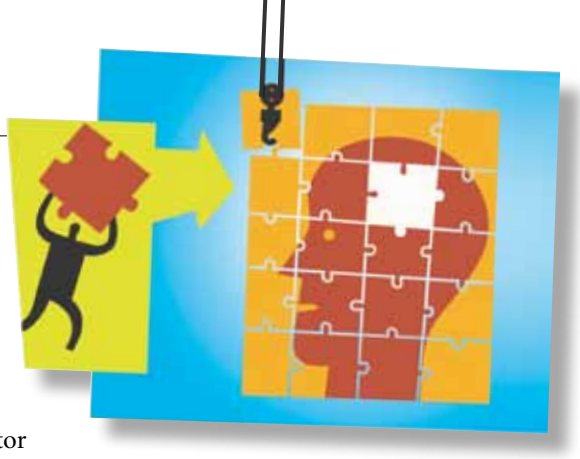

Interest Deficit

Bryan Goodman, MA, with James Swanson, PhD

A STUDY RECENTLY RELEASED in the *Journal of the American Medical Association* showed a significant deficit in the function of the dopamine reward pathways in individuals who have AD/HD. Experts say that the research points to an "interest deficit" for people who have AD/HD. To learn more about what this means for those who live with the disorder, Bryan Goodman, MA, talked with James Swanson, PhD, one of the study's key authors. The research was funded by the National Institutes of Health and conducted by a team at Brookhaven National Laboratory in collaboration with investigators from Mt. Sinai Hospital, Duke University, and the University of California, Irvine.

James Swanson, PhD

How would you describe this study to someone with a limited scientific background?

The core feature of AD/HD has been described and labeled as an "attention deficit." This study investigated whether another underlying factor may be an "interest deficit." We used PET brain imaging to evaluate the neurochemistry of the brain in regions and pathways that are related to attention and motivation. We found decreased activity of the reward system in individuals with AD/HD, and that translates into a decreased sensitivity to being able to be engaged by activities that are not inherently rewarding or reinforcing. This would explain what some parents of children with AD/HD know—that their child can spend hours playing video, focused and attentive, and yet he or she cannot focus at all at school.

Is this something scientists have always known or is it a revolutionary finding?

Both. This study confirms what previous research had already shown about dopamine levels in people with AD/HD and that is that they are low. But this study adds two new findings about why the levels are low and *where* in the brain they may be low. We could address these two questions in a new way because we evaluated adults with AD/HD who had not previously been treated with medication. Therefore we could evaluate whether the differences were due to AD/HD itself and not the treatment of AD/HD. Also, our large sample of adult volunteers allowed us to evaluate a small brain structure called the nucleus accumben, which had not been previously examined in our brain-imaging studies of AD/HD, as well as a relatively large brain structure, called the caudate nucleus that has been well studied. Our measures of dopamine receptor and transporter availability in this area of the brain were lower in the AD/HD group than the control group, suggesting abnormalities in an important component of the reward pathway (nucleus accumben), as well as an important component of the attention pathway (caudate nucleus).

So will these findings translate into practical solutions?

We believe so. First our findings may alter how the individual with AD/HD and society view the condition itself. Second, the interventions based on motivation and interest may be re-emphasized and new ways to address the proposed "interest deficit" may be developed. A deficit in the reward pathway suggests an emphasis on using intrinsically interesting activities (perhaps in an area where the child shows talent and has successes) to reinforce mundane but necessary behaviors. At the CHADD meeting in Cleveland, the very interesting pro-wrestler/basketball player, Matt Morgan, gave an excellent personal description of how this was used in his early school years to motivate him when his teacher used "free throws" to reinforce working in class on math. Our research supports the slight reformulation of what is sometimes called "Grandma's Rule"—first you work (even if it is not interesting) and then you play (so you can do what is interesting).

Three Takeaways

by Bryan Goodman

While more research is needed, adults with AD/HD and teachers and parents of children with AD/HD can use the study's findings to inform their efforts. Here are some quick tips.

1 Readjust your thinking about AD/HD. It appears that it's not just about an attention deficit; it's also about an interest deficit. That may mean that you can become really good at things you find interesting. Conversely, you may not give your full attention to tasks you find boring.

2 Figure out what is interesting and uninteresting to you or your child. For every uninteresting task you perform, do something you enjoy as a reward. For example, a runner could go for a run after he or she organizes paperwork, or a young student could go out on the playground for ten minutes after completing a certain number of math problems. This is a basic principle of behavior modification.

3 Use this information to drive your decisionmaking. Everything from small tasks to the work you pursue should be chosen in terms of optimizing the context and the setting that would make use of intrinsically interesting aspects of your life. This might help you to understand common weaknesses of AD/HD and to identify and build on some of the strengths of AD/HD.

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