

PRESCHOOL CHILDREN'S KNOWLEDGE ABOUT NATURE

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Research Questions and Purpose

The purpose of this study is to extend Kahn's research to a younger age group than has been previously investigated, and to compare environmental moral reasoning of children who are attending a nature-focused preschool to that of children attending a non-nature focused preschool.

- RQ1: What do preschool children think about nature?
- RQ2: Do preschool children think that pets, wild animals, plants, and parks are important, and why?
- RQ3: What do preschool children know about harm to nature?
- RQ4: Do preschool children do anything to protect or take care of nature?

Method

- Sample:
- Nature: n = 53
 - Non-nature: n = 97
- Measures:
- Children were asked:
 - Whether they think about nature, and what they think about
 - Whether pets, wild animals, plants, and parks/gardens are important or not important and why
 - If they know about any problems that might hurt nature
 - If they do anything to protect or take care of nature

Qualitative Findings

Qualitative data coding and analysis produced 7 themes which encompassed all four research questions, especially RQ1 and RQ4. The themes were animals, plants, outside activities, indoor activities, harmful human actions, natural causes, and other ways to protect nature.

Theme 1: Animals

The first theme centered around animals, whether it was children's thoughts about nature, or children talking about animals in the context of caring for and protecting nature:

"Well, just sometimes I wonder how...I just wonder how rabbits hop, because they don't look like they're jumping but they are."

One child described how he likes animals and bugs, and especially llamas when he discussed he thoughts on nature.

"I think about birds' nests and squirrels' nests and rabbits' nests."

"They bite people, and they attack other insects and other animals; that's why I like wild animals."

"When there's crows around, I blow if they're really close, or if they're really far, I just run after them."

Children identified many animals, such as owls, turkeys, bunnies, squirrels, yellow-bellied sapsucker, sharks, geese, chameleons, flamingos, raccoons, ladybugs, bats, lions, turtles, ants, caterpillars, butterflies, fish, eagle, fox, mouse, elephants, spiders, frogs, and tadpoles.



Qualitative Findings (cont...)

Theme 2: Plants

Many children also talked about plants when they discussed their thoughts about nature, problems that hurt nature, and ways to protect nature. One child talked about flowers getting hurt: "I think when you step on flowers, they really hurt so, it's a lot precious."

When asked if he did anything to take care of nature, one child said, "Yes, I water plants and I give them sunlight and I take very good care of them; I feed them and check if they are growing." One child described how going off the trail is a problem that could hurt nature because the plants would never grow again, and staying on the trail can help protect nature.

Theme 3: Outside Activities

Children described outside activities such as taking care of animals, jumping in leaves, playing outside, going down a slide, and seeing things in nature such as flowers, snow, and apples. Examples of other activities include:

"Well, I think about nature as, well ...today when we were going to the lake, some friends and one grown-up gave me an idea. My idea was when we were coming here, I, and then they, were, well, when we were coming back here, we, well, there was a space where we crossed and I thought that it could be fun where we could rest and like, we could pretend it was a rocket ship, and the boys already thought about that so that was good, that they thought about it."

Theme 4: Indoor Activities

Children also talked learning about nature indoors through books and television programs. One child said, "But nature's in my TV show about Sesame Street."

Theme 5: Harmful Human Actions

Children identified several human actions that can harm nature including throwing trash on the ground, breaking branches off trees, walking off the trail (which would smash plants),

Theme 6: Natural Causes

Children also identified natural causes of harm to nature, such as fires, lightning, snow, bears crashing down trees, garlic mustard (an invasive species) and poison ivy. Other examples include:

"Funguses could infect animals & trees"; "a disease called rabies hurts raccoons"; "Storms can make trees tip over"

Theme 7: Other Ways to Protect or Take Care of Nature

Some children talked about watering plants and walking their dog or taking care of pets as caring for nature. Other ways to protect nature included, "I don't break anything," and "If it's dirty, I go outside and pick up trash; and if it's trick-or-treat time and there's garbage around, after I'm done trick-or-treating, I might pick up some garbage some more."

Combination Quotes

Some responses combined two or more of the seven themes:

"I think about flowers growing; I think about if I planted a seed. I think it would grow. I think about owls and I think about me hiking with my mum and dad and my sister, and I think about trees and leaves falling down in the fall. And I think about going to the Audubon (the nature center)."

Quantitative Findings

RQ2: Do preschool-aged children consider pets, wild animals, plants, and parks to be important, and why?

A majority of children in both programs judged pets, wild animals, plants, and parks as important, and there were no significant differences between children from the nature and non-nature programs

Table 1. Proportions of children who said pets, wild animals, plants, and parks and gardens are important

	Nature Program	Non-nature Program
Pets Important	68.1%	87.1%
Wild Animals Important	61.4%	66.2%
Plants Important	73.2%	71.6%
Parks & Gardens Important	64.3%	81.2%

Quantitative Findings (cont...)

Table 2. Proportions of children who used each type of justification for importance of pets, wild animals, plants, parks and gardens

	Harm to Nature		Anthropocentric		Biocentric		Social Convention	
	Nature	Non	Nature	Non	Nature	Non	Nature	Non
Why Pets	11.8%	2.9%	76.5%	88.2%	11.8%	8.8%	0%	0%
Why Wild Animals	0%	5.0%	44.4%	60.0%	55.6%	35.0%	0%	0%
Why Plants	0%	6.1%	61.1%	69.7%	38.9%	24.2%	0%	0%
Why Parks & Gardens	0%	2.8%	86.7%	86.1%	13.3%	8.3%	0%	2.8%

Note: not all children had codeable responses

RQ3: Do Preschool-aged Children Demonstrate Understanding of Harm to Nature?

90.4% of all children said that it would **not** be okay for someone to throw trash in a lake. This is slightly less than the 96% of first, third, and fifth graders reported by Kahn (2001).

Chi-square analysis also showed that a greater proportion of children attending nature-focused preschool thought that throwing trash into a lake would harm fish at a marginal level of significance, $X^2(1) = 3.07, p = .08$. Children from the nature and non-nature-focused preschools did not significantly differ in their assessments of whether trash would harm birds, water, or people.

Table 3. Proportion of children indicating that throwing trash in the lake would harm fish, birds, water and people

	Nature (n=53)	Non-nature (n=73)
Fish	82.0% (41/50)	67.6% (46/68)
Birds	56.9% (29/51)	50.7% (34/67)
Water	43.8% (21/48)	53.7% (36/67)
People	45.8% (22/48)	51.5% (34/66)

Conclusions

- Most children talked about animals and plants when asked what they thought about nature.
 - Some think about activities regarding animals and plants (e.g., spotting an animal on a hike)
- A majority of children in nature and non-nature programs considered pets, wild animals, plants, and parks to be important.
 - Children provided mainly anthropocentric reasons, consistent with Kahn's research.
 - Children from the nature and non-nature programs did not significantly differ in their justifications for their importance ratings
- Children understood that most harm to nature is caused by human actions (e.g., plucking flowers, littering)
 - Some children also mentioned natural causes of harm like lightning and fire
- The majority of children judged throwing trash in a lake to be wrong, with "harm to fish" being the most agreed upon.
- Most children do take steps to protect nature (e.g., picking up garbage, don't step on plants, care for pets/animals/plants)