

Research Summaries – Connecting Children with Nature

These recommended research briefs have been grouped into four categories to make finding what you need as easy as possible. This is only a sampling of the growing body of research on the problem of children's disconnection from the natural world, and the benefits of increased connection. Our goal is to provide easy access to key research that can be used in advocacy presentations or to share with colleagues. To find more comprehensive listings of research, see the recommended links at the end of this section.

Adverse Effects of Disconnection from Nature

Fears about nature are growing:

-- Cohen and D. Horm-Wingerd contend that children's unfounded fears and misconceptions about the natural environment develop when they have very little actual contact with living things and obtain most of their attitudes through the electronic media.

Cohen, S. & Horm-Wingerd, D. (1993). Children and the environment: Ecological awareness among preschool children. *Environment and Behavior*, 25 (1), 103-120.S.

-- David Sobel explains that children are being exposed to frightening environmental issues at an early age, but are not first being given the opportunity to develop close personal connections with nature.

Sobel, D. (1996). *Beyond Ecophobia: Reclaiming the Heart of Nature Education*. Great Barrington, MA: The Orion Society

--Randy White contends that exposing children to environmental problems beyond their cognitive abilities, understanding and control can cause them to become anxious, tune out and develop "biophobia" –a fear of the natural world and ecological problems.

White, R. (2001). *Moving from Biophobia to Biophilia*. Accessed from <http://www.whitehutchinson.com/children/articles/biophilia.html>

--Research based on personal interviews with groups of children varying in age from preschool to age nine found that the attitudes children expressed towards various aspects of the natural environment (rain, wildflowers, trees, birds) included more expressions of fear and dislike than appreciation, caring or enjoyment.

Simmons, D.A. (1994). Urban children's preferences for nature: Lessons from environmental education. *Children's Environment Quarterly* 11 (3): 194-203

Screen time reduces outdoor time:

--The first two years of life are considered a critical time for brain development. TV and other electronic media can get in the way of exploring, playing outdoors, and interacting with parents and others, all critical activities for learning and healthy physical and social development. As children get older, too

much screen time can interfere with activities such as being physically active outdoors, reading, doing homework, playing with friends, and spending time with family.

Kidshealth.org website September 2010

--The American Academy of Pediatrics recommends that children under two-years-old not watch any TV and that those older than two watch no more than one to two hours a day of quality programming. According to the Kaiser Family Foundation: two-thirds of infants and toddlers watch a screen an average of two hours a day; kids under age six watch an average of about two hours of screen media a day, primarily TV and videos or DVDs; kids and teens 8 to 18 years spend nearly four hours a day in front of a TV screen and almost two additional hours on the computer (outside of school work) and playing video games. This interferes with physical activity, time outdoors, and social interactions.

The Henry J. Kaiser Family Foundation, <http://www.kff.org>

Too much time indoors leads to health issues:

--There is a high prevalence of vitamin D deficiency (“the sunshine vitamin”) among infants, children, and adolescents worldwide. Too much time spent indoors keeps children from enough exposure to sunshine. Vitamin D deficiency is a risk factor for rickets and may be a risk factor for development of cardiovascular diseases, cancer or autoimmune conditions.

Huh S, Gordon CM. Vitamin D deficiency in children and adolescents: Epidemiology, impact and treatment. *Rev Endocr Metab Disord.* 2008 Jun;9(2):161-70

--A U.S. environmental health report notes that most people, including children, spend 90% of their time indoors. Dr. Dennis Ownby says that “maybe part of the reason we have so many children with allergies and asthma is that we live too clean a life.”

Accessed from www.21stcenturycares.org/allergies.htm

Cognitive Benefits of Connecting with Nature **(Increased Skill Development)**

Time in nature increases observation and creativity:

-- Appropriate interactions with nature help children develop powers of observation and creativity.

Crain, William (2001). How nature helps children develop. *Montessori Life*, Summer 2001

Play in natural environments fosters language development and collaborative skills:

---Children’s play in natural environments contains more imaginative and creative components that foster language and collaborative skills.

Fjortoft, I. And J. Sageie (2000). The natural environment as a playground for children: Landscape description and analysis of a natural landscape. *Landscape and Urban Planning*, 48(1/2) 83-97

Faber Taylor, A., Wiley, A., Kuo, F.E., & Sullivan, W.C. (1998). Growing up in the inner city: Green spaces as places to grow. *Environment & Behavior*, 30(1)

Nature connections increase children's skills in multiple domains:

--Children who spend time in well-designed nature-filled outdoor spaces with nurturing adults develop valuable skills across all learning domains.

Miller, D.L. (2007). The seeds of learning: Young children develop important skills through their gardening experiences at a Midwestern early education program. *Applied Environmental Education and Communication*, 6(2)

--Early experiences with the natural world have been positively linked with the development of imagination and a sense of wonder. A sense of wonder is an important motivator for life-long learning.

Louv, Richard (1991). *Childhood's Future*, New York, Doubleday

Wilson, Ruth A. (1997). The Wonders of Nature: Honoring Children's Ways of Knowing, *Early Childhood News*, 6(19)

Nature connections increase children's skills in multiple domains:

--When children engage in authentic play in nature-based outdoor spaces, they develop skills in a variety of domains simultaneously.

Miller, D.L., Tichota, K., White, J. (2009). Young children Learn Through Authentic Play. Accessed from <http://www.dimensionsfoundation.org/research/authenticplay.pdf>

**Mental Health Benefits of Connecting with Nature
(Increased Feelings of Well-Being; Healing From Adverse Conditions)**

Nature helps buffer stress:

--Nature alleviates the impact of life stress on children and helps them deal with adversity. The greater the amount of nature exposure, the greater the benefits.

Wells, Nancy M. & Evans, Gary W. (2003). Nearby nature: A buffer of life stress among rural children. *Environment and Behavior*, 35(3), 311-330

--Roger Ulrich has produced a generous body of research on this topic, and this study in particular, conducted with others, looks at stress recovery in natural environments.

Accessed at http://www.uns.ethz.ch/edu/teach/masters/ebcdm/readings/Ulrich_R_1991.pdf

Time in nature helps children with Attention Deficit Disorder:

--A study by University of Illinois researchers Andrea Faber Taylor, Frances Kuo and William Sullivan has revealed that the symptoms of children with Attention Deficit Disorder (ADD) are relieved after contact with nature. The greener the setting, the more the relief. Children actually perform better on schoolwork after those experiences. By comparison, activities indoors such as watching TV, or outdoors in paved, non-green areas leave children with ADD functioning worse.

Maintaining trees and greenery near home and encouraging children with ADD to go out and play may be a compelling approach to helping them cope.

Taylor, A., Kuo, F. & Sullivan, W. (2001). Coping With ADD: The Surprising Connection to Green Play Settings. *Environment and Behavior*, 33 (1), 54-77

Nature enhances positive feelings about others:

--Children who play together in nature have more positive feelings about each other.

Moore, Robin (1996). Compact nature: The role of playing and learning gardens on children's lives. *Journal of Therapeutic Horticulture*, 8, 72-82

**Physical Health Benefits of Connecting with Nature
(Increased Positive Health and Decreased Health Problems)**

Positive nature experiences improve coordination, balance, agility:

--Children who regularly have positive personal experiences with the natural world show more advanced motor fitness, including coordination, balance and agility.

Fjortoft, Ingunn (2001). The natural environment as a playground for children: The impact of outdoor play activities in pre-primary school children. *Early Childhood Education Journal*, 29(2): 111-117

Grahn, P., Martensson, F., Lindblad, B., Nilsson, P., & Ekman, A., (1997). UTE pa DAGIS, Stad & Land nr. 93/1991 Sveriges lantbruksuniversitet, Alnarp

Appropriate risk in outdoor play can minimize accidents:

--Almon explains that people freely admit they are afraid of accidents in play and want to minimize risk. Yet playgrounds that offer genuine risk tend to have fewer accidents than traditional playgrounds. "Give children real risk and they rise to it; they learn how to handle it. Give them sanitized play spaces, and children often are less conscious of risk and have accidents, or take outlandish risks for the sheer excitement of it all."

Almon, Joan. (2009). The fear of play. *Exchange*, March/April, 42-44

Health is positively impacted when nature is a part of everyday environments :

Clare Cooper Marcus and Robin Moore address the positive health effects of including nature in the everyday environments where children spend time.

Accessed from http://www.naturalearning.org/docs/MooreCooperMarcus_Healthy.pdf

Yale School of Forestry & Environmental Studies Research

To address environmental issues, society needs a deeper understanding of the natural world, and the ways we can regulate our own behavior. Faculty and students at F&ES conduct research in eight broadly conceived areas of environmental concern – biodiversity, forestry, global climate, industry, law and economics, urban systems, water, and social ecology. The scope of these programs reflects not just the complexity of human interaction with the environment, but the fact that the easy answers have been exhausted. As such, it is the mission of the F&ES faculty and students to conduct research that uncovers new knowledge, unique insights, and approaches that tie many fields together. This mission is further carried out by communicating the results of this research to the widest possible audience through publication, lectures, and other educational programs.

<http://environment.yale.edu/research/>

To access publications including books, newsletters, magazines and journals published by the school.

<http://environment.yale.edu/pubs/>

Children and Nature Network

Parents and grandparents, friends, family, teachers, physicians and concerned citizens—people want to do what is right and best for children. With that in mind, this network has set out to compile a premier set of research studies to help us all understand what's best for children's healthy development. They have:

- 4 Volumes of research and studies related to connecting children with nature
- A synthesis of collected research and studies related specifically to health benefits to children from contact with the outdoors and nature
- A synthesis of collected research and studies specific to children's contact with the outdoors and nature: A focus on educators and educational settings

<http://www.childrenandnature.org/research/>