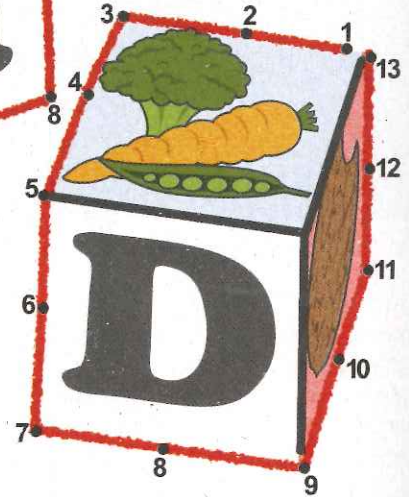
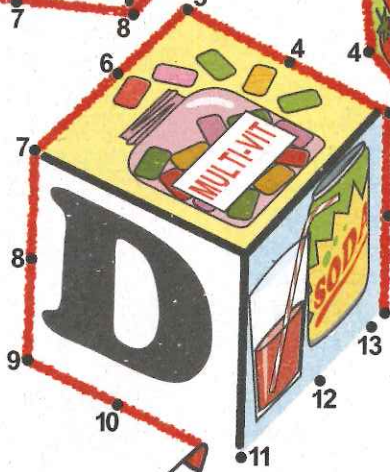
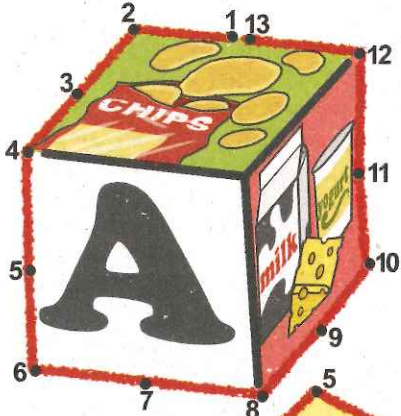


Connecting



and Nutrition

BY PAMELA WEINTRAUB

Anyone who's raised a kid with attention deficit hyperactivity disorder (ADHD) knows the drill: You take your sweet child to nursery school, and he runs amuck during story time. He won't follow instructions for using the glitter and glue during art. He tips over other kids' block towers.

Your child might be bright, maybe even brilliant, but he's on his own disruptive trajectory. He might be called out in class, disinvited from play dates, labeled a menace. He risks exclusion from his community of peers, all because he can't pay attention, slow down, or fit in.

The teacher takes you aside and tells you that if you don't get on top of this, your son or daughter won't be accepted in any mainstream classroom. The teacher gives you the name of a clinic, and you're on your way.

That's often the start of the Ritalin years. And from the moment your child takes those stimulant drugs, he never seems quite himself.

On Ritalin, along with Dexedrine, Adderall, or any number of other drugs — eventually one medication stops working, and another must cycle in — he makes it through the day. He's OK in the classroom, although his personality is eerily flat and contained. He has no appetite and can't eat lunch.

Then he comes home and the meds wear off, leaving a hellion on the rebound, bouncing off the walls with an aching stomach and a spinning head. If he has a prayer of doing his homework, he'll need more Ritalin.

Then the meds keep him awake at night, so you have to give him another drug to help him sleep.

It is better than the pre-Ritalin days: He's not a pariah, shipped off to some gated school for the disruptive, or forced to pass his days shadowed by an aide. At least his grades are better.

Besides, what choice do you have? The school social worker has informed you that taking your kid off his meds now would constitute child abuse — she could report you to the state.

If this scenario sounds familiar, you aren't alone. ADHD and its cousin, attention deficit disorder (ADD), are the most widely diagnosed neuropsychiatric diseases of childhood. The Centers for Disease Control and Prevention says that 11 percent of children from age 4 to 17 have been diagnosed with ADHD — boys at more than double the rate of girls. And the majority of them take medicine to control the symptoms.

There is some recent good news: A raft of new, peer-reviewed studies reveals that simple changes in diet can dramatically help manage ADHD and ADD.

For a significant set of children, eliminating culprits like artificial food coloring and preservatives, wheat, milk products, and chocolate can vastly relieve symptoms. Still other kids are helped by nutritional supplements targeting certain minerals and vitamins.

The upshot? While there's no nutritional magic bullet for all children, tweaking your child's diet to rule out food problems, one by one, just might yield enough improvement that you can toss one or more medications.

Beyond Feingold

The notion that diet could trigger the symptoms of ADHD first emerged in the 1970s, thanks to San Francisco-based pediatric allergist Ben Feingold, MD. His initial mission was testing for allergies by eliminating artificial dyes and other additives in food.

Feingold's ADHD discovery came about by accident when a woman consulted him about her hives. After testing her for the usual allergies and finding nothing, he decided to run an experiment: Eliminate all natural and artificial food colors and flavors, and see what happens. Within three days the woman's skin cleared.

Ten days later, Feingold got a call from her psychiatrist: The woman's aggressive and hostile behavior, which had failed to respond to two years of psychotherapy, had mysteriously vanished as well.

Feingold came to believe that food dyes, preservatives, and even certain



For kids with focus and behavior challenges, nutritional shifts may work as well as, or better than, medication.

chemicals that occur naturally in some fruits, vegetables, and spices were causes of hyperactivity.

His elimination diet had good results for many children, and psychiatrists, psychologists, and parents began to embrace his ideas.

The food industry quickly jumped into defensive mode. By 1980, studies in hand, health officials declared Feingold's nutritionally based approach to ADHD purely a placebo response.

The 1990s saw a huge surge in the diagnosis of children thought to be on one psychiatric spectrum or another. In addition to ADHD and ADD kids, there were now the OCD kids (obsessive-compulsive disorder) and the ODD kids (oppositional-defiant disorder).

By 2000, doctors were also reporting a disturbing, inexplicable rise in cases of autism, a range of neurodevelopmental disorders marked by social impairments, communication difficulties, and repetitive patterns of behavior, often accompanied by gastrointestinal ills.

Despite the official decree that Feingold's approach was bunk, thousands of parents insisted it was working for their spectrum-challenged children.

Feingold pointed to so many problematic substances, however, and there was so much crossover from one neuropsychiatric disorder to the next, separating the diagnoses and triggering factors became a herculean task.

Caustic Colors

The only way to tell whether eliminating a given food or additive might aid a certain disorder is to conduct studies to the highest standards of science. And in recent years, researchers have done just that.

Much of the new clarity comes from Columbia University Medical Center psychiatrist David Schab, MD, MPH. He performed a full meta-analysis — a study of all the studies — to try to tease out the connections between certain additives and symptoms.

Schab's analysis of placebo-controlled, double-blind studies

was published in the *Journal of Developmental & Behavioral Pediatrics* in 2004. He revealed that artificial food colors, in particular, had an enormous, negative effect on focus and concentration, driving hyperactive behavior in a significant subset of children and teens.

The scientific parsing of this data has made all the difference. While Feingold pointed to thousands of food additives as possibly contributing to the symptoms of ADHD, careful studies have since found that artificial dyes and the preservative sodium benzoate, in particular, trigger the hyperactivity and inattentiveness associated with the condition.

The studies suggest that younger children are more prone to these effects than older children — and that the more exposure to the colors and preservative, the greater the effect.

“Our study showed that the average effect on children's behavior was distinctly larger than the more widely recognized effect of typical lead exposures on children's cognition,” says Schab. “Untold billions of dollars have been spent to remove lead from gasoline and paint, but hardly any outcry, attention, or resources have been mobilized to remove artificial dyes from the food supply.”

In the aftermath of Schab's report came a landmark study from the University of Southampton in England involving nearly 300 children. Strikingly, the study showed that even children without ADHD could be made hyperactive by food additives, while the ADHD children could be made even more hyperactive.

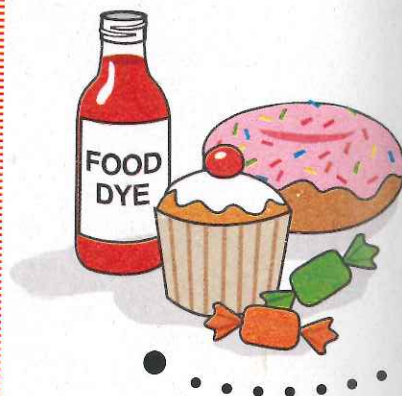
The inattention, impulsivity, and overactivity were literally a pharmacological side effect, as if the children had taken a hazardous drug — and no one was immune. All children, the British researchers concluded, whether initially hyperactive or not, would benefit if the colors and additives were removed.

Then in 2011, Lidy Pelsser, PhD, a researcher at the ADHD Research

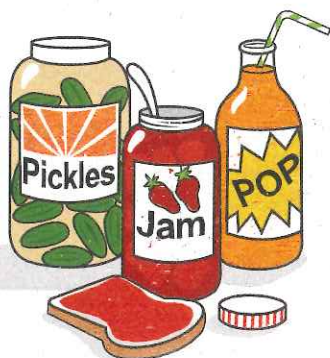
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Nutritional Tune-Up

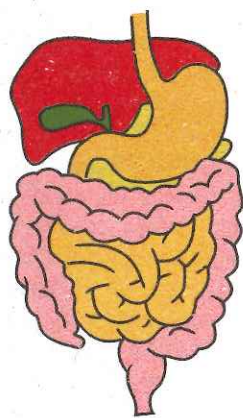
For parents wanting to help their children with attention, behavior, and mood challenges, our experts recommend starting with these integrative, nutrition-based approaches.



- **Remove artificial colorings** from your child's diet. These dyes — especially Red #40, Blue #2, Yellow #5, and Yellow #6 — trigger hyperactivity in many kids, notes Columbia University Medical Center psychiatrist David Schab, MD, MPH. In addition, they serve to “get children interested in foods that are globally unhealthy — Pop-Tarts, sodas, processed cereals, energy bars.”



- **Eliminate food additives,** especially the preservative sodium benzoate, from your kid's diet. It is most commonly found in soda and other carbonated beverages, fruit juices, jams, salad dressings, condiments, and pickles. Be sure to read ingredients labels and beware of fast-food menu items, which can contain a significant dose.



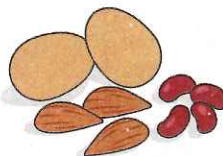
- **Consider your child's gastrointestinal health.** Working with your doctor, you may want to add probiotics to his or her supplements, along with the supplement tricycline (which contains berberine, artemisinin, citrus extract, and walnut hulls). This treatment is designed to improve problems related to leaky gut, a condition in which damaged intestinal walls release undigested food particles into the bloodstream. Leaky gut is associated with a range of inflammatory and immune responses.



- **Remove medicines and foods containing salicylates,** found in hundreds of medicines, including aspirin, as well as some fruits. In some people, salicylates can cause or exacerbate asthma, fatigue, and, notably, the symptoms of ADHD.



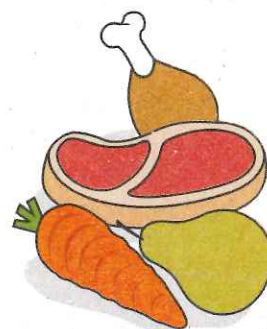
- **Try an elimination diet.** Remove casein (found in dairy products, such as milk and cheese) and gluten (found in wheat, barley, and rye) from your child's meals and see if it makes a difference. Reintroduce these substances after they have cleared the system (three weeks for casein, three months for gluten) only if no positive changes have occurred with elimination.



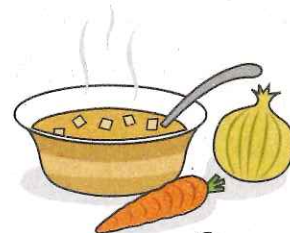
- **Consider a low-glycemic eating plan** high in protein and fiber, and low in carbs, such as refined carbohydrates and sugar.



- **Supplement your kid's meals with targeted micronutrients** (vitamins and minerals), including vitamin D, the range of B vitamins, omega-3 fatty acids, amino acids, calcium, iron, magnesium, and zinc. Be sure to consult with a skilled naturopath or integrative physician so that you do not oversupplement.



- **If your child is still acting hyperactive,** try a restrictive diet of water and organic rice, turkey, lamb, lettuce, carrots, pears, and other whole foods that rarely cause food allergies. See if your child's symptoms subside; if so, slowly reintroduce foods to his or her meals to see which items cause symptoms to reemerge.



- **Rebuild your child's diet** based on whole, organic, nutrient-dense foods.

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Centre in the Netherlands, published a paper in the prestigious medical journal *The Lancet* connecting food sensitivity and ADHD. In her study, Pelsser placed 50 ADHD children on a hypoallergenic diet of water, rice, turkey, lamb, lettuce, carrots, pears, and other whole foods that rarely cause allergic reactions.

Sixty-four percent of ADHD children on Pelsser's special diet had a significant remission of symptoms. And most of these children relapsed after stopping the elimination diet.

"We think that dietary intervention should be considered [for] all children with ADHD, provided parents are willing to follow a diagnostic restricted-elimination diet for a five-week period, and provided expert supervision is available," Pelsser says. "Children who react favorably to this diet should be diagnosed with food-induced ADHD."

Taking it all in, the U.S. Food and Drug Administration (FDA) convened a panel in 2011 to examine these results. In a highly criticized move, the FDA ultimately voted 8 to 6 against warning labels for the implicated food colorings.

In Europe, meanwhile, a similar panel reviewed the same results and voted for the labeling. Today, many international food makers use only natural dyes in European versions of their products while Americans get artificial colorings in the same food.

Supplement Successes

In addition to dietary changes, there's evidence that targeted nutritional supplementation might also ease ADHD.

Julia Rucklidge, PhD, of the University of Canterbury in New Zealand, saw numerous teen and adult patients with ADHD symptoms who were highly impaired despite being treated with various drugs and behavioral therapy. She wondered whether their nutritional needs weren't being adequately met.

In an effort to cover key nutritional requirements and address common deficits, Rucklidge tested a broad-spectrum formula called EMPowerplus. It contains 36 important micronutrients, including 14 vitamins

(D, E, H, and a range of Bs), 16 minerals (calcium, iron, magnesium, and zinc, to name a few), and three crucial amino acids (methionine, phenylalanine, and glutamine).

In 2008, Rucklidge held an open-label safety trial (in which both clinicians and patients were aware of what was happening) with 14 adults taking the micronutrients for eight weeks. The patients' ADHD symptoms of hyperactivity, impaired focus, and impulse control improved dramatically.

Removing gluten and dairy from sensitive children's diets can yield vast improvements, helping kids become calmer and more focused while improving their health overall.

Other problems were relieved as well: Many participants noted reduced anxiety and stress as well as improved quality of life. And the supplement worked without any of the rebounding, sleeplessness, or jitters that Ritalin and other stimulants often cause.

In January 2014, Rucklidge's team published a randomized, placebo-controlled, double-blind trial — run as rigorously, she says, as a pharmaceutical-drug study. Thirty-eight patients received placebos; 42 received the micronutrient mix. ADHD symptoms were monitored by the patient, clinician, and a close observer, such as a spouse or parent.

Here, too, Rucklidge saw success. Those taking the micronutrient formula reported greater improvement in inattention, hyperactivity, and impulsivity. Rucklidge reports that the longer patients remained on the micronutrients, the more profound the effect.

Those who stayed on the micronutrients were still continuing

to improve more than one year later. Drugs like Ritalin work better in the beginning, says Rucklidge, but as time goes on, improvement is reduced.

Recently, Rucklidge has reported other interesting findings in her ADHD patients. Just last year, a patient who had experienced improvements with the micronutrient regimen saw setbacks due to a yeast infection. Treatment with olive-leaf extract and probiotics not only cured the yeast infection, but helped the patient regain the ADHD-symptom relief achieved with the micronutrients. Rucklidge believes this suggests that gut health should be considered when treating psychiatric disease.

Progressive Strategies

Such research is still considered preliminary by mainstream medical standards. But in integrative and functional-medicine circles, elimination diets and nutritional-supplementation strategies have been used for decades to manage the symptoms of ADHD, autism, and allergies.

In his influential book, *Healing the New Childhood Epidemics: Autism, ADHD, Asthma, and Allergies*, Kenneth Bock, MD, reports that gluten (found in many grains including wheat, barley, and rye) and casein (found in milk and dairy) can sometimes profoundly exacerbate symptoms associated with ADHD.

He's found that removing gluten and dairy from sensitive children's diets can yield vast improvements, helping kids become calmer and more focused while improving their health overall.

Bock recommends a clean diet of whole, organic, nutrient-dense foods. Children with ADHD must avoid fish high in heavy metals like mercury, such as tuna, he says, and any meats that have been treated with hormones, pesticides, or herbicides.

He puts some patients on a diet to counteract hypoglycemia (low blood sugar), a condition often caused by inflammation and known to mimic or exacerbate symptoms of ADHD.

"A frequent cause of hypoglycemia is a poor diet too high in [refined]

carbohydrates,” Bock notes. Such carbs consist of either sugar or starch, which travel rapidly through the digestive system, sending kids’ behavior on an emotional roller-coaster ride.

His diet consists of low-glycemic-load foods that travel more slowly through the digestive system. It focuses on protein and high fiber, while limiting the intake of grains.

“Grains often contribute to hypoglycemia because they are high in starch,” he explains. Bock advises parents to limit their children’s intake of grains to two or three servings a day, and then, serve them only as a side dish combined with slower-digesting foods high in protein, fat, and fiber.

For kids with ADHD, refined cereals, sweet fruits like melons and raisins, and starches like white rice are best avoided altogether, he says. Beans and lower-glycemic fruits like berries, apples, and pears can be eaten in limited quantities.

Even simple nutritional interventions like these can make a profound difference. But many parents find they get the best results (and support) working with progressive health professionals who can suggest individualized treatment plans.

Bundling Treatments

In addition to nutritional factors, many health experts believe that environmental toxins can also play a significant triggering or exacerbating role for those with symptoms of ADHD or autism. That’s why physicians like Luke Curtis, MD, and Kalpana Patel, MD, advocate for bundling nutritional and environmental interventions together.

In 2007, at an environmental medicine clinic in Buffalo, N.Y., Curtis and Patel conducted a preliminary study of 10 patients diagnosed with ADHD and autism. Working with these children over the course of three to six months, they adjusted a wide range of nutritional and environmental factors.

These included eliminating problematic foods (such as gluten, casein, and food additives); adding more whole foods and supplements

(such as probiotics, B vitamins, and omega-3 fatty acids); and reducing the children’s exposure to toxins of all kinds, including mites, mold-causing moisture, tobacco, and pesticides. (For a detailed list, see “Nutritional Tune-Up” on page 62.)

Attacking all these issues at once proved a successful strategy. Children in the study “showed significant improvement in many areas of social interaction, concentration, writing, language, and behavior,” Curtis reports.

The Buffalo team had no way of being certain about which interventions helped which children. Still, Curtis stands behind the treatment philosophy of addressing all potential irritants simultaneously.

“Until we know more, the bundling approach appears to be the best use of the environmental-medicine arsenal,” he says.

The Way Forward

One thing is certain: More work must be done to determine how both the presence and absence of various nutrients and chemicals may be affecting our children’s health and well-being.

There are thousands of chemical compounds in our foods, and still more in our water, air, soil, and everyday environments. At the same time, there are dozens of nutritional components that might affect ADHD symptoms for better or worse.

Combined, all these factors can dramatically influence our children’s cognition, behavior, and life chances.

Until we know more, supplementing with broad-spectrum nutrients, as Rucklidge does, and eliminating problematic foods, as Pelsser recommends, may be the surest nutritional interventions for ADD and ADHD.

Most of these findings are still new and require replication, notes Columbia University’s David Schab.

In the meantime, he notes, “When it comes to food and attention, what we consume can make a difference — an enormous one.”

Pamela Weintraub is the psychology and medical editor of *Aeon* and the author of *Cure Unknown: Inside the Lyme Epidemic*. Follow her on Twitter @pam3001.



Get Smart

For a detailed look at the link between **artificial food dyes** and children’s health, see ELmag.com/fooddyes.

For more on **nourishing your child’s moods and thinking**, see ELmag.com/autismspuzzle.

Listen to an audio interview with renowned neurologist David Perlmutter, MD, on how **avoiding grains and choosing healthier fats** can help our brains thrive. See ELmag.com/perlmutteraudio.

For more on the **connection between nutrition and mental health**, see ELmag.com/wholebodypsychiatry.