

### Nature Deficit Disorder

*David Mitchell*

In the early 1900s, more than 90% of the population of North America lived in rural areas where farming was dominant, while only 10% lived in urban centers. As recently as the 1950s, most U.S. youngsters still had a connection to agriculture in some form. Even in towns or cities, kids played ball in dusty sandlots or spent hours building forts against fences, in garden shrubbery, or in parks. Their unregimented play allowed them to be at one with nature. That kind of exposure to the outdoors has reportedly faded dramatically in recent decades, but our need for nature—as both psychological and physiological aid—has not. “Neurologically, human beings haven’t caught up with today’s over-stimulating environment,” says Michael Gurian, family therapist and author of *The Wonder of Boys*.

By the beginning of this millennium, demographics from the 1900s had reversed themselves. Now, more than 90% of the population resides in urban or suburban areas. Interestingly, during this time, we have also seen a dramatic increase in Attention Deficit Disorder, ADD, and Attention Deficit Hyperactive Disorder, ADHD. Children diagnosed with these disorders have trouble paying attention, listening, following directions, and focusing. They may also be aggressive, antisocial, and prone to academic failure. Based on high-tech images of the brain, some scientists report that ADD and ADHD children show altered levels of some neurotransmitters and slight shrinking in the part of the cerebral cortex that governs attention and impulse control. But scientists are not clear whether those differences indicate a cause for the disorder, perhaps due to a genetic defect, or are simply manifestations of another cause or causes.

According to the National Survey on Children’s Health,<sup>1</sup> about 8% of children between

the ages of 4 and 17—a total of 4.4 million—have a diagnosis of ADD or ADHD, and more than 50% of them take stimulant medications, many of which are addictive.<sup>2</sup> Children diagnosed with ADHD often receive “little more than prescribed medications—with no further guidance from a physician, therapist, or educational counselor.”<sup>3</sup> Statistics gatherers admit, however, that “non drug, psychosocial treatment may be helpful if it continues long enough.”<sup>4</sup> This leads us to a consideration of the correlation between ADD, ADHD, and the phenomenon of children of today spending less and less time outdoors in unstructured activity.

*Last Child in the Woods: Saving Our Children from Nature Deficit Disorder* by Richard Louv appeared last May.<sup>5</sup> Louv coined the term “nature deficit disorder” after spending ten years traveling around the country, interviewing both parents and children about their experiences in nature, in both rural and urban areas. He compared their anecdotes with a growing body of emerging scientific research that suggests children who are given early and ongoing positive exposure to nature thrive in intellectual, spiritual, and physical ways that their “shut-in” peers do not. Over the past 30 years, he says, children of the digital age have become increasingly alienated from the natural world. Citing skyrocketing rates of childhood obesity, diabetes, depression, and ADHD, he links a lack of interaction with nature to a slow but steady erosion of mental, physical, and spiritual health.

A camp counselor told Louv of the counselor’s experience of taking a nighttime walk with a 9-year-old girl who had never left the city in which she lived. “She looked at the night sky, gasped, and grabbed my leg,” the counselor recalled. “She had never really seen the stars before. That night,

I witnessed the power of nature on a child. She was a changed person. From that moment on, she saw everything, even the camouflaged lizard that everyone else skipped by. She used her senses. She was awake.”<sup>6</sup>

Louv advocates “nature play” as a way to reduce stress, sharpen concentration, and promote creative problem solving. He believes it could also emerge as a promising therapy for attention deficit disorder and other childhood maladies.

Speaking on Nation Public Radio in February 2006, he stated that our culture’s sterile rejection of nature is harming children in body and soul. He argued that kids’ free time is so structured with youth sports, dance, gymnastics, and so forth, and children are so plugged into television and video games that they’ve lost their connection to the natural world. He states, “We don’t do well when we lose our connection with the trees, hills, sky, and streams. Humanity in the western world has lost its balance.”<sup>7</sup>

Rhoda Clements, in “An Investigation of the Status of Outdoor Play,”<sup>8</sup> supports Louv’s findings. Her study discusses the extent to which children in North America today participate in active, outdoor play, compared with those of the previous generation. Eight hundred and thirty mothers nationwide were surveyed regarding their active, outdoor play experiences as children, and their children’s play experiences today. The mothers’ play experiences, compared with the children’s, clearly indicate that children today spend considerably less time playing outdoors than their mothers did as children.

The following bullets identify some of the problems children face, problems that may be aided by addressing “nature deficit disorder”:

- The number of children diagnosed with ADHD has skyrocketed—by 33 percent from 1997 to 2002.
- Prescriptions of stimulant medications such as methylphenidate (Ritalin) and amphetamines (Dexedrine) have risen as well, especially for preschoolers.

From 2000 to 2003, spending on ADHD drugs for children younger than five rose by 369 percent.

Scientists have yet to definitively explain these trends. One theory is that ADHD may be

over-diagnosed; pharmaceutical companies have intensely marketed medications, and school officials often urge parents to seek treatment for disruptive children. A suspected cause of ADHD symptoms is over-stimulation, especially from television viewing.

The following research seeks answers to the problems outlined above:

Harvard biologist Edward O. Wilson’s “biophilia” hypothesis argues that humans have an affinity with the natural world. When we aren’t exposed to a natural landscape, we suffer.<sup>9</sup>

In ongoing studies by the Human-Environment Research Laboratory at the University of Illinois, researchers have discovered tantalizing evidence for a new view of the syndrome. In a 2004 study published in the *American Journal of Public Health*, the laboratory found that children as young as five showed a significant reduction in ADHD symptoms when they engaged with nature.

Parents and guardians were asked to identify after-school or weekend activities that left their children functioning particularly well or poorly. The study measured responses to two types of activities: those in green landscapes—such as grassy backyards, parks, and farmland—and those in indoor playgrounds and paved recreation areas. The researchers designed the study to account for any effects of physical exercise so they could measure only the influence of green settings. They also factored out age, gender, family income, geographic region, size of community, and the severity of diagnosis. In fifty-four of fifty-six cases, outdoor activities in more natural settings led to a greater reduction in ADHD symptoms than activities in less natural areas. The only instances in which symptoms worsened occurred in artificial environments. In a related experiment, the laboratory found that children could focus on specific tasks better in green settings.<sup>10</sup>

The University of Illinois team has also suggested that nature therapy could be a third option, after prescription medications and behavioral therapy. The study recounts how one parent began taking her son to the local park for thirty minutes each morning before school, which she indicated reduced his ADHD symptoms. “Come to think of it,” she told the researchers, “I have noticed his attitude toward going to school has

been better, and his schoolwork has been better this past week.” Another parent of a boy with attention deficit symptoms began engaging him regularly in outdoor activities, such as fishing, with similar results. “When I read the results of your study,” he reported to the researchers, “they hit me in the face. I thought, yes, I’ve seen this!”<sup>11</sup>

A 2003 Cornell University study reported that the more nature a child encountered at home—including exposure to indoor plants and window views of natural settings—the less he or she was affected by negative stresses.<sup>12</sup>

A 2003 study by researchers at the New York State College of Human Ecology reached similar conclusions. Nancy Wells, the lead researcher, said that exposure to nature resulted in “profound differences” in children’s attention capacities and that “green spaces may enable children to think more clearly and cope more effectively with life stress.” That, in turn, could strengthen a child’s attention and potentially decrease the symptoms of ADHD.<sup>13</sup>

In a study in the *American Journal of Preventive Medicine*, gallbladder surgery patients with trees outside their hospital windows recovered more quickly than those with views of a brick wall.<sup>14</sup>

Michigan prisoners whose cells faced inward suffered 24% more illness than peers whose cells looked out on landscapes.

Nature also appears to reduce stress and stimulate creativity. In another Michigan study, office workers with views of greenery reported significantly less frustration and more job enthusiasm than colleagues without such vistas.

Swedish research has shown people who walked for 40 minutes in nature returned to perform better in proofreading tests.

Stephen and Rachel Kaplan, husband and wife environmental psychologists at the University of Michigan, have developed an “attention-restoration theory.” The Kaplans take their inspiration from philosopher and psychologist William James, who, in 1890, described two kinds of attention in adults: directed and involuntary.

In the early 1970s, the Kaplans studied the impact of a range of activities and found too much directed attention—this could include computer tasks, homework, or studying for a test—leads to what they call “directed-attention

fatigue,” marked by impulsive behavior, agitation, irritation, and inability to concentrate. Directed-attention fatigue occurs because neural inhibitory mechanisms become overstressed by blocking competing stimuli. Subsequent research, including more than one hundred studies linking exposure to nature to stress reduction, has supported the Kaplans’ theory—and the salutary influence of what they called “the restorative environment.” According to the Kaplans, nature can be the most effective source of restorative relief.<sup>15</sup>

A new report on American’s eco-literacy is a significant read for all teachers. The report, *Environmental Literacy in America*, comes from the National Environmental Education and Training Foundation, a nonprofit foundation chartered by Congress in 1990 to promote environmental education in its many forms. In the issue *Eco-Literacy and America’s “Nature-Deficit Disorder,”* Kevin Coyle lays the blame for children’s falling grades in eco-literacy on, in part, unprecedented cultural pattern changes in how young people relate to nature and the outdoors:

As kids become more “wired” than ever before, they are drawn away from healthful, often soul-soothing, outdoor play. The age-old pattern of children spending hours roaming about and playing outside is becoming close to extinct due to a combination of electronics, cyberspace, and parental efforts to keep their children indoors and, in their minds, safer.<sup>16</sup>

Ellen Britt, co-founder of Primal Waters and an expert in stress resiliency, argues that it’s not only children who suffer from nature deficit disorder, but adults as well. A recent Environmental Protection Agency study found that most adults in the United States spend 90% of their lives indoors.

A conservative, main-line consideration of this problem can be found in *The Harvard Mental Health Letter* of the Harvard Medical School (February 2006) in an article titled “Attention Deficit Disorder: Old Questions, New Answers.” It states that ADHD is not “just a set of behavior problems but a biologically based disorder of brain function.” It has the strongest genetic component among psychiatric disorders. Evidence is reported that children with ADHD have a disturbance that occurs in a “circuit that runs between the frontal cortex, seat of judgment and planning, and the

basal ganglia, which control habitual actions and convey reward signals.”

Following a statement advocating a decrease in television viewing for children, however, *The Harvard Mental Health Letter* states:

Not only less exposure to television but more exposure to nature might be good for children with attention problems. Several recent studies have found that impulse control and other ADHD symptoms improved when children had more access to grass and trees. This evidence, like the evidence for damaging effects of television, is limited, and its practical significance might be doubted. Still, it can't hurt any child to spend less time as a couch potato and more time outdoors in parks and playgrounds, woods, and fields.<sup>17</sup>

If arguments about nature deficit disorder resound in us as Waldorf school teachers, then a walk in the woods is an ideal activity. Before or after school, it will restore us to ourselves. With our classes, it may be an essential salutogenic practice. A concern for nature deficit, however, also calls for an awakening. It beckons us to “scale back industrialism, redesign homes, schools, hospitals, and cities, and expand the access to open space”—none of which can be encapsulated in a pill.<sup>18</sup> To the extent that we, as associates of Waldorf schools and Waldorf education, can take up this challenge, we will help our students and their families at least as much as we do through our daily practices.

## Endnotes

1. See <http://www.cdc.gov/nchs/about/major/slaits/nsch.html>.
2. See <http://www.health.harvard.edu>.
3. See the *Harvard Mental Health Letter*, Volume 22, Number 8, February 2006, p. 5.
4. Ibid.
5. Richard Louv has written for the *New York Times* and the *Christian Science Monitor*, and is a long-time columnist for the *San Diego Union-Tribune*. He is the author of seven books, including *Last Child in the Woods: Saving Our Children from Nature Deficit Disorder*, published in April by Algonquin Books of Chapel Hill. He lives in San Diego. Louv also serves as a columnist and editorial advisory board member for *Parents* magazine, as well as a commentator on Monitor Radio. He is

an advisor to the Ford Foundation's Leadership for a Changing World award program. A partner in The Frameworks Institute and a member of Citistates, an association of urban observers, Louv also helped found Connect for Kids, the largest child advocacy site on the World Wide Web. Louv has appeared on the CBS Morning Show, NBC National News, Good Morning America, Today, Donahue, Bill Moyers' Listening to America, NPR Morning Edition, NPR Fresh Air, NPR Talk of the Nation, PBS News Hour with Jim Lehrer, Minnesota Public Radio, and many other national and regional programs. He lives in San Diego and prefers fishing to writing.

6. See <http://www.npr.org/templates/story/story.php?storyId=4665933>.
7. Ibid.
8. For the complete paper, see <http://www.waldorfresearchinstitute.org>.
9. See [http://arts.envirolink.org/interviews\\_and\\_conversations/EOWilson.html](http://arts.envirolink.org/interviews_and_conversations/EOWilson.html).
10. See <http://www.lib.niu.edu/ipo/2004/ip041122.html>.
11. See <http://www.herl.uiuc.edu>.
12. See <http://www.news.cornell.edu/releases/April03/nature.kid.stress.ssl.html>.
13. See <http://www.normanbirdsantuary.org/whatsnew.shtml>.
14. See [http://www.elsevier.com/wps/find/journaldescription.cws\\_home/600644/description#description](http://www.elsevier.com/wps/find/journaldescription.cws_home/600644/description#description).
15. See a comprehensive article on nature deficit disorder and the pioneer work of the Kaplans at: [http://www.lifetimefitness.com/magazine/index.cfm?strWebAction=article\\_detail&intArticleId=436](http://www.lifetimefitness.com/magazine/index.cfm?strWebAction=article_detail&intArticleId=436).
16. Environmental Literacy in America, October 2005, can be downloaded at <http://www.neetf.org/pubs/index.htm> or write to: The National Environmental Education & Training Foundation, 1707 H Street, NW Suite 900, Washington, D.C. 20009-3915.
17. See *Harvard Mental Health Letter*, Volume 22, Number 8, February 2006, p. 5.
18. See <http://www.oriononline.org/pages/om/05-4om/Louv.html>