

How do parental experiences with nature during their childhood influence the transmission of environmental values to their own children?

Understanding parents motivation to stimulate their children to engage with nature

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Abstract

Considering the overall health benefits for children to play outside and interact with nature independently, this paper aims to understand what influences parents to stimulate their children to engage with nature and play outdoors. As childhood influences a person's values, studying a parent's childhood experiences in the natural environment can help to understand what influence these experiences have on parents stimulating their children to interact with nature. This is researched through a qualitative research method where parents are asked to reflect on childhood experiences in nature, how environmental values were formed by those experiences, and how they transmit such values to their offspring.

Results show how most environmental values are formed through socialisation processes and by the influence of parents, less as a result of childhood experiences with the natural environment. Further studies should investigate if this less observed influence is also found in different research methodologies. The influence of childhood experiences in the natural environment on transmission is prominent in the safety concerns of parents, as perceptions of a changed environment both physically and socially were found to be the most prominent hindrances in the transmission of environmental values. Policy should seek to promote children's outdoor activity by incorporating nature into the institutions that are already embedded in the daily life of parents and children.

Keywords: health, nature, children geography, outdoor, play, safety, environmental values

Introduction

Background

Many studies in existing academic literature already show numerous health benefits of human interaction with green spaces and nature. For example, research has shown how the sight of nature decreases blood pressure, reduces stress and decreases anger in comparison with an urban environment (Hartig et al., 2003). Studies also show how less negative health effects are reported by participants in a green environment (de Vries et al., 2003).

Studies focussing on children's interaction with nature show similar results. Results by the research of Wells and Evans (2003) demonstrate that the negative impacts of a stressful situation are restrained for children who live near nature. Additionally, outdoor playtime is associated with less obesity (Cleland et al., 2008) and children who live near greenery are linked with a healthier BMI (see Bell et al., 2008; Potwarka et al., 2008). Next to physical health benefits, research also show benefits for mental en cognitive health, for example how 'experiencing nature during childhood gives children the opportunity to have meaningful experiences that contribute to their understanding of the world around them, developing a sense of self, imagination, and creativity, and affiliation with nature' (Tanja-Dijkstra et al. 2018, p.97).

Studies also show effects of childhood interaction with the natural environment in adult life. For example, research suggests that the effects of interaction with plants and trees in childhood also spill into adulthood, as these interactions are associated with activities such as gardening and care for plants in adult life (Lohr and Pearson- Mims, 2005). Childhood experiences in nature also carry through adult memories. One study by Sebba (1991) researched the reflections of adults on their childhood environment. Here, 96.5% of all 198 participants identified a natural environment as their most significant environment in their childhood.

Even though many studies have pointed out the importance of children interacting with the natural environment, there are many challenges which hinder this from happening. First of all, much of unbuilt, natural land is being replaced with a built environment considering the Dutch context in which this research takes place. Even though playgrounds are built in these areas to provide playing space for children, studies have already pointed out how children prefer undesigned, open spaces to play in (Valentine & McKendrick, 1997). Secondly, in today's day and age competition for children's time and attention has increased thanks to the digital innovations such as the internet, TV and video games. Whether children play outside is also influenced by a number of factors such as characteristics of the built environment, increasing

safety concerns with parents and an decrease of freedom of movement (Veitch et al., 2010, Kartsen, 2005).

Additionally, the public space is increasingly an adult space where children only are when accompanied by adults under supervision and where they must follow various rules and social codes (Valentine, 1996). Considering these challenges and the importance of the children's interaction with the natural environment, understanding how children can be motivated to have this interaction is valuable for society.

Research problem

Although recent academic literature links childhood experiences in the natural environment in combination with intergenerational value transmission as the primary influencers of a positive adult environmental perspective, there is a less known on how parents' childhood experiences in the natural environment affect the -daily- transmission of environmental values to their offspring (see Lee and Burns, 2022).

Considering the societal relevance of children's interaction with nature in combination with this literature gap, this research aims to investigate which role parents play in stimulating their children to interact with the natural environment. It does so by examining parent's environmental values, how these values are influenced by their own childhood experiences in nature and which influence these experiences have on the transmission of environmental values of parents to their children. The main research question is: How do childhood experiences with the natural environment of parents influence the transmission of environmental values to their children?

As children are influenced by the values parents transmit to them (see Wells and Lekies, 2006; Grønhoj and Thøgersen, 2009; Lee and Burns, 2022) it is important to understand where these values originate from and how they are transmitted. Parents might have the most important role of all, as they can actively stimulate their children to play outdoors, educate them on nature and on an emotional level, they can awaken a passion for nature which affects their children's whole life course. In addition to the main research question, this research uses three sub questions to broaden the understanding of the subject. The first sub question is needed to understand the process of transmission of values: *How do parents transmit environmental values to their children?*

Parents, however, in their place must also have some kind of motivation to teach their children this. Obviously, most parents want what's best for their children, yet not everyone might know the overall health benefits there are. Or even if they know, putting on a television show for your children can be considered an easier or safer option than driving them out to a forest or letting them play independently outdoors. This example might not prove much, but it does illustrate how actively stimulating your children requires some form of motivation to transmit environmental values at the very least to overcome obstacles. This research additionally aims to investigate how obstacles such as safety concerns could get into the way of transmitting environmental values. From this aim follows the sub question: *What obstacles come in the way of the transmission of environmental values?*

The research aims to see how those environmental values were formed in parents' own childhood experiences with the natural environment and how they are passed on to their children as one reasonable explanation for the motivation of parents to stimulate their children lies in parents' own interaction with the natural environment in their childhood (see; Porteous, 1990; Cooper, 1992; Morgan, 2009). The level to which an adult can describe their childhood landscape through an extensive reflection might indicate how attached they are to these environmental memories. This extent of attachment may be influencing how much of their respective *childhood experiences* will be transmitted to their offspring. Therefore the final sub question to support the research is: *How do parents reflect on their childhood's landscape?*

Structure of thesis

This paper will first review the existing body of literature on the subject. A conceptual model follows that summarises the main insights of this literature review. Then the methodology, based on the conceptual model and the insights of the review, will be explained. Afterwards, the primary results of the research will be presented. The research process and results will be finally discussed and then concluded in the last section.

Literature review

Considering the nature of the research question, it makes sense to follow a two step approach in order to arrive at an answer for it. The first step is to discover how childhood experiences form values. The second step is to see how these values are transmitted. The following section will prove an overview of the existing academic literature on these two steps and will thereby lay the basis for how this research forms through the interview guide, data analysis and the conclusion.

Step one: values formation in childhood experiences

The first step is to consider how childhood experiences form values. Most research from this field takes on a qualitative approach, where adults are asked to reflect on their memories from a retrospective view. The question that then emerges is whether these memories are representative of reality or mere interpretations. Sibba (1991) considers this in her research too by studying adult memories in addition to children's description of their environment. When comparing the two, she found how the way a child experiences their environment goes beyond the environment as a setting for events. They have a unique relationship with their environment which comprises the involvement of all of their senses in addition to a wide set of activities and feelings such as running and a feeling of independence. Tanja-Dijkstra et al. (2018) categories this unique relationship a child has by typologies. They illustrate three kinds of experiences a child can have by interacting with the natural environment and describe the effect they can have (see figure 1). For example, significant life experiences 'may permanently change the vision on

life (Tanner 1980)' (Tanja-Dijkstra et al., 2018, p.98). And flow experiences are described as experiences that can make a person feel responsible for nature.

	<i>Peak & flow experiences</i>	<i>Significant life experiences</i>	<i>Magical moments</i>
Examples	Building a dam at the beach, building a shelter or taking care of an animal	Getting lost in the forest or a confrontation with a (wild) animal	Intrigued by the beauty of a flower or animal or the growing process of a seed
Psychological state	Synergy of mind, senses and body. A deep focus and concentration	Conquer fears, feeling of mastery	Being grasped by something that you've never sensed before
Adult supervision	Alone, preferably without adult supervision	Alone or with adults, adults can function as a role model	Alone or with adults, adults can facilitate the experience by guiding attention
Availability of nature	Proximate and easily accessible nature	Access and accessibility to nature, preferable wild nature areas	A rich sensory natural environment, indoors or outdoors
Conditional: time and space	There needs to be time and space to emerge in the experience		

Figure 1: typologies of significant childhood interactions with the natural environment, source: Tanja-Dijkstra et al. (2018). (based on Verboom & de Vries, 2006)

Sibba (1991) concludes that this relationship does not survive into adulthood. Additionally, adults tend to romanticise their childhood (Valentine & McKendrick 1997; Sebba 1991; Cobb 1971). How parents remember their childhood also influences how they raise their children. Valentine and McKendrick (1997) conclude in their paper that parents' safety concerns for their children and their perception of a changed notion of childhood, have the largest influence on children's free play. A root for this concern is found in parents' comparison of the unsafe environment of today with their remembered careless childhood.

Nonetheless, whether real or imagined, childhood memories have a direct impact on an adult's life course (Cooper 1992; Porteous 1990) and childhood experiences also form a considerable role in the formation of the identity of an adult (Porteous, 1990; Cooper, 1992; Morgan, 2009). The effects of interaction with plants and trees in childhood are associated with activities such as gardening and care for plants in adult life (Lohr and Pearson- Mims, 2005). Also, extensive childhood experiences in nature result in a preference for the natural living environment among elderly, and positively affects their engagement in outdoor activities (Lee & Burns, 2022). Such experiences have also shown to lead to environmental attitudes -e.g. values about protection for the environment-, and behaviour - e.g. recycling- in later life (Wells & Lekies 2006). Childhood involvement in nature related activities are found to have a positive impact on the wish to engage in these activities in adult life (Asah et al., 2012).

To add, Chawla (1992) summarises the findings of several retrospective studies that researched how environmentalists explained the origin of their actions by two intertwined influences: much

time spent outdoors in their childhood and an adult who taught them respect for the natural environment. Here, what a person values and their identity are both influenced by their childhood experiences. It seems that childhood experiences in nature affects adult identity, behaviour and values.

Next, we consider how parents transmit environmental values to their children.

Values are transmitted through the process of socialisation, in which children or adolescents learn the right behaviour and values to fit in a certain social group and intergenerational transmission occurs when the results of this process lead to shared values between parents and children (Grønhøj and Thøgersen, 2009).

Even though family life is seen as the basis for the development of a child's values, most results in research show low correspondence between the child's and parents values (Thomas & Stankiewicz, 1974). Whitbeck & Gecas (1988) studied value transmission between parent and child and results show how parental behaviours have a stronger effect on perceived value congruence than on actual value congruence.

However, other research on the transmission of environmental values show a positive correlation between parents and children's values. On the basis of these results Grønhøj and Thøgersen conclude that 'environmental concern and commitment is - to some extent- transferred from parents to their children' (Grønhøj and Thøgersen, 2009, p.420). Moreover, in their research on which factors influence elderly's preference for a natural landscape, Lee and Burns (2022) conclude that outdoor activities and positive memories with parents have a considerable influence on how nature is perceived in later life and can be understood as an effect of the values parents transmit. This paper suggests that environmental values are transmitted from parents to children through outdoor activities and positive memories. In line with these results, Wells and Lekies (2006) describe how next to time spent outdoors during childhood, exemplary behaviour of parents and other adults was of significant influence on environmental enthusiasts such as environmental professionals, educators and environmentalists.

Lee and Burns (2022) forge the two steps together: 'intergenerational transmission of the current perception and behaviour regarding the natural environment from parents to children can be explained through the memories of nature experience in childhood' (p.5).

Conceptual model

The conceptual model is based on the literature review. That illustrated how even though the unique relationship a child has with their environment does not survive into adulthood (Sibba 1991), childhood experiences play an important role in the formation of the identity of an adult (see Porteous, 1990; Cooper, 1992; Morgan, 2009) and in the development of environmental values (Asah et al., 2012). Through the process of socialisation, these values are transmitted from parent to child.

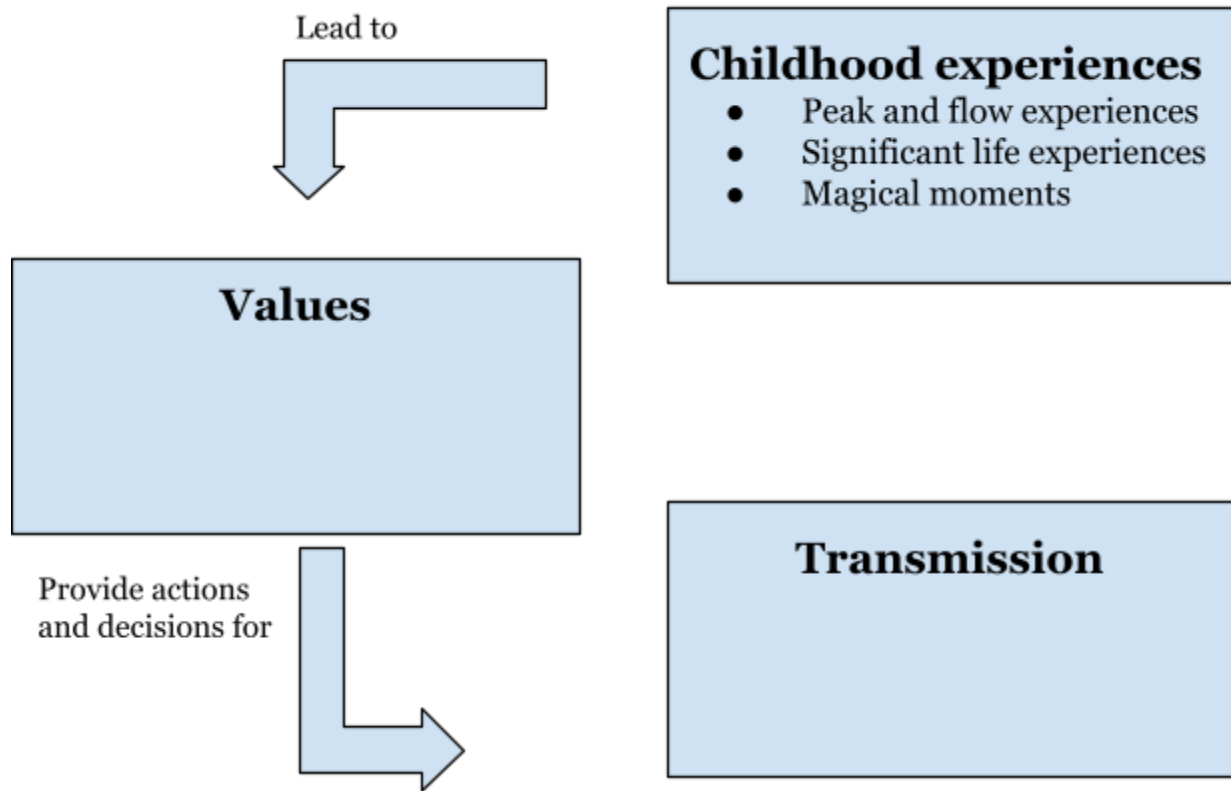


Figure 2: Conceptual model, source: Van de Geer, A (2023)

Method

This study used qualitative methods as its research form. The usage of interviews is deemed most appropriate as it allows for questions covering the *why* and *how* part of the questions. Qualitative methods allow for gaining insight in people's motivation, feelings and personal perspective which are needed in order to come to some sort of answer for the research question.

In this research, the aim was to investigate how parent's environmental values are shaped by childhood experiences and how these values are transmitted to their children. Therefore, the research subjects are the parents themselves. In order to answer this research question, interviews were held with parents who have one or more children under eighteen. Additionally, the interviews were held with one parent because the interviews are focussed on personal experiences of a parent's youth. Besides parents' own childhood experiences, any other personal characteristics of the interviewee were not taken into account during the analysis. For example,

their financial situation or education level might be relevant aspects that could influence how they can transmit the values, however they would broaden the study too much within the limited time. See figure 3 for some context of the participants through an overview of their main characteristics.

Data collection

The participants of this research were recruited via the researcher’s network and were often acquaintances of friends and family. If these people met the very basic requirements of this research (having at least one child), and were willing to participate in the study, they were sent an explanatory letter to inform them of the purpose and methods of the study. The interviewees were held online. This was chosen because of the geographical distance between researcher and participants it was not feasible for the participants nor the researcher to travel to one location because of the limited time and lack of resources.

Participant’s code	Number of children	Age range of children	Current place of residence
1	2	2-4	Emmeloord
2	2	4-7	Arnhem
3	4	13-24	Ede
4	2	2-5	Zaandam
5	3	2-7	Assendelft
6	4	1-12	Zaandam
7	2	2-6	Amsterdam

Figure 3: Overview of participants’ main characteristics

Interview design

The seven interviews followed a semi-structured method. That is why every main question in each part has several probe questions which are to further intrigue the interviewee to reflect on the subject.

The interviews consisted of three parts in order to answer all three parts of the main research question, these are i) childhood experiences ii) environmental norms and values iii)

transmission to children. The first part consists of a reflection of parents' own experiences with nature in their childhood. The second part covers if and how these experiences have led to the formation of environmental norms and values. The last part looks into how these values are then passed on to their children. Each interview lasted around thirty minutes.

Ethical considerations

In any research it is also important to take ethical considerations into account. All the participants had to sign a consent form to inform them about their rights and duties in the participation. For example, they could always stop participating in the research. Additionally, in the transcripts and the research, the individuals are anonymized as the interview can deal with personal and perhaps emotional data about childhood memories and parenting. The data is stored in the University's secured online environment and can only be accessed by the researcher and, upon request, for the thesis's supervisor, which is also agreed upon in the consent form. The audio fragments will be removed after the thesis writing process is finalised through grading.

Data analysis

The interviews were recorded and transcribed in the original language. The method of coding in this research follows the structure of multiple coding cycles which lies rooted in the grounded theory. The raw data of transcribed interviews was first roughly analysed without coding to highlight any important quotes that aroused interest towards a relevant or unexpected result. After this, the data went through various coding cycles where codes emerged along the way and were constantly altered, improved, deleted and added. The codes were then categorised in three sections in order to create an overview in the results. An illustration of this categorisation and an overview of the codes can be found in Appendix section C. Through this process some central themes emerged that will be discussed later in this thesis.

Additionally, analytic memos were used to reflect on codes, patterns that emerged, links, problems and ethical considerations (Saldaña, 2009). An example of such a memo would be concerning the coding process (illustrated in figure one and two). The codes were categorised within the three categories to create order in the data. However, some of the codes overlap between categories like *sense of safety* from sub subcategory *description* could also fit in the sub subcategory *emotions*. The analytic memo made a link between the data of perceived (*emotions*) safety, and how adults tend to romanticise their childhood (Valentine & McKendrick 1997; Sebba 1991; Cobb 1971).

Limitations lie in the subjectivity of coding as “All coding is a judgment call” since we bring “our subjectivities, our personalities, our predispositions, [and] our quirks” to the process (Sipe & Ghiso, 2004, pp. 482–3)’ (Saldaña, 2009, p.7).

Results

The results are explained through three central themes.

Parent's description of childhood experiences with the natural environment

Results show how all respondents spent much time outdoors and described parks, green spaces, streets, squares, gardens, and forests. Social interactions such as the presence of friends and family were also directly embedded in the description of these memories. Friends are often mentioned hand in hand with positive reflections on outdoors play, and although some respondents remember their parents' supervision, all interviewees mentioned they felt free and looked back on their childhood environment as a safe place: 'in a peaceful neighbourhood where it was safe to play outside' (interviewee 3).

In accordance with the existing literature (Sebba,1991), when asked to describe the most significant place in their childhood, all the answers described an outdoor place.

Results show a limitation in adult's reflecting capacity concerning the psychological state they experienced as a child. While most of the respondents associated their childhood experiences outdoors with words such as good, pleasant or nice, almost none of them recalled the same relationship with nature as they might have experienced as a child. The difficulty in reporting these deep emotions is also depicted in previous research. The explanation for this does not lie in an inaccurate understanding of children's psychological state, but in the shortcoming of adults being able to grasp these memories when childhood has passed (Sebba, 1991).

The transmission of environmental values

The most frequent environmental values parents mentioned boiled down to a sense of responsibility for the earth and thus promoted sustainable behaviour, for example to not trash the natural environment. Other sustainable values included recycling, not using too much water and buying less plastic products. Results show how most respondents reported that such values derive from their own upbringing, and not so much directly from their childhood experiences in nature.

Other values encompassed more abstract and aesthetic values such as being dependent of nature and an appreciation for nature:

Interviewee 3: 'I try to teach them something about the beauty of nature... because I want to give them some amazement and also the rest you can find in it. I can recharge and relax when I go for a walk. I think this is a complicated time, they are of course much on their phones and there are so many things that require their attention, and then I think be aware of what there is, nature. So they might look beyond their phones.'

Most of these values could not be directly linked with parents' childhood experiences in the natural environment. Five out of seven describe the role their parents had had. Some can recall specific instances when they did something wrong, like picking flowers from the neighbour's garden (interviewee one), while others describe a more indirect process:

Interviewee 2: 'I think it is because my father was very black and white...He would have a rule and stick to that. And besides that I don't really know where it comes from. It is something that you make your own through the years, you think about things and make certain choices.'

The results show how in some instances however, childhood experiences did influence the transmission of environmental values to their children:

Interviewee 2: 'The swing was a recurring thing. If I had to name a place, that would be it. We also have a swing in the yard now and I am sorry to see that my children do not use it much.'

Interviewee 7: 'We do not have a yard and because I have those memories very strongly and my partner also had it at his house, I also would want that very much for my own children as well.'

The interviewees indicated multiple ways which and reasons why they passed on the norms and values. Some interviewees stimulate their children to interact with nature because they are aware of some health benefits, while others have stumbled upon these effects and have now incorporated them in everyday choices like riding to school by bike instead of car. The transmission of values is often done in long term choices that are included in everyday life, like the choice for a school with much nature in the schoolyard or often taking the bike instead of the car. In some cases however, sending the children outside to play was not a priority. For example interviewee 3 mentioned: 'I let them free to choose, but I also do not really stimulate them to go outside. I do mention it, but one of them mostly is an indoor kid.'

Interviewee 5: 'They also go to a daycare centre on a farm... Even when it is raining, in almost all circumstances of weather they are outside. And they are also very close to farm life, they can help feed the animals, and when the chickens have their eggs they can come along and see where those come from. We have chosen this very knowingly that they are close to nature and are outside a lot... I think it is very important that they know that the milk does not come from a supermarket.'

Interviewee 3: 'Now I notice that when I ride my bike somewhere I make remarks as "the colours of autumn are so beautiful"... and with that I try to teach them something about the beauty of nature.'

While some parents will transmit values by just telling their children how to behave, others found it important to teach their children these lessons by given the right example themselves:

Interviewee 7: 'I think it is important that you as a child are stimulated in that and that you yourself give the right example. Lead by example, let's make sure that they don't get stuck to all the screens they have nowadays.'

Parents were also asked about the obstacles and limitations they encounter in the process of transmitting these norms and values. Limitations often mentioned included practicalities like the ease of technology, lack of time, or motivation and unwillingness to go out when external circumstances like rain or cold weather occurs. Results also show the role social interaction plays in whether children are outside or not. Previous research by Veitch et al. (2006) describes how a lack of friends has a negative impact on children's playtime outdoors:

Interviewee 2: 'They also do not have friends nearby so that also does not encourage them so go outside I think. So I think that those things combined make that they are not much outside in their free time outside of school.'

Other obstacles were encountered in the environment the interviewees describe. They mention a lack of space for children, less playgrounds and lack of greenery. Even some of the interviewees who live in a relatively nature rich environment, indirectly mentioned this changes: 'We lived in a house that was then at the edge of the city' (interviewee 3). The descriptions of the environment often went hand in hand with a comparison of how it used to be:

Interviewee 5: 'Because you did not have the gym you used to have more nature. They are also planning to build a daycare centre on the field and to build a gym so yeah, it's becoming less and less green. I understand that but do pity it... Children have less space to play outside and to explore.'

The negative effects of remembered childhood on the transmission of values

Results show that parent's childhood environmental memories had a negative influence on the transmission of environmental values. Parents remembered their childhood environment as safe and often felt as though modern society is not. This was a prominent reason in some interviews on why they would not let their children play outside unsupervised. Coming back to the typologies of childhood experiences with nature by Van den Berg et al. (2018), exploring nature without adult supervision plays a large role in the process of forming meaningful experiences. These results are confirmed by previous research where a survey has shown how '91 % of the adults polled, considered it very important for children to be able to play outdoors in safety but that 85% of those questioned think that children's opportunity to play in safety has declined since they were very young.' (McNeishand & Roberts, 1995 cited by Valentine & McKendrick, 1997).

Interviewee 4: 'When we were young I always had the feeling that you could play outside safely. I find it harder, my children are still little but I do find it more difficult to let my children play outside because society has changed.'

Interviewee 2: 'I do notice I am more protective than my parents. We now live in Arnhem and 40 years later, the time and location is different. I would not let my children play outside after dinner so easily.'

An important side note to make next to these results is how parents can pose a different, idyllic picture of their childhood, also relating to supervision. As mentioned earlier, most interviewees do not recall adult supervision to play a large role in their memories all though they were supervised. However: 'remembered childhoods (when children played freely outdoors) whether 'real' or 'imagined' are used as a vehicle for expressing concern with contemporary childhood (the lack of outdoor play) and, indeed, are to some extent a root cause of this concern (changing play patterns)' (Valentine & McKendrick 1997, p.231).

The parents could also criticise the role they or other parents have in this process:

Interviewee 6: 'We make princes and princesses out of our children: we bring them from A to B, everything is taken care of. With that you create spoiled children who can't handle headwinds or rain on their forehead...I think you get used to the comfort of your house and your car really fast. You think it is more efficient, faster and better. But now, I don't think that is the case anymore.'

Interviewee 3: 'Now, everything is so controlled and children are not allowed to do anything wrong, just let them be. I would like to see that parents would stop being so anxious. I have seen mine also high in a tree, and then I do think to myself "okay...", but then they learn to be careful.'

This description is also depicted by academics who write how in modern society children's time and space is streamlined with adult's life and how children's free time is used for human capital gains which reflect adult's ideals, through institutionalised activities instead of child-lead free play (Oldman, 1994; Adler & Adler, 1994). Literature also shows how 'bringing them from A to B' has a negative effect on children's environmental awareness, adding to a sense of confusion in their understanding of time and space (Buchner, 1990). Buchner describes the phenomenon in the following way: 'The spaces in between rush passed and are often perceived only superficially with the result that a child's subjective map becomes a patchwork carpet consisting of islands of apparently unconnected space' (Buchner 1990, cited by Valentine & McKendrick, 1997, p. 229).

Discussion

The aim of this research was to understand how parents stimulate their children to engage with nature. As parents can be seen as an important determinant in children's playing behaviour, this study aimed to investigate how parents' own childhood experiences with the natural environment influences the transmission of environmental values to their children. The question 'How do childhood experiences with the natural environment of parents influence the transmission of environmental values to their children?' stood central in this study and, along with several sub questions, was aimed to be answered by a qualitative research design. These sub questions are: i) how do parents reflect on their childhood's landscape ii) how do parents transmit environmental values to their children iii) what obstacles come in the way of the transmission of environmental values.

In the recollection of childhood experiences, an active youth with much time outdoors was often depicted where the presence of friends and feelings of independence, freedom and a sense of safety played an important role. In line with research by Sebba (1991), all parents mentioned an outdoor place as the one they hold most significant in their youth.

Additionally, results show how parents do not extensively describe the psychological state of their childhood's interaction with nature. Although not all participants can be expected to have experienced the same deep connection with nature, these results are in line with previous research. That states that childhood's relation with the natural environment does not survive into adulthood, as the comparison between adults' reflection with children's description of the natural environment illustrates (Sebba, 1991).

This deficiency of a retrospective study might account for the result that relatively few childhood experiences with the natural environment showed to have an influence on the transmission of environmental values. Results show how most environmental values are formed through their upbringing and through the influence of parents. Thus, in line with previous research on the effect of childhood experiences for adult values (Porteous, 1990; Cooper, 1992; Morgan, 2009), these results suggest that childhood is an important time for the development of adult values and parents play a considerable part in this development as well.

Clearer influences of effects on the transmission of environmental values were found through the way adults remember childhood's social landscape. The active recollection of their childhood led parents to compare their experiences of the safe environment they remember with the current day and age they considered changed and general less safe. In this way, remembered childhood have a negative influence on the transmission of environmental values, as concerns of safety regularly came up as a hindrance for their child's free play.

Overall, these results suggest that parents' perceived changes in society form a major hindrance in stimulating their children to interact with the natural environment.

Parents employed several modes of direct and indirect modes of transmission, as well as short and long term choices. They encounter many obstacles in their way to do so successfully, such as indications of a lack of space, distance to nature, absence of friends, the convenience of

technology and the lure of the comfort of home. These findings are supported by previous research (Veitch et al., 2006).

Some of the difficulties in this research lay in its rather broad setup. Within the limited time and resources, this study aimed to investigate the role of parents' childhood. Even though the seven interviews executed in this study gave a large range of relevant results, ideally this research would have been performed on a larger sample. Results of a larger research design could also shed some light on whether the small observed influence of childhood experiences with the natural environment is due to the number of participants, or simply because of other factors such as the inability of adults to accurately recall childhood experiences, or even the insignificance of these experiences of the transmission.

Additionally, due to the limited participants of the study, socio-economical differences between parents or family structures and demographic features were not part of the research design, although previous research has shown how these aspects affect parent's concern for the environment their child is in (Valentine & McKendrick, 1997).

Nevertheless, this study does sketch an image on the current situation within this subject and can certainly be useful as the basis for larger qualitative or quantitative studies. A difficulty within the qualitative nature of this research design lies in the translation. As all interviews were conducted in the mother language of both interviewer as interviewees, the translations were up to the researcher. As with any translation, the choosing of specific words or even structure of sentences was done with the intentions of remaining objective, but one must always choose to translate most directly or for the purpose of best understanding within linguistic context. The fact that all of the interviewees were mothers could be considered as a flaw in the study, however as mothers are usually more involved in the upbringing of their children as the primary caregiver, it also seemed natural to have made this choice (Anderson et al., 2003).

Conclusion

In conclusion, this study aimed to investigate the role of parents on children's playing behaviour through studying how their environment values are formed by their childhood experiences in the natural environment. Even though childhood itself is found to be of great influence on the values and attitudes of adult life, the effects of childhood experiences *in the natural environment* on the transmission of environmental values are less often observed by adults. Future studies should utilise different research methods to discover this influence more closely e.g. by increasing the sample size or by refraining from retrospective methods. The study also suggests how the perception of changes in the social environment and the notion of *changed times* through the reflection of childhood, served as a mechanism for parent's safety concerns, and thus formed an influential obstacle in the transmission of environmental values.

Retrospectively, this research shows the influential role that parents have in the development of a child's value system. Parents actively transfer the environmental values they have to their children and thereby aim to influence their children's behaviour and values. Sustainable beliefs

already have a prominent place in parents' values, but awareness of the extent to which a child is benefited by nature is less observable in their value system. Therefore, educating parents on the importance of children's interaction with the natural environment might affect parents' values and consequently stimulate children's outdoor interaction.

Considering the many obstacles parents encounter in the transmission process, policy should seek to promote children's outdoor activity by incorporating nature into the institutions that are already embedded in the daily life of parents and children, for example through funds for green schools and daycares.

References

- Adler, P. A. and Adler, P. (1994). Social Reproduction and the Corporate Other: The Institutionalization of Afterschool Activities. *The Sociological Quarterly*, 35(2), 309–328.
- Anderson, P., Butcher, K., Levine, P. (2003). Maternal employment and overweight children. *Journal of Health Economics*, 22 (3), 477–504.
- Asah, S. T., Bengston, D. N. and Westphal, L. M. (2012). The Influence of Childhood: Operational Pathways to Adulthood Participation in Nature-Based Activities. *Environment and Behavior*, 44(4), 545–569.
- Bell, J. F., Wilson, J. S. and Liu, G. C. (2008). Neighborhood Greenness and 2-Year Changes in Body Mass Index of Children and Youth. *American Journal of Preventive Medicine*, 35(6), 547–553.
- Buchner, P. (1990) Growing up in the eighties: Changes in the social biography of childhood in the FRG. In Chisholm, L., Buncher, P., Kruger, H.H., Brown, P., *Childhood, Youth and Social Change: a Comparative Perspective* (pp. 49). London: Falmer Press.
- Chawla, L. (1992). Childhood place attachments. In: Altman, I., Low, S.M. (eds) *Place Attachment*. Human Behavior and Environment, vol 12. Boston: Springer.
- Cleland, V. et al. (2008). A Prospective Examination of Children's Time Spent Outdoors, Objectively Measured Physical Activity and Overweight. *International Journal of Obesity*, 32(11), 1685–1693.
- Cobb, E. (1959). The Ecology of Imagination in Childhood. *Daedalus*, 88(3), 537–548.
- Fraj, E. and Martinez, E. (2006). Environmental values and lifestyles as determining factors of ecological consumer behaviour: an empirical analysis. *Journal of Consumer Marketing*, 23 (3), 133-144.
- Grønhøj, A. and Thøgersen, J. (2009) “Like Father, Like Son? Intergenerational Transmission of Values, Attitudes, and Behaviours in the Environmental Domain,” *Journal of Environmental Psychology*, 29(4), 414–421.
- Hartig, T., Evans, G.W., Jamner, L.D., Davis, D.S., Gärling, T. (2003). Tracking restoration in natural and urban field settings. *Journal of Environmental Psychology*, 23 (2), 109-123.

- 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): 275-90.
- Lee, J.-hyoung and Burns, R. C. (2022). Older Adults' Preferences for Natural Environment and Rural Life: Intergenerational Transmission of Pro-Environmental Motivation. *Journal of Outdoor Recreation and Tourism*, 39.
- Lohr, V.I., & Pearson-Mims, C.H. (2005). Children's Active and Passive Interactions with Plants Influence Their Attitudes and Actions toward Trees and Gardening as Adults. *HortTechnology*, 15(3), 472-476.
- Marcus, C.C. (1992). Environmental Memories. In: Altman, I., Low, S.M. (eds) *Place Attachment*. Human Behavior and Environment, vol 12. Boston: Springer.
- Morgan, P. (2009). Towards a Developmental Theory of Place Attachment. *Journal of Environmental Psychology*, 30(1), 11–22.
- Nancy M., Wells and Kristi S. Lekies. (2006). Nature and the Life Course: Pathways from Childhood Nature Experiences to Adult Environmentalism. *Children Youth and Environments*, 16(1), 1–24.
- Oldman, D. (1994) Childhood as a mode of production. In Mayall, B. (ed), *Children's Childhoods Observed and Experienced* (pp. 153-166). London: Falmer Press.
- Porteous, J. (1990). *Landscapes of the Mind: Worlds of Sense and Metaphor*. Toronto: University of Toronto Press.
- Potwarka, L. R., Kaczynski, A. T. and Flack, A. L. (2008). Places to Play: Association of Park Space and Facilities with Healthy Weight Status among Children. *Journal of Community Health: The Publication for Health Promotion and Disease Prevention*, 33(5), 344–350.
- Saldaña, J. (2009). *The Coding Manual for Qualitative Researchers*. First edition. London: SAGE.
- Sebba, R. (1991). The landscapes of childhood: The reflections of childhood's environment in adult memories and in children's attitudes. *Environment & Behavior*, 23, 395-422.
- Tanja-Dijkstra, K., Maas, J., van Dijk-Wesselius, J. and van den Berg, A. (2018). Children and the Natural Environment. In Groot, J.I.M. and Steg, L. (eds), *Environmental Psychology: An Introduction* (pp. 95-103). Hoboken: John Wiley & Sons Ltd.
- Thomas, L. E., & Stankiewicz, J. F. (1974). Family Correlates of Parent-Child Attitude Congruence: Is it Time to Throw in the Towel? *Psychological Reports*, 34 (3), 1038–1038.

United Nations Human Settlements Programme (UN-Habitat). (2022). World Cities Report 2022.

Valentine, G. (1996) Children should be seen and not heard: the production and transgression of adults' public space. *Urban Geography*, 17(3), 205–220.

Valentine, G. & McKendrick, J. (1997). Children's outdoor play: exploring parental concerns about children's safety and the changing nature of childhood. *Geoforum*, 28(2), 219–235.

Veitch, J., Bagley, S., Salmon, J. & Ball, K. (2006). Where do children usually play? A qualitative study of parents' perceptions of influences on children's active free-play. *Health & Place*, 12 (4), 383-393.

Veitch, J., Salmon, J. & Ball, K. (2010). Individual, social and physical environmental correlates of children's active free-play: a cross-sectional study. *International Journal of Behavioral Nutrition and Physical Activity*, 7 (11).

Vries, S. de, Verheij, R. A., Groenewegen, P. P., & Spreeuwenberg, P. (2003). Natural Environments—Healthy Environments? An Exploratory Analysis of the Relationship between Greenspace and Health. *Environment and Planning A: Economy and Space*, 35(10), 1717–1731.

Wells, N. M., & Evans, G. W. (2003). Nearby Nature: A Buffer of Life Stress among Rural Children. *Environment and Behavior*, 35(3), 311–330.

Whitbeck, L. B., & Gecas, V. (1988). Value Attributions and Value Transmission between Parents and Children. *Journal of Marriage and Family*, 50(3), 829–840.

Appendix

Section A: Interview guide

Interview guide

Main research question: *How do childhood experiences with the natural environment of parents influence the transmission of environmental values to their children?*

Explanation of the interview guide:

- Main question
 - Probe question

Part one: Reflection of the childhood.

- Tell me about your childhood. In what kind of place did you spend most of it?

- Was it in- or outdoors?
- In what kind of landscape did you grow up?
- What memories do you have of your emotions during that time?
- Could you describe the most significant place in your childhood?
 - What did it look like?
 - What memories do you have of it?
 - What colours would you use to describe it?
- Why would you say this is the most significant place in your childhood?
- What role did your parents play in where you spent most of your childhood?
 - Did you often go outdoors without adult supervision?

Part two: formation of environmental values

- How do you interact with nature?
 - Do you often go outside?
 - Do you enjoy your time outdoors?
 - What kind of activities do you do in the outdoors?
- How do you appreciate nature?
 - With which emotions do you associate it?
 - Do you care for it?
 - How do you feel when you are in a natural environment?
- What do you find important norms and values regarding nature?
 - Can you sum them up as a rule or a word you associate with it?
- Could you describe how these values developed?
- Do you think your childhood experiences in nature played a role in the formation of these values?
 - Can you consider what role your childhood interaction with nature plays in your everyday life?
 - Do you often recall these old memories?
 - What effect did childhood experiences in nature have on you as a person?

Part three: transmission of values

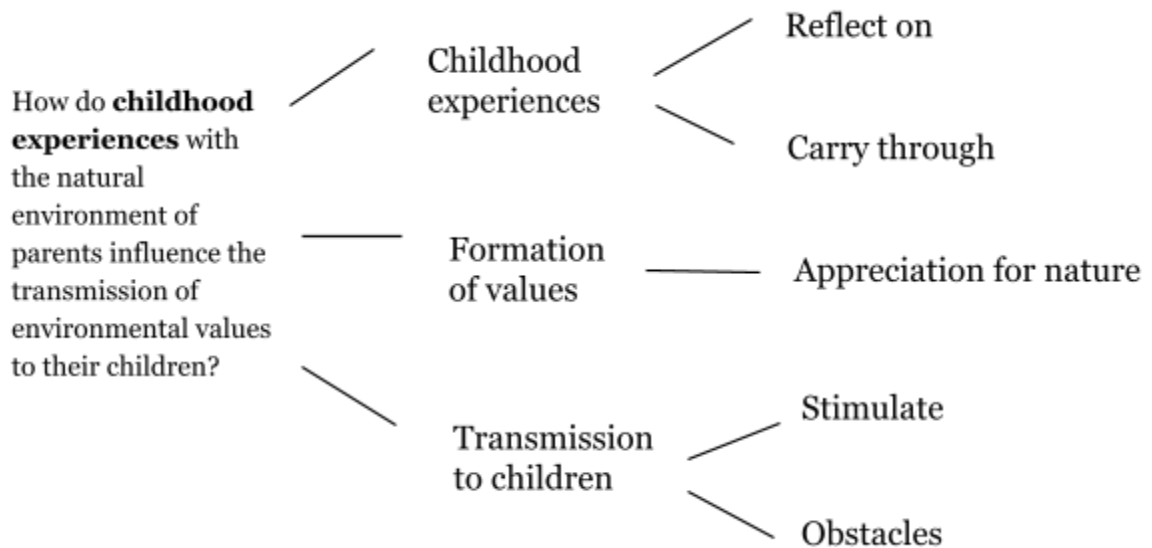
- Could you describe the role you have in your childrens' playing behaviour?
 - Do you tell them where to play?
 - Do you often take them somewhere to play?
- What environmental values influence your parenting?
- How do you pass on your values to your children?
- What obstacles do you encounter in this process?

Section B: Interview data

Upon request, the transcripts can be made available. Audio fragments and consent forms can be made available for supervisor only in order to secure privacy.

Section C: Data analysis

1. An illustration of the coding categories



Categories of the coding three, source: van de Geer, A (2022)

2. An overview of the codes

Category	<i>Childhood experiences</i>	<i>Formation of environmental values</i>	Transmission of values
Codes	<ul style="list-style-type: none"> - Subcategory: reflect on - Code: memories <ul style="list-style-type: none"> - Sub subcategory: emotions <ul style="list-style-type: none"> - Code: being intrigued 	<ul style="list-style-type: none"> - Code: appreciation - Code: formation - Code: activities - Code: values 	<ul style="list-style-type: none"> - Code: stimulation - Code: transmission - Code: motivation - Code: limitation - Code: obstacles

	<ul style="list-style-type: none"> - Code: exciting experiences - Code: childhood experiences - Code: social - Code: role of parents - Code: adult supervision - Code: rule - Code: comparison - Code: environment - Code: sense of space <ul style="list-style-type: none"> - Sub subcategory: description <ul style="list-style-type: none"> - Code: perception - Code: sense of safety 	<ul style="list-style-type: none"> - Code: environmental care 	<ul style="list-style-type: none"> - Code: benefits - Code: chances -
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Codes within categories and subcategories, source: van de Geer, A (2022)