



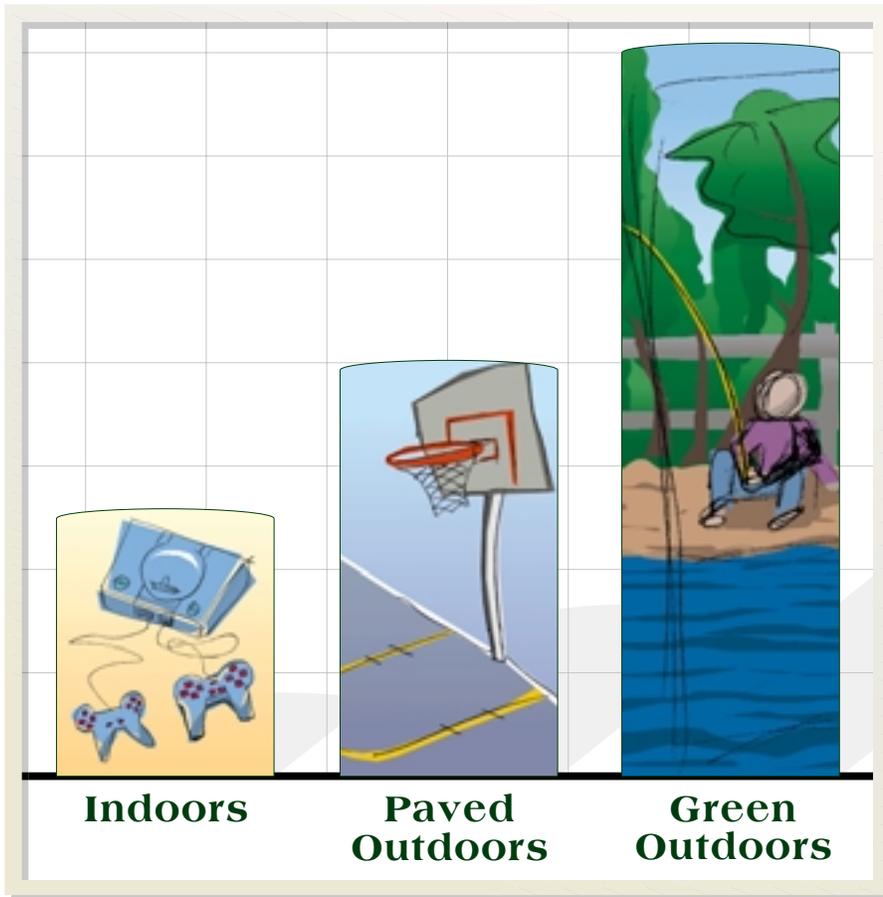
# ILLINOIS

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN  
Human-Environment Research Laboratory

## Go Out and Play!

Nature Adds Up for Kids with ADD

Relief From **ADD** Symptoms



Human-Environment Research Laboratory, University of Illinois, [www.herl.uiuc.edu](http://www.herl.uiuc.edu)

ADD symptoms in children are relieved after spending time in nature. The greener the setting, the more the relief.

**M**ore than 2 million children in the United States are diagnosed with attention deficit disorder (ADD). For children with ADD and those in their immediate sphere, life can be chaotic. ADD children are restless and prone to outbursts. They have trouble listening, following directions and focusing on tasks. ADD makes children impulsive and sometimes

aggressive. Family conflict, peer rejection, academic failure, anxiety, depression and low self-esteem may occur. Lifelong problems can result.

Medication can help relieve ADD symptoms, but it has side effects. Therapy also helps somewhat. Now, the dramatic results of a study by University of Illinois

researchers Andrea Faber Taylor, Frances E. Kuo and William C. Sullivan suggest an alternative way to relieve ADD symptoms that has virtually no side effects or costs.



*Sterile environments are less likely to foster creative play and adult interaction. Both are considered to be highly beneficial to healthy child development.*

The researchers found that ADD symptoms in children are relieved after contact with nature. The ability to concentrate, complete tasks and follow directions improves dramatically after play in green, natural settings. The greener the setting, the more the relief. Greenery in a child's everyday environment—even views of green

through a window—reduces ADD symptoms. While outdoor activities in general help, settings with trees and grass are the most beneficial. For ADD kids, the simple message *Go out and play* is significant.

## What Underlies the Message

The ability to deliberately pay attention, as when working or studying, draws on what scientists call *directed attention*. Like a mental muscle, directed attention becomes fatigued with exertion. To refresh and renew this mental muscle, the use of *involuntary attention* is effective.

Involuntary attention is effortless attention. Simply noticing the sights, sounds and scents of the environment exemplifies it. Studies of adults have shown that time spent in nature uses involuntary attention especially effectively. Directed attention rests, and ability to concentrate is renewed.

Taylor, Kuo and Sullivan thought that children, like adults, become fatigued from concentration on schoolwork and structured activities and need to refresh their ability to pay attention. ADD kids in particular need more ability to pay attention. Would time spent in nature be a remedy for them? Specifically, would ADD symptoms be more manageable after activities in nature compared to activities indoors or in paved outdoor settings? Would

ADD improve overall if a child's everyday environment were green?

To address these questions, Taylor, Kuo and Sullivan conducted an intensive survey of the parents of ADD children. To create a survey that would yield the most accurate results, they involved ADD experts, including children, parents, pediatricians and teachers, in the survey design.

## About the Survey

Survey participants were parents or guardians of children aged 7 to 12 who had been formally diagnosed with ADD by a physician or psychologist. The parents were recruited through newspaper ads and information distributed at pediatricians' offices, medical clinics, schools and ADD support groups.

Parents were asked about symptoms of their child's ADD after play in a variety of settings, about the amount of nature in their child's daily environment and about the severity of their child's disorder. They were not told in advance what the study sought to learn.

Information was collected through a questionnaire that took 30 to 40 minutes to complete. In all, 96 questionnaires were completed. In the general population, the ratio of boys to girls diagnosed with ADD is 3:1. The same ratio was represented among the children of the parents surveyed.

Parents were asked to identify one or two after-school or weekend activities that left their child functioning especially well and especially poorly. An independent coder later classified each activity as "green" or "not green" depending on the setting in which the activity usually occurs. For example, green activities included camping, fishing and playing soccer. Not-green activities included watching TV, playing video games, and doing homework. Activities that can occur in green and paved settings, including playing outside and in-line skating, were classified as ambiguous.

Parents also reviewed a list of 25 activities and rated the aftereffects of each activity on their child's ADD symptoms. The

*The ability to concentrate, complete tasks and follow directions improves dramatically after play in green, natural settings.*

activities were grouped as conducted indoors, outdoors in a green environment or outdoors in a paved environment, such as a parking lot or downtown area with few trees.

Finally, parents answered questions about their child, their household, the severity of the child's ADD symptoms and the child's everyday surroundings. To help assess the amount of greenery in the child's surroundings, parents viewed photos of settings rated for greenness by 21 horticulture students. The settings ranged from windowless rooms, to mostly paved residential areas, to highly green residential areas to wild landscapes.

## Go Out and Play

Compared to the aftereffects of play in paved outdoor or indoor areas, **activities in natural, green settings were far more likely to leave ADD children better able to focus, concentrate and pay attention.** Activities that left ADD children in worse shape were far more likely to occur indoors or outdoors in spaces devoid of greenery. **The findings point compellingly to using outdoor play in green settings to help ADD kids function better.**

Taylor, Kuo, Sullivan and many other scientists have found that natural settings have a measurably positive effect on people.

Even so, the strong results of this survey surprised them.

"We knew from our own studies and those of other scientists that in general, green is good. For ADD kids, however, green is great," said Frances E. Kuo, assistant professor and co-director of the Human-Environment Research Laboratory at the University of Illinois at Urbana-Champaign.

Prior studies by Taylor, Kuo and Sullivan have found that green outdoor spaces may foster creative play, a form of play that is especially valuable for children's development. Green spaces also seem to improve children's access to adult interaction. Numerous other studies show positive connections between green spaces and people's well-being.

"Planting and caring for green space is important," said Dr. Andrea F. Taylor. "Near home, in particular, nature can be used to help people." Planting and caring for trees, shrubs and grasses near home takes a modest investment of time, money and energy. But few things may cost less and yield more—especially for kids with ADD.



*Children with ADHD are better able to concentrate, complete tasks and follow directions after playing in natural settings.*

## Ideas for Parents, Teachers and Caregivers

- ❑ Before they begin activities that demand attention, such as school or homework, have children play outside in a green yard or park, or enjoy time together in such a place. It may leave them better able to concentrate on upcoming tasks.
- ❑ Observe which activities and settings seem to restore or improve children's ability to pay attention.
- ❑ Advocate recess in green schoolyards. It may help all children refresh their ability to concentrate.
- ❑ Value and care for the trees and vegetation in your community. Caring for trees means caring for people.

The information in this bulletin is condensed from "Coping With ADD: The Surprising Connection to Green Play Settings," *Environment and Behavior*, Volume 33, Number 1 (January 2001), pp. 54-77. A. Faber Taylor, F.E. Kuo, W.C. Sullivan. Copyright © 2001 Sage Publications, Inc.

For more information on this study, go to [www.herl.uiuc.edu](http://www.herl.uiuc.edu) or contact the University of Illinois at Urbana-Champaign, Human-Environment Research Laboratory, 1103 S. Dornier Dr., Urbana, IL 61801, phone (217) 333-1965. This project was supported by the USDA Forest Service Urban and Community Forestry Program on the recommendation of the National Urban and Community Forestry Advisory Council. Grant #01-DG-11244225-292. Findings do not necessarily reflect the views of the USDA Forest Service.

The Human-Environment Research Laboratory of the University of Illinois at Urbana-Champaign is a multidisciplinary research laboratory dedicated to studying the relationships between people and the environments they inhabit. The mission of the lab is to generate information about human-environment relationships to guide policy, planning and design of environments. The lab's scientists explore how to create environments in which individuals, families and communities flourish, and how to better involve people in the design, management and stewardship of their local environments.

Frances E. Kuo and William C. Sullivan, Directors

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