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Why do children not play in nearby nature? Results from a Norwegian survey

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ABSTRACT

Based on a nationwide Norwegian survey among 3160 parents of children aged 6–12 years, this article identifies and discusses barriers for children's engagement with nearby nature. A set of social factors related to time pressure are evaluated as more significant barriers than environmental factors such as accessibility, safety and landscape quality. Children's free play in nearby nature does not seem to be an alternative to a target-orientated and time-scheduled everyday life. Instead, parents give themselves, other adults and public institutions more responsibility to stimulate increased nature contact. Despite strong traditions in outdoor life and good accessibility to nearby nature, social and cultural trends seem to influence children's engagement with nature in the same way in 'Green Norway' as it does in many other European countries. Implications of the findings are discussed in terms of policy and promotion according to nature management and adults' roles.

KEYWORDS

Children's engagement with nature; barriers for nature contact; adult's role; target orientation

Introduction

There is increasing evidence suggesting that contact with nature provides a wide variety of benefits for children. These benefits range from health, including physical, mental and social well-being (Chawla, Keena, Pevec, & Stanley, 2014; Faber Taylor & Kuo, 2006; Fjortoft, 2004), to a wide range of learning opportunities (MacQuarrie, Nugent, & Warden, 2015; Wells, 2000) and the chance to develop a caring connection with nature (Chawla, 1998; Ewert, Place, & Sibthorp, 2005). In parallel with this, there is increasing global concern that children nowadays are getting fewer opportunities to engage with nature, because of reduced access to nature spaces, because of competing screen time and because children's play to a greater extent today seems to be supervised by adults with the consequence that free play is often replaced by organized sports and leisure activities (Clements, 2004; Francis & Lorenzo, 2006; Karsten, 2005; Prince, Allin, Sandseter, & Ärlemalm-Hagsér, 2013; Skår & Krogh, 2009).

Internationally, Norway is often characterized as a 'Green' country with strong traditions in outdoor life (Gullestad, 1997; Henderson & Vikander, 2007), a lot of nature, a low population density and a public right of access that even includes access to privately owned nature areas. Notwithstanding, an increasing concern for children's reduced contact with nature is observable even here (Tordsson & Vale, 2013). According to Waller, Sandseter, Wyver, Ärlemalm-Hagsér, and Maynard (2010), adults' nostalgic comparisons of their own childhood with childhood today forms much of the basis for parents' concerns about contemporary children's lack of engagement with

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nature. Many Norwegian parents remember a childhood filled with outdoor play in nearby nature, while they today observe their own children in front of screens, in organized sport or occupied by homework. There is evidence to suggest that children in Norway are spending less and less time on outdoor play in the neighborhood, and in particular in nature spaces (Lidén, 2003; Mjaavatt, 2013; Skår & Krogh, 2009), but quantitative evidence on this subject is weak. Skar et al. (2014) show that children use forests and other nature spaces near home much more sporadically than more urbanized areas such as streets, bikeways and playgrounds. In the same study, private gardens are the most frequently used outdoor space, and jumping on a trampoline is the most common outdoor activity. In all, 53% of the children never or seldom (maximum twice a month) play in neighborhood forests or other nature spaces, according to this survey.

Children's engagement with nearby nature not only depends on physical access and the quality of outdoor spaces, but is closely interwoven with other aspects of their everyday life. This can be reflected by taking a contextual ecological approach to the study of barriers to nature engagement, including political, social, cultural and economic factors influencing perceived accessibility and behavior as part of active living (Koppen, Tveit, Sang, & Dramstad, 2014; Morris, O'Brien, Ambrose-Oji, Lawrence, & Carter, 2011; Sallis et al., 2006). Studying the barriers to children's nature engagement from the 'Green Norwegian' point of view is highly relevant when exploring the multifaceted character of the topic, and should be of interest in an international context because of commonalities in contemporary childhood across developed countries.

A nationwide survey among 3160 Norwegian parents of children aged 6–12 years was conducted in 2013. The survey offers statistics about children's use of nearby nature in Norway today (Gundersen, Skar, O'Brien, Wold & Follo, 2016; Skar et al., 2014). We will specifically focus on and present those parts of the survey that are relevant to the topic of barriers to children's use of nearby nature. Identifying these barriers is based on parent's evaluation of a set of prescribed statements, identified from the short literature review presented here, and their responses to an open-ended question concerning measures to increase children's contact with nature. Implications of the findings will be discussed in terms of policy and promotion according to both management and adults' roles related to children's engagement with nature.

Barriers to children's use of nearby nature

Access to nature in 'Green Norway'

Loss of green spaces is an important part of the concern about children's opportunities to play outdoors in many western countries (Clements, 2004; Francis & Lorenzo, 2006; Holloway & Valentine, 2000). Despite the fact that Norway has a large proportion of accessible nature—for example, most of the Norwegian cities are surrounded by forests often within a 500 m distance of where people live (Gundersen, Frivold, Myking, & Øyen, 2006)—questions about access to urban green spaces have been raised. Urbanization within the past 20 years has resulted in new ideals for sustainable compact cities, and urban green infrastructure is being lost or reduced in size (Thorén, Trier, Lieng, & Aradi, 2010). The Public Accounts Committee in Norway has asked for better control and monitoring of this development (Riksrevisjonen, 2007). According to Statistics Norway, about one-half of the population in densely populated areas (settlements >200 inhabitants where the distance between the houses does not exceed 50 m) has safe access to small green areas (>0.5 ha, distance <200 m) and potential recreational areas (>20 ha, distance 500 m) (Statistics Norway, 2014a). Proximity is of course especially important for children (Florgård & Forsberg, 2006). According to Hörnsten and Fredman (2000), the average preferred distance to a recreation woodland for adults is less than 1 km, but this will be considerably less for children (Florgård & Forsberg, 2006).

Socio-cultural changes are influencing development of play spaces outdoors. While green spaces in the past functioned as informal meeting places for children's play, sport and so forth,

across gender, age and social status, such green spaces are today replaced by sports installations, built playgrounds, 'ball bins' and play installations (Skår & Krogh, 2009). According to Lidén (2003), earlier informal play in neighborhoods seems to be replaced by time spent in institutions. Today, 90% of Norwegian preschool children go to kindergarten (Statistics Norway, 2014b). Several studies show that the preschool educationists in Norway have a strong focus and give priority to free play in nature (Borge, Nordhagen, & Lie, 2003; Little, Sandseter, & Wyver, 2012; Nilsen, 2008; Sandseter, 2012; Stokke, 2013). However, a study investigating the situation in 2010 regarding space for outdoor play in public kindergartens in the capital Oslo found that all legislative changes regarding space requirements in outdoor play areas for kindergartens have consequently led to less play space per child, as well as reduced protection of the outdoor play areas (Nilsen & Hägerhäll, 2012).

A study based on a national representative sample of 68 Norwegian lower secondary schools showed that green fields, parks and nature reserves, as well as soccer fields and open field spaces, were available in almost all schools, either within the schoolyard or in the school neighborhood (Haug, Torsheim, & Samdal, 2008). Another study claims that the size and amount of green spaces in Norwegian schoolyards is very variable, dominated by asphalt and gravel surfaces, large ball courts and play installations such as slides, sandboxes and swings (Limstrand, 2000). A national survey including all Norwegian schools (Thorén, 2003) showed that 28% of the primary schools and more than 40% of the secondary schools reported that the lack of suitable nature spaces for play was the biggest obstacle for physical activity. Surprisingly, schools situated in small towns (2000–5000 residents) reported this to be a particular barrier. In spite of some inconsistent findings in various studies on access to green spaces, there is evidence to believe that Norway's situation is good in comparison with many European countries and cities (Pauleit, Jones, & Nyhuus, 1995).

Risk and safety

Internationally, one sees that outside play experiences are now limited for many children because of excessive fear of risk amongst adults (Brussoni, Olsen, Pike, & Sleet, 2012; Foster, Villanueva, Wood, Christian, & Giles-Corti, 2014; Natural England, 2009; Valentine & McKendrick, 1997). An in-depth study from England shows that, for some young girls, woodlands were seen as 'out of bounds' due to parental concerns about safety issues (Milligan & Bingley, 2007). Although many educationists and parents feel a personal responsibility to consider risk and carry out supervision of children, perceptions of risk are very much subject to cultural interpretation (Prince et al., 2013). Compared with many other western countries, children's free play still seems to be an important part of childhood in Norway and the rest of Scandinavia (Borge et al., 2003; Guldborg, 2009; Little et al., 2012; Prince et al., 2013; Sandberg, 2012; Sandseter, 2012). However, much of the Norwegian research on outdoor play is based on studies in pre-schools or kindergartens focusing on how teaching practice can support this kind of play without compromising safety. There are fewer studies from a Norwegian and Scandinavian context that deal with concerns about safety, danger and risk in a broader context, including older children and their leisure time outside institutions. Boyesen (1997) focuses on adult's perceptions of risk and security and, like Sandseter and Kennair (2011), claims that children need to experience challenging situations more than they do, and through embodied experiences need to learn to deal with risk. In a Swedish study about children's use of nature in an urban context, Sandberg (2012) identifies mobility restrictions by adults as increasing and one of the barriers for children's outdoor play, because of concerns about traffic and so-called 'stranger danger'. Several Norwegian researchers focus on children's right to free play outdoors, with a basic perception that such play is more risky, noisy and chaotic but is beneficial for children's social, psychological and motor skills development (Fjortoft, 2004; Øksnes, 2010; Sandseter & Kennair, 2011).

There has been an increased focus on risk assessment in Norway through comprehensive regulations by law, in line with other European countries. The regulation on the safety of children's playground equipment was introduced in 1996 in order to prevent serious accidents and was

followed up in 2007 (Direktoratet for samfunnssikkerhet og beredskap, 2007). According to Stokke (2013), these kinds of regulations have resulted in many children's playgrounds being stripped of facilities and this has reduced the opportunities for play. Despite a lack of knowledge concerning perceptions of risk and safety in a Norwegian context, outside the pre-care institutions, the studies referred to indicate a strong focus on this even in a Norwegian and Scandinavian context; presumably leading to more supervision of children and less free play outside.

Adults' supervision in children's engagement with nature

That children's outdoor play in contemporary society is to a large extent under parental control is evident internationally (Francis & Lorenzo, 2006; Karsten, 2005).

The norm within society seems to be that parents are always with their children or organize their activities, and the result of this may be the 'domesticated' child according to Prince et al. (2013). For example, according to Natural England (2009), 20% of British adults said that they had been supervised by their parents or carers when playing in natural spaces when they were children. However, while this suggests that parents had some freedom to play in nature when they were young, they are not providing the same opportunity for their own children. In the same survey, 80% of parents stated that they supervise their own children when their children play in nature. Fear of strangers and road safety issues were identified as the key reasons why parents today stated they do not provide as much freedom for their children as they experienced when young.

A survey commissioned by Playday (2010) in Britain showed that 29% of the children (aged 7–14 years) did not play or 'hang out' in the street at all. Accordingly, 30% of Norwegian parents report that their children never or seldom (maximum twice per month) stay outdoors without parents knowing exactly what the children are doing in summer time, while the corresponding percentage for winter time is 43% (Skar et al., 2014). The increasing (but well-meant) degree of supervision of children is seen in the popularity of organized nature events or activities for children in nature, such as Forest Schools in the United Kingdom (O'Brien & Murray, 2007). The same tendency can also be seen in Norway, where nature events arranged by the Children's Trekking Club, for example, have been very popular.

Skar et al. (2014) show that children aged between 6 and 12 years spend more time outside in nature with adults than without, and that the youngest children (six to nine years old) spend more time in nature than the older ones (10–12 years old). This possibly illustrates that younger children's engagement with nature today, to a high degree, depends on whether an adult takes them out or not, and that older children reduce their engagement with nature when they to a higher degree can choose, themselves, to go outside or not. This situation of comprehensive supervision by adults seems to be the opposite of the situation some decades ago, when adults were seldom present in children's play outside (Skår & Krogh, 2009). The situation in Norway today seems to be in accordance with developments in other western countries.

Children's leisure time: too passive or too many activities?

A worldwide and permanent shift of media practices has been seen in the last decade and screen time is often mentioned as a competitor to children's outdoor play. In addition to social media becoming extremely popular, not least among girls, the market for computer games has increased significantly, and television channels target a lot of their broadcasts at children after school (The Norwegian Media Authority, 2014). The consequences of this increase in media use is discussed within many research fields, and one possible issue often mentioned is a higher degree of inactivity and being overweight among children. Clear connections between time spent in front of the screen and participation in other activities have not been found, as reasons for overweight/obesity

are complex and are also influenced by factors such as social class, personality and individual interests (The Norwegian Media Authority, 2014).

Children in Norway are part of a prosperous society which includes great access to several digital media. A national survey undertaken for The Norwegian Media Authority (2014) among 1950 children and youths aged 9–16 shows that 98% have access to television, 95% to a PC/Mac (95%) and 86% to a game console. In all, 94% of the children have access to a mobile phone and 83% own a smart phone. This survey shows that the average time spent on computer games among boys aged 12–17 is two to four hours on week days, and four hours daily on days off. On average, girls use their mobile phone for 150 minutes daily and boys for 98 minutes. Both the proportion of users and time use has increased in the last decade, and this use increases with age.

Children's time use and their experiences of time should be seen as a complex and dynamic issue situated within a specific cultural context (Lidén, 2004). Notwithstanding, the shift of media practices has undoubtedly contributed to the fact that outdoor spaces have lost much of their appeal as attractive playscapes for children and young people, but this has to be viewed in relation also to other aspects of children's everyday lives. In a letter to the editor 'We do not live in the 50's anymore' in *Aftenposten* on 12 November 2012 (cited in Vaage, 2013), the signature 'Girl, 14 years old' writes:

Older people argue with the fact that when they were young, they were constantly active outside, and that the youth of today are just sitting in front of PC, mobiles and displays. But, there are many different reasons why we stay more inside, and resort to social media. Among other things, the school is a main reason. We have simply not the time to be outside. Homework, tests and the submissions pile up during the week, and free time becomes, therefore, not a lot of [...] Also, youth are doing sports and training more now than before. The sum of the school and training therefore provides young people little time to be outside to play and meet up with friends. Therefore, we would rather resort to social media.

This 14-year-old girl shows that between homework, sports and duties, children do not find enough time to meet friends in an unstructured way, but view screen time as 'free time'. Time pressure is a part of everyday life for many families, and terms such as 'the organized frenzy' are used (Beck, 1990). Approximately, 80% of children in Norway 6–15 years old participate in organized sports or other activities, and this amount is increasing (Kjelvik, 2012). Along with this, children spend increasing time in childcare, in schools and in after-school care. Waite (2010) outlines how the performativity agenda focused on examination results is perceived to reduce opportunities for outdoor engagement due to schools trying to meet specific targets. This picture of a target-oriented, time-scheduled and also time over-scheduled everyday life for children seems to accord with international studies. It is evident that children's play in Norway, as well as in other countries, has become more institutionalized and organized, taking place in special centers rather than in public spaces (Gleave, 2009; Skår & Krogh, 2009).

Methods and data analysis

The sample frame for this study was 6537 parents among the Norwegian population with children in the age range 6–12 years old. The sample frame was derived from a survey panel consisting of approximately 90,000 volunteers who are continuously tested by the polling company TNS Gallup, to be representative of Norway's general population. In December 2012 and January 2013, all 6537 persons were invited by email to participate in the study. The email contained a link to an online questionnaire. Altogether 3160 parents responded and filled out the questionnaire completely, giving a response rate of 48.3%. The sample represents respondents living in 354 municipalities out of 428 municipalities in Norway, and with a geographical distribution regarding all 19 counties. In total, 54.7% were women and 45.3% men; 71.1% lived in urban areas and 28.8% lived in sparsely populated areas, which is fairly representative of the demographic distribution in Norway. According to level of income and education, the sample was found representative compared with the target population (age group 25–50 years) where the level of income and education are

a bit higher than within the total population. The parents filled out the questionnaire in relation to their youngest child: 51.4% of the children were boys and 48.6% girls; 53% were between six and nine years of age, 47% between 10 and 12 years old. The survey failed to obtain enough answers concerning children who had grown up in countries other than Norway. We developed a comprehensive web-based questionnaire in cooperation with TNS Gallup, using a set of different numeric categories and open-ended questions.

Two of the survey questions are presented; the first is a question which outlines 19 different barriers to using nearby nature which are evaluated by the parents and derived from the review of existing knowledge within the field: 'To what extent do you agree or disagree that the following conditions are hindrances for your child to visit nature and other green spaces?' The parents answered along a five-point Likert scale. The data are descriptive and presented in the Results section as frequencies and means (Figure 1). Statistical analysis was performed using SPSS 19.0 software with the general significance level set to $\alpha = 0.05$; one-way analysis of variance was performed to identify demographic differences according to prescribed barriers (Table 1).

The second question was open ended, worded as follows: 'Given a political objective that children ought to spend more time out in nature and green spaces, which measures do you believe are most important to get your child to spend more time outdoors in nature?' The results show that the open-ended question verifies the results from the quantitative question, but in addition it supplements and identifies further important aspects that act as barriers for children to engage with nature (Table 2).

Sixty-six percent of the respondents ($n = 3160$) answered this second question. However, because of unspecified answers (for instance, 'my child does not need to spend more time in nature'), the valid response rate was 59%. The responses given to the question were a mix of suggested measures and descriptions of barriers and other factors influencing the child's engagement with nature. Initially, all responses were read through and a first overview of the different topics was composed. These topics were discussed by the research group and a new topic overview separating measures and barriers was then created. Furthermore, all answers were then imported into the qualitative analysis software Atlas.ti, read through and coded/categorized into 16 different codes/categories (Table 1). An answer could be coded to more than one code, depending on the number of measures/barriers mentioned by the respondent.

Results

Results from prescribed barrier categories

Responses to the prescribed barriers mainly generated low mean values for all of the barriers evaluated by parents along the five-point Likert scale. The largest value for the barrier 'The child's leisure time is filled up with several activities' was a mean value of 2.57 (Figure 1). The main barriers identified by the parents included: less time is available because the child is too busy in leisure time (organized sports and leisure activities) and because too much time is spent on homework. Additionally, concern about traffic is an important barrier. Factors such as length of distance to nature spaces, unsafe nature spaces and the quality of nature spaces, as well as lack of equipment and poor motor skills, are shown to be less important barriers.

We analyzed the effects of demographic and socio-economic factors for each of the 19 barrier statements, including child's gender, child's age, parent's income, parent's education, rural versus urban living and family structure (Table 1). In terms of gender we identified significant differences for six of the statements, with higher barriers for boys than girls for all of these statements. Regarding the child's age, we identified significant differences for nine statements, and for all except one ('concerns about traffic') there where higher barriers for the age class 10–12 years compared with the age class of six to nine years. We identified six significant differences regarding parent's income, and for four of these the category 'Low income' showed the highest values.

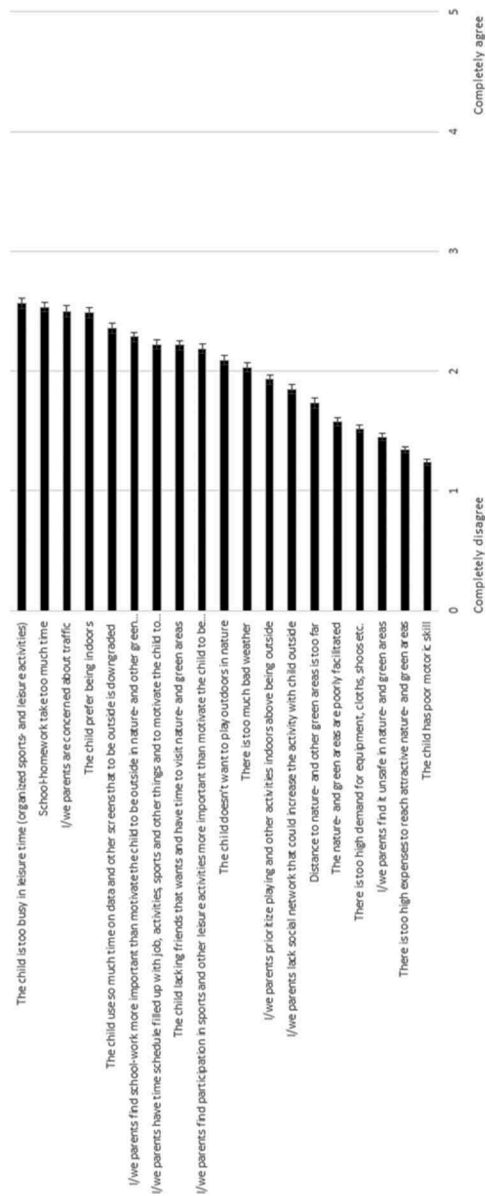


Figure 1. Children's barriers for not using the nature and green areas as evaluated by parent(s) as an answer to the following question: 'To what extend do you agree or disagree that the following conditions are hindrances for your child to visit the nature and other green areas?' Note: Data are mean (± 2 standard errors) for 19 prescribed statements.

Table 1. Effects of demography and socio-economic factors for each of the 19 barrier statements.

Barriers	Child's gender	Child's age ^a	Parent's income ^b	Parent's education level ^c	Rural vs. urban living	Family structure ^d	Number of children ^e
The child has poor motor skill	Boys (df = 3136, $F = 8.64$, $p = 0.003$)			Low education (df = 3136, $F = 12.46$, $p < 0.001$)		Two homes (df = 3129, $F = 10.81$, $p = 0.001$)	
Too high expenses to reach attractive nature and green areas			Low income (df = 2920, $F = 14.68$, $p = 0.004$)	Low education (df = 3128, $F = 13.85$, $p < 0.001$)	Urban (df = 3125, $F = 6.41$, $p = 0.011$)	Two homes (df = 3121, $F = 7.93$, $p = 0.005$)	
I/we parents find it unsafe in nature and green areas					Urban (df = 3124, $F = 16.64$, $p < 0.001$)		
Too high demand for equipment, cloths, shoes etc.			Low income (df = 2929, $F = 20.32$, $p < 0.001$)	Low education (df = 3138, $F = 20.60$, $p < 0.001$)	Urban (df = 3135, $F = 12.31$, $p < 0.001$)	Two homes (df = 3131, $F = 21.14$, $p < 0.001$)	
The nature and green areas are poorly facilitated					Urban (df = 3104, $F = 20.38$, $p < 0.001$)	Two homes (df = 3100, $F = 6.44$, $p = 0.011$)	
Distance to nature and other green areas is too far				High education (df = 3130, $F = 4.48$, $p = 0.034$)	Urban (df = 3127, $F = 75.13$, $p < 0.001$)		
I/we parents lack social network that could increase activity with the child outside			Low income (df = 2917, $F = 21.85$, $p < 0.001$)	Low education (df = 3121, $F = 5.52$, $p = 0.019$)	Urban (df = 3118, $F = 13.51$, $p < 0.001$)	Two homes (df = 3114, $F = 26.28$, $p < 0.001$)	
I/we parents prioritize playing and other activities indoors above being outside					Urban (df = 3122, $F = 24.60$, $p < 0.001$)	Two homes (df = 3118, $F = 7.96$, $p = 0.005$)	
There is too much bad weather					Urban (df = 3122, $F = 11.95$, $p = 0.001$)		
The child does not want to play outdoors in nature	Boys (df = 3125, $F = 15.02$, $p < 0.001$)	10–12 years (df = 3125, $F = 107.83$, $p < 0.001$)			Urban (df = 3122, $F = 14.26$, $p < 0.001$)	Two homes (df = 3118, $F = 13.54$, $p < 0.001$)	One child (df = 3123, $F = 3.90$, $p = 0.048$)
I/we parents find participation in sports and other leisure activities more important than motivating the child to be outside in nature and other green areas			High income (df = 2907, $F = 14.37$, $p < 0.001$)		Urban (df = 3111, $F = 30.70$, $p < 0.001$)		
The child lacks friends who want and have time to visit nature and green areas	Boys (df = 3110, $F = 10.09$, $p = 0.002$)	10–12 years (df = 3110, $F = 45.46$, $p < 0.001$)			Urban (df = 3107, $F = 9.60$, $p = 0.002$)	Two homes (df = 3103, $F = 6.10$, $p = 0.014$)	
I/we parents have a time schedule filled up with job, activities, sports and other things and to motivate the child to be outside is downgraded				High education (df = 3130, $F = 4.29$, $p = 0.038$)	Urban (df = 3127, $F = 31.39$, $p < 0.001$)	Two homes (df = 3123, $F = 4.74$, $p = 0.029$)	

(Continued)

Table 1. (Continued).

Barriers	Child's gender	Child's age ^a	Parent's income ^b	Parent's education level ^c	Rural vs. urban living	Family structure ^d	Number of children ^e
I/we parents find school-work more important than motivating the child to be outside in nature and other green areas		10–12 years (df = 3123, $F = 24.12$, $p < 0.001$)			Urban (df = 3120, $F = 16.95$, $p < 0.001$)		
The child uses so much time on data and other screens that to be outside is downgraded	Boys (df = 3133, $F = 72.04$, $p < 0.001$)	10–12 years (df = 3133, $F = 231.44$, $p < 0.001$)				Two homes (df = 3126, $F = 10.47$, $p = 0.001$)	
The child prefer being indoors	Boys (df = 3129, $F = 18.78$, $p < 0.001$)	10–12 years (df = 3129, $F = 49.85$, $p < 0.001$)		High education (df = 3129, $F = 8.23$, $p = 0.004$)	Urban (df = 3126, $F = 13.05$, $p < 0.001$)	Two homes (df = 3122, $F = 14.98$, $p < 0.001$)	
I/we parents are concerned about traffic		6–9 years (df = 3133, $F = 85.79$, $p < 0.001$)			Urban (df = 3130, $F = 4.18$, $p = 0.04$)	One home (df = 3126, $F = 6.55$, $p = 0.011$)	
School homework takes too much time	Boys (df = 3133, $F = 4.45$, $p < 0.035$)	10–12 years (df = 3133, $F = 16.06$, $p < 0.001$)	Low income (df = 2924, $F = 8.42$, $p = 0.004$)	Low education (df = 3133, $F = 10.14$, $p = 0.001$)	Urban (df = 3130, $F = 10.50$, $p = 0.001$)	Two homes (df = 3126, $F = 6.78$, $p = 0.009$)	
The child is too busy in leisure time (organized sports and leisure activities)		10–12 years (df = 3131, $F = 20.64$, $p < 0.001$)	High income (df = 2922, $F = 36.93$, $p < 0.001$)	High education (df = 3131, $F = 20.26$, $p < 0.001$)	Urban (df = 3128, $F = 64.45$, $p < 0.001$)		

Notes: Likert five-point scale: 1 = completely disagree, 5 = completely agree. One-way analysis of variance. Significance level 0.05. df, degrees of freedom.

^aSix to nine years old and 10–12 years old.

^bParent's income: more or less than middle family income (800,000 NKR).

^cParent's education level: lower (high school) versus college/university.

^dFamily structure: the child lives in one versus two or more homes.

^eNumber of children: one versus two or more children <15 years in the family.

Altogether nine statements showed significant differences for parent's education; five of them were for those who had 'Low education' and four of them for those who had 'High education'. For the urban–rural categories, we identified 17 significant differences, and for all of them there were higher barriers for those living in urban areas than for those living in sparsely populated areas. Also, the statement of whether 'the child lives in one or more than one home' showed significant differences for many statements, altogether 13, and for all of these except one ('concerns about traffic') the child living in more than one home faced a higher number of barriers.

Results from open-ended question about reducing barriers for using nature

In the analysis we categorized responses into physical and social factors that could act as barriers to children's engagement with nature. Coupled with this we also categorized the measures mentioned by parents that might encourage children outdoors into these physical and social factors, with respectively 6 and 10 categories in each (Table 2). Social factors are mentioned more than twice as often as physical factors. The two most important physical factors/barriers are 'access' and 'facilitation'. For the access category, green/nature space accessible in the neighborhood is the most important measure. Barriers in terms of public transportation or the lack of parking lots in popular recreation areas is also a dominant

Table 2. Answers placed into physical and social factors that can act as barriers to children accessing nature and measures mentioned by parents that could enable greater access ($n = 1864$).

Factors/barriers	Mentioned measures	<i>n</i>	%
Physical factors			
Access	More green/nature areas near home. Move to rural residence. Better protection, less downsizing of nearby green/nature areas. Easier access including public transportation offers and parking spaces.	256	13.7
Lack of facilitation/measures	Paths, signs, lean-to buildings, fire places, nature playgrounds. Facilitation/maintenance of sport arenas and playgrounds.	246	13.2
Lack of walkways/bikeways	More of this in the neighborhood, on the school road or to nature areas.	94	5.0
Concerns about traffic	Lower speed limits, speed bumps, driving prohibition in certain roads.	50	2.7
Lack of information	Information/tips about paths, ski tracks, actual areas and activities.	44	2.4
Bad weather/season	No mentioned measures.	40	2.1
Social factors			
The role of institutions (kindergarten, before/after-school care institutions, school)	School camp, athletic/exercise classes, outdoor education, more time between classes designated to being outdoors. Minimum requirement on a time spent outdoors during a specific time period (week/month).	494	26.5
The role of parents and adults	Parents/adults need to accompany/take their children outdoors in nature. Be good role models. Parents/adults need motivate their children to spend more time outdoors in nature.	425	22.8
Time pressure	Shorter working days for parents. Less amount of homework.	273	14.7
Organized activities	Organized activities should take place outdoors. More organized activities with a nature/outdoor life profile (including economic subsidy). Less amount of organized activities because they limit outdoor activities.	184	9.9
Attitudes/motivation	Activities have to be fun. The child needs to want to do the activity, motivation campaigns/ changes addressed at parents/adults, motivation measures addressed at children (e.g. competitions, acknowledgements).	146	7.8
Time on screens	Limitations on screen use.	143	7.7
Safety and fear (wild animals, kidnappers, flashers)	More secure areas, safer roads.	62	3.3
Lack of equipment/economy	Cheaper activities. Outdoor equipment or clothing needed.	56	3.0
Lack of friends outside	Wish the child's friends would play more outside.	41	2.2
Free play	Children should be able to play without adult interference.	23	1.2

issue. When it comes to facilitation, parents made many requests for different specific measures such as paths, signs and fire places. Compared with the quantitative responses to the barrier statements, answers fitting into the 'traffic' category constituted a relatively small percentage. However, answers allocated to the 'walkway/bikeway' category are closely interrelated to traffic safety, and are mentioned in 5% of the answers. 'Bad weather' is the least mentioned barrier among the physical factors.

The most important factors seem to be social ones, with 'the role of institutions', 'the role of parents/ adults' and 'time pressure' dominating. Time pressure could be split into two underlying barriers: parent time pressure and children time pressure, the latter implying too much homework and time used on other activities, which are in line with the findings from the quantitative question. A key finding from the results of the open-ended question is that it is as much about adult's influence and response to children's engagement with nature as it is about the child's response. It becomes obvious that many parents feel it is their responsibility to accompany, motivate or support their children in outdoor play (22.8% of parents state this). This is also evident through the issue of parent time pressure, which is claimed as an important

barrier, and even implicitly emphasized by the very low score given by the parents to the category 'free play' as a measure for increased engagement with nature.

The most often mentioned social factor is the role of institutions. More than one-quarter of the parents state that kindergartens, before/after school care institutions and schools have an important role to play in increasing children's engagement with nature. The majority of the specific suggestions relate to schools, and to a certain degree to before/after school care (about one-half of the sample have children in the age group relevant for this). The specific measures mentioned most often were for outdoor education, exercise/athletic classes outdoors, school camps and more free time between classes to be spent outdoors. Many also suggested that a minimum requirement for time being spent outdoors during a week or month should be specified.

Almost 10% of the parents point out the need for more organized activities; however, this is only minimally seen as a barrier. Rather, most of the parents' suggest that this is a measure to increase nature contact. Measures mentioned emphasize that organized activities to a greater degree should happen outdoors, and that more organized nature-based activities should be offered (also including financial support for outdoor/nature organizations). Screen activities were mentioned as a barrier by nearly 8% of the parents. Safety in terms of fear of strangers or undesired experiences was not a frequently mentioned barrier (mentioned by 3.3%), and neither was a lack of equipment/economy (3.0%). In accordance with the parent's emphasis of their own and other adult's role, being outside with friends and free play, without adults present, was not seen as an important measure for children's increased engagement with nature. Only 1.2% of the parents mentioned free play without adult intervention as positive.

Discussion

In the Introduction we illustrated four topics from the research literature that are emphasized as the main barriers for children's engagement with nature in current society: access to nature; risk and safety; adult's supervision and time use; and time pressure in children's leisure time. A key result from our study is that social factors related to time pressure are given higher values as barrier for children's engagement with nearby nature than factors such as accessibility and attributes in the physical landscape, such as paths and signs. These results should contribute to the current field of knowledge, because much research has focused on decreasing access to nature (Clements, 2004; Holloway & Valentine, 2000; Francis & Lorenzo, 2006), while less of the literature has been concerned with how children's institutionalized and organized everyday life affects their engagement with nature (Gleave, 2009; Prince et al., 2013). That parent's place little emphasis on accessibility to nature as a barrier may not be surprising in 'Green Norway'. Of greater interest is the need to discuss the actual implications of why and how time use and time pressure still seem to be the key barriers for children's outdoor play.

Outdoor play in a time-scheduled everyday life

The main barrier to increasing their child's engagement with nature, identified by the parents in the quantitative question, was that less free time is available because their child is too busy in leisure time (undertaking organized sports and leisure activities) and because too much time is spent on homework. These findings contribute to general debates concerning high expectations directed towards children in contemporary society, with strong norms related to participation and being successful in organized leisure time, in social life and in school performance (Waite, 2010). Based on national surveys concerning time use, Vaage (2013) shows that Norwegian children want to spend more time with their friends. Children themselves state that screen time is their 'free time' among homework, sports and other activities (*Aftenposten* cited in Vaage, 2013). Children are also obviously part of a target-oriented society, and the situation in 'Green Norway' seems to be much the same as in other western countries, where free play outside may be in danger of being

forgotten amongst the scheduled targets and competing screen activities (Francis & Lorenzo, 2006; Jarvis, Newman, & Swiniarski, 2014; Prince et al., 2013). At the same time, it is evident that experiencing nature without too much supervision, structure or control has potential for reducing stress and promoting better mental well-being in children (Chawla et al., 2014; Faber Taylor & Kuo, 2006; Kaplan, 1995; Kaplan & Kaplan, 1989). How could this potential for de-stressing in nature fit better into a target-oriented, time-pressed and potentially stressed society?

First of all, many of the parents mentioned, in the open-ended question, that better availability and facilitation of nature spaces would provide motivation for increased nature contact. This includes suggestions about specific measures such as paths, signs, lean-to buildings, nature playgrounds, parking lots and so forth. Currently, as adults' supervision seems to dominant childhoods (Prince et al., 2013), we think it is opportune to discuss whether a lack of landscape qualities is actually a barrier for children, or is it simply hindering parents in encouraging, or accompanying, their children outdoors? Knowledge about what children themselves identify as important qualities in the physical landscape needs to be better understood and emphasized in landscape planning and management, in order to offer positive nature experiences for children. To bring 'wild' elements for hiding, play and exploring into the proximate nearby nature or gardens is important to make them attractive for children's spontaneous and self-initiated play. An All Party Parliamentary Committee (2015) in England recommends the use of natural materials as part of good design of play areas for children. Diverse natural places have been identified as more inspiring and imaginative for children, compared with well-organized playgrounds that show children what to do (Grahn, 1997; Gundersen, Frivold, Myking, & Øyen, 2006; Rydberg, 1998).

It can be argued that nature as a playscape is exceptional because it is only to a small extent shaped by human purposes (Tordsson, 2002). Nature does not hold instructions for actions, but offers a diversity of opportunities for play and activities, where every child has their own opportunity to explore (Chawla, 1991; Fasting, 2013). However, in parallel with this, our study shows that free play is mentioned by very few parents as a possibility to increase their child's engagement with nature. Instead, many point out that parents themselves, public institutions and outdoor life organizations need to take a more active role to increase children's range of nature contact. Parents feel it is their responsibility to accompany, motivate or support their children in outdoor play. As citizens in a time-pressured and target-oriented society, parents seem to seek even more targets and support for them to increase their children's engagement with nature. But does this support and supervision necessarily bring about engagement with nature? According to Skar et al. (2014), spontaneous play without adults' interference offers a closer, more sensuous and embodied nature contact than when children participate in planned activities. Important factors to stimulate free play in nature are for adults to take a step back and not arrange as many activities, not be with too many people and stay in one place for enough time so that the children can become familiar with a site and with each other. These were the findings from a qualitative study of large and small-scale organized events run by the Norwegian Children's Trekking Club (Skar, Gundersen, & O'Brien, 2016).

Barriers according to socio-demographics

We explored in more detail the kinds of factors the parents identified as barriers for outdoor play, by analyzing socio-demographic variables such as gender, age, parent's income and urbanity. Barriers to the use of nature spaces seem significantly higher for children living in urban areas than for those living in sparsely populated areas. In all, 82% of the Norwegian population is situated in cities and built-up areas, and urbanization has effects on people's way of living, their lifestyle and how they organize their lives. Better access to nature and other green spaces in rural settings could have affected the evaluation of barriers by parents, indicating that proximity to nature can influence children's engagement with nature.

According to gender, the survey shows a significantly higher degree of several barriers for boys than for girls. We find this result interesting, because the survey also shows that boys spend significantly more time in nearby nature than girls (Skar et al., 2014). The barriers that show the largest differences between genders are 'amount of homework, screen time, lack of initiative to be outside in nature and lack of company in being outside'. Boys in Norway spend more time on the screen playing computer games than girls (The Norwegian Media Authority, 2014). When a lot of boys are playing computer games in their spare time, it is likely that this both influences their own motivations for alternative activities such as outdoor play and will also influence the number of potential friends they have to go out with.

According to their parents, older children (10–12 years old) are experiencing a significantly higher degree of barriers in all categories with the exception of concerns about traffic, compared with the younger children (six to nine years). This is the opposite situation compared with a few decades ago, when it was common to see older children taking care of the younger ones outdoors, and where children increased their activity outdoors in line with increasing age and proficiency (Karsten, 2005; Skår & Krogh, 2009). Today, younger children are spending more time outdoors in nearby nature than the older ones, but this is more often in the presence of adults (Skar et al., 2014). This outlines a picture of children's engagement with nature today being to a high degree dependent on whether an adult takes them out or not, either with the family or in an institutional context.

The family's socio-economic status does not seem to have much influence on how parents perceive barriers for children's engagement with nearby nature. This accords with Fyhri and Hjorthol (2006) who show that children whose parents have lower income and education than the average are staying outdoors more without adults present than *vice versa*. Studies from England (Stewart & Costley, 2013) also show that those families with children in the 10% most deprived areas were more likely to visit nature than those without children. While participation in outdoor recreation activities such as mountain walking and cross-country skiing follow social dividing lines where children from the lower social strata to a lesser degree take part (Dervo et al., 2014), this seems not to be the situation when it comes to children's use of nearby nature. It seems that children's use of nearby nature has the potential to be socially equitable, compared with participation in outdoor recreation activities initiated by adults and that happen away from the neighborhood.

For parents with high incomes, barriers for the child's use of nature spaces are to a greater degree associated with time pressure, and this is the same in terms of level of education. Time pressure may be seen as both an individual and family matter, but also as a public matter in which social, cultural, political and economic factors and norms affect time use. Time pressure in the higher social strata, according to the survey, can thus appear to constitute a barrier to more self-directed play outdoors in nature. Despite the fact that time pressure is identified as a main barrier for children's engagement with nature, parents seem to want to remedy the lack of nature contact with yet more organized tasks for children rather than provide opportunities for more free play.

Our study shows that several socio-demographic variables have an influence on barriers for children's engagement with nature, and should be a focus for further research. Such knowledge complements the results on social and physical factors discussed. These accord with a broad framework including both sociological–demographic factors and physical landscape factors identified by Sallis et al. (2006). This study shows that barriers for children's engagement with nature are to be found in the intersection between individual, social and physical factors influencing perceived access and motivations for engaging with nearby nature. This may explain why the barrier statements, overall, generated low mean values. Potentially, it is the complex range of different barriers that are interacting and thus hinder children's engagement with nature.

Concluding remarks

To increase children's engagement with nature, our study shows that it is necessary to have a more conscious view of time use within the general context of everyday life. It is relevant to question the

scope of children's involvement in organized leisure activities and sports today, and whether the focus on school achievements and the extent and pressure of homework is too high. This issue concerns both policy-makers and individuals.

More knowledge is needed of children's point of view regarding barriers and preferences for their engagement with nature. Knowledge is also needed on children's views concerning time use in everyday life and how they look on adults' often supervisory role in their play and leisure time. However, to overcome perceived barriers for use of nearby nature, this study shows clear potential for adults, to a greater degree, to call attention to and understand the importance of different qualities in their children's own-initiated play in nature. This should apply to both families' everyday life and as part of a wider public responsibility, to ensure good access to attractive green spaces for children as well as safe neighborhoods.

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References

- All Party Paliamentary Committee. (2015). A play report by the All Party Paliamentary Committee on a fit and healthy childhood. APPC, London.
- Beck, C. (1990). *Det organiserte vanvidd. Et kritisk blikk på barns og ungdoms oppvekst i 90-åra*. Opplandske bokforlag.
- Borge, A. I. H., Nordhagen, R., & Lie, K. K. (2003). Children in the environment: Forest day-care centers. *The History of the Family*, 8, 605–618. doi:10.1016/j.hisfam.2003.04.001
- Boyesen, M. (1997). *Den truende tryggheten. Barneulykker, foreldres forebygging og risikoopplevelse* (Doctoral dissertation). Department of Sociology and Political Science, Norwegian University of Science and Technology, Trondheim.

- Brussoni, M., Olsen, L. L., Pike, I., & Sleet, D. A. (2012). Risky play and children's safety: Balancing priorities for optimal child development. *International Journal of Environmental Research and Public Health*, 9(12), 3134–3148. doi:10.3390/ijerph9093134
- Chawla, L. (1991). Ecstatic places. *Children's Environments Quarterly*, 7, 18–23.
- Chawla, L. (1998). Significant life experiences revisited: A review of research on sources of environmental sensitivity. *The Journal of Environmental Education*, 29(3), 11–21. doi:10.1080/00958969809599114
- Chawla, L., Keena, K., Pevec, I., & Stanley, E. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health & Place*, 28, 1–13. doi:10.1016/j.healthplace.2014.03.001
- Clements, R. (2004). An investigation of the status of outdoor play. *Contemporary Issues in Early Childhood*, 5(1), 68–80. <http://dx.doi.org/10.2304/ciec.2004.5.1.10>
- Dervo, B. K., Skår, M., Köhler, B., Øian, H., Vistad, O. I., Andersen, O., & Gundersen, V. (2014). Friluftsliv i Norge anno 2014 – status og utfordringer. Norwegian institute for nature research, NINA Rapport 1073. 98 pp.
- Direktoratet for samfunnssikkerhet og beredskap. (2007). Temaveiledning i risikoanalyse. For risikofylte forbrukertjenester. Veileder. Tønsberg.
- Ewert, A., Place, G., & Sibthorp, J. (2005). Early-life outdoor experiences and an individual's environmental attitudes. *Leisure Sciences*, 27, 225–239. doi:10.1080/01490400590930853
- Faber Taylor, A., & Kuo, F. E. (2006). Is contact with nature important for healthy child development? State of the evidence. In C. Spencer & M. Blades (Eds.), *Children and their environments: Learning, using and designing spaces* (pp. 124–140). New York, NY: Cambridge University Press.
- Fasting, M. (2013). *Vi leker ute! En fenomenologisk hermeneutisk tilnærming til barns lek og lekesteder ute* (Doctoral dissertation). Norwegian University of Science and Technology, Oslo.
- Fjortoft, I. (2004). Landscape as playscape: The effects of natural environments on children's play and motor development. *Children, Youth and Environments*, 14, 23–44.
- Florgård, C., & Forsberg, O. (2006). Residents' use of remnant natural vegetation in the residential area of Järvafältet, Stockholm. *Urban Forestry & Urban Greening*, 5(2), 83–92. doi:10.1016/j.ufug.2006.06.002
- Foster, S., Villanueva, K., Wood, L., Christian, H., & Giles-Corti, B. (2014). The impact of parents' fear of strangers and perceptions of informal social control on children's independent mobility. *Health & Place*, 26, 60–68. doi:10.1016/j.healthplace.2013.11.006
- Francis, M., & Lorenzo, R. (2006). Children and city design: Proactive process and the 'renewal' of childhood. In C. Spencer & M. Blades (Eds.), *Children and their environments, Learning, using and designing spaces* (pp. 217–237). New York, NY: Cambridge University Press.
- Fyhri, A., & Hjorthol, R. (2006). Barns fysiske bomiljø, aktiviteter og daglige reiser. Rapport 869, Institute of Transport Economics, Oslo.
- Gleave, J. (2009). Children's time to play: A literature review. Playday – Make Time. Retrieved October 12, 2014, from http://playday.org.uk/media/2640/children%E2%80%99s_time_to_play_a_literature_review.pdf
- Grahn, P. (1997). Ute på dagis: Hur använder barn daghemsgården? Utformingen av daghemsgården och dess betydelse för lek, motorik och koncentrationsförmåga. *Stad & Land*, 145, pp. 111.
- Guldberg, H. (2009). *Recalling childhood. Freedom and play in an age of fear*. Abingdon: Routledge.
- Gullestad, M. (1997). A passion for boundaries: Reflections on connections between the everyday lives of children and discourses on the nation in contemporary Norway. *Childhood*, 4, 19–42. doi:10.1177/0907568297004001002
- Gundersen, V., Frivold, L. H., Myking, T., & Øyen, B.-H. (2006). Management of urban recreational woodlands: The case of Norway. *Urban Forestry & Urban Greening*, 5, 73–82. doi:10.1016/j.ufug.2006.06.003
- Gundersen, V., Skar, M., O'Brien, L., Wold, L.C., & Follo, G. (2016). Children and nearby nature: A nationwide parental survey from Norway. 2nd revision in *Urban Forestry & Urban Greening*.
- Haug, E., Torsheim, T., & Samdal, O. (2008). Physical environmental characteristics and individual interests as correlates of physical activity in Norwegian secondary schools: The health behaviour in school-aged children study. *International Journal of Behavioral Nutrition and Physical Activity*, 5, 47. doi:10.1186/1479-5868-5-47
- Henderson, B., & Vikander, N. (2007). *Nature first: Outdoor life the Friluftsliv way*. Toronto: Natural Heritage Books.
- Holloway, S. H., & Valentine, G. (2000). *Children's geographies. Playing, living, learning*. London: Routledge.
- Hörnsten, L., & Fredman, P. (2000). On the distance to recreational forests in Sweden. *Landscape and urban planning*, 51, 1–10.
- Jarvis, P., Newman, S., & Swiniarski, L. (2014). On 'becoming social': The importance of collaborative free play in childhood. *International Journal of Play*, 3, 53–68. doi:10.1080/21594937.2013.863440
- Kaplan, R., & Kaplan, S. (1989). *The experience of nature. A psychological perspective*. New York, NY: Cambridge University Press.
- Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*, 15, 169–182. doi:10.1016/0272-4944(95)90001-2
- Karsten, L. (2005). It all used to be better? Different generations on continuity and change in urban children's daily use of space. *Children's Geographies*, 3(3), 275–290. doi:10.1080/14733280500352912
- Kjelvik, J. (2012). Statistics Norway, Oslo. Retrieved January 5, 2015, from <http://www.ssb.no/helse/artikler-og-publikasjoner/barn-og-unges-miljo-og-helse-2011>

- Koppen, G., Tveit, M. S., Sang, Å. O., & Dramstad, W. (2014). The challenge of enhancing accessibility to recreational landscapes. *Norwegian Journal of Geography*, 68(3), 145–154. doi:10.1080/00291951
- Lidén, H. (2003). Common neighbourhoods – Diversified lives: Growing up in urban Norway. In K. F. Olwig & E. Gulløv (Eds.), *Children's Places. Cross-cultural perspectives* (pp. 119–134). London: Routledge.
- Lidén, H. (2004). Tidspress? Barn, hverdagsliv og erfaringer av tid. In J. Bjønnnes & A. Ostenfeld-Rosenthal (Eds.), *Spor af tid. Antropologiske perspektiver* (pp. 103–117). Århus: Department of Ethnography and Social Anthropology, University of Århus.
- Limstrand, T. (2000). "Ut er In?" En kartlegging av uteaktiviteter i barnehager, SFO og grunnskoler i Nordland. Rapport fra Salten Friluftsråd.
- Little, H., Sandseter, E. B. H., & Wyver, S. (2012). Early childhood teachers' beliefs about children's risky play in Australia and Norway. *Contemporary Issues in Early Childhood*, 13(4), 300–316. doi:10.2304/ciec.2012.13.4.300
- MacQuarrie, S., Nugent, C., & Warden, C. (2015). Learning with nature and learning from others: Nature as setting and resource for early childhood education. *Journal of Adventure Education and Outdoor Learning*, 15(1), 1–23. doi:10.1080/14729679.2013.841095
- Milligan, C., & Bingley, A. (2007). Restorative places or scary spaces? The impact of woodland on the mental well-being of young adults. *Health & Place*, 13, 799–811. doi:10.1016/j.healthplace.2007.01.005
- Mjaavatn, P. E. (2013). Hva har barn lyst til å gjøre ute? *Barn*, 1, 29–44.
- Morris, J., O'Brien, L., Ambrose-Oji, B., Lawrence, A., & Carter, C. (2011). Access for all? Barriers to accessing woodlands and forests in Britain. *Local Environment: The International Journal of Justice and Sustainability*, 16, 375–396. doi:10.1080/13549839.2011.576662
- Natural England. (2009). Childhood and nature: A survey on changing relationships with nature across generations. Report by England Marketing to Natural England, Cambridgeshire, UK.
- Nilsen, A. H., & Hägerhäll, C. M. (2012). Impact of space requirements on outdoor play areas in public kindergartens. *Nordic Journal of Architectural Research*, 2, 8–29.
- Nilsen, R. D. (2008). Children in nature: Cultural ideas and social practices in Norway. In A. James & J. A. James (Eds.), *European childhoods* (pp. 38–60). New York, NY: Palgrave Macmillan.
- O'Brien, L., & Murray, R. (2007). Forest School and its impacts on young children: Case studies in Britain. *Urban Forestry & Urban Greening*, 6, 249–265. doi:10.1016/j.ufug.2007.03.006
- Øksnes, M. (2010). *Lekens flertydighet: Om barns lek i en institusjonalisert barndom*. Oslo: Cappelen Akademisk.
- Pauleit, S., Jones, N., & Nyhuus, S. (1995). Urban forest resources in European cities. In C. C. Konijnendijk, K. Nilsson, T. B. Randrup, & J. Schipperijn (Eds.), *Urban forests and trees: A reference book* (pp. 49–78). Heidelberg: Springer.
- Playday. (2010). Playday opinion poll summary: Our place campaign 2010. Retrieved November 10, 2014, from <http://www.playday.org.uk/playday-campaigns/previous-campaigns/2010-our-place/playday-2010-research.aspx>
- Prince, H., Allin, L., Sandseter, E. B. H., & Årlemalm-Hagsér, E. (2013). Outdoor play and learning in early childhood from different cultural perspectives (Editorial). *Journal of Adventure Education & Outdoor Learning*, 13(3), 183–188. doi:10.1080/14729679.2013.813745
- Riksrevisjonen (2007). Riksrevisjonens undersøkelse av bærekraftig arealplanlegging og arealdisponering i Norge. Dokument nr. 3:11 (2006–2007). Oslo: Riksrevisjonen. 133 pp.
- Rydberg, D. (1998). *Preferences of children and teenagers for various stand densities of young forests in Sweden* (Doctoral dissertation (Study IV)). Swedish University of Agricultural Sciences, Umeå.
- Sallis, J. F., Cervero, R. B., Ascher, W., Henderson, K. A., Kraft, M. K., & Kerr, J. (2006). An ecological approach to creating active living communities. *Annual Review of Public Health*, 27, 297–322. doi:10.1146/annurev.publhealth.27.021405.102100
- Sandberg, M. (2012). *De är inte ute så mycket: Den bostadsnära naturkontaktens betydelse och utrymme i storstadsbarns vardagsliv* (Doctoral dissertation). University of Gothenburg, Göteborg.
- Sandseter, E. B. H. (2012). Restrictive safety or unsafe freedom? Norwegian ECEC practitioners' perceptions and practices concerning children's risky play. *Childcare in Practice*, 18(1), 83–101. doi:10.1080/13575279.2011.621889
- Sandseter, E. B. H., & Kennair, L. E. O. (2011). Children's risky play from an evolutionary perspective: The anti-phobic effects of thrilling experiences. *Evolutionary Psychology*, 9(2), 257–284. doi:10.1177/147470491100900212
- Skar, M., Gundersen, V., Bischoff, A., Follo, G., Pærlussen, I., Tordsson, B., & Stordahl, G. (2014). Barn og natur. En nasjonal spørreundersøkelse. NINA Temahefte nr. 54.
- Skar, M., Gundersen, V., & O'Brien, L. (2016). How to engage children with nature: Why not just let them play? *Children's Geographies*. doi: 10.1080/14733285.2015.1136734
- Skår, M., & Krogh, E. (2009). Changes in children's nature-based experiences near home: From spontaneous play to adult-controlled, planned and organised activities. *Children's Geographies*, 7, 339–354. doi:10.1080/14733280903024506
- Statistics Norway. (2014a). Rekreasjonsareal og nærturterreng 2013. Retrieved January 5, 2015, from <http://www.ssb.no/natur-og-miljo/statistikker/arealrek/hvert-2-aar/2014-12-04#content>
- Statistics Norway. (2014b). Ni av ti barn i barnehage. Retrieved December 18, 2014, from <http://www.ssb.no/utdanning/statistikker/barnehager>

- Stewart, D., & Costley, T. (2013). Monitor of Engagement with the Natural Environment Survey (2009–2012): Analysis of data related to visits with children. Natural England Data Reports, Number 004.
- Stokke, A. (2013). Et blikk på barns vilkår for fysisk aktivitet i barnehager. En komparativ studie, 1981 og 2009. *Barn*, 1, 27–47.
- The Norwegian Media Authority. (2014). Barn og media 2014. Oslo.
- Thorén, K. H. (2003). Skolens uteareal - om behov for arealnormer og virkemidler. Rapport 11, Norwegian Directorate of Health and Social Affairs, Oslo.
- Thorén, K. H., Trier, D. Ø., Lieng, E., & Aradi, R. (2010). Kartlegging av urban grønnstruktur med satellittdata. *Kart og Plan*, 70(4), 238–253.
- Tordsson, B. (2002). *Å svare på naturens åpne tiltale* (Doctoral dissertation). Norwegian School of Sport Sciences, Oslo.
- Tordsson, B., & Vale, L. S. R. (2013). Barn, unge og natur. Høgskolen i Telemark.
- Vaage, O. F. (2013). Unges dagligliv 1971–2010. Unge har mer fritid - men savner samvær. *Samfunnsspeilet*, 2, 2013.
- Valentine, G., & McKendrick, J. (1997). Childrens outdoor play: Exploring parental concerns about children's safety and the changing nature of childhood. *Geoforum*, 28, 219–235. doi:[10.1016/S0016-7185\(97\)00010-9](https://doi.org/10.1016/S0016-7185(97)00010-9)
- Waite, S. (2010). Losing our way? The downward path for outdoor learning for children aged 2–11 years *Journal of Adventure Education & Outdoor Learning*, 10(2), 111–126. doi:[10.1080/14729679.2010.531087](https://doi.org/10.1080/14729679.2010.531087)
- Waller, T., Sandseter, E. B. S., Wyver, S., Årlemalm-Hagsér, E., & Maynard, T. (2010). The dynamics of early childhood spaces: Opportunities for outdoor play? *European Early Childhood Education Research Journal*, 18(4), 437–443. doi:[10.1080/1350293X.2010.525917](https://doi.org/10.1080/1350293X.2010.525917)
- Wells, N. (2000). At home with nature: Effects of 'greenness' on children's cognitive functioning. *Environment & Behavior*, 32(6), 775–795. doi:[10.1177/00139160021972793](https://doi.org/10.1177/00139160021972793)