## **One-on-One with**

# **Russell Barkley**



As a leading researcher and writer in the area of attention-deficit/hyperactivity disorder (AD/HD), Russell A. Barkley, Ph.D. understands how much perceptions of the disorder have changed over the last 30 years. Barkley, a professor of Psychiatry and Neurology at the University of Massachusetts Medical School,

is the author of 14 books, manuals and co-edited texts, and more than 150 book chapters and scientific papers on the subject. He has spent the better part of a lifetime searching for answers and explaining misconceptions of AD/HD.

Barkley began his research in 1973 and explains some of the changes that have occurred in the past 27 years. "In the '60s and '70s, the focus used to be on hyperactivity and disruptive behavior," he says. "Over the next 10 years, we broadened the view to include concentration and distractibility. Then we began to move out from hyperactivity into disinhibition and thoughtlessness in kids."

"By the mid-80s, people realized that although those things were there, they didn't explain why a child had AD/HD and there was a growing respect that these were just surface features."

When scientists looked below the surface, they found two fundamental deficits: first, that inhibition seemed central to the disorder; and second, in addition to the problems with self-control and self-regulation there was a sense that something else was needed to explain the disorder.

In the 1990s, research studies returned to the idea of inhibition and associated the disorder with inhibitory deficits. Leading scientists in the field also theorized that the lack of self-control created problems in executive functions. They began to look at the role of executive functions — the covert, self-directed actions individuals use to help maintain control of themselves. Scientists realized that instead of AD/HD having a single characteristic, there were several underlying issues that affected brain functions. A new theory was then developed to explain how a lack of inhibition disrupts executive functioning and self-control.

### **Brain Structure and Causality**

Further study has involved a search for causality and whether there were biological or physiological reasons for the disorder. There has always been a suspicion that there was something physical about the disorder. Neuroimaging and other recently developed technologies are allowing physicians and researchers to literally see the disorder in a new light. "As technology has advanced, we saw the advent of neuroimaging," explains

Barkley. "CAT scans, MRIs (magnetic resonance imaging), PET scans (positron emission tomography) and FMRIs (functional MRIs) help measure brain activity and allow us to see the neurology behind the disorder."

Barkley says three structures in the brain seem to show up in AD/HD. These involve the orbital, striatum and cerebellum regions. Researchers are finding that in individuals with AD/HD there is 8–15 percent less brain volume than there should be. These three regions are functionally interconnected and inhibit motor responses, affecting an individual's inhibitions and preparation to act. The smaller regions seem to appear more in the right hemisphere of the brain than the left, especially for the orbital prefrontal region and cerebellum. "These smaller structures in the brain are not a result of damage or injury, but of something taking place when the brain is being formed," says Barkley. "We had a hunch in the '70s that AD/HD was in the brain, but we had never been able to pinpoint it before now."

## It's in the Genes

Over the last 10 years, scientists have also made great strides in proving that AD/HD is hereditary. In 1902, George Still wrote the first paper voicing the hunch that AD/HD ran in families. "If a child has AD/HD," explains Barkley, "then most likely a relative has it as well."

In the 1980s, statistics confirmed that the closer people are genetically related, the higher the incidence of AD/HD. According to current research, approximately five percent of the population has AD/HD. If one child is diagnosed with AD/HD, the chances increase to 30 percent that a sibling will have it. If a child has the disorder, the risk to parents is 15–20 percent. And if the parent has the disorder, the risk to their offspring may be as high as 25-54 percent.

In the case of twins, the statistics nearly double at 70-90 percent. A number of twin studies both in the U.S. and abroad have proved that AD/HD is determined by genetics, like human height or hair color. It is even more genetically determined than I.Q. Twin studies have helped to remove the environmental issues from the equation and have proved that a child's rearing environment has no impact on whether or not he/she has AD/HD.

Twelve research teams, including Barkley's, have been trying to identify a gene for AD/HD. They have found two in the last four years. "It is a complex disorder with multiple traits," says Barkley, "and because complex traits are due to multiple genes, there will be more [genes] discovered in the future."

"What we found was that particular versions of these genes were over-represented in people with the disorder," clarifies Barkley. "Discovering what these genes do and how they affect AD/HD is the next step.We are investigating six other genes now."

Research has moved from not knowing that it was an inherited disorder to confirming its heredity. "It's not rearing and not diet, and we should be able to nail it (the genes) down in the next five years or so," adds Barkley. "More people are studying AD/HD than ever before."

### **Stemming the Tide of Misinformation**

With advances in research come negative developments in other areas. Periodic misinformation by individuals who want people to think the disorder is caused by social problems or poor parenting takes time and attention away from energies that could be spent furthering the cause instead of counteracting or correcting the misinformation.

"There are individuals who intentionally mislead the public for their own reasons," says Barkley.

The Internet, with its easy access to information, has made it much simpler for respected researchers, as well as those with more questionable backgrounds, to make a plethora of information available on the Web. Barkley cautions individuals to be very wary of information that comes off the Net. "There is a great deal of misinformation out there. The Internet is not policed or regulated, and no one is verifying the information on some of these sites," he says. "A vast amount of information on the Net concerning AD/HD is incorrect." He also suggests being wary of promos for vitamins, health foods or other AD/HD "cure-alls" that are sold over the Net. He recommends applying the same skepticism to these ads and promotions as one would to advertising in any other medium.

#### Advances in Treatment

In the past 30 years, there have been major changes in the way AD/HD is treated. "We have made some changes," says Barkley, "but you need advances in other areas such as in the psychological and physical basis for the disorder, before you can begin to advance treatments for the disorder beyond just the use of medication."

Research has also led to the development of a number of psychosocial treatments and the usage of a multi-modal approach in treating the disorder. This means that medication used in conjunction with a variety of other treatments and interventions is more effective than when used alone.

"We're learning more about stimulant drugs and why they're effective," adds Barkley. "There are new drugs and new agents that have proven useful, as well as new ways to administer them. Three new drugs will be available in the next two years."

Psychosocial changes have occurred because researchers began looking at a child's environment and the accomodations needed to make a child with AD/HD more successful in school and other settings. Cognitive therapy and self-control training were found to be failures as part of the treatment process. In such approaches, children learn

how to manage their own behavior, particularly anger and disappointment when things don't work out the way they want them to. Behavior modification therapies help individuals learn about their limitations, however they only work when they are utilized and have no enduring effect when they are stopped. Some are also very situation specific (e.g., for a classroom setting) and do not transfer to other areas.

"Learning what doesn't work is useful too," says Barkley. "We've found that diet is not a major treatment force or cause of AD/HD."

Barkley says that some of the misconceptions about AD/HD still remain. These include:

People will eventually outgrow it.

It stems from a lack of will or effort at self-control.

It is the result of a moral failing or the way parents are raising their children.

It is the result of too much television or too many video games.

It is related to diet.

It is a result of our fast-paced, stressful culture.

## **Changes for the Better**

Recognition of the disorder in adults and how it affects them has been a profound change for those not diagnosed as children. "The identification of adults with AD/HD is a major breakthrough," explains Barkley, "as well as its acceptance by mental health professionals."

Teachers' and school administrators' perceptions have also changed. "Schools now recognize AD/HD and the changes in the Federal law (Section 504 and IDEA) are positive as well," he adds. "There has been a reinterpretation of the laws and support services have improved. We are light-years ahead of where we were in the '60s when it comes to education."

Changes for adults in the workplace have been positive as well, and Barkley believes we will continue to see modifications in the years to come. "However, we still have a long way to go in this area and still need to make accommodations for workers."

As Russell Barkley and others continue their research on the many facets of identifying, diagnosing and treating AD/HD, they provide a little more hope and help for the families who face its challenges daily.

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