



Access to nature contributes to the health and well-being of young people, and helps to form a foundation for the development of responsible environmental behavior. The following studies identify some of the benefits that children can gain from connections with nature.

Concentration and School Achievement

A study following 17 seven through 12 year olds as they moved from rundown urban housing into better homes in better neighborhoods found that the amount of improvement in natural views and more natural yards best predicted which children would show the highest levels of concentration after the move.¹ In a Swedish study comparing preschool children using a



traditional playground with others whose play area contained a field and orchard, the children with the field and orchard showed significantly greater powers of concentration at the end of the year.² Teenage girls with green views outside their windows performed significantly better on tests of concentration, inhibiting impulses, and delaying gratification than those with barren views.³ High school students with more natural features like trees outside classroom and cafeteria windows showed higher standardized test scores, graduation rates and intention to attend college, after controlling for socioeconomic status and other factors.⁴

1. Wells, N. (2000) "At Home with Nature: Effects of 'greenness' on children's cognitive functioning." *Environment and Behavior* 32 (6): 775-795.

2. Grahn, P., Martensson, F., Lindblad, B., Nilsson, P., & Ekman, A. (1997) "Ute på dagis." *Stad and Land* 145. Håssleholm, Sweden: Nora Skåne Offset.

3. Faber Taylor, A., Kuo, F. & Sullivan, W. (2002) "Views of nature and self-discipline: Evidence from inner city children." *Journal of Environmental Psychology* 22: 49-63.

4. Matsuoka, R. (2008). High school landscapes and student performance. Doctoral dissertation, University of Michigan.

Emotional Coping and Stress Reduction

A study with Finnish adolescents found that they often went to natural areas after upsetting events.⁴ They said they could relax there, clear their minds, gain perspective on things, and sort out whatever troubled them. Natural areas appear to function this way for younger children as well. A study of 337 rural eight-through-11-year-olds revealed that even when there was a relative abundance of natural surroundings in their lives, more exposure to nature was still better.⁵ The study found that regardless of a family's socioeconomic status, the greener the home surroundings, the more resilient children appeared to be against stress and adversity. The protective effect of nature was strongest for the most vulnerable children who experienced the highest levels of stressful life events.

5. Korpela, K. (1992) "Adolescents' favorite places and environmental self-regulation." *Journal of Environmental Psychology* 12: 249-258.

6. Wells, N. & Evans, G. (2003) "Nearby nature: A buffer of life stress among rural children." *Environment and Behavior* 35 (3): 311-330.



Photo by Louise Chawla



More Creative Play

In a Chicago study, children observed in green outdoor spaces engaged in more play and more creative forms of play than children in barren spaces.⁶ Preschoolers with access to a natural yard developed more varied and elaborate patterns of play, including complex make believe stories with a beginning and an end.⁷ Observations of preschool play in a schoolyard in Seattle, Washington showed similar results.⁸ Children who played in vegetated edges of the yard with trees and shrubbery engaged in more creative social play than those on the built equipment, and these areas attracted more balanced groups of boys and girls.

7. Faber Taylor, A., Wiley, A., Kuo, F. & Sullivan, W. (1998) "Growing up in the inner city: Green spaces as places to grow." *Environment and Behavior* 30 (1): 3-27.

8. Grahm, P., Martensson, F., Lindblad, B., Nilsson, P., & Ekman, A. (1997) "Ute på dagis." *Stad and Land* 145. Håssleholm, Sweden: Nora Skåne Offset.

9. Kirkby, M. (1989) "Nature as refuge in children's environments." *Children's Environments Quarterly* 6 (1): 7-12.



Photo by Roger Hart

A Foundation for Stewardship

When people who demonstrate a commitment to protect the natural world reflect on the sources of their actions, they most frequently mention positive experiences of nature in childhood and parents or other role models who show nature's value.⁹ By itself, childhood play in nature is associated with recycling, buying green products, voting green, and the choice of natural areas for recreation in adulthood.¹⁰ The results of a Swiss study suggest that outdoor investigations of nature (rather than indoor study) are the most effective and most popular approach to increase children's knowledge of biodiversity, especially in easily accessible settings such as school grounds and the local neighborhood.¹¹

10. Chawla, L. (1999) "Life paths into effective environmental action." *Journal of Environmental Education* 31 (1) : 15-26.

11. Wells, N., and Lekies, K. (2006). "Nature and the life course." *Children, Youth and Environments* 16 (1). (www.colorado.edu/journals/cye).

12. Lindemann-Matthies, P. (2006) "Investigating nature on the way to school: Responses to an educational programme by teachers and their pupils." *International Journal of Science Education*, 28 (8) : 895-918

◇Text and layout by Louise Chawla and Debra Flanders Cushing◇

Reduced Symptoms of ADD and ADHD

Children diagnosed with Attention Deficit Disorder (ADD) or Attention Deficit Hyperactivity Disorder (ADHD) function better with nature. Children exhibited fewer ADD symptoms after they walked through a park¹² or played outdoors in green settings, and the greener their surroundings, the fewer symptoms they showed.¹³ According to a web-based survey of 525 parents of children with ADHD their children's symptoms were relieved by leisure activities (other than TV viewing), but especially by leisure in green outdoor settings.¹⁴



Photo by Larisa Sunderland

13. Faber Taylor, A. & Kuo, F. (2009). "Children with attention deficits concentrate better after walk in the park". *Journal of Attention Disorders* 12(4).

14. Faber Taylor, A., Kuo, F. & Sullivan, W. (2001) "Coping with ADD: The surprising connection to green play settings." *Environment and Behavior* 33 (1): 54-77.

15. Kuo, F., & Faber Taylor, A. (2004). "A potential natural treatment for Attention-Deficit/Hyperactivity Disorder: Evidence from a national study." *American Journal of Public Health*, 94(9), 1580-1586.

Motor Coordination

Comparisons of preschool children in Norway and Sweden show physical gains from play in nature. Studies in Norway and Sweden compared preschool children who played everyday among the trees, rocks and uneven topography of natural school grounds with other preschoolers who played in conventional playgrounds.^{14,15} On tests of motor fitness, children with opportunities for nature play at school showed greater gains over the course of the year, especially in balance and agility.

16. Fjørtoft, I. (2001) "The Natural environment as a playground for children." *Early Childhood Education Journal* 29 (3): 111-117.

17. Grahm, P., Martensson, F., Lindblad, B., Nilsson, P., & Ekman, A. (1997) "Ute på dagis." *Stad and Land* 145. Håssleholm, Sweden: Nora Skåne Offset.



Photo by Reba Rye

