

## Research shows a walk in the park improves attention in children with ADHD

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For children with Attention Deficit Hyperactivity Disorder (ADHD) tasks that require concentration such as doing homework or taking a test can be very difficult. A simple, inexpensive remedy may be a "dose of nature."

A study conducted at the University of Illinois shows that children with ADHD demonstrate greater attention after a 20-minute walk in a park than after a similar walk in a downtown area or a residential neighborhood.

The study, conducted by child environment and behavior researchers Andrea Faber Taylor and Frances E. Kuo was published in a recent issue of the *Journal of Attention Disorders*.

"From our previous research, we knew there might be a link between spending time in nature and reduced ADHD symptoms," said Faber Taylor. "So to confirm that link we conducted a study in which we took children on walks in three different settings – one especially "green" and two less "green" – and kept everything about the walks as similar as possible."

Some children took the "green" walk first; others took it second or last. After each walk, an experimenter who didn't know which walk the child had been on tested their attention using a standard neurocognitive test called Digit Span Backwards, in which a series of numbers are said aloud and the child recites them backwards. It's a test in which practice doesn't

improve your score.

"We compared each child's performance to their own performance on different walks," said Faber Taylor. "And when we compared the scores for the walks in different environments, we found that after the walk in the park children generally concentrated better than they did after a walk in the downtown area or the neighborhood area. The greenest space was best at improving attention after exposure."

"What this particular study tells us is that the physical environment matters," said Kuo. "We don't know what it is about the park, exactly – the greenness or lack of buildings – that seems to improve attention, but the study tells us that even though everything else was the same – who the child was with, the levels of noise, the length of time, the time of day, whether the child was on medication – if we kept everything else the same, we just changed the environment, we still saw a measurable difference in children's symptoms. And that's completely new. No one has done a study looking at a child in different environments, in a controlled comparison where everything else is the same."

The sample size was relatively small [?] children – mostly because the logistics were a nightmare to coordinate. "Because we kept everything the same, the children all went to the same park and walked through the same neighborhood and downtown area. The testing location had to be close by so that there wasn't a lot of lag time between going for the walk and taking the post-test," said Faber Taylor. "And each child was always paired with the same adult guide for their walks, and all the children were tested by the same tester."

Kuo said that the variables of the study were very hard to control. "We started with a much larger sample size. But when we threw out all of the things that could go wrong – the weather wasn't good one day, the child came late, or came medicated—when we threw out all of those, it left us

with this relatively pure, clean sample to work with."

Faber Taylor added that their confidence in the findings from this study is bolstered by findings from other studies. "Because we have results from a national study which looked at over 450 children, we can have more confidence that this relationship between natural settings and improved attention is true not just for the children in this study." She said that the larger study included children from all over the United States, representing a wide range of ages, different community sizes, and both with and without hyperactivity. "The findings from the national study give us some confidence that this relationship applies to all children with ADHD."

Kuo emphasized that this study involved an objective test of attention, not just on children's or parents' impressions.

During the walks, all of the children were unmedicated -- those of the participants who normally took medications to control their ADHD symptoms stayed off their medications on the days of the walks. Interestingly, Faber Taylor and Kuo found that a "dose of nature" may be as helpful -- at least for a while -- as a dose of stimulants. "We calculated the size of the effect in our study and compared it to the size of effects in a recent medication study," said Faber Taylor, "and we were surprised to see that the dose of nature had effects the same size or even larger than the dose of medication." What remains to be seen is how long the effects of a dose of nature last.

"Some of the previous survey research suggests a relationship between children who regularly play in green spaces and how severe their symptoms are. Children who have regular exposure to green spaces have milder symptoms overall. So that's hinting that there may be a persistent effect," said Kuo.

She said that while there are hints that the regular doses of nature work long term – that you can expose a child to the same green outdoor settings day after day and still get a benefit – the science isn't advanced enough to give parents a strict formula. "We can't say for sure, 'two hours of outdoor play will get you this many days of good behavior,' but we can say it's worth trying, and we can say that as little as 20 minutes of outdoor exposure could potentially buy you an afternoon or a couple of hours to get homework done," said Kuo. "One reason we believe this is that if the effect were short-lived, we don't think that parents would have so consistently observed it. But they do. They report it over and over. And they report it independently. So, in the larger study with over 450 kids, we asked 'what's your kid like after watching TV or after playing outside' and none of the parents know what any of the other parents are telling us, but they overwhelmingly agree."

Faber Taylor believes it would be easy to add a dose of nature to a child's routine. "I could imagine parents hearing about this research and immediately applying it – just trying it out – taking their child to the park either when their child's symptoms are exacerbated or as a regular routine. It's not that hard to incorporate, especially if they have a green backyard or if they can get to a neighborhood park. Again, we can't say for sure that it would work for any given child – but there's probably very little risk involved in encouraging your child to play outdoors and seeing if their symptoms improve."

She also says that the benefits of a dose of nature don't apply just to children with ADHD. "We're all on a continuum of attention so this study has implications for all of us," said Taylor. "ADHD is just at the far end of attention functioning, but there're plenty of us who fall somewhere close to that end of the continuum, and we all experience times when we're mentally fatigued – times when we're less able to focus and do tasks and get easily distracted. The evidence suggests that natural settings can benefit everyone, even children (and adults) who have not

been diagnosed with ADHD."

Source: University of Illinois at Urbana-Champaign

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