the mothers' most and least favorite landscape preferences in terms of levels of human influence, on the other hand, the total frequency of natural outdoor settings that mothers would like to visit in all cases was far more than maintained ones (n=77, n= 36, respectively). Supporting this result, the total frequency of the maintained settings (n=66) in mothers' least favorite preferences was more than natural ones (n=47). As a result, mothers preferred natural settings to maintained ones. Mothers' preferences for natural outdoor settings can be explained in two ways since their preferences for outdoor settings were investigated in terms of their own preferences and their preferences for their children. First, since natural environments have aesthetic attributes, the participant mothers focusing such attributes might experience a feeling of aesthetic appreciation (Sebba, 1991). Secondly, since a natural setting with variety of natural elements might prompt parents to think that these environments might inspire children's imagination and creativity during play (Fjortoft,

2004). In support of this argument, Zamani (2016) stated that if children are given a choice, they mostly prefer natural settings instead of built ones due to the affordances for different kinds of play in such environments. Therefore, the participating mothers might have observed their children's willingness for playing in natural environments rather than maintained ones and might prefer natural settings to be visited by their children.

## 5.4 The similarities and differences in both children' and mothers' landscape preferences and the ideas about the reasons of their most and least frequently chosen landscape preferences

To begin with children's and mothers' most favorite personal landscapes, both groups of the participants selected water and park as their favorite categories. Both groups of the participants' personal preferences had some different points. While children personally liked to visit open fields/grassy areas, mothers personally liked to visit forest settings. With regard to the reasons of the participants' particular personal landscape preferences, while children mostly focused on the opportunities that the landscapes offer for them, mothers mostly reported the relaxing atmosphere that the landscapes make them to feel a sense of calm and peace. The presence of both water and greenery was also a common factor affecting both groups of the participants' personal landscape preferences. Different from mothers, having fun in the settings, familiarity of the settings, and the presence of water in the settings were the factors influencing children's personal preferences. On the other hand, only mothers mentioned about the beauty of the scenery and the existence of natural elements in the settings.

Both the children's and the mothers' least preferred personal landscape preferences, was the forest settings. Each group of the participants also indicated their personal preferences for open fields/grassy areas and parks. Different from mothers, children would not like to visit open fields/grassy areas personally. Different from children, mothers would not like to visit park settings personally. The reasons of the participants least preferred personal settings was mainly common and related to safety

concerns including risk of injuries based on high density of trees, tree branches, and bushes and the possibility of seeing wild animals in such desolated environments. Lack of greenery, inappropriate ground/environment making to move/play hard, and lack of place to sit were the other common factors affecting both groups of the participants' least personal preferences. Different from mothers, children also indicated that they might get lost in their least preferred landscapes. Moreover, familiarity was the factor that affecting both groups of the participants' least favorite landscapes in a different way. While children would not like to visit unfamiliar landscapes personally, mothers thought in an opposite way. Familiarity to a setting had negative on affect mothers' landscape preferences because mothers were personally unwilling to visit usual outdoor settings they frequently see.

Furthermore, park and water settings were also children's and mothers' favorite landscape preferences for their children to visit with their teacher and classmates. However, different from children, mothers also preferred open fields/grassy areas for their children to visit with the teachers and classmates. With regard to the reasons of the participants' particular educational landscape preferences, both groups of the participants reported that they were affected the opportunities for unstructured play, to have fun, unstructured learning about nature while selecting their favorite educational landscapes. Different from children, opportunities for structured learning about nature, opportunities to go on a picnic, safety, and the presence of shaded areas were the factors affecting mothers' favorite landscapes for their children to visit with their teacher and classmates. Consistent with the reasons of their selections of the particular landscape preferences, the most favorite activity which was indicated by both groups of the participants was unstructured play, including playing with toys and natural elements. The other activities which are indicated by the participants were picnicking, unstructured activities that they learn about nature, as well as structured activities, including art and science activities.

Children's and mothers' least preferred educational outdoor setting type, on the other hand, was forest. Different from mothers, children would not like to prefer to visit open fields/grassy areas with their teachers and classmates. Different from children, mothers would not prefer water settings for their children either to visit

together or with their teachers and classmates. With regard to the reasons of the participants' educational preferences, the results showed that mothers' ideas were similar with their children. According to the results, almost all of the factors affecting both children's and mothers' least educational preferences were common: safety hazards, lack of greenery, lack of things to do, and inappropriate ground/environment making hard to move. Different from mothers, children also indicated unfamiliarity as a negative factor affecting their educational landscape preferences. Children's such kinds of expressions confirm their ideas about their least favorite personal landscapes.

With regard to children's and mothers' most favorite educational landscape preferences that they would like to visit together, park, water, and open field/grassy area were the common outdoor setting types. Considering the reasons of the participants' most favorite landscape preferences that they would like to visit together, there were some common points: opportunities for unstructured play, opportunities for picnicking, and opportunities for unstructured learning about nature were the common factors affecting the participants' landscape preferences. Different from mothers, children indicated familiarity as a positive factor influencing their selection of landscape preferences that they would like to visit with their parents. Different from children, presence of water, opportunities for children to have fun, and naturalness of the settings were the factors affecting the selections of the mothers' favorite landscapes that they would like to visit with their children. Consistent with the reasons of their selections of the particular landscape preferences, the most favorite activities which were indicated by both groups of the participants was unstructured play, unstructured learning about nature, picnic, and structured activities. Different from children, mothers also reported camping as an activity in their preferred settings which they would like to visit with their children.

Forest, on the other hand, were the participants' least preferred outdoor setting type that they would like to visit together. Different from mothers, children would not like to visit open fields/grassy areas with their parents. Furthermore, different from children, mothers would not like to visit water settings with their children. The common reasons of the participants' particular landscape preferences as their least preferences were associated with safety hazards, inappropriate ground/environment

making to move/play hard, lack of greenness/barren environment, and lack of things to do/not attractive to children. The only difference in children's reports was that children do not like to visit unfamiliar landscapes with their parent. In addition to the common factors affecting both groups of the participants' landscape preferences, mothers also mentioned about the lack of shade, too much human influence, and their frequent visit to similar settings as negative factors affecting their least favorite landscapes they would visit with their children.

The reasons of the similarities and differences in children's and mothers' outdoor setting preferences can be supported by the literature and each groups of the participants' self-reports about the possible activities that they would like to practice as well as the resources they would need in the particular settings.

Consistent with the results in the literature, one of the striking difference between children's and mothers' most preferred landscape preferences was that while mothers considered mostly the physical and aesthetic attributes of a landscape, children mostly concentrated on play opportunities in their preferences. According to (Balling & Falk, 1982; Sebba, 1991), while adults perceived landscapes just as a background for their activities, children perceived landscapes considering to what extent they afford different kinds of play opportunities for them. Difference in the participants' perceptions of landscapes might be explained through Gibson's ecological approach to perception. According to Gibson (1977), the idea of active engagement of a landscape might arouse functional possibilities in individuals' mind. Several researchers (Heft & Nasar, 2000; Heft & Poe, 2005) studied to identify the distinction between image-based approach to visuals (the spectator stance) and functional approach to vision (the engaged perceiver stance). The main idea of these discussions was that individuals have inclination to subtract their feelings from the visuals that they are able to have first-hand experience. Interestingly, since looking at photographic images is a special kind of visual experience, individuals might feel different feelings that they might not have in real life when they see such visuals (Sontag, 1977). Therefore, the participating children might focus on the action-related properties of the landscapes, while their mothers might concentrate on the visual attributes of such places.

Familiarity was another issue that affected both groups of the participants' most preferred landscape preferences in a different way. Children preferred to visit the landscapes familiar to them, whereas mothers do not like to visit outdoor settings, which they can have an opportunity to access frequently. Researchers also supported that familiar landscapes were appealing for children (Castonguay & Jutras, 2009) whereas such places did not taken into consideration by adults (Park et al., 2010).

Another prominent common factor affecting children' and mothers' most preferred landscape preferences was associated with the opportunities for unstructured play. Supporting this result, Rydberg and Falck (2000) indicated that children prefer landscapes offering variety of unstructured play opportunities for them. The participants' preferences for unstructured play might be explained trough the affordances of the outdoor settings. According to Fjortoft (2001) and Zamani (2016), outdoor environments including loose materials (i.e., dead wood, old trees, different types of trees) which children can manipulate are the best play environments for them. The unstructured play opportunities in a landscape might be climbing on trees, hiding behind bushes, and playing on the fields shaded by bushes or trees (Titman, 1994). Moore (1987) regarded some characteristics of a landscape as: diversity, being untouched by humans, and timelessness in nature as some specific characteristics that might appeal children's attention for unstructured free play in outdoor settings.

Accoring to Gundersen et al. (2016), the landscapes including some water, forests, park settings, and open fields have potentials for unstructured play which is not organized or directed by adults, but is initiated, manipulated, and directed by children themselves. Wooley (2008) indicated that there are some important differences between natural outdoor play environments and playgrounds having standardized equipment and rubber mat. For instance, a standard slide is just for sliding in a seated position and has almost no other use under the supervision of adults. However, boulders in a natural landscape can be arranged and used for jumping, sliding, sitting, and climbing (Herrington & Brussoni, 2015). Therefore, the participants' preferences for unstructured play might be explained by the fact that children can manipulate the environment and can use the natural elements for multiple purposes in such settings. It can be also important to improve children's school

grounds in terms of natural elements. According to the results of Olgan and Kahriman-Öztürk's study (2011), playgrounds in Turkish preschools were insufficient in terms of natural elements including sand and water.

With regard to the resource needs that children and mothers would need in their favorite landscapes, both groups of the participants indicated that there is no need for extra material rather than nature in such environments. White and Stoecklin (1998) indicate that nature has variety of open-ended elements such as plants, soil, sand, water are that children can manipulate. According to these researchers, nature enhances children variety of elements that stimulates their unstructured play opportunities. Frortoft and Sagei (2000) pointed out that children's unstructured play, which is active, self-directed, self-motivated, imaginative, and spontaneous nurture their creativity and enrich their play forms. Since natural elements have interactive attributes, they offer pretend play that stimulate children's imagination and creativity (White & Stoecklin, 1998); in turn promotes their development and learning (Frost, 1992; Rivkin, 1995). Finally, the more diversity and variability children have in nature, the more complexity and variability in their play (Fjortoft, 2001).

It can be said that there is a consistency between the participants' activity preferences and the resources they would need in their favorite landscapes. In other words, the resource needs of the participants actually confirm their reports about their activity preferences. Furthermore, toys were among the participants' resource needs in their favorite landscapes again, confirming the participants' favorite activity since children would prefer to play with toys during unstructured play in natural environments.

The second common activity reported by children and mothers in all cases were unstructured learning about nature. This result was confirmed in the research study conducted by Torquati and Ernst (2013). The researchers indicated that an outdoor environment having some water offer variety of opportunities for unstructured learning about nature because of having greater diversity of life forms, when we compare such environments with forest and open field/grassy areas (Torquati & Ernst, 2013). Moreover, the participants' ideas that they don't need extra materials in their favorite

settings, also consistent with these results since children might play with natural elements, including water during their unstructured play and might learn about nature.

Furthermore, opportunities for picnicking was another common factor affecting the participants' most preferred landscape preferences. This result might be supported by research studies. For example, according to Simmons (1994), picnic amenities in a natural outdoor setting might be effective in children's place preferences. Similarly, children in Zhang and Gobster's (1998) study included facilities for picnicking in their drawings for their ideal playgrounds. In accordance with, children's resource needs that they would need in their favorite landscape included picnic supplies. The participant mothers, on the other hand, might consider that picnicking is a social activity when individuals have time together as a family or with friends.

Another outstanding similarity regarding the participants' most preferred landscape preferences was both children and mothers considered the opportunities for structured learning in their landscape preferences. In fact, the frequency of structured activities had the highest frequency when children visit outdoor settings with their parents rather than the other situations. Furthermore, the highest frequency of structured activities was obtained in mothers' reports in the case when their children visit the outdoor settings with their teacher and classmates. There were similar results with different type of participants in the literature. Researchers (i.e., Ernst & Tornabene, 2012; Torquati & Ernst, 2013) revealed the pre-service teachers ideas about structured activities in natural settings. The pre-service teachers perceived all types of natural landscapes as appropriate environments for structure learning about nature.

Considering these results, although there is no evident in the current study, the participant children in the current research might be affected by their teachers' teaching practices, which might dominantly include structured learning activities, when they indicated their favorite activities in their preferred landscapes. Moreover, participating mothers seemed to accept unstructured play in outdoor settings is not important when they compare such activities with structures indoor play activities in terms of their contribution to children's academic development. Supporting this result, Irwin, He, Bouck, Tucker, and Pollett (2005) asserted that parents overestimated

children's unstructured play, in particular children's physical activities in outdoor environments of their children's school grounds. According to several researchers (Copeland, Sherman, Kendeigh, Saelens, & Kalkwarf, 2009; O'Connor & Temple 2005), this might be explained by parents' lack of awareness and knowledge about the importance of unstructured outdoor play that children mostly engage in vigorous activities.

Lastly, even though just a few of the participants from both groups mentioned about the amenities of a landscape as a significant factor affecting their most preferred landscape preferences, it is worth to discuss this point as well. In essence, while both groups of the participants considered a place to sit in a landscape as an important factor affecting their landscape preferences, the presence of shade was an important factor that only concentrated by mothers. In their study, Nasar and Holloman (2013) found that parents prefer seats, considering the comfort in a landscape more than children do. The authors interpreted this finding as children do not prefer seats in their play environments since children do not like to be supervised by their parents and try to create a private space for themselves. Therefore, the reason why the participant children did preferred seats in a landscape might be related that they get used to be under the surveillance of their parents. Furthermore, the presence of shade was associated with the parent's safety concerns related to protecting children from the harmful effects of the sunlight. This result was discussed in the related literature, as well. Similar to need for shade, children in Nasar and Holloman's study (2013) indicated that they need fences in their play environments considering safety issues.

With regard to the similarities and differences in children' and mothers' least preferred landscape preferences including their ideas about the reasons of their choices, the results showed that safety concerns was the main issue considering the landscape preferences of both groups of the participants. In fact, both groups of the participants did not prefer forest settings for their reported activities in all cases. The main reason for both groups of the participants was related to the physical dangers in forest settings, in particular, the possibility of getting physical injury due to the high density of vegetation in such settings. The possibility of getting lost, to come across see the wild animals in a desolated environment, difficulty to move around were also

the other common possible physical dangers indicated by the participants based on the high density of vegetation in the outdoor settings. However, according to the results, different from children, mothers mentioned about the possible dangers of water and poisonous insects in outdoor settings.

The results about the participants' safety concerns can be supported by some researchers in the literature (Dyment, 2005; Scott, Boyd, Scott, and Colquhoun, 2015). According to Dyment (2005) allergenic reactions to vegetation or poisonous insects, physical injuries based on natural elements, reduction of the sight distance based on the high density of trees, and the presence of water in a landscape are the main concerns reported by adults when they visit natural settings with their children. According to Scott, et al. (2015), gaining acceptance of such concerns as barriers or managing them might be associated with risk-averse culture within society. Supporting this, Little (2010) indicated that parents' risk-taking beliefs affect their children's outdoor play. Therefore, Turkish mother's cultural risk-averse tendencies might prevent children from benefits of natural forest settings.

Nevertheless, the results of the other studies might be in the opposite way. For instance, the results revealed that children prefer to play wild nature considering the affordances that nature offers to them (Zamani, 2016). Moreover, Gundersen et al., (2016) found that children commonly prefer forest settings since they can have variety of opportunities for unstructured play in such settings. According to the researchers, the reason why children prefer forest setting may be associated with the familiarity factor (Gundersen, Frivold, & Myking, 2006; Gundersen et al., 2016). In fact, if forest settings are very common around children's neighborhood, children get used to play such settings. The reason why children prefer forests having high density of tree might also be related to children's feelings of freedom without their parents' supervision (Korpela, 1992; Korpela et al., 2002). Therefore, in the current study, the participant children's non-preferences for forest settings to play might be related to the physical characteristics of the environment where they live and lack of forest settings in their neighborhood.

Similar to children, the participant mothers' non-preferences for forest settings to visit with their children might also be related to the lack of nearby forest settings.

The findings of the study conducted by Skar, Gundersen, Bischoff, Follo, Pareliussen, Tordsson, & Stordahl (2014) supported the result of the current study. The researchers found that parents use nearby nature, in particular, forests less than their private gardens and playgrounds with their children. In particular, they are more willing to take their children outdoor settings for planned or structured activities rather than unstructured free play because of safety concerns including both physical and social dangers. This might be related to either high density of vegetation or fear of crime (Shaffer & Anderson, 1985).

Different from children, mothers also did not prefer water settings for their children to visit with their teacher and classmates. In this regard, the study of Gundersen et al., (2016) had consistent results with the current research. The researchers emphasized that the use of different kinds of landscapes having water, including lakes, rivers, and streams is restricted for children by adults because of the difficulty of their control of in such places. From a similar point of view, the participant mothers' non-preference of the landscapes having some water for their children to visit with the teacher and classmates might be related to their safety concerns. In fact, the parents might though that it will be difficult for the teacher to control and provide safety for children as a class in outdoor settings. This result can also be confirmed by the mothers' own reports about the resource needs that they would need in their favorite landscapes. According to the mothers, increasing a number of adults who can visit the landscapes having water with the particular teacher and the whole class might be a good solution to handle with this problem. Moreover, having first aid kit, which was also reported by the participant mothers as one of resource needs, might be another way to reduce their safety concerns about their children in outdoor settings.

### 5.5 Obstacles preventing the participants from visiting natural landscapes

With regard to the obstacles that may prevent children from visiting the outdoor settings, the results showed that children indicated the same obstacles in the case they visit the landscapes with their parents as well as with their teacher and classmates. The most frequent obstacles highlighted by the children for both cases were related to

weather conditions and health problems. Transportation problems, safety concerns, and other things to do were the other obstacles that were also reported by the children.

According to the results, the obstacles that preventing mothers to visit outdoor settings with their children as well as preventing their children's visit the settings with their teacher and classmates had some similar points. These common points were bad weather conditions, parents'/teachers' lack of time to visit outdoor settings, health problems, inconvenient natural places to visit, and safety concerns.

Most of these results might be explained through the present conditions about natural outdoor settings in the contemporary world. According to some researchers (Clements, 2004; Sandberg, 2012), loss of nature is one of the essential obstacles preventing children's outdoor play in today's world. Karsten and Van Vliet (2006) explained this situation as one of the results of urbanization which open public spaces have become not only less usable but also less accessible to inhabitants. Moreover, Ward (1990) stated that children living even rural areas have less opportunity to access open spaces. Supporting this result, several researchers (Borge, Nordhagen, & Lie., 2003; Skar & Krogh, 2009; Mjaavatn, 2013) indicated that even in countries like Norway where nature is an essential part of the culture, children's use of natural outdoor settings has decreased when it compared with a few decades ago.

Parallel to the results of this research, Skar et al. (2016) indicated that parents'/teachers' lack of time to visit outdoor settings with children might be related not only easy access to such environments, but also adults' safety concerns about their children and other things that they have to do. This obstacle might be explained through time pressure or bustle to do something to fulfill the responsibilities of living in a modern society (Skar et al., 2016). Researchers (i.e., Coakley, 2012; Wood, 2009) asserted that putting children into organized activities or target-oriented structured activities has been more popular than letting them playing outdoors among parents. According to Coakley (2012), children's engagement to organized activities can be easily supervised by adults than their engagement in unstructured free play outdoors. However, this might prevent children to gain benefits of spending time in nature considering their development Wood (2009).

Although it was not directly evident in the current study findings, the mothers' reports related to parents'/teachers' lack of time to visit outdoor settings might be explained through their ideas about teachers' responsibilities to fulfill the requirements of school curricula. According to Rickinson et al. (2014), teachers might have limited time to get the children outdoors because they have to do extra-curricular activities as well as trying to fulfill the school curriculum's obligations at educational settings. Therefore, the participant mothers might think that teachers should have extra time to take children outdoors rather than integrating outdoor activities into the curriculum. In contrast to this perspective, Jayasuriya,et al. (2016) found that parents might value outdoor play time at school settings and perceive outdoor play important as much as other curricular domains such as literacy, math, and science. Consistent with the results of this study, lack of funding as well as transportation problems which are also reported by the mothers seemed to be barriers that prevent teachers visiting outdoor settings with children (Rickinson et al., 2004).

Although the participating mothers did not mention, several researchers (Jorgensen, Hitchmough, & Calvert, 2002; Kuo, Bacaicoa, Sullivan, 1998; Müderrisoğlu & Gültekin, 2013; Nasar & Fisher, 1993) highlighted about the possible dangers of the social environment rather than physical environment of outdoor settings. To demonstrate, Veitch et al. (2006), indicated that fear of strangers, teenagers and gangs are factors preventing parents' tolerance concerning children's outdoor play. In parallel, several researchers (Jorgensen et al., 2002; Shaffer & Anderson, 1985) stated that since high density of vegetation increases the risk of crime, it restricts individual's visit to outdoor settings.

One of the other barriers against taking children to outdoors was weather conditions. Both children and mothers reported that neither too hot not too cold weathers are appropriate to visit outdoors. Consistent with the results of the current study, the weather conditions was also suggested as one of the barriers against taking children to outdoors in some research studies (Bloom, Holden, Sawey, & Weinburgh, 2010; Kos & Jerman, 2013). However, in these studies, the barriers related to weather conditions were reported by preschool and elementary school teachers rather than children and their parents as being in the current research. According to Kos and

Jerman (2013), individuals' concerns related to weather conditions might be related with their increasing responsibility to protect children from discomforts in nature. These researchers also indicated that bad weather conditions might restrict the activities that parents would like to do with their children. The participant mothers in the current research might have similar perceptions and they might avoid going outside with their children in very cold and hot weathers. Moreover, the participant children might be influenced by their mothers' actions in terms of avoiding going outside in bad weathers. Furthermore, children might see bad weathers as barriers against to visit outdoor settings based on their previous experiences with their parents or with their teachers and classmates.

In addition, the mothers' reports about being tired as one of the obstacles preventing them going outdoors with their children might be explained by their overbooked daily schedules. The high percent of the participant mothers was working. This might make them to feel tired and unwilling to visit outdoors with their children. In other words, since working mothers might feel tired, they might prefer to stay at home and relax after work and weekends.

## 5.6 Implications

This section includes the implications of the current research for landscape/city planners, teachers, parents, administrators, and teacher education programs. The proposed implications are based on the results of the study in terms of children's biophilia and children's and their mothers' landscape preferences.

### 5.6.1 Implications for landscape/city planners

The results of the current study may reveal important clues for the landscape/city planners, particularly concerning the outdoor setting types (water, park, open field/grassy area, and forest). The children participated in the study enjoyed water settings since they could have opportunities for unstructured and structured play in such environments. Moreover, water was an important element that children

aesthetically liked in a landscape. Since the presence of water generally seemed to draw children's attraction in any kind of outdoor setting, city planners and designers of outdoor play areas should strategically place water areas in both designated outdoor play environments and undesignated outdoor settings (Marcus & Francis, 1997).

The results also pointed out that the affordances of a landscape as well as the criteria of having fun in a landscape were important factors that affect children's landscape preferences in particular park settings. In fact, the participant children rated positively both the high degree of naturalness and play opportunities in park settings. Therefore, it is important for planners to consider including many elements of natural settings and play opportunities while designing playgrounds.

Children do not have a specific preference in visiting open fields/grassy areas with the reasons of comfortable places for playing actively and lack of diversity or variability, respectively. Variability and diversity of a landscape were important factors influencing the participant children's landscape preferences. According to Sandseter (2012), it is important for landscape planners to design stimulating and challenging places where children would feel safe and would have a chance for independent play. Therefore, open fields/grassy areas might be enriched with natural elements to attract children's attention more and make them desire to visit such environments for playing. In addition to being appealing for children, such environments should be accessible for children to make them visit such places frequently (Skar & Krogh, 2009).

Children's responses indicated that they have safety concerns when visiting forest settings due to the high density of trees and vegetation and, in turn, the possibility of getting physical injuries, getting lost, and coming across with wild animals. In order to reduce children's such kinds of safety concerns, the visibility distance should be increased (Kuo & Sullivan, 2001; Michael & Hull, 1994). According to the results of the current study, since increasing the visibility distance in a forest setting requires human influence on a landscape, this suggestion would be consistent with children's preferences for maintained settings as their most preferred one. In order to increase the visibility distance in forest settings, the density of the trees and vegetation should be reduced, when possible, with consideration of minimal

interference to the natural environment. This way, there would be much more open spaces for children to play and move easier. Moreover, children's concerns about getting physical hurt would diminish. Reducing the high density of trees and vegetation would also provide children to see potential hazards that might come from wild animals and would save time to take necessary precautions how to protect themselves. Furthermore, increasing the vehicle access to forest settings would also help to overcome children's safety concerns (Herzog & Kutzli, 2004). By this way, forest settings would be more accessible to children and the probably of children's visit could be increased in such settings, in turn, their familiarity with such settings would be increased.

With regard to the landscape preferences in terms of levels of human influence, the results of the current study showed that both natural and maintained environments might be preferable by children. Therefore, there should be a balance considering the presence of both natural and maintained elements in a landscape where children would visit with an accompanied adults and/or friends.

In the light of children's landscape preferences in terms of both outdoor setting types and levels of human influence, the potential landscapes where children would visit should include natural settings including variety of elements, such as trees, grassy areas, and water have many affordances for children to investigating, playing vigorously, and socializing (Janssona, Sundevall, & Wales, 2016; Noren-Bjorn, 1982). Additionally, combining both natural and maintained elements, which increase the functions of children's play, might be useful to increase children's use and visit different outdoor settings including school grounds (Herrington & Studtmann, 1998; Jansson & Persson, 2009; Martensson, et al., 2004) and public playgrounds (Jansson, 2008). As indicated by several researchers (i.e., Castonguay & Jutras, 2009; Min & Lee, 2006), after ensuring safety, the essential issue should be offering different kinds of play opportunities with both natural and built elements in the landscapes having high potential to be visited by children.

The results regarding the participant mothers' landscape preferences in terms of both outdoor setting types and levels of human influence have some implications for the landscape planners and designers as well. To begin with the implications for

the landscape planners and designers, the results of the study are considered landscapes in terms of outdoor setting types including, park, water, open field/grassy area, and forest, and levels of human influence. Results revealed that the participant mothers preferred park settings for their children, but not for themselves personally. Considering the results, in order to increase mothers' visit to park settings with their children, the planners and designers might increase the places (e.g. picnic tables, benches) that adults can sit and socialize with each other and with their children.

Moreover, the greenness of the park settings might be increased and natural elements might be enriched for children's unstructured play activities with such elements. As suggested by Maxwell, Mitchell, and Evans (2008), it would be better to nurture children's development and learning not only by greening the environment, but also increasing the duration of exposure to visit nature settings.

The results related to mothers' preferences for water settings point out that the reasons for mothers' desire to visit such settings can be transformed into advantage for landscape planners and designers. Since mothers liked water environments to visit because of variety of reasons including its visual and relaxing effect, opportunities for different kinds of enjoyable physical and social activities, the landscape planners and designers should consider water in possible landscapes that mothers and children would visit together. However, the mothers' safety concerns for their children in water settings were also very high. In order to lessen parents' concerns about their children's safety, children's play environments should be designed considering the optimization of play opportunities to nurture children's developmental needs and safety as well (Brussoni et al., 2012). Similarly, Smith (1998) stated that the optimal way for adults to deal with children's risky play in to challenge with risks within a relatively safe play environment. Another thing that should be taken into account by landscape planner and designers to lessen the mothers' safety concerns should be the consideration of rational adult-child ratio during the visit to water settings. Lastly, the level of water should not be threatening children's lives to make children have more interaction with water safely.

One of the striking difference between children's and mothers' most preferred landscape preferences was that while mothers considered mostly the physical and

aesthetic attributes of a landscape, children mostly concentrated on play opportunities in their preferences. Therefore, it can be suggested that landscape designers should plan aesthetically appealing outdoor environments with enriched play opportunities for children to increase parents and children's visits to such environments.

Familiarity was another subject that affected both groups of the participants' most preferred landscape preferences in a different way. In fact, children preferred to visit the landscapes familiar to them. On the other hand, mothers indicated that they do not like to visit familiar outdoor settings, which they can have an opportunity to access frequently. Therefore, it can be suggested to increase the number of public outdoor environments, which children can easily access with their parents in their local environments. Additionally, while planning such environments, the landscape designers should take into consideration not only children's play opportunities, but also different kind of facilities that parents can engage within such environments.

Another factor affecting children's and mothers' most preferred landscape preferences was related to the landscapes affordance for unstructured play. Therefore, any kind of outdoor settings that children can visit can be enriched in terms of natural materials to offer unstructured play opportunities for children.

### 5.6.2 Implications for administrators, teachers, and parents

Results of the current study indicate that young children's existing commitment to nature can be turned into an advantage in educational settings. Greening school grounds and enriching such environments with natural elements might be a good start to increase children's connection with nature. It can be also important to improve children's school grounds in terms of natural elements. Olgan and Kahriman-Öztürk's study (2011) showed that playgrounds in Turkish preschools need to be improved in terms of natural elements including sand and water. Therefore, it is suggested to improve outdoor environments, including school grounds by adding loose materials to increase children's free play opportunities.

Once the landscapes are designed considering children's landscape preferences represented above, it is important how such environments could be used for children's

learning and development through the guidance of parents and teachers. In essence, parents and teachers should be knowledgeable about how to integrate experiences at school grounds and field trips to outdoor settings out of school into the curriculum and activities (Akoumianaki-Ioannidou & Paraskevopoulou, 2016). As suggested by Akoumianaki-Ioannidou and Paraskevopoulou (2016), the results of this study promote that, as a first step, teachers' ability to incorporate outdoor activities into teaching can be supported through teacher training practices in both undergraduate years and in-service trainings. As supported by Davis (1998), as a second step, the results also suggest parents, teachers, and teacher educators should work collaboratively; they should inform each other considering children's outdoor experiences and discuss how to use such experiences for the benefit of children's development and learning.

Moreover, nature experiences, either in school grounds or in different outdoor settings out of school, should be a part of the curriculum. In fact, teachers can implement nature activities regularly in their school grounds. They can also enrich children's nature experiences by arranging field trips to different kinds of outdoor settings. Children's connection with the natural world could be encouraged through these visits. In particular, in such landscapes, the accompanying adults might let children to have hand-on experiences to investigate the environment and nurture the connection between children and nature (Akoumianaki-Ioannidou & Paraskevopoulou, 2016). Such experiences, which let children to observing, exploring, and experimenting, might increase their environmental awareness and nurture their cognitive development (Blair, 2009).

Some of the barriers reported by either the participating children or mothers against visiting to natural landscapes were weather conditions, health problems, transportation problems, safety concerns, other things to do, parents'/teachers' lack of time to visit outdoor settings, tiredness, and inconvenient natural places to visit.

There might be several solutions for aforementioned barriers against children's visits to outdoor settings either with their parents or with their teachers and classmates. For instance, children might be taken into local outdoor settings to reduce the problems related to both transportation and safety (Scott et al., 2015). Visitations to such places

with their parents after work or during weekends might be a solution. Moreover, the teachers should arrange field-trips to local outdoor environments with the participation of parents. As suggested by Dyment (2005), greening outdoor environments of schools might be another solution to several barriers such as transportation problems, safety issues, and lack of time to visit outdoor places out of school since school grounds are available and secure environments for children to play outdoors. Bentsen, Mygind and Randrup (2009) advocated that collaborative work of schools, teachers, landscape and park managers is needed to achieve better use of natural spaces in children's education.

Parents' participation to children's activities might also help to decrease their safety concerns. Since parents' involvement to children's outdoor experiences increase the number of adults per child, parents might feel more comfortable about their children's safety. To demonstrate, parent involvement to children's education should be achieved through field trips arranged by the teachers to different kinds of outdoor settings in children's local environment. Parents might have a chance to observe their children's experiences and gains in such settings. In addition, they might have opportunities to observe outdoor teaching practices and to gain knowledge about effective outdoor experiences with children. Finally, parents might have idea about how teachers manage with any problem that they face with during the visits to outdoor settings.

Since children are dependent for accompanying adults, including both parents and teachers to visit natural environments, it would be essential to increase adults' knowledge about the importance of visiting different kinds of landscapes including variety of textures and materials, natural areas with loose parts, and water areas (Wardle, 1995). Furthermore, increasing adults' motivation to visit outdoor settings would be good to increase the possibility to visit such environments with their children (Veitch et al., 2006).

The results of the current research reveal that the safety concerns of the participants was mainly related to the possibility of getting physical injury due to the high density of vegetation in natural settings. Since this might be associated that the participants live in a risk-averse culture that might prevent children from benefits of natural forest settings. In order to change this culture, adults might be informed about

the importance of outdoor risky play for young children to test their limits and boundaries; which in turn, their development and learning (Sandseter, 2007). In fact, both parents and teachers might be informed about the importance of children's positive risk-taking, encouraging them to meet these challenges, possible injury risks and the ways of managing them as well as safety policies and regulations (Sandster, 2007). Teachers might be informed by pre-service and in-service teacher training programs in order to prepare environmental education programs for children considering their strengths and weaknesses. Parents also might be informed by parent involvement activities in their children's early child care centers.

One of the striking results of the study is that the participating mothers seemed to accept unstructured play in outdoor settings is not important when they compare such activities with structured indoor play activities in terms of their contribution to children's academic development. As a practical solution to this problem might be parent involvement activities might be arranged to increase the awareness of parents in terms of the importance of children's unstructured play in nature in terms of their learning and development. For instance, providing parents variety of opportunities to observe their children learning practices outdoors might be important to alert them in terms of the benefits of outdoor activities for children's learning and development (Sheridan, Knoche, Kupzyk, Edwards, & Marvin, 2011). Parents and teachers should be informed about one of the best practice recommendations of the experts suggesting minimum of 60 min per day as outdoor play time for child care centers to be able to support young children's learning, development, and well-being (American Academy of Pediatrics, Council on Sports Medicine and Fitness and Council on School Health, 2006; American Academy of Pediatrics, American Public Health Association, and National Resource Center for Health and Safety in Child Care and Early Education, 2011). In addition to this, both parents and teachers should be informed about the early childhood guideline launched by North American Association for Environmental Education (NAAEE) (2010), which aimed to increase adults' awareness and knowledge considering the value of nature explorations, not only for children's academic development, but also for their whole-development and well-being. In the light of these information, the first step might be including these guidelines and best

practice recommendations in teacher training programs or in-service teachers training; then, as a second step, parents might be informed through the effective communication with the educators in their children's early child care institutions (Jayasuriya, Williams, Edwards, & Tandon, 2016).

With regard to the results of this research, parents'/teachers' lack of time to visit outdoor settings and parents' tiredness were two of the obstacles to visit natural landscapes. Since teachers' responsibilities to fulfill the requirements of school curricula is considered by the participants as one of the barriers against visiting natural settings, it is suggested to inform parents about the value of unstructured outdoor play which increases children's creativity, imagination, and self-motivation (Frortoft & Sagei, 2000); in turn, their whole development and learning (Rivkin, 1995).

Moreover, since the participating mothers' might have overbooked daily schedules, they might let children to play within such environment, if possible. Furthermore, if parents have enough budget for visiting some natural places and sleep over there for the weekend, they might take rest and their children might have a chance to play outdoors.

### 5.6.3 Implications for teacher education

Although it is out of the scope of the current research, it can be suggesting that increasing teachers' knowledge about how they have quality time with children in natural settings or how they can integrate natural outdoor activities into the curriculum can be very beneficial. The number of related courses focusing on natural and environmental issues as well as enhancing hands-on experiences natural outdoors should be increased in teacher training programs (Yılmaz, Olgan, & Öztürk-Yılmaztekin, 2016). In a similar way, in-service teachers can be informed about not only the importance of nature experiences, but also how outdoor activities in nature could effectively be incorporated into the curriculum through in-service training programs given by the field experts.

Once teachers gain awareness about the importance of sufficient and regular nature experiences for children's health, development and learning as well as have

sufficient information about the best practical implementations with children in natural settings, they might inform parents effectively. In fact, teachers can encourage parents to participate into their children's education through parent involvement activities at school grounds or in field trips. Therefore, children's learning and development could be supported by teachers' collaborative work with parents. As children have more experiences in natural environments, they would have a deeper sense of affinity for nature (Kalvaitis & Monhardt, 2015) and their connection with the nature would be stronger (Cheng & Monroe, 2012).

One of the results of this research showed that bad weather condition is one of the barriers against visiting natural landscapes. Therefore, both pre-service and in-service training programs should emphasize that all weather conditions might be appropriate and offer different kinds of outdoor play opportunities for children. Moreover, teachers should be informed about what are the precautions that should be taken into consideration before visiting outdoor settings and how to manage the barriers during the implementation of outdoor activities with children in such environments through teacher training programs. When teachers understand the value of outdoor play and have sufficient information about how to integrate outdoor activities into their curriculum, they might knowledgably support parents to practice outdoor play with their children. Moreover, in order to increase parents' knowledge about the importance of outdoor activities for children's learning and development as well as to observe effective implementation of such activities, teachers might integrate parent-involvement activities into their curriculum.

## 5.7 Recommendations for Further Studies

There are several recommendations for future research based on the findings of the current research.

This study investigated 5-year-old preschool children's biophilia scores and children's and their mothers' landscape preferences. One of the critical points for selecting the participant children for this research was related to their enrolment to different type of schools, which are natural and non-natural. In order to see whether or

not children's living environments (house or apartment) as well as different type and level of vegetation in different locations would affect children's biophilia or landscape preferences, future research might investigate the effects of such variables.

In addition, it was known from the literature that mothers' maternal education can affect children's biophilia (Rice & Torquati, 2013). In the current study, the participant mothers were highly educated. Since the level of education might be an indicator of family income which may significantly influence children's biophilia scores and their landscape preferences, future research might include more economically diverse families.

Moreover, both children's and mothers' landscape preference questionnaires were used accompanied by sixteen photographs taken by the researcher in the late spring. Therefore, in order to see to what extent the participants' landscape preferences would change, it might be suggested for future researchers to investigate the participants' landscape preferences by using the photographs taken in different seasons.

The results of this research in terms of the participants' landscape preferences were limited with 20 children's and their mothers' landscape preferences. Therefore, further studies can be conducted with bigger sample size to get more representative findings. In this research, almost all the participating children and mothers in the sub-group were familiar with and available to natural landscapes, it could not be investigated the effects of such variables on either children's biophilia or children's and mothers' landscape preferences. Therefore, increasing the sample size could be effective to reveal the impacts of these variables on individual's biophilia and landscape preferences.

This study investigated the similarities and differences in all participating children's and mothers' landscape preferences. However, as a further research, in order to see to what extend children's and mothers' landscape preferences correspond to each other, the data coming from each children's and their mothers' landscape preferences might be analyzed, separately. This might also help us to see the effects of culture on individuals' landscape preferences. Similarly, investigation of children's and their fathers' landscape preferences might be suggested as a further research.

These studies might help us to understand to what extend children' and fathers' landscape preferences affect each other's. Such studies might also help us to see how the particular children's mothers' and fathers' landscape preferences correspond to or differ from each other's preferences.

According to the results of the current research, children had 'undecided' scores for their 'maintained' versus 'natural' landscape preferences. This research assumed that children understand these words in the same way their mothers do. Therefore, further studies might investigate how children actually perceive and understand the concepts of 'nature', 'natural', and 'maintained' concepts.

In addition, this study only conducted with the particular community belonging to the same culture living in an urban, metropolitan city. Therefore, cross-cultural studies might be suggested to conduct to compare different cultural communities across the countries or within Turkish culture including urban and rural citizens.

Finally, this study was only conducted with children and their mothers. Considering the idea that teachers' preferences may lead to their indoor and outdoor activities, further studies are needed to investigate both pre-service and in-service teachers' landscape preferences. To demonstrate, the researchers might investigate the most effective methods of teacher instruction in helping teachers make use of natural elements around their school for play and learning. They might also explore the effects of schoolyard greening on teachers and students. Moreover, researchers might investigate what kind of curriculum and administrative supports enable teachers to make good use of green school grounds. Investigating teachers' landscape preferences might also be important to see the similarities and differences between children and their teachers' landscape preferences.

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# APPENDICES

## APPENDIX A

### Children's Biophilia Measure

| **Biophilic Item** | **Non-Biophilic item** |
|---|---|
| This boy likes to play outside | This boy likes to play inside |
| This boy likes to dig for worms | This boy doesn't like to dig for worms |
| This boy likes to splash in puddles | This boy doesn't like to splash in puddles |
| This boy likes to watch birds | This boy doesn't like to watch birds |
| This boy likes to catch bugs and look at them | This boy doesn't like to catch bugs and look at them |
| This boy likes to watch animals like cats and dogs | This boy doesn't like to watch animals like cats and dogs |
| This boy likes to play in creeks and lakes | This boy doesn't like to play in creeks and lakes |
| This boy likes to play with sticks, leaves, and pinecones | This boy doesn't like to play with sticks, leaves, and pinecones |
| This boy likes to listen to birds singing | This boy doesn't like to listen to birds singing |
| This boy likes to look at the stars and moon at night | This boy would rather play indoors at night |
| This boy likes to learn about wild animals | This boy isn't interested in wild animals |

*** Substitute "this girl" when the respondent is a girl**

## APPENDIX B

### Children's Landscape Preferences Questionnaire

1. Child's gender
   □ Female
   □ Male

2. What is the meaning of nature for you?
   _____.

3. What is the meaning of natural landscape for you?
   _____.

4. Do you have any previous experiences in natural landscapes?
   □ Yes
   □ No
   If yes, please tell me about that experience.
   _____.

5. Do you have any natural landscapes in your neighborhood?
   □ Yes
   □ No
   If yes, please specify the characteristics of that landscape(s):
   _____.

6. Do you visit natural landscapes in your daily life?
   □ Yes
   □ No
   If yes, please specify the characteristics of that settings and indicate the adult accompanied for you during that visit:
   _____.
   The accompanied adults is my _____.

7. How often does your early childhood center offer natural outdoor activities for you? (This question could be asked the teacher of the children).
   - □ Every day
   - □ Several times a week
   - □ Once a week
   - □ 1-3 times a month
   - □ Infrequently

8. How much time does your early childhood center offer natural outdoor activities for you? (This question could be asked the teacher of the children).
   - □ 15-30 minutes
   - □ 31-60 minutes
   - □ 1-2 hours
   - □ More than 2 hours

**Using the set of photos provided in the paper envelope, please answer the following questions. In doing so, please note that each photo has a number on the back; you can use that number as the label for the photo. Also please do not write on the photos, as other students will be using this same set. Thank you!**

1. Which three places would you personally *most* like to visit? (write the number from the back of the photos)

   Photo # _____, Photo # _____, and Photo #_____

   Why did you select these three photos? (What about these places/photos make them the ones you'd be most likely to visit?).

| |
|---|
| |

2. Which three places would you personally *least* like to visit?

   Photo # _____, Photo # _____, and Photo #_____

   Why did you select these three photos? (What about these places/photos make them the ones you'd be least likely to visit?).

| |
|---|
| |

3. Which three places do you would want to visit *most* with your parents?

   Photo # _____, Photo # _____, and Photo #_____

   Why did you select these three photos? (What about these places/photos make them the ones you want to visit most with your parents?).

| |
|---|
| |

For each of the three photos you selected, please indicate what you would do with your parents in a place like this.

| | |
|---|---|
| Photo#___: | |
| Photo#___: | |
| Photo#___: | |

For each of the three photos you selected, please indicate what you would need in order to spend time with your parents in a place like this.

| | |
|---|---|
| Photo#___: | |
| Photo#___: | |
| Photo#___: | |

4. Which three places do you would want to visit *least* with your parents?

   Photo # _____, Photo # _____, and Photo #_____

   Why did you select these three photos? (What about these places/photos make them the ones you want to visit least with your parents?).

| |
|---|
| |

For each of the three photos you selected, please indicate why you want to visit least with your parents.

| | |
|---|---|
| Photo#___: | |
| Photo#___: | |
| Photo#___: | |

5. Considering all those photographs, is there anything to prevent you to visit the natural landscapes with your parents?
   If yes, please indicate the possible obstacles for you to visit such kinds of settings/places with your parents.

| |
|---|
| |

6. Which three places do you would want to visit *most* with your teacher and your classmates?

   Photo # _____,  Photo # _____, and Photo #_____

   Why did you select these three photos?  What about these places/photos make them the ones you want to visit most with your teacher and your classmates?

| |
|---|
| |

For each of the three photos you selected, please indicate what you would do with your teacher and your classmates in a place like this.

| | |
|---|---|
| Photo#___: | |
| Photo#___: | |
| Photo#___: | |

For each of the three photos you selected, please indicate what you would need in order to spend time with your teacher and your classmates in a place like this.

| | |
|---|---|
| Photo#___: | |
| Photo#___: | |
| Photo#___: | |

7. Which three places do you would want to visit *least* with your teacher and your classmates?

   Photo #___, Photo #___, and Photo #___

   Why did you select these three photos? What about these places/photos make them the ones you want to visit least with your teacher and your classmates?

| |
|---|
| |

For each of the three photos you selected, please indicate why you want to visit least with your teacher and your classmates in a place like this.

| | |
|---|---|
| Photo#___: | |
| Photo#___: | |
| Photo#___: | |

8. Considering all those photographs, is there anything to prevent you to visit the natural landscapes with your teacher and your classmates?
   If yes, please indicate the possible obstacles for you to visit such kinds of settings/places with your teacher and your classmates.

| |
|---|
| |

## APPENDIX C

### Parent's Landscape Preferences Questionnaire

1. What is your relationship with your child?
   □ Mother
   □ Father

2. Please indicate your age
   □ 18-20 □ 26-30 □ 36-40 □ 46-50 □ 56-60
   □ 21-25 □ 31-35 □ 41-45 □ 51-55 □ More than 60

3. What is your educational level?
   □ Primary School
   □ High School
   □ University
   □ Master's or Doctoral Degree
   □ No school experience

4. What kind of setting did you grow up?
   □ Natural
   □ Unnatural

5. What is the meaning of nature for you?
   _____.

6. What is the meaning of natural landscape for you?
   _____.

7. Do you have any natural landscape in your neighborhood?
   □ Yes
   □ No
   If yes, please specify the characteristics of that landscape:
   _____.

8. Do you visit natural landscapes in your daily life?
   □ Yes
   □ No
   If yes, please specify the characteristics of those settings:
   _____.

9. How often do you visit natural landscapes in your daily life?
   □ Every day
   □ Several times a week
   □ Once a week
   □ 1-3 times a month
   □ Infrequently

10. How much time do you spend in natural landscapes when you visit one of them?
    □ 15-30 minutes
    □ 31-60 minutes
    □ 1-2 hours
    □ More than 2 hours

11. Do you have any previous experiences in natural landscapes?
    □ Yes
    □ No
    If yes, please tell me about that experience and the characteristics of those landscape(s).
    _____.

12. Do you visit such kinds of natural landscapes with your child in your daily life?
    □ Yes
    □ No
    If yes, please specify the characteristics of those landscape(s):
    _____.

13. How often do you visit natural landscapes with your children in your daily life?
    □ Every day
    □ Several times a week
    □ Once a week
    □ 1-3 times a month
    □ Infrequently

14. How much time do you spend with your child in natural landscapes when you visit one of them?
    □ 15-30 minutes
    □ 31-60 minutes
    □ 1-2 hours
    □ More than 2 hours

15. Do you have any previous experiences in natural landscapes with your child?
    □ Yes
    □ No
    If yes, please tell me about that experience and the characteristics of those settings.
    _____.

**Using the set of photos provided in the paper envelope, please answer the following questions. In doing so, please note that each photo has a number on the back; you can use that number as the label for the photo. Also please do not write on the photos, as other students will be using this same set. Thank you!**

1. Which three places would you personally *most* like to visit? (write the number from the back of the photos)
   Photo # _____, Photo # _____, and Photo #_____
   Why did you select these three photos? (What about these places/photos make them the ones you'd be most likely to visit?).

| |
|---|
| |

2. Which three places would you personally *least* like to visit?
   Photo # _____, Photo # _____, and Photo #_____
   Why did you select these three photos? (What about these places/photos make them the ones you'd be least likely to visit?)

| |
|---|
| |

3. Which three places do you would want to visit *most* with your child considering his/her learning and development?
   Photo # _____, Photo # _____, and Photo #_____
   Why did you select these three photos? What about these places/photos make them the ones you want to visit most with your child considering his/her learning and development?

| |
|---|
| |

For each of the three photos you selected, please indicate what you would do with your child in a place like this.

| | |
|---|---|
| Photo#___: | |
| Photo#___: | |
| Photo#___: | |

For each of the three photos you selected, please indicate what you would need in order to spend time with your child in a place like this?

| | |
|---|---|
| Photo#___: | |
| Photo#___: | |
| Photo#___: | |

4. Which three places do you want to visit *least* with your child?
   Photo #___, Photo #___, and Photo #___
   Why did you select these three photos? What about these places/photos make them the ones you want to visit least with your child?

| |
|---|
| |

For each of the three photos you selected, please indicate why you want to visit least with your child in a place like this.

Photo#___:

Photo#___:

Photo#___:

5. Considering all those photographs, is there anything to prevent you to visit the natural landscapes with your children even if you would like to visit those settings together?

□ Yes

□ No

If yes, please indicate the possible obstacles for you to visit such kinds of settings/places with your child.

6. Which three places you would want *most* by the teacher of your child to bring the children in his/her class in a place like this?

Photo # _____, Photo # _____, and Photo #_____

Why did you select these three photos? What about these places/photos make them the ones you would want most the teacher of your child to bring the children as a class in a place like this?

For each of the three photos you selected, please indicate what you would want to be done by the teacher of your child with the children in his/her class in a place like this?

Photo#___:

Photo#___:

Photo#___:

For each of the three photos you selected, please indicate what would your child's teacher and the children in his/her class need in order to spend time in a place like this?

Photo#___:

Photo#___:

Photo#___:

7. Which three places you would want *least* by the teacher of your child to bring the children in his/her class in a place like this?
   Photo #___, Photo #___, and Photo #___
   Why did you select these three photos? What about these places/photos make them the ones you want least by the teacher of your child to bring the children as a class in a place like this?

For each of the three photos you selected, please indicate why you want those places to be visited least by your child, his/her teacher and his/her classmates.

Photo#___:

Photo#___:

Photo#___:

8. Considering all those photographs, would it be any anything to prevent you to be visited such kinds of settings/places by your child with his/her teacher and classmates?
   - □ Yes
   - □ No

# APPENDIX D

## Photographs of Different Types of Landscapes

Photograph #1

Photograph #4

Photograph #2

Photograph #5

Photograph #3

Photograph #6

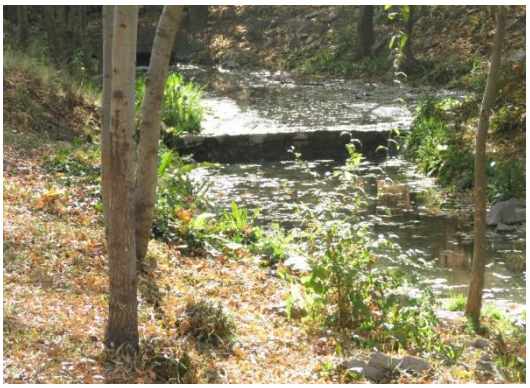
Photograph #7

Photograph #11

Photograph #8

Photograph #12

Photograph #9



Photograph #13

Photograph #10

Photograph #14

Photograph #15

Photograph #16

## APPENDIX E

### Long and Short Descriptions of the Landscapes

Photograph #1: Open forest with a mix of uncut and irregular texture of grass on the floor, a fresh short tree, no path (open forest with no path).

Photograph #2: Natural park with a high density of forested backdrop, two wooden picnic tables in front, uncut grassy floor, no path (natural park with picnic tables).

Photograph #3: Shallow and still water, grassy floor with woodland background, the sunlight appears to be shining through trees (shallow and still water with grassy floor).

Photograph #4: Open field completely covered with mowed grass, highly dense forested backdrop, a metal box next to a fire extinguisher, shadow of long and large trees on the grassy floor (open field completely covered with mowed grass).

Photograph #5: Water stream in a man-made concrete water bed with small stones on the edges, several small well-trimmed plants near water, a large tree in the foreground and a lot of young trees on a poor grassy land, a long stone wall at far back (water stream in a man-made concrete water bed with small stones on the edges).

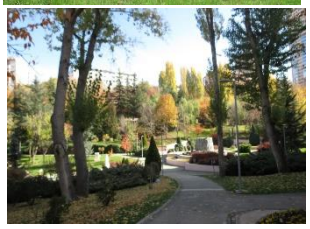
Photograph #6: Earth road with high density of colorful leaves on trees on both sides, little grassy areas both on the edges of the road and under the trees on the right side of the way (earth road with high density of colorful leaves on trees on both sides).

Photograph #7: Wide open field with full of grass, a group of assorted rocks in the middle of the uncut grassy land, hill with full of vegetation on the backdrop (wide open field with full of grass and no path).

Photograph #8: Playground on a manmade rectangular pavement, a wooden fence around the playground, several large/small trees and bushes on the backdrop, a pathway going into the wood from the play area, several buildings behind the green area (playground on a manmade rectangular pavement).

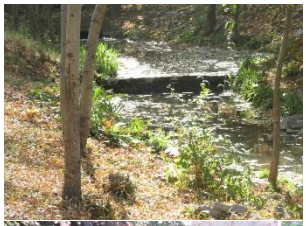
Photograph #9: Park like setting with several trees and bushes, a park bench in front of a young tree, uncut grassy ground, a narrow pathway among the trees (park like setting with uncut grassy floor and a narrow pathway).

Photograph #10: Wide open field with full of grass on the ground, different kind and different size of trees and bushes on the backdrop, no path (wide open field with full of grass on the ground and no path).



Photograph #11: Park like area with several asphalt pathways around, yellowish leaves scattered on the pathways, several kinds of colorful trees and bushes in different sizes all around the area, an ornamental pool without water inside, a few tall buildings on the backdrop (park like area with several asphalt pathways around).

Photograph #12: Forestry area divided by an earth road that goes up to a hill, high dense of trees in both sides of the road, plenty of dry bushes and sticks in all around the environment (forestry area divided by an earth road that goes up to a hill).



Photograph #13: Streaming water flowing down a pavement/manmade wall, several narrow young trees, yellowish leaves on the floor, some green vegetation on the edges of the water, no path (streaming water with some green vegetation on the edges).

Photograph #14: Open field with full of mowed grass and dry leaves scattered all around the ground, a concrete pathway with well-shaped shrubs in both sides along the way, colorful trees on the backdrop, several light poles close to pathway (open field with full of mowed grass).

Photograph #15: Two ornamental pools divided by short man-made wall, shallow water with dry reeds and small stones inside, small rocks and some greenery area on the shoreline and , concrete pathway with benches and regular man-made flowerpots along the way, several types and sizes of trees and bushes around the pools (two ornamental poo with dry reeds and small stones inside).

Photograph #16: Forestry area with a high density of young trees some of which have dried brunches, dry sticks and leaves, stones, and little green vegetation on the foreground, grassy land in the background, no path (forestry area with a high density of young trees).

## APPENDIX F

## Curriculum Vitae

| **PERSONAL DETAILS** |
| --- |
| **Address:** Middle East Technical University, Faculty of Education/Elementary Education No: 109, Ankara, TURKEY<br>**Tel:** +90 312 2107516<br>**Fax:** +90 312 2107984<br>**E-mail:**ysimge@metu.edu.tr<br>**Marital Status:** Single<br>**Date of Birth:** 05/01/1985<br>**Place of Birth:** Adana, Turkey |

| **EDUCATION** | |
|---|---|
| **PhD (2011-Present)** | **The Department of Early Childhood Education (ECE), Elementary Education, Middle East Technical University (METU), Ankara, Turkey** |
| **MEd (2011)** | **The Department of Early Childhood Education (ECE), Elementary Education, Middle East Technical University (METU), Ankara, Turkey** |
| **BEd (2007)** | **The Department of Early Childhood Education (ECE), Elementary Education, Mersin University, Mersin, Turkey** |
| **PROFESSIONAL EXPERIENCE** | |
| **2007-Present** | **Research & Teaching Assistant, ECE, METU, Ankara, Turkey** |

## FOREIGN LANGUAGE KNOWLEDGE

| | |
|---|---|
| **Turkish** | **Native** |
| **English** | **Academic (Advanced)** |

## RESEARCH INTERESTS

- Creativity in Early Childhood Education
- Early Childhood Environmental Education
- Environmental Preferences
- Biophilia
- Outdoor Play and Outdoor Environments in Early Childhood Education
- Early Childhood Education for Sustainability
- Participatory Research with Children

## PUBLICATIONS

**Alkuş (Yilmaz), S. (2011).** *Pre-service and in-service preschool teachers' views regarding creativity in early childhood education***.** Unpublished master's thesis, Middle East Technical University.

YILMAZ, S., Olgan, R, E., & Öztürk Yılmaztekin, E., (2016). Nature Nature Connectedness and Landscape Preferences of Turkish Pre-service Preschool Teachers. *International Journal of Environmental and Science Education, 11*(15), 8120-8142.

YILMAZ, S. (2016). Outdoor environment and outdoor activities in early childhood education. *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, *12*(1), 423-437.

YILMAZ, S. (2016). The importance of listenning the voices of children from their immediate outdoor environments of their early childhood centers. *Karadeniz Teknik Üniversitesi Sosyal Bilimler Enstitüsü Sosyal Bilimler Dergisi*, (11), 187-207.

## CONFERENCES & PROCEEDINGS

- Olgan, R. & **Alkuş (Yilmaz), S.** (2010, May 24-26). *Early Childhood Pre- and In-Service Teachers' Attitudes towards Creativity in Education.* Paper Presented at the 12th Annual International Conference on Education, Athens, Greece.

- **Alkuş (Yilmaz), S.** & Olgan, R. (2010, August 23-27). *Pre-service Early Childhood Teachers' Views about Creativity.* Paper presented at 2010 ECER- the European Conference on Educational Research, Helsinki, Finland.

- Olgan, R. & **Alkuş (Yilmaz), S.** (2010, September 24-26). *Early Childhood Teachers' Views about Computer Assisted Instruction in Preschool Education.* Paper Presented at 4th International Computer & Instructional Technologies Symposium (ICITS), Konya, Turkey.

- **Alkuş (Yilmaz), S.** & Olgan, R. (2011, November 2-5). *Pre-service Preschool Teachers' and In-service Preschool Teachers' Views Regarding Creativity in Early Childhood Education.* Paper Presented at National Association for the Education of Young Children (NAEYC) 2011 Annual Conference & Expo, Orlando, FL., USA.

- **Alkuş (Yilmaz), S.** & Sicim, B., & Olgan, R. (2011, September, 12-16). *An Investigation of the Relationship between Pre-Service Early Childhood Teachers' Attitudes towards Science and Their Competencies in the Science Activities.* Paper Presented at 2011 ECER- the European Conference on Educational Research, Berlin, Germany.

- Sicim, B., **Alkuş (Yilmaz), S.**, & Olgan, R. (2012, September, 12-15). *Pre-Service Early Childhood Teachers' Attitudes Towards Nature of Science and Science Teaching.* Paper Presented at III. International Congress on Early Childhood Education Congress, Adana, Turkey.

- **Alkuş (Yilmaz), S.** (2012, September, 17-21). *The Impact of Outdoor Activities on Children's Development Scale for Preschool Teachers.* Paper presented at 2012 ECER- the European Conference on Educational Research, Cadiz, Spain.

- **Alkuş (Yilmaz), S.**, Olgan, R., Öztürk Yılmaztekin, E. (2013, July 11-13). *Understanding Pre-Service Early Childhood Teachers' Levels of Connectedness with the Natural World and Their Landscape Preferences: A Turkish Sample.* Presented at 2013/65th OMEP World Assembly and Congress, Shangai, China.

- **Alkuş (Yilmaz), S.**, Sicim, B., & Kirazcı, S. (2013, July 11-13). *Comparing Motor Skill Levels of 5 Year-old Female Gymnasts with Their Non-Gymnasts Female Peers.* Presented at 2013/65th OMEP World Assembly and Congress, Shangai, China.

- **Alkuş (Yilmaz), S.**, Öztürk Yılmaztekin, E., & Olgan, R. (2013, September, 9-13). *Examining Turkish Pre-service Teachers' Beliefs*
- *regarding Creativity.* Paper presented at 2013 ECER- the European Conference on Educational Research, İstanbul, Turkey.

- YILMAZ, S. & Derr, V. Effective means of communication for children and youth to have a voice in environmental decisions in their city. (2015, June, 11-14). Paper presented at The 13th Biennial Conference on Communication and Environment (COCE), Boulder, Colorado, USA.

- YILMAZ, S., & Olgan, R. (2016, May, 18-21). An Investigation of Preschool Children's Affinity towards Nature (Biophilia): A Turkish Sample. Poster presented at Twelfth Congress of Qualitative Inquiry. Urbana-Champaign, IL, USA.

**TEACHING EXPERIENCE**

- ELE240 PROBABILITY AND STATISTICS
- ECE208 CHILDREN'S LITERATURE
- ECE 220 PHYSICAL EDUCATION AND GAMES
- ECE 230 CURRICULUM IN EARLY CHILDHOOD EDUCATION
- ECE 303 SCHOOL EXPERIENCE
- ECE 326 METHODS OF TEACHING IN EARLY CHILDHOOD EDUCATION
- ECE 409 CREATIVITY AND CHILDREN
- ECE 411 PRACTICE TEACHING I
- ECE 430 PRACTICE TEACHING II

**PROJECTS**

YILMAZ, S. Growing Up Boulder Project (Fall 2014, Spring 2015). Worked as a volunteer assistant in the project Boulder Civic Area: Young people's ideas and views for the civic area in Boulder,Park at the Core, Boulder, Colorado, USA.

**MEMBERSHIPS**

- Association for the Development of Early Childhood Education in Turkey

## APPENDIX G

TURKISH SUMMARY

# 5 YAŞ OKUL ÖNCESİ ÇOCUKLARIN DOĞAYA YAKINLIĞININ VE ÇOCUKLAR İLE ANNELERİNİN AÇIK ALAN TERCİHLERİNİN ARAŞTIRILMASI

## GİRİŞ

Biyofili, insanların yaşama ve canlılık süreçlerine katılımını sağlamak için genetik temelli bir ihtiyaç ve eğilim olarak tanımlanır (Kahn, 1997). Birçok araştırmacıya göre (Dubos, 1968; Iltis, Loucks, & Andrews, 1970; Kahn, 1997), insanoğlunun, hayvanlar, bitkiler, bitki örtüsü, su, hayvan sesleri ve hareketleri, ya da mevsimsel değişiklikler gibi herhangi bir doğal uyarana karşı doğuştan gelen bir yakınlık isteği bulunmaktadır. Bu bilgiyi destekler nitelikte, Tilbury (1994) ve Kellert (2005) biyofiliyi, doğal çevreyi araştırmak için doğuştan getirilen bir eğilim olarak tanımlamıştır. Bu çalışma kapsamında, biyofili, bireylerin genetik olarak doğaya yakınlığı ve olumlu tepkileri olarak tanımlanabilir (Wilson, 1993).

İnsanoğlunun herhangi bir doğal uyarana karşı yankın olma eğilimi çeşitli teorilerle açıklanabilir. Birçok araştırmacı (Appleton, 1975; Coss & Charles, 2004; Orians, 1986; Wilson, 1984), insanoğlunun evrimsel temellerinin, onların açık tercihlerini etkilediğini belirtmektedir. Evrimsel yaklaşıma göre, insanoğlunun vahşi hayvanlardan veya düşmanlardan korunma içgüdüsüyle, özellikte çalılıkların ve ara ara ağaç gruplarının bulunduğu geniş çayırları tercih etmeye yönelik bir eğilimi vardır (Appleton, 1975). Wilson'a (1984) göre, insanlar yaşamak için içgüdüsel olarak iyi ve

verimli çevreler ararlar. Bireylerin açık alan tercihlerinde, çok öenmli bir etkisi olan suyu tercih etmeleri de, evrimsel bakış açısı ile açıklanabilir.

Kellert ve Wilson'a göre (1995), insanların herhangi bir doğal uyarana karşı doğuştan getirdikleri ve onlara avantaj sağlayabilecek ya da tehlike arz edebilecek olumlu (biyofili) ya da olumsuz (biofobi) tepkilerin varlığından söz edilebilir. Bu avantajlar, yiyecek, su ve güvenlik gibi insanların hayatta kalmalarını sağlayacak ihtiyaçlarla ilişkili olabilirken; tehlikeler ise yılan, örümcek gibi yaşamı tehdit edebilecek riskli doğal uyaranlar veya yükseklik, karanlık gibi bireylerde korku uyandırabilecek durumlardır. Bu nedenle, biyofilinin ve biyofobinin küçük yaşlardan itibaren çocuklardaki gelişimi, evrimsel perspektif ile açıklanabilir. Bu noktada, biyofili ve biyofobinin küçük çocuklarda nasıl geliştiğini anlamak önemlidir.

Çocuklarda biyofili gelişimi yaşamın ilk yıllarından itibaren, iki yaşından daha erken çocukluk döneminde bile gözlemlenebilir (Moore & Marcus, 2008). Çocuklar doğal çevreyi keşfetmeye ihtiyaç duyarlar ve bu ortamlarda öğrenmenin gerçekleşmesi için kendi inisiyatiflerini kullanırlar (Thompson & Thompson, 2007). Çocukların bu yöndeki davranışları, doğanın onlara sağlamış olduğu rahatlık hissi ve onlara kendi oyunlarını kurma özgürlüğü sağlayacak çeşitli kaynaklar sunması ile ilgili olabilir (Rivkin, 1995).

Doğal ortamlar zengin uyaranlarla çocukların kendi oyunlarını kurmalarını teşvik etmesi ve çocukların yaratıclıklarını geliştirmesinin yanında, çocukların bütünsel gelişimini de destekler (Wilson, 2007). Günümüzde, özellikle, okul öncesi eğitim yazınında açık alanların ve doğadaki deneyimlerin çocukların gelişim ve öğrenmesine olan katkısı ile ilgili çok sayıda çalışma bulunmaktadır (Rivkin, 1995). Araştırmacılar, çocukların gelişim düzeylerine uygun olan açık alanların, bütünsel gelişimi en iyi şekilde desteklediğini vurgulamaktadır (Davies, 1996; Haas, 1996; Henniger, 1993; Louv, 2005; Tannock, 2008).

Biyofobi ise, genetik olarak doğuştan getirdiğimiz bir olgudan ziyade, doğal uyaranlara karşı kültürün etkisi ile dolaylı olarak kazanılabilen ya da öğrenilebilen tepkilerdir (Ulrich, 1993). Bazı araştırma sonuçları, doğal bir uyarana karşı korku ile

ilişkili tepkilerin otomatik ve bilinçsiz bir şekilde ortaya çıktığını gösterirken, bazı sonuçlar ise, bu tür tepkilerin kültürel olarak öğrenildiğini belirtmiştir (Ulrich, 1993). Aslında, biyofobi, yılan, sıçan ve örümcek gibi korku uyandıran doğal uyaranlara karşı, bireylerin göstermiş olduğu olumsuz ve öğrenilmiş reaksiyonlardır (Ulrich, 1993).

Bu nedenle, doğanın olumlu etkilerinden faydalanabilmek, doğa sevgisi ve doğaya yakınlığı artırabilmek; ve olumsuz sonuçlar doğurabilecek öğrenilmiş korkulardan korunmak için, çocuklar, doğada keşif yapma ve deneyim kazanma yönünde, gelişimlerine uygun fırsatlara ihtiyaç duyarlar (Chawla, 2006; Sobel, 2008).

Ancak günümüz çağdaş dünyası, çocuklara doğada özgür keşif yapma fırsatları konusunda geçmiş nesillere göre çok da fazla fırsat sunmamaktadır (Louv, 2005). Çocuklar, kendilerine seçenek sunulduğunda yapılandırılmamış doğa ortamlarında oynamayı tercih ederken (Titman, 1994), günümüzde çocukların doğadan kopuk olarak büyümesi birçok faktöre bağlı olarak artmaktadır (Louv, 2005). İnsanların hüküm sürdüğü, doğallığı bozulmuş alanlar, çocukların doğadan kopmasında en önemli faktörlerin başında gelmektedir (Turner, Nakamura, & Dinetti, 2004). Aynı zamanda, çocuklar dış ortamlarda aktif olmak yerine, uzun süre televizyon ve bilgisayar karşısında zaman geçridikleri için, hareketsiz bir yaşam sürmektedirler (Clements, 2004). Louv (2005), günümüzde cocuklarının açık alanlarda vakit geçirme fırsatlarına sahip olmalarına ragmen, bu alanların doğal çeşitlilik açısından verimsiz olduğuna dikkat çekmiştir. Bekoff ve Goodall (2007) ve Louv (2005), algılanan tehlikeler ve kültürün çocukların doğadan kopmasında etkili olan diğer faktörler olduğunu belirtmiştir.

Bu faktörlere bağlı olarak, daha az doğa deneyimine sahip olan çocuklar, doğa yoksunluğu sendromu (Louv, 2008) ve duygusal ve fiziksel gelişimde eksiklikler yaşayabilirler (Wilson, 1993; Kellert, 1993). Doğadan kopmanın çocuklar üzerinde olumsuz etkisi olduğu gibi, doğa üzerinde de olumsuz etkileri görülebilir. Birçok araştırmacıya göre, bireylerin doğa ile bağlantısının azalması ya da tamamen kopaması, onların yaşamları boyunca doğal dünyayı korumak ve doğal çevreye saygılı

davranmak konularında özensiz olabileceklerine işaret etmektedir (Chawla 1999; 2007; Engleson & Yockers 1994; Samways, 2007; Wells & Lekies 2006). Özetle, insanların ve doğanın sağlıklı olması büyük ölçüde birbirine bağlıdır (Kellert, 1993; Wilson, 1993).

Birçok araştırmacıya göre, doğadan kopuk bir şekilde büyümek çocuklarda bir yandan biyofilinin gelişimi için bir engel olarak düşünülebilirken (Stokes, 2006), diğer yandan da biyofobinin gelişimine zemin hazırlayabilir (Orr, 1994; Simaika & Samways, 2010; White, 2004; White & Stoecklin, 1998). Özetle, doğuştan sahip olduğumuz davranışsal eğilimler: doğal çevreye bağlılığımızı korumamızı teşvik edecek çevreci davranışlarımızı teşvik edebilir ya da çevreye zarar verebilecek davranışlarımızı ortaya çıkarabilir (Gardner & Stern, 2002).

Doğadan kopukluk ve biyofili arasındaki ilişkiyi anlamak, ayrıca bireylerin açık alan tercihlerini anlamamıza da yardımcı olur; çünkü biyofili, çocukların ve yetişkinlerin açık alan tercihlerini etkileyen başlıca kavramlardan biridir (Ernst & Tornebene, 2012; Rice & Torquati, 2013; Wilson, 1984). Açık alan tercihleri, bireylerin bir alan ile ilgili hoşlandıklarını ya da hoşlanmadıklarını gösteren duyguları ifade eder (Buijs, Elands, & Langers, 2009). Falk'a (1977) göre, insanoğlunun Doğu Afrika'daki geniş çayırlarda yaşama adapte olabilmesi için gerekli olan evrimsel adaptasyon, onların açık alan tercihleri üzerinde önemli ölçüde etkilidir. Evrimsel bakış açısına zıt olarak Falk ve Balling (2009), bireylerin açık alan tercihlerinde kültürün etkisinin olduğunu belirtmiştir.

Bireylerin biyofilisinin, onların açık alan tercihleri üzeninde etkili olduğu düşünülürse, birbirleriyle ilişkili olan bu iki kavramı etkileyen faktörler, birçok araştırmaya konu olmuştur.

Biyofili ve açık alan tercihleri üzerinde eklili olan faktörler: geçmiş deneyimler (Chawla, 2007; Cheng, 2008; Herzog, Herbert, Kaplan, & Crooks, 2000), doğal açık alanları ziyaret etme sıklığı (Moore & Marcus, 2008), doğal açık alanlarda geçirilen zamanın süresi (Louv, 2008; Moore & Marcus, 2008; Wilson, 1996), bir açık alanın doğal elementleri bulundurma seviyesi (Herzog ve ark., 2000; Purcell & Lamb, 1984;

Ulrich, 1986; Van den Berg, Vlek, & Coeterier, 1998), doğal açık alanların erişilebilir olması (Korpela, Kytta, & Hartig, 2002; Min & Lee, 2006), doğal açık alanlara aşinalık (Balling & Falk, 1982; Herzog ve ark., 2000; Kaplan & Herbert, 1987), bir açık alandaki çeşitlilik (DeLucio & Mugica, 1994; Han, 2007; Heath, Smith, & Lim, 2000; Kaplan, 1985; Palmer, 2004; Purcell ve ark., 2001; Wohlwill, 1968) ve kültür (Balling & Falk, 2009; Rice & Torquati, 2013) şeklinde sıralanabilir.

Wilson (1996) ve Chawla (2007) düzenli ve olumlu doğa deneyimlerinin, doğada kendini rahat hissetme, doğada yaşayan canlılarla empati kurma ve doğa sevgisi ile büyümenin, küçük çocuklarda biyofilinin gelişimi için önemli faktörler olduğunu belirtmişlerdir. Moore ve Marcus (2008) ise, doğa deneyimlerinin yanı sıra, çocukların düzenli olarak doğal açık alanlara erişiminin ve buralarda geçirdikleri zamanın uzunluğunun da, onların doğaya olumlu yönde yönelimlerini etkileyen faktörler olduğunu vurgulamıştır. Çeşitlilik ise bireylerin açık alan tercihlerini etkileyen diğer bir faktördür, çünkü bir doğal alanın çeşitliliği, o alanın çocuklara sağladığı farklı oyun fırsatlarıyla ilgilidir (Dyment & O'Connell, 2013; Moore, 1986; Sargisson & McLean, 2012).

Bu noktada Gibson'un teorisi, bireylerin açık alan tercihlerinde çevredeki olası aktivite fırsatlarının önemini vurgulamaktadır (Gibson, 1977; 1979). Gibson'a göre (1979), insanların davranışları fiziksel çevrenin onlara sunduğu fırsatlar ile şekillenir. Aslında çocuklar için önemli olan öncelikli olarak bir alanın işlevselliği, yani çevrenin onlara ne gibi oyun fırsatları sunduğu ve onları hangi eylemleri gerçekleştirmek için güdülediğidir.

Diğer faktörlere ek olarak, aşinalık da bireylerin açık alan tercihlerini etkileyen faktörlerdendir (Castonguay & Jutras, 2009; Herzog ve ark., 2000; Kaplan & Herbert, 1987). Castonguay ve Jutras'a göre (2009), arkadaşlarının evi gibi sürekli gidebilecekleri ve aşina oldukları alanlar, çocukların en sevdikleri alanlar arasındadır. Bu sonuç, ayrıca bir alana aşina olma durumu ile o alanin ulaşılabilirliği veya yakınlığı arasında da ilişki olduğunu göstermektedir (Castonguay & Jutras, 2009).

Herzog ve arkadaşlarına göre (2000) , bir alana aşina olma durumu her ne kadar bireylerin açık alan tercihlerini etkilese de, bireylerin tercihleri deneyim ve kültürün etkisi ile de değişebilir. Rice ve Torquati (2013) aşinalığın ve aileden aktarılan kültürün, biyofilinin gelişiminde çok önemli rol oynayan faktörler olduğunu belirtmiştir. Benzer olarak Falk ve Balling de (2009), estetik ideallerin ve estetik tercihlerin oluşumunda bir nesilden diğerine aktarılan kültürün etkili olduğunu, ve bunun da bireylerin açık alan tercihlerini etkilediğini savunmuştur.

Bu açıdan düşünüldüğünde, bireylerin açık alan tercihleri, evrimsel teorinin savunduğu gibi onların doğuştan getirdikleri tercihler olmayıp, kültürün etkisiyle oluşan tercihler de olabilir. Crandell'e göre (1993), bireylerin içinde yaşadıkları toplumun kültürel özellikleri, açık alan tercihlerini etkilemektedir. Rice ve Torquati (2013) de ebeveynlerden aktarılan kültürün, bireylerin doğaya olumlu yönelimlerinin gelişimini etkileyen bir faktör olduğunu belirtmiştir.

**Çocukların biyofilisinin araştırılmasının önemi**

Yetişkinlerin doğaya bağlılığını araştıran birçok sayıda çalışma bulunmasına rağmen (Mayer & Frantz, 2004; Nisbet, Zelensky, & Murphy, 2009), çocukların doğaya bağlılığı, diğer bir deyişler çocuklarda biyofilinin gelişimi, son yıllarda araştırılan bir konudur (Rice ve Torquati, 2013). Rice ve Torquati (2013) tarafından geliştirilen biyofili ölçeği, çocuklarda biyofilinin gelişimini ölçen ilk ölçme aracıdır. Rice ve Torquati (2013), annelerin eğitim seviyesinin, aile gelirinin ve okul bahçesinin doğal elementleri içerme oranının çocukların biyofilisine ne ölçüde etki eden faktörler olduğunu araştırmıştır. Ayrıca, bu araştırmacılar, ebeveynler vasıtası ile, çocuklarda biyofilinin gelişimine etki edebilecek daha farklı faktörlerin (okul bahçesi dışında doğal açık alanlarda geçirilen zaman, erişilebilir doğal açık alanların kullanımı, çocukların zaman geçirdiği doğal alanların özellikleri, doğal açık alanların çocukların yaşam alanlarına yakınlığı gibi) de araştırımlasını önermişlerdir (Rice ve Torquati, 2013). Bununla birlikte, biyofili ve açık alan tercihleri birbiriyle yakından ilişkili

olmasına ragmen (Kaplan & Kaplan, 1989), ilgili yazında bu iki kavram arasındaki ilişkiyi araştıran çalışma bulunmamaktadır. Yazındaki bu eksiklik düşünülerek, bu araştırma okul öncesi çocuklarda biyofili ve çocukların biyofilisi ile açık alan tercihleri arasındaki ilişkiyi araştırmaktadır.

Çocuklarda biyofilinin araştırılması, onların doğaya ne ölçüde bağlı olduklarını ya da ne ölçüde doğadan kopuk olduklarını anlamamıza yardımcı olabilir. Schultz (2000) çocukların doğaya ne ölçüde değer verdiklerini ve doğada nasıl hissttiklerini anlamanın, onların gelecekteki yaşamlarında doğaya ne ölçüde saygı duyacakları ve doğayı ne şekilde koruyacakları konusunda fikir verebileceğini vurgular. Benzer bir şekilde, Nisbet ve arkadaşları (2009), çocukların doğaya yakınlığının bilinmesinin, onların yaşamları boyunca çevre için sorumluluk sahibi olma potansiyelleri konusunda bilgi verebileceğini vurgular.

**Çocukların açık alan tercihlerinin araştırılmasının önemi**

Araştırmacılar, okul bahçeleri (Dyment & O'Connell, 2013; Martensson Jansson, Johansson, Raustorp, Kylin, & Boldemann, 2014; Norodahl & Einarsdottir, 2015), oyun parkları (Müderrisoğlu & Gültekin, 2013; Sargisson & McLean, 2012), mahalleler (Castonguay & Jutras, 2009; Talen & Coffindaffer, 1999), ve farklı türdeki açık alanlarda (Fjortoft, 2004; Tunstall, Tapsell, & House, 2004), çocukların açık alan tercihlerini araştırmıştır.

Araştırmacılar çocukların tercihlerini araştırırken çoğunlukla, onların bir alanda nelerden hoşlandıklarını veya hoşlanmadıklarını, tercih ettikleri doğal elementleri, en çok tercih ettikleri alanları, aktiviteleri ve oyunları; ve fiziksel alanı nasıl kullandıklarını incelemişlerdir (Castonguay & Jutras, 2009; Hart, 1979; Martensson ve ark., 2014; Moore, 1986; Sargisson & Mclean, 2012; Van Andel, 1990). Araştırma sonuçlarına göre, çocukların açık alanlardaki tercihlerinde etkili olan en önemli faktör doğal ortamların çocukların oyunlarını veya deneyimlerini zenginleştiren çeşitlilik faktörüdür (Dyment & O'Connell, 2013; Moore, 1986; Sargisson & Mclean, 2012;

Talen & Coffindaffer, 1999). Çocukların açık alan tercihlerini etkileyen yaş, cinsiyet, sosyalleşme, estetik özellikler, aşinalık, ve erişilebilirlik gibi diğer faktörlerle ilgili ortak bir sonuç bulunmamaktadır (Balling & Falk, 1982; Castonguay & Jutras, 2009; Lucas & Dyment, 2010; Norodahl & Einarsdottir, 2015; Samborski, 2010; Talen & Coffindaffer, 1999; Tunstall, 2004).

Konu ile ilgili yukarıda bahsedilen araştırmalar bulunmasına rağmen, birçok araştırmacı, çocukların açık alanlardaki oyun alanı tercihleri ile ilgili daha fazla araştırma yapılması ihyiyacını dilegetirmiştir (Norodahl & Einarsdottir, 2015; Sargisson & McLean 2012; Veitch, Bagley, Ball, & Salmon, 2006). Norodahl ve Einarsdottir (2015), çocukların bulunmak istedikleri alanların ve bu alanların onlar tarafından nasıl kullanıldığının araştırılmasına ihtiyaç olduğunu belirtmiştir. Ayrıca, bazı araştırmacılar, çocukların hem doğal hem de yapılandırılmış elementleri içeren açık alanları kullanış biçimlerinin araştırılmasını önermiştir (Sargisson & Mclean, 2012). Castonguay ve Jutras (2009), çocukların bir açık alanda bulunmasını en çok istedikleri özelliklerin araştırılmasının önemine dikkat çekmiştir. Çocuklar için en uygun açık alanların oluşturulabilmesi için, çocukların bir alanda nelerden hoşlanmadıklarının bilinmesi de önemlidir. Ancak, araştırmacılar, ilgili yazında, bu konunun yeterince araştırılmadığını belirtmişlerdir (Castanguay & Jutras, 2009; Simons, 1994; Van Andel, 1990). Bu nedenle, bu çalışmada, kentte yaşayan çocukların ve annelerinin sulu alan, park, açık alan/çimli alan, ve orman gibi farklı türlerdeki açık alan tercihleri araştırılmıştır. Bu çalışmada, özellikle, çocukların ve annelerin en çok ve en az tercih ettikleri açık alanlar incelenmiştir.

Okul öncesi dönemdeki çocukların açık alan tercihlerinin araştırılması, küçük çocuklar için erken çocukluk çevre eğitimi programlarının hazırlanmasında, okul öncesi eğitimcileri ve çevre eğitimcileri için önemli bir rehber niteliği taşımaktadır (Ernst & Tornebene, 2012). Diğer bir deyişle, küçük çocukların açık alan tercihlerinin araştırılması, açık alanların hangi özelliklerinin çocuklar tarafından daha önemli bulunduğu ve çevre eğitimi kapsamında yetişkinlerin çocuklara hangi aktiviteleri sunabilecekleri konularında bilgi sağlaması beklenmektedir. Son olarak, çocukların

açık alan terchilerinin araştırılması, açık alanların çocuklara hangi oyun fırsatlarını sunabileceği ya da çocukların öğrenmesini ne şekilde teşvik edebileceği konularında planlamacıların kararlarını da etkileyebilir (Fjortoft & Sageie, 2000).

**Ebeveynlerin kişisek açık alan tercihleri ve çocukları için tercih ettikleri açık alanların araştırılmasının önemi**

Çocukların açık alan terchilerinin yanısıra, araştırmacılar, yetişkinlerin açık alan tercihlerini ve çocuklar için tercih ettikleri açık alanları da araştırmıştır. Bu noktada, birçok arşatırmacı, katılımcıların farklı türdeki açık alanların fiziksel özellikleri ile ilgili görüşlerine veya estetik tercihlerine odaklanmıştır (Balling & Falk, 1982; Falk & Balling, 2009). Araştırma sonuçları, yetişkinlerin kişisel olarak su bulunduran doğal ortamları tercih ettiklerini göstermiştir.

Yetişkinlerin çocuklar için tercih ettikleri açık alan çalışmalarına bakıldığında, araştırmacıların öğretmen ve ebeveyn grupları ile çalıştıkları görülmektedir. Öğretmenlerle yapılan çalışmaklar (örneğin, Norodahl & Johannesson, 2014; Simmons, 1998), öğretmenlerin genellike doğal ortamlarda öğretimi tercih etme eğilimde olduklarını ve öğretim ortamının güvenliğinin ve bu ortamlardaki oyun fırsatlarının neler olabileceğini göz önünde tututklarını göstermiştir.

Ebeveynlerin çocukları için tercih ettikleri alanları araştıran çalışmalar ise, çocukların daha çok nerelerde oynadıklarına (Veitch ve ark., 2006), ve ebeveynlerin çocuklar için tercih ettikleri alanlara odaklanmıştır (Nasar & Holloman, 2013; Valentine & McKendrick, 1997; Veitch ve ark., 2006). Araştırmacıların çoğu ilk okul çağındaki çocukların ebeveynlerinin, çocukları için tercih ettikleri alanların neler olduğunu araştırmıştır (örn., Nasar & Holloman, 2013; Valentine & McKendrick, 1997; Veitch ve ark., 2006). Ebeveynlerle yapılan çalışmalar, ebeveynlerin çocukları için birçok oyun fırsatı sunan doğal ortamları tercih ettiklerini göstermiştir (Nasar & Holloman, 2013; Veitch ve ark., 2006). Ebeveynlerin tercihlerini etkileyen en önemli faktörlerin, çevrenin suduğu olanaklar ve güvenlik faktörü olduğu bulunmuştur (Nasar

& Holloman, 2013; Sallis, McKenzie, Elder, Broyles, & Nader, 1997; Valentine & McKendrick, 1997; Veitch ve ark., 2006).

Ancak, Nasar ve Holloman (2013) ebeveylerin çocuklarını açık alanlara çıkarmalarında etkili olan faktörlerin neler olduğu konusunda yazında eksiklik olduğunu belirtmiştir. Yazındaki eksiklikler göz önünde bulundurularak, bu çalışmada okul öncesi dönem çocuklarının ve annelerinin açık alan tercihleri, onlara dört farklı açık alan türü (su bulunduran alanlar, park, açık alanlar/çimli alanlar, ve ormanlar) sunularak araştırılmaktadır. Ayrıca bu çalışmada, her iki grup katılımcının açık alan tercihlerinde hoşlandıkları ve hoşlanmadıkları özellikler, geçmiş deneyimler, aşinalık, ve erişilebilirlik gibi katılımcıların tercihlerine etki edebilecek faktörler de araştırılmıştır. Ayrıca bu çalışma, ebeveynlerin özellikle de annelerin, çocukları için tercih ettileri açık alan tercihlerini etkileyebilecek olası diğer faktörlerin de ortaya çıkarmayı amaçlar.

Birçok araştırmacı, çocukların dış ortamlardaki oyunlarının ve dış ortamları kullanımının, ebeveynlerinin çocukları bu ortamlara götürmeye istekli olup olmadığına ve bunun için ayıracak vakitleri olup olmadığına bağlı olduğunu belirtmiştir (Brusson, Olsen., Pike, Sleet 2012; Skar ve ark., 2016; Veitch, Salmon, & Ball, 2007). Bu nedenle, ebeveynlerin açık alan tercihlerinin ve bu tercihleri etkileyen faktörlerin araştırılması, çocukların açık alanlarda hareketli ve özgür oyun fırsatlarını artırmak ve bölgesel planlamacıların, umumi açık alanlar için planlama stratejilerini geliştirirken, çocukların oyun ihtiyacını karşılayacak şekilde planlama ve düzenlemeler yapmaları için önemlidir (Veitch ve ark., 2006).

**Araştırma soruları**

Bu çalışmanın araştırma soruları, yazındaki eksikliklere katkıda bulunmak amacıyla, aşağıdaki şekilde belirlenmiştir. İlk iki araştırma sorusu çalışmanın esas katılımcısı olan 105 çocuğun yanıtlamasını gerektirirken, diğer sorular 20 şer kişilik çocuk ve anne grularından oluşan alt katılımcıların yanıtlamasını gerektirmektedir.

Çocukların, annelerin ve her iki grup katılımcının açık alan tercihini araştıran bütün araştırma soruları, çocukların ve annelerin en çok ve en az sıklıkta tercih ettikleri alanlara işaret etmektedir.

1. Çocukların biyofili puanları, onların doğal ya da doğal olmayan anaokullara devam etmelerine bağlı olarak farklılık gösterir mi?
2. Çocukların biyofili puanları cinsiyete bağlı olarak farklılık gösterir mi?
3. Açık alan türü (su bulunduran alan, park, açık alan/çimli alan, orman) ve insan etki seviyeleri (doğal alan, yapılandırılmış alan) yönünden çocukların açık alan tercihleri ve çocukların bu tercihlerinin sebepleri nelerdir?
   3.1. Açık alan türü ve insan etki seviyeleri yönünden, çocukların kişisel açık alan tercihleri ve bu tercihlerinin nedenleri nelerdir?
   3.2. Açık alan türü ve insan etki seviyeleri yönünden, çocukların eğitimsel açık alan tercihleri ve bu tercihlerinin nedenleri nelerdir?
   3.3. Açık alan türü ve insan etki seviyeleri yönünden, çocukların ebeveynleri ile birlikte ziyaret etmek istedikleri açık alan tercihleri ve bu tercihlerinin nedenleri nelerdir?
4. Çocukların gitmeyi sıklıkla tercih ettikleri açık alanlarla ilşkilendirdikleri olası aktiviteler ve kaynak ihtiyaçları hakkındaki fikirleri nelerdir? (eğitimsel ve ebeveynleri ile birlikte ziyaret etmek istedikleri açık alanlarda)
5. Çocukların biyofili puanları, onların insan etki seviyeleri yönünden (doğal, yapılandırılmış) açık alan tercihlerine bağlı olarak nasıl farklılık gösterir?
6. Açık alan türü (orman, park, açık alan/çimli alan, orman) ve insan etki seviyeleri (doğal, yapılandırılmış) yönünden annelerin açık alan tercihleri ve bu tercihlerinin nedenleri nelerdir?
   6.1. Açık alan türü ve insan etki seviyeleri yönünden, annelerin kişisel açık alan tercihleri ve bu tercihlerinin nedenleri nelerdir?
   6.2. Açık alan türü ve insan etki seviyeleri yönünden, annelerin eğitimsel açık alan tercihleri ve bu tercihlerinin nedenleri nelerdir?

6.3. Açık alan türü ve insan etki seviyeleri yönünden, annelerin çocukları ile birlikte ziyaret etmek istedikleri açık alan tercihleri ve bu tercihlerinin nedenleri nelerdir?

7. Annelerin sıklıkla tercih ettikleri açık alanlarla ilşkilendirdikleri olası aktiviteler ve kaynak ihtiyaçları hakkındaki fikirleri nelerdir? (eğitimsel ve çocukları ile birlikte ziyaret etmek istedikleri açık alanlarda)
8. Çocukların ve annelerin açık alan tercihleri, açık alan türü (su bulunduran alan, park, açık alan/çimli alan, orman) ve insan etki seviyeleri (doğal alan, yapılandırılmış alan) açısından nasıl farklılık gösterir?
9. Çocukların ve annelerin açık alan tercihleri bu alanları sıklıkla tercih etme nedenleri açısından nasıl farklılaşır?
10. Çocukların ve annelerin, onların açık alanları ziyaret etmelerini önleyen engeller hakkındaki algıları açısından nasıl farklılık gösterir?

## YÖNTEM

### Çalışmanın Deseni

Bu çalışmada, hem nicel hem de nitel araştırma metotları kullanılmıştır. Nicel araştırma yöntemleri kullanılarak, 5 yaşındaki 105 çocuğun biyofili ölçeğine verdikleri yanıtlar araştırılırken, 20 çocuğun ve annelerinin açık alan tercihleri ölçeğine verdikleri yanıtlar nitel olarak araştırılmıştır.

Creswell (1999), nicel ve nitel verilerin birlikte kullanıldığı durumlarda, araştırma problemini ortaya koymak için nicel ve nitel verileri tek başına kullanmaktan ziyade, karma yöntem kullanılmasının uygunluğunu vurgular. Bu çalışmada, nitel ve nicel verilerin ayrı olarak toplanmasına ve analiz edilmesine imkan verirken, ancak sonuçların birlikte yorumlanmasını gerektiren eşzamanlı üçgenleme deseni kullanılmıştır (Creswell, Plano Clark, ve ark., 2003).

## Ortamlar

Çalışmaya katılan çocuklar Ankara ilinin aynı bölgesinde yer alan 4 farklı devlet anaokulundan seçilmiştir. Bu dört okul bir amaç doğrultusunda seçilmiştir. Okullardan ikisi doğal anaokul olarak kodlanırken, diğer iki okul ise doğal olmayan anaokul olarak kodlanmıştır. Doğal anaokular, çocuklara gözlem yapabilecekleri ve ağaç, çalı, ve çim gibi doğal elementlerle etkileşimde bulunabilecekleri geniş ve açık bir dış ortam sağlamaktadır. Ayrıca bu okullarda program gereği çocuklar düzenli olarak her gün en az iki saat dış alanda zaman geçirmektedir. Diğer yandan doğal olmayan anaokulların dış alanları, doğal elementler yönünden, doğal okul bahçelerinin özellikleri ile benzerlik göstermemektedir. Doğal olmayan okullarda, çocuklar haftada bir ya da iki haftada bir, sadece bir saat kadar dış ortamlarda zaman geçirmektedir. Çalışma kapsamında, 50 çocuk doğal okullardan seçilirken, 55 çocuk doğal olmayan okullardan seçilmşitir.

## Çalışma grubu

Çalışmanın temel katılımcılarını 5 yaşındaki 105 çocuk oluşturmaktadır. Bu çocuklar, belirli kriterler doğrultusunda belirlenen 4 farklı anaokulundan, rastgele örnekleme yöntemi ile seçilmiştir. Çalışmanın alt örneklemini ise 20 çocuk ve anneleri oluşturmaktadır. 20 çocuk ve annesi rastgele olarak, çalışmanın ana örneklemi olan 105 çocuk arasından seçilmiştir. Katılımcıların demografik bilgileri aşağıdaki tabloda yer almaktadır.

Table 1: Katılımcıların demografik bilgileri

| | Toplam katılımcı sayısı | Yaş | Cinsiyet | | Okul Türü | |
|---|---|---|---|---|---|---|
| | | | Kız | Erkek | Doğal | Doğal olmayan |
| Çocuklar | 105 (temel örneklem) | 5 yaş | 59 | 46 | 50 | 55 |
| | 20 (alt örneklem) | 5 yaş | 10 | 10 | 10 | 10 |
| Anneler | 20(alt örneklem) | 3 (31-35 yaş)<br>11 (36-40 yaş)<br>6 (41-45 yaş) | 3<br>11<br>6 | | 10 | 10 |

**Veri toplama araçları**

Bu çalışmada üç tür veri toplama aracı kullanılmıştır. Bunlarda ilki çocukların biyofili ölçeğidir. Bir diğeri çocukların açık alan tercihleri ölçeğisir. Sonuncusu ise annelerin açık alan tercihleri ölçeğidir. Çocukların ve annelerin açık alan ölçekleri, soruların içeriği kapsamında paralel olarak hazırlandığı için, bu ölçekler aynı başlık altında açıklanmıştır.

**Biyofili ölçeği**

Veri toplama araçlarından ilki çocuklar için kullanılan 'Biyofili Ölçeği' dir ve 22 maddeden oluşan görüşme soruları şeklindedir. Ölçekte 11 adet biyofilik madde, 11 adet ise bu maddelerin içeriğinin tam tersini savunan ve biyofilik olmayan madde bulunmaktadır. Bu ölçüm aracı kullanılarak, çocukların biyofilisini, yani onların ne ölçüde doğaya bağlı olduklarını anlamak amaçlanmıştır. Orijinal görüşme soruları Rice ve Torquati (2013) tarafından oluşturulmuştur. Araştırmacı, okul öncesi alanından uzman başka bir araştırmacının da görüşlerini alarak, bu ölçüm aracını Türkçe'ye adapte etmiştir. Rice ve Torquati (2013) görüşme sorularını kukla eşliğinde uygulamıştır. Bu çalışmada ise, araştırmacı, bir okul öncesi uzmanı yardımı ile, ölçüm aracının her bir maddesini somut görsel materyal olacak şekilde geliştirmiş olup, bir ressama çizimini yaptırmıştır.

**Çocukların ve annelerin açık alan tercihleri ölçeği**

Çalışmada kullanılan diğer ölçekler ise 20 kişilik çocuktan ve 20 kişilik anneden oluşan iki farklı alt örnekleme uygulanan 'Çocukların Açık Alan Tercihleri Ölçeği' ve 'Annelerin Açık Alan Ölçeği' dir. Her iki ölçek de birbirine paralel sorular içerdiği için, aynı başlık altında toplanmıştır. Bu ölçekteki açık uçlu görüşme soruları katılımcılara, 16 adet açık alan fotoğrafı eşliğinde sorulmaktadır. Bu 16 adet fotoğraf 4 grup açık alan türü içermektedir. 16 fotoğrafın her biri su içeren alan, park, açık alan/çimli alan ve orman olmak üzere farklı açık alan türleri şeklinde kodlanmıştır. Her bir açık alan türünden 4 adet fotoğraf bulunmaktadır. 4'er fotoğraftan oluşan her bir açık alan türü ayrıca, insan etki seviyeleri yönünden doğal ve yapılandırılmış olarak kodlanmıştır.

Tablo 2: Çocukların ve annelerin açık alan tercihleri ölçeğinden örnek sorular

| | |
|---|---|
| **Kişisel açık alan tercihleri** | Kişisel olarak gitmeyi en çok tercih ettiğiniz üç açık alan hangisidir? |
| **Eğitimsel açık alan tercihleri** | Öğretmeniniz ve arkadaşlarınızla birlikte en çok gitmeyi tercih ettiğiniz üç açık alan hangileridir?/Çocuğunuzun öğretmeni ve arkadaşlarıyle birlikte gitmesini en çok tercih ettiğiniz üç açık alan hangileridir?<br>Neden bu üç fotoğrafı seçtiniz? |
| **Aile/Çocukla birlikte ziyaret etmek istenen açık alan tercihleri** | Ailenizle birlikte gitmeyi en az tercih ettiğiniz üç açık alan hangileridir?/Çocuğunuzla birlikte gitmeyi en az tercih ettiğiniz üç açık alan hangileridir? Neden bu üç fotoğrafı seçtiniz? |
| **En çok tercih edilen alanlardaki olası aktiviteler** | Seçtiğiniz üç fotoğraf için, lütfen öğretmen ve arkadaşlarınızla bu gibi açık alanlara gittiğinizde neler yapmak istediklerinizi belirtiniz. / Seçtiğiniz üç fotoğraf için, lütfen çocuğunuzun öğretmen ve arkadaşlarıyla birlikte bu gibi alanlara gittiklerinde neler yapmalarını tercih ettiğinizi belirtiniz. |
| **En çok tercih edilen alanlardaki kaynak ihtiyaçları** | Seçtiğiniz üç fotoğraf için, lütfen öğretmen ve arkadaşlarınızla bu gibi açık alanlara gittiğinizde nelere ihtiyaç duyabileceğinizi belirtiniz. / Seçtiğiniz üç fotoğraf için, lütfen çocuğunuzun öğretmen ve arkadaşlarıyla birlikte bu gibi alanlara gittiklerinde nelere ihtiyaç duyabileceklerini belirtiniz. |
| **Doğal açık alanları ziyaret etme karşısındaki engeller** | Tüm bu fotoğraflar düşünüldüğünde, bu gibi açık alanlara aileniz/öğretmen ve arkadaşlarınız ile birlikte gitmeniz önündeki engeller nelerdir? / Tüm bu fotoğraflar düşünüldüğünde, bu gibi açık alanlara çocuğunuz/çocuğunuzun öğretmen ve arkadaşları ile birlikte gitmeniz önündeki engeller nelerdir? |

## Veri toplama yöntemleri

Veri toplama sürecinde, biyofili ölçeğindeki her bir madde, her bir katılımcıya maddelerin içeriğini yansıtan iki çizim eşliğinde gösterilmiştir. Bu çizimlerden biri, biyofilik tutumu yansıtırken, diğeri biyofobik tutumu yansıtmaktadır. Ölçekteki maddeler her bir katılımcıya, her bir madde için iki görsel sunularak okunmuştur. Hemen sonrasında, araştırmacı, her bir katılımcıya "sen hangi kız/erkek gibisin?" sorusunu sormuştur. Katılımcıların yanıtları biyofilik maddeleri seçtiklerinde 1 puan olarak kodlanırken, biyofobik maddeleri seçtiklerinde 0 (sıfır) puan olarak kodlanmıştır.

Çocuk ve anneden oluşan yirmişer kişilik alt gruplara uygulanan açık alan tercihleri ölçekleri ise, katılımcılara bireysel olarak 16 fotoğraf eşliğinde uygulanmıştır.

**Data analiz yöntemleri**

Katılımcı çocukların biyofilya puanları ve çocukların ve annlerin en çok ve en az tercih ettikleri açık alan tercihleri, biyofilya ölçeği ve çocuk ve annelerin açık alan tercihleri ölçekleri kullanılarak elde edilen veriler doğrultusunda, betimleyici istatistik yöntemleri ile belirlenmiştir.

Çocukların ve annelerin en az ve en çok tercih ettikleri açık alan tercihlerini belirlemek için, her bir katılımcının açık alan tercihleri, her bir fotoğrafın arka yüzünde yazan numaralar SPSS'e girilmiştir. Özellikle, çocukların ve annelerin en çok ve en az tercih ettikleri kişisel ve eğitimsel açık alan tercihleri ile birlikte gitmeyi en çok ve en az tercih ettikleri açık alanlar betimleyici istatistik yöntemi ile belirlenmiştir.

Bununla birlikte, çocukların biyofilisinin ve açık alan terchilerinin ne ölçüde farklılık gösterdiğini anlamak için, ilk aşama olarak çocukların gitmeyi en çok ve en az tercih ettiği üç açık alan tercihi, insan etkisi seviyesi açısından doğal ya da yapılandırılmış olarak kodlanmıştır. Ancak, katılımcılar en çok ve en az gitmek istedikleri üç açık alanı seçtikleri için, araştırmacı yeni bir kategori olan 'kararsız' kategorisini oluşturmuş ve data analizi için ilgili sonuçları bu şekilde kodlamıştır.

Çocukların açık alan tercihlerini, insan etkisi seviyesi yönünden kodladıktan sonra, çocukların biyofili puanlarının mod değeri hesaplanmıştır. Her bir çocuğun biyofili seviyesi, mod puanı referans alınarak belirlenmiştir.

**Bağımsız t-testi**

Doğal anaokullarına ya da doğal olmayan anaokullarına kayıtlı çocukların, biyofili puanlarına göre istatistiksel olarak farklılık gösterip göstermediklerini anlamak için bağımsız t-testi yapılmıştır.

Ayrıca, çocukların biyofili puanlarının cinsiyet değişkenine göre istatistiksel olarak anlamlı bir farklılık gösterip göstermediği de bağımsız t-testi ile hesaplanmıştır.

**Nitel veri analizi**

Veri analiz süreci başlangıç aşamasında, video kaydına alınmış tüm veriler yazılı rapor hale getirilmiştir. Daha sonra, Creswell (2007) tarafından önerildiği gibi, data analizi hem araştırmacı, hem de bir okul öncesi eğitim uzamanı tarafından bağımsız olarak yapılmıştır. Öncelikle hem çocukların hem de annelerin raporları bağımsız kodlayıcılar tarafından okunmuştur. Daha sonra, çocukların ve annelerin tercihlerindeki temel konular özetlenmiştir. Çocukların ve annelerin açık alan tercihlerini araştıran veri toplama materyalleri açık uçlu olduğu için, araştırmacı ve okul öncesi uzmanı bazı ortak söz öbekleri, sözcükler ve cümleler belirlemeye odaklanmıştır. Daha sonra kodlayıcılar benzerlik ve farklılıklar elde edebilmek için kodlarını karşılaştırmıştır. Creswell'e (2007) göre, bağımsız olarak analiz edilen verilerdeki kodlarda neredeyse tam bir uzlaşma beklenmektedir. Bu çalışmada da özellikle, çalışmanın sonuçlarının geçerliliğini artırmak için kodlar karşılaştırılmıştır. Bağımsız iki kodlayıcının kodlamaları sonucunda ortak kodlar elde edilmiş olup, kodlayıcılar arasında tam bir uzlaşma sağlanmıştır.

## BULGULAR VE TARTIŞMA

### Çocukların Biyofilisi

Çalışmanın bulguları, çocukların biyofili puanlarının onların doğal ya da doğal olmayan okul türlerinden birine kayıtlı olup olmama durumlarından bağımsız olarak, birbirine yakın ve yüksek bulunmuştur. Bu sonuç Biyofili Hipotezi (Kahn, 1977) ile açıklanabilir. Kahn'a göre (1977), çocukların özellikle de küçük yaşlarda genetik olarak doğaya yakın olma eğiliminde oldukları savunulmaktadır. Moore ve Marcus'a göre (2008), doğal çevreyi araştırmak için doğuştan gelen eğilim, yaşamın ilerleyen yıllarında kültür ve deneyim ile şekillenir. Özellikle, çocukların biyofilisi yıllar ilerledikçe ve çocuklar deneyim kazandıkça, yaş ve kültürün etkisi ile değişmektedir (Moore & Marcus, 2008).

Ayrıca bu çalışmada, okul türü (doğal ya da doğal olmayan okul) ve cinsiyet gibi faktörlerin biyofili üzerindeki etkisi de araştırılmıştır. Bulgular, çocukların biyofili puanlarının okul türüne göre değişmediğini göstermiştir. Bu bulguya paralel olarak Rice ve Torquati'nin (2013) araştırma sonuçları da, çocukların biyofili puanlarının, kayıtlı oldukları okul öncesi eğitim kurumunun dış alanındaki doğallık seviyesine bağlı olmadığını göstermiştir. Bununla birlikte, çalışma sonucu çocukların biyofili puanları üzerinde cinsiyetin de etkili olmadığını göstermiştir. Lucas ve Dyment'a göre (2010), kız ve erkek çocuklar doğanın onlara sundukları oyun fırsatlarını benzer bir şekilde değerlendirirler. Doğal bir ortam, içerdiği estetik unsurlar nedeni ile her iki cinsiyetteki çocuğun dikkatini de benzer bir biçimde çeker (Martensson ve ark., 2014; Norodahl & Einarsdottir, 2015). Özellikle küçük yaşlardaki çocuklar, çevredeki doğal materyalleri kullanma açısından birbirleri ile benzerlik gösterirler (Sargisson & Mclean, 2012). Ancak, kız ve erkek çocukların oyunlarındaki çeşitlilik, yaşın ilerlemesi ile ortaya çıkabilir (Sargisson & Mclean, 2012).

**Çocukların açık alan türlerine göre en çok ve en az gitmeyi tercih ettikleri açık alan tercihleri ve bu tercihlerinin nedenleri**

Bu çalışmanın sonuçlarına göre, çocukların açık alan tercihleri her üç durumda da bazı ortak noktalar içermektedir. (kişisel olarak tercih ettikleri açık alanlar, öğretmenleri ve arkadaşları ile gitmeyi tercih ettikleri açık alanlar ve aileleri ile birlikte gitmeyi tercih ettikleri açık alanlar). Her durumda, çocukların gitmeyi en çok tercih ettikleri açık alanlar, su bulunduran alanlar ve parlardır. Bu açık alan türleri, her iki durum için de eşit sayıda çocuk tarafından seçilmiştir (n=46). Su bulunduran alanlar ve parklar çocukların gitmeyi en az tercih ettikleri alanlar arasında yer almamaktadır. Açık/çimli alanlar ise çocukların öğretmenleri ve arkadaşlarıyla birlikte gitmeyi tercih ettikleri alanlar dışında, çocukların gitmeyi en çok istedikleri açık alanlar arasındadır. Ancak çocuklar, açık alanlara gitmeyi en az tercih ettikleri ikinci açık alan türü olarak da tercih etmişlerdir. Son olarak, ormanlar çocukların gitmeyi tercih ettiği açık alanların hiç birinde yer almamakla birlikte, onların gitmeyi en az tercih ettikleri açık alanlar arasında ilk sıradadır.

Birçok çalışmanın sonucu, çocukların su bulunduran alanı tercih etmeleri ve tercih nedenleri açısından, bu çalışmanın sonucu ile benzerlikler göstermektedir (Mahidin & Maulan, 2012; Müderrisoğlu & Gültekin, 2013; Hart, 1979; Tunstall ve ark., 2004). Tunstall ve arkadaşlarına göre (2004), su bulunduran alanlar, çocukların doğal elementlere şekil verebilmeleri ve bu elementleri istedikleri şekilde kullanabilmelerine yardımcı olması açısında birçok fırsat sunmaktadır. Benzer şekilde, White ve Stoecklin (1998) de, su bulunduran alanların çocukların yapılandırılmamış oyunlar kurmalarını teşvik ettiğini belirtmiştir. Katılımcıların su bulunduran alanları seçme nedenleri bu çalışma sonuçları tarafından doğrulanmıştır. Katılımcılar su bulunduran alanların onlara yapılandırılmamış oyun fırsatları sunmasının (el ve ayaklarını suya sokma ve eğlenme, su savaşı yapma vb.) açık alan tercihlerini olumlu yönde etkilediğini belirtmiştir.

Yapılandırılmamış oyun fırsatlarına ek olarak, doğa hakkında yapılandırılmamış öğrenme fırsatları (yaprağın suyun akışı ile gidişini izlemek) ve yapılandırılmış aktivite fırsatları (kağıttan gemi yapmak, bitki ve hayvanları inclemek) da çocukların su bulunduran açık alanları tercih etme nedenleri arasındadır. Çocukların bu yöndeki açıklamaları, devam ettikleri okul öncesi eğitim kurumlarında öğretmenlerinin yaptırdıkları aktivitelerden etkilenmiş olmaları ile ilgili olabilir. Rickinson, Dillon, Teamey, Morris, Choi, ve Sanders (2004) öğretmenlerin açık alan etkinliklerini tüm müfredatlarına dahil etmekten ziyade, sadece bilim aktiviteleri uygulamak olarak algılamak olduğunu belirtmiştir.

Çalışmanın sonuçlarına göre, çocukların su bulunduran alanları seçmelerinin diğer bir nedeni ise açık alanların fiziksel ve estetik özellikleri ile ilgilidir. Benzer bir şekilde Müderrisoğlu ve Gültekin (2013) ve Tunstall ve arkadaşları (2004) da, su bulunduran alanların çocuklar tarafından daha ilgi çekici bulunduğunu ve çocukların bu alanlara gitmeyi tercih ettiklerini belirtmişlerdir.

Bu çalışmanın sonuçlarına göre, çocukların gitmeyi en çok istedikleri bir diğer açık alan türü ise park idi. Bu sonuca paralel olarak, birçok araştırmacı da, çocukların özellikle doğal malzemeler içeren, yeşil alanların bulunduğu oyun parklarına gitmeyi tercih ettiklerini bulmuştur (Castonguay & Jutras, 2009; Van Andel, 1990). Çalışmanın sonuçlarına göre, çocukların parklara gitmek istemelerinin nedenlerinden biri bu ortamlarda eğlenceli vakit geçirmeleri ile ilgilidir. Bazı araştırmacılara göre (Müderrisoğlu & Gültekin, 2013; Staempfli, 2009), çocuklara eğlenceli vakit geçirme fikri ve bir açık alanın çocuklara kendi yönetebilecekleri, yapılandırılmamış oyun fırsatları sunması, onların açık alan tercihlerini etkileyen önemli nedenler arasındadır. Çocukların park tercihlerini etkileyen bir diğer etken ise, bu ortamların sosyal etkileşim için uygun ortamlar olması ile ilgilidir (Van Andel, 1990).

Bu araştırmanın sonuçlarına göre, çocukların açık alanlar/çimli alanlar için kesin bir tercihleri yoktur. Bu sonuç, çocukların kendi ifadeleri ile açıklanabilir. Çocuklar bir yandan, rahat ve özgür biçimde koşup oynayabilecekleri alanları tercih ederken, diğer yandan ortamda ilgilerini çekecek uyaranlar ve çeşitlilik aramaktadır. Birçok

çocuğun ifadesine göre açık/çimli alanlarda çok fazla yapacak bir şey yoktur. İlgili yazında araştırmacılar da benzer şekilde sonuçlar bulmuştur. Örneğin, Willenberg ve arkadaşları (2009), açık alanlarda düşük oranda fiziksel yaralanma riski olduğu ve fiziksel hareketleri rahatlıkla sergileyebilecek bir çevre olduğu için, çocukların bu alanları terchi ettiklerini belirtmiştir.

Diğer bir açık alan türü olan orman kategorisine baktığımızda, araştırma sonuçlarına göre, katılımcı çocukların ormanlık alanları hiç bir koşulda tercih etmedikleri görülmüştür. Bu sonucun nedenlerine baktığımızda, çocukların güvenlikle ilgili büyük kaygıları olduğu görülmektedir. Çocuklar kendi ifadelerinde, ormanlık alanlar yoğun bitki örtüsü nedeniyle büyük ölçüde fiziksel yaralanma riski içeren ortamlar olduğunu belirtmiştir. Çocuklar ormanlık alanları tercih etmeme nedenleri olarak ayrıca, bu ortamlarda kaybolma ya da vahşi hayvanlarla karşılaşma riskinin olduğunu ve bu ortamların oyun için elverişli ortamlar olmadığını da belirtmişlerdir. Benzer bir şekilde, yazındaki diğer araştırmalar da (örneğin, Müderrisoğlu & Gültekin, 2013; Simmons, 1994), yoğun bitki örtüsü ve ağaçların düşme tehlikesinin olduğu bir alandaki olası fiziksel tehlikelerin, açık alan tercihlerini etkileyebileceğini belirtmişlerdir. Ancak Müderrisoğlu ve Gültekin'in (2013) çalışmasında, bu çalışma sonuçlarından farklı olarak, çocukların ormanlık alanları güvensiz ve tehlikeli bulmalarının yanında, oyun için elverişli olduğunu da düşündükleri ifade edilmiştir.

Çalışmanın sonuçlarına göre, çocuklarınen az gitmeyi tercih ettikleri alanların en önemli nedenlerinden bir diğeri ise aşinalıktır. Çocuklar kendi ifadelerinde aşina olmadıkları, yani onlara tanıdık gelmeyen ortamlara gitmeyi tercih etmediklerini belirtmiştir. Ayrıca çocuklar, erişilebilirlik yani bir ortamın onlar için ulaşılabilir olma durumunu da ortama tanıdık olma durumu ile ilişkilendirmişlerdir. Benzer bir şekilde, Castonguay ve Jutras (2009) da çocukların en çok tercih ettikleri açık alanların evlerine yakın olan ve bildikleri alanlar olduğunu belirtmiştir.

Çocukların gitmeyi en çok ve en az tercih ettikleri alanları, çalışmanın bir diğer faktörü olan insan etki seviyelerine göre ele aldığımızda, sonuçlar çocukların doğal ya da yapılandırılmamış alan konularında kesin bir terchileri olmadığını göstermektedir.

Çocukların doğal alanları tercih etmeleri, doğal alanların birçok doğal materyal içererek onlara çeşitli oyun fırsatları yaratmaları ile açıklanabilir (Nedovic & Morrisseyi, 2013). Yapılandırılmış alanlar ise estetik yönünden ve yine görece doğal materyaller içermeleri bakımından çocuklara sosyal ve fiziksel oyun fırsatları yarattığından, çocukların tercihleri arasında yer alabilir (Martensson ve ark., 2014; Müderrisoğlu & Gültekin, 2013; Simmons, 1994; Tunstall ve ark., 2004).

**Annelerin açık alan türlerine göre en çok ve en az gitmeyi tercih ettikleri açık alan tercihleri ve bu tercihlerinin nedenleri**

Bu bölümde annelerin gitmeyi en çok ve en az tercih ettikleri açık alan tercihleri ile ilgili bulgular ve terch nedenleri, çocukların sonuçları ile karşılaştırılarak belirtilmiştir. Daha sonra ise bulgular, yazında ebeveynlerle yapılan araştırma sonuçları incelenerek tartışılmıştır.

Çalışma sonuçlarına göre, çocukların tercihlerine paralel olarak, annelerin de en çok tercih ettikleri açık alan türleri, parklar ve su bulunduran alanlardır. Ancak sulu alanlar, bazı durumlarda (annelerin çocuklarıyla birlikte gitmek istedikleri alanlar ve annelerin çocuklarının öğretmenleri ve arkadaşlarıyla birlikte gitmesini istedikleri açık alanlar), annelerin en az tercih ettikleri açık alanlar arasında da yer almaktadır. Açık/çimli alanlar annelerin her koşulda en çok tercih ettikleri yerler arasındadır. Ormanlık alanlar ise, annelerin sadece kişisel olarak gitmeyi en çok tercih ettikleri alanlar arasında yer alırken, tüm koşullarda en az gitmeyi tercih ettikleri açık alanlar arasında ilk sıradadır.

Çalışmanın bulgularına göre, anneler kişisel tercihleri hariç tüm durumlarda parkları tercih etmiştir. Bu sonuç bize, annelerin aslında parka çocukları için gittiklerini veya çocuklarının öğretmenleri ve arkadaşları ile birlikte gitmesini tercih ettiklerini, ancak bireysel olarak kendilerinin parka gitmeyi tercih etmediğini göstermektedir. Benzer bir bulgular Nasar ve Holloman'ın (2013) çalışmasında da belirtilmiştir. Bu araştırmacılara göre, özellikle oyun materyalleri içeren, kısmen doğal

malzemeler bulunduran ve geniş açık alanlara sahip parklar, çocukların en çok tercih ettiği açık alanlardandır. Katılımcı çocukların parkları tercih nedenlerine parallel olarak anneler de tercihlerinde, bu alanlarda çocuklar için yapılandırılmamış fiziksel oyun fırsatlarını, eğlenceyi ve sosyalleşmeyi göz önünde bulundurmuştur. Veitch ve arkadaşları da (2006), ebeveynlerin açık alan tercihlerinde, çocukların oyun materyalleri ile oynayabilecekleri, doğal materyallerle etkileşimde bulunabilecekleri ve sosyalleşme fırsatı bulabilecekleri parkları tercih ettiklerini belirtmiştir. Annelerin kişisel olarak parkları seçmeme nedenleri ise bu ortamların çok fazla doğallık içermemesi, bu ortamların anneler için çekici olmaması ve annelerin bu ortamlarda yapacak birşey bulamamaları ile açıklanabilir. Loukaitou-Sideris ve Stieglitz'e göre (2002), bir ortamın bireylere sunduğu aktivite çeşitliliği ve ortamdaki yaşa uygun olanaklar, kişilerin bu ortamları seçme tercihlerini etkilemektedir.

Çocuklardan farklı olarak annelerin parkları kişisel olarak tercih etmemelerinin bir diğer nedeni ise, bu alanların çocukları için çok fazla ziyaret edilmesi ve bu alanlara oldukça aşina olmaları ile ilgilidir. Bazı araştırmacılara göre, bireyler aşina oldukları alanlara gitmeyi tercih edebilirler (Herzog ve ark., 2000; Samborski, 2010). Ancak, bazı durumlarda aşinalık, bireylerin açık alan tercihlerini olumsuz etkileyen faktörlerden biri olabilir (Park, Shimojo, & Shimojo, 2010).

Çocuklarda olduğu gibi, su bulunduran alanlar, tüm durumlarda annelerin gitmeyi tercih ettikleri açık alanlar arasındadır. Ancak, su bulunduran alanlar, annelerin çocukları ile birlikte gitmek istedikleri veya çocuklarının öğretmenleri ve arkadaşları ile birlikte gitmesini istedikleri alanlar düşünüldüğünde, annelerin tercih etmedikleri yerler arasında da yer almaktadır. Yetişkinlerin açık alan tercihlerinde suyun olumlu etkisini gösteren birçok araştırma bu sonucu desteklemektedir (Veitch ve ark., 2006; Kaplan & Kaplan, 1989). Bazı araştırmalara göre, suyun huzur verici ve rahatlatıcı etkisi olduğu düşüncesinin ve sulu alanların görsel olarak bireyleri tatmin edici özelliği olmasının, bireyleri bu alanları tercih etmeye yönelttiğini belirtilmiştir. Bu açıklamalardan farklı olarak Wilson (1984) ise evrimsel bakış açısıyla, suyun bireylerin yaşamını sürdürmeleri göz önüne alındığında temel ihtiyaçlardan biri

olduğu için, bireylerin su bulunan alanları doğuştan gelen bir içgüdüyle tercih ettiklerini belirtmiştir. Diğer durumlar için annelerin suyu tercih etmelerinin nedeni suyun birçok oyun için açık uçlu bir materyal olarak kullanılabilmesi ile açıklanabilir (Matthews, 1995, Tunstall, ve ark., 2007). Diğer yandan sulu alanların annelerin en az gitmeyi tercih ettikleri alanlar arasında yer alması ise, annelerin güvenlik kaygıları ile ilgilidir. Anneler su bulunduran alanlardaki güvenlik kaygılarını, gitmeyi en az tercih ettikleri alanların nedenlerini açıklarken belirtmiştir. Benzer bir şekilde, farklı araştırmacılar da, ebeveynlerin güvenlik kaygılarından dolayı, çocuklarına su bulunduran alanlarda çok fazla oyun oynama fırsatı vermediklerini belirtmiştir (Brussoni, ve ark., 2012; Gundersen ve ark., 2016).

Açık alanlar/çimli alanlar kategorisi düşünüldüğünde sonuçların annelerin tercihleri bakımından çocuklardan faklı olması dikkat çekmektedir. Anneler her koşulda bu açık alan türünü tercih etmişlerdir. Ayrıca bu alan annelerin en az tercih ettikleri açık alanlar arasında hiç bir koşulda yer almamaktadır. Katılımcı çocuklara benzer bir şekilde, anneler de kendi ifadelerinde açık/çimli alanların büyük motor kaslarını destekleyici fiziksel hareketleri yapmak için elverişli ortamlar olduğunu belirtmiştir. Ancak annelerin her koşulda bu açık alanları tercih etme nedenleri, çocuklar için çeşitli fiziksel aktivite imkanları sunmasının yanında, esas olarak, annelerin bu alanları güvenli bulmaları ile ilgilidir (Willenberg ve ark., 2009).

Orman kategorisine baktığımızda, çocuklardan farklı olarak anneler bu alanları kişisel olarak gitmeyi tercih ettikleri alanlar arasında ifade etmiştir. Ancak, çocukların tercihlerine paralel olarak, ormanlık alanlar annelerin gitmeyi en az tercih ettikleri alanlar arasında ilk sıradadır. Annelerin kişisel tercihlerini evrimsel bakış açısı ile açıklayacak olursak, bireyler çevredeki potansiyel tehlikelerden korunabilecekleri, vahşi hayvanlar ya da yabancı insanlardan saklanabilecekleri ve çevreyi kontrol edebilecekleri ortamları tercih edebilir (Appleton, 1975; Wilson, 1984). Farklı bir bakış açısıyla, bireyler estetik olarak güzel buldukları ve temiz hava alabilecekleri açık alanları tercih edebilir (Nowak ve ark., 2002). Diğer yandan annelerin güvenlikle ilgili kaygıları, ormanlık alanların en az tercih ettikleri alanlarda ilk sırada olmasını açıklar

niteliktedir. Bu çalışmada katılımcı çocuklara paralel olarak, anneler de, özellikle ormanlık alanlardaki fiziksel tehlikelerden bahsetmişlerdir. Benzer bir şekilde Dal Santo ve arkadaşları da (2004), annelerin açık alanlar söz konusu olduğunda, çocuklarına karşı aşırı koruyucu tavırlarının ve kaygılarının, onları fiziksel yaralanmalardan korumak amacıyla ortaya çıkabileceğini belirtmiştir. Sandseter (2009), yetişkinlerin aşırı koruyucu bu tutumlarında kültürün etkisinin varlığından bahseder. Özellikle İskandinav ülkelerinde, tüm hava koşullarında, yetişkinlerin çocukların risk alabilecekleri maceracı oyunlar oynayabileceği alanların, onların gelişim ve öğrenmesini olumlu yönde etkilediğinin bilincinde olduğu bilinmektedir (Sandseter, 2009). Ancak benzer bir kültür bizim kültürümüzde bulunmamaktadır. Türk kültüründe aşırı koruyuculuk mevcut olup, açık alanlarda risk almanın, çocukların gelişimi, öğrenmesi, güçlü ve zayıf yönlerini keşfetmeleri açısından çok önemli katkıları olduğu göz ardı edilebilmektedir.

Annelerin açık alan tercihleri, insan etki seviyeleri faktörü düşünüldüğünde, çocuklarınkinden farklılık göstermektedir. Annelerin gitmeyi en çok ve en az tercih ettikleri açık alanlar birlikte düşünüldüğünde, anneler en çok doğal alanları gitmeyi tercih etmiştir. Çocukların tercih nedenlerine benzer biçimde, anneler de doğal alan tercihlerinde en etkili nedenlerinin, bu alanların estetik özelliği olmasının yanı sıra, çocukların etraftaki doğal materyallerle oynayabilmesi, çeşitli oyunlar kurabilmesi olduğunu ifade etmişlerdir. İlgili yazında bu sonuçları destekleyen çalışma bulgularına rastlanmaktadır (Sebba, 1991; Fjortoft, 2004; Zamani, 2016).

## Sonuç ve Öneriler

Bu bölümde, bu çalışmanın sonuçları temel alınarak, şehir ve bölge planlamacıları, öğretmenler, ebeveynler, idareciler ve öğretmen eğitimi programları için öneriler içermektedir.

Çalışmanın sonuçlarına göre, hem açık alan türleri, hem de insan etki seviyeleri açısından çocukların açık alan tercihleri düşünülürse, çocukların gidebileceği olası

açık alanlarda ağaç, çim ve su gibi doğal elementlerin bulunması, planlamacılar tarafından gözönünde tutulmalıdır. Bir çok araştırmacı tarafından da önerildiği gibi (Herrington & Studtmann, 1998; Jansson & Persson, 2009; Janssona, Sundevall, & Wales, 2016; Noren-Bjorn, 1982), bu çalışma sonuçları da, çocukların sıklıkla kullanabileceği açık alanlarda onların oyun işlevlerini artıran doğal unsurların bulundurulmasını ve fiziksel ve sosyal gelişimlerine katkı sağlayacak oyun alanları planlanması önerilmektedir.

Çalışma sonuçlarına göre su bulunduran alanların anne ve çocuklar tarafından her koşulda tercih edildiği düşünüldüğünde, planlamacıların çocuklara farklı çeşitlerde oyun fırsatları sunmak için, açık alanlarda sulak ortamlar tasarlamaları önerilebilir. Ancak su bulunduran alanlarda, annelerin çocuklarının güvenliği ile ilgili kaygılarını azaltmak için de her türlü önlemin alınması gerekliliği unutulmamalıdır (Brussoni, ve ark., 2012).

Açık alanların, çocuk ve annelerin açık alan tercihleri düşünülerek tasarlanması kadar, bu ortamların ebeveynlerin ve öğretmenlerin rehberliği ile, çocukların öğrenme ve gelişimlerini artırmak için etkili bir şekilde nasıl kullanılabileceği de önemlidir. Bu noktada, öğretmen eğitimi programları geliştirilerek, çevre ile ilgili ders sayısının artırılması ve öğretmen adaylarının etkili doğa aktiviteleri ile ilgili pratik olarak deneyim kazanmaları sağlanabilir (Yılmaz, Olgan, & Öztürk-Yılmaztekin, 2016). Öğretmenlerin öğretmen eğitimi ya da hizmet içi eğitimlerle bu tarz bir deneyimler kazanmaları, açık alan aktivitelerinin eğitim programlarına etkili bir şekilde entegre edilmesini kolaylaştıracaktır.

Öğretmenlerin, doğa deneyimlerinin çocukların sağlıkları, gelişimleri ve öğrenmeleri için önemi ve doğal ortamlarda çocuklarla uygulanabilecek etkili doğa deneyimleri konularında bilgi sahibi olmaları, ebeveynlerin de öğretmeler tarafından etkili bir şekilde bilgilendirebilmesine yol açabilir. Çocukların gelişim ve öğrenmeleri, öğretmenler ve ebeveynlerin etkileşim içerisinde olmasıyla desteklenebilir.

Çalışma sonuçlarına göre, çocukların ve annelerin açık alanlara gitmesini engelleyen faktörler düşünüldüğünde, okullardaki açık alanların yeşillendirilmesi

ulaşım problemleri, güvenlik sorunları ve okul dışı açık alanların ziyareti için zaman ayırma sıkıntısı gibi birçok engele çözüm olabilir (Dyment, 2005). Bentsen, ve arkadaşları (2009) tarafından da önerildiği gibi, bu çalışma da, çocukların eğitiminde doğal ortamların etkili bir biçimde kullanımının artması için okul yönetimi, öğretmenler, ve açık alan ve park yetkililerinin işbirliği içinde çalışmasını desteklemektedir.

Bununla birlikte, aile katılımının sağlanması, annelerin güvenlik endişelerinin azalmasına yardımcı olabilir. Açık alanlarda uygulanan etkinliklerde, aile katılımı ile çocuk başına düşen yetişkin sayısı artırılabileceği için, ebeveynlerin çocuklarının güvenliği hakkındaki endişeleri azaltılabilir.

Bu çalışmanın sonuçları, katılımcıların güvenlik endişelerinin çoğunlukla yoğun bitki örtüsüne bağlı olarak potansiyel fiziksel tehlikeler olduğunu göstermiştir. Bu sonuç, katılımcıların riskten kaçınan bir kültürden geldiklerinin bir göstergesi olabilir. Bu kültürü değiştirmek için, ebeveynler ve öğretmenler, çocukların açık alanlardaki zorlu görevlerle başa çıkabilmek için cesaretlendirilmelerinin; olası yaralanmalar ve bunlarla başa çıkabilme yolları; ve güvenlik ilkeleri ve düzenlemeler hakkında bilgilendirilmelidir (Sandster, 2007).

Bu çalışmanın sonuçlarına dayanarak, gelecek çalışmalar için birçok öneride bulunulabilir.

Bu çalışmada, hem çocukların hem de annelerin açık alan tercihlerinin araştırıldığı anket soruları, araştırmacı tarafından ilkbahar mevsiminin sonlarına doğru çekilmiş on altı fotoğraf eşliğinde sorulmuştur. Katılımcıların açık alan tercihlerinin farklı mevsimlerdeki değişimini görebilmek için, bundan sonraki yapılacak çalışmalarda araştırmacılar için farklı mevsimlerde çekilmiş fotoğrafların kullanımı önerilebilir.

Çalışmanın sonuçlarına göre, çocuk ve annelerin açık alan tercihlerinin farklılık ve benzerlikleri ortaya konmuştur. İlerde yapılacak çalışmalarda, annelerin ve çocukların açık alan tercihlerinin ne düzeyde birbiriyle ilişkilendirilebildiğini görebilmek için, her bir annenin ve çocuğun açık alan tercihleri eşleştirilerek

araştırılabilir. Bu yöntem, bireylerin açık alan tercihlerinde kültürün etkisini ortaya çıkarabilir. Benzer olarak, çocukların ve babalarının açık alan tercihlerinin incelenmesi de ileride yapılacak çalışmalar için öneri olabilir.

Ek olarak, bu çalışma, büyük bir kentte yaşayan aynı kültüre sahip katılımcılarla yürütülmüştür. Bu nedenle, uluslararası düzeyde farklı kültürlere sahip toplulukların ya da Türkiye'de kırsal bölgelerde ve kentte yaşayan bireylerin açık alan tercihlerinin karşılaştırılabileceği kültürler arası çalışmalar önerilmektedir.

Son olarak, bu çalışma sadece anneler ve çocukları ile birlikte yürütülmüştür. Öğretmenlerin açık alan tercihlerininin okul içi ve okul dışı etkinliklere öncülük edebileceği fikri göz önüne alınarak, gelecekte yapılacak çalışmalar için hem öğretmen adaylarının, hem de çalışan öğretmenlerin açık alan tercihlerinin incelenmesi önerilebilir.

## APPENDIX H

### Tez fotokopisi izin formu

**ENSTİTÜ**

Fen Bilimleri Enstitüsü ☐

Sosyal Bilimler Enstitüsü ■

Uygulamalı Matematik Enstitüsü ☐

Enformatik Enstitüsü ☐

Deniz Bilimleri Enstitüsü ☐

**YAZARIN**

Soyadı : Yılmaz
Adı : Simge
Bölümü : Temel Eğitim Bölümü

**TEZİN ADI** (İngilizce) : Investigation of 5-year-old Preschool Children's Biophilia and Children's and Their Mothers' Outdoor Setting Preferences

**TEZİN TÜRÜ** : Yüksek Lisans ☐ Doktora ■

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir. ☐
2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir. ☐
3. Tezimden bir bir (1) yıl süreyle fotokopi alınamaz. ■

**TEZİN KÜTÜPHANEYE TESLİM TARİHİ:**