

NIH News in Health

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Inside News: 3 Curb Your Eating... 4 Peanut Allergy Therapy... Tips for Healthy Feet... It's a Noisy Planet

Keeping Up in School? Identifying Learning Problems

Reading, writing, and math are the building blocks of learning. Mastering these subjects early on can affect many areas of life, including school, work, and even overall health. It's normal to make mistakes and even struggle a little when learning new things. But repeated, long-lasting problems may be a sign of a learning disability.

Learning disabilities aren't related to how smart a child is. They're caused by differences in the brain that are present from birth, or shortly after. These differences affect how the brain handles information and can create issues with reading, writing, and math.

"Typically, in the first few years of elementary school, some children, in spite of adequate instruction, have a hard time and can't master the skills of reading and writing as efficiently as their peers," says Dr. Benedetto Vitiello, a child mental health expert at NIH. "So the issue is usually brought up as a learning problem."

In general, the earlier a learning disability is recognized and addressed, the greater the likelihood for success in school and later in life. "Initial screening and then ongoing monitoring of children's performance is important for being able to tell quickly when they start to struggle," explains Dr. Brett Miller, a reading and writing disabilities expert at NIH. "If you're not actively looking for it, you can miss opportunities to intervene early."

Each learning disability has its own signs. A child with a reading disability may be a poor speller or have trouble reading quickly or recognizing com-



mon words. A child with a writing disability may write very slowly, have poor handwriting, or have trouble expressing ideas in writing and organizing text. A math disability can make it hard for a child to understand basic math concepts (like multiplication), make change in cash transactions, or do math-related word problems.

Learning difficulties can affect more than school performance. If not addressed, they can also affect health. A learning disability can make it hard to understand written health information, follow a doctor's directions, or take the proper amount of medication at the right times. Learning disabilities can also lead to a poor understanding of the benefits of healthy behaviors, such as exercise, and of health risks, such as obesity. This lack of knowledge can result in unhealthy behaviors and increased chances for disease.

Not all struggling learners have a disability. Many factors affect a person's ability to learn. Some students may learn more slowly or need more practice than their classmates. Poor vision or hearing can cause a child to miss what's being taught. Poor nutrition or exposure to toxins early in life can also contribute to learning difficulties.

If a child is struggling in school, parents or teachers can request an evaluation for a learning disability. The U.S. Individuals with Disabilities Education Improvement Act requires that public schools

provide free special education support to children, including children with specific learning disabilities, who need such services. To qualify for these services, a child must be evaluated by the school and meet specific federal and state requirements. An evaluation may include a medical exam, a discussion of family history, and intellectual and school performance testing.

Many people with learning disabilities can develop strategies to cope with their disorder. A teacher or other learning specialist can help kids learn skills that build on their strengths to

continued on page 2

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continued from page 1

counter-balance their weaknesses. Educators may provide special teaching methods, make changes to the classroom, or use technologies that can assist a child's learning needs.

A child with a learning disability may also struggle with low self-esteem, lack of confidence, and frustration. In the case of a math learning disability, math anxiety may play a role in worsening math abilities. A counselor can help children use coping skills and build healthy attitudes about their ability to learn.

"If appropriate **interventions** are provided, many of these challenges can be minimized," explains Dr. Kathy Mann Koepke, a math learning disability expert at NIH. "Parents and teachers should be aware that their own words and behavior around learning and doing math are implicitly learned by the young people

around them and may lessen or worsen math anxiety."

"We often talk about these conditions in isolation, but some people have more than one challenge," Miller says. Sometimes children with learning disabilities have another learning disorder or other condition, such as attention deficit hyperactivity disorder (ADHD).

"ADHD can be confused with a learning problem," Vitiello says. ADHD makes it difficult for a child to pay attention, stay focused, organize information, and finish tasks. This can interfere with schoolwork, home life, and friendships. But ADHD is not considered a learning disability. It requires its own treatments, which may include behavior therapy and medications.

"Parents play an important role in treatment, especially for children in elementary school," Vitiello says. Medications and behavioral interventions are often delivered at home. Teachers can usually advise parents on how to help kids at home, such as by scheduling appropriate amounts of time for learning-related activities. Parents can also help by minimizing distractions and encouraging kids to stay on task, such as when doing homework. Effective intervention re-



Web Links

For more about learning disabilities, click the "Links" tab at: newsinhealth.nih.gov/issue/Sep2016/Feature1

quires consistency and a partnership between school and home.

Many complex factors can contribute to development of learning disabilities. Learning disorders tend to run in families. Home, family, and daily life also have a strong effect on a child's ability to learn starting from a very early age. Parents can help their children develop skills and build knowledge during the first few years of life that will support later learning.

"Early exposure to a rich environment is important for brain development," Mann Koepke says. Engage your child in different learning activities from the start. Before they're even speaking, kids are learning. "Even if it's just listening and watching as you talk about what you're doing in your daily tasks," she says.

Point out and talk with children about the names, colors, shapes, sizes, and numbers of objects in their environment. Try to use comparison words like "more than" or "less than." This will help teach your child about the relationships between things, which is important for learning math concepts, says Mann Koepke. Even basic things, like getting enough sleep and eating a healthy diet, can help children's brain development and their ability to learn.

NIH is continuing to invest in research centers that study learning challenges and their treatments, with a special focus on understudied and high-risk groups.

Although there are no "cures," early interventions offer essential learning tools and strategies to help lessen the effects of learning disabilities. With support from caregivers, educators, and health providers, people with learning disabilities can be successful at school, work, and in their personal lives. ■



Wise Choices Signs of a Learning Disability

Consider talking with your doctor if you notice these signs:

- difficulty with reading and/or writing
- problems with math skills
- difficulty remembering
- trouble following directions
- difficulty with concepts related to time
- problems staying organized



Definitions

Interventions

Actions taken to prevent or treat a disorder or to improve health in other ways.

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Curb Your Eating

Help Your Brain Fight the Urge to Splurge

Ever tried to eat just one potato chip, or take just one bite of chocolate cake? It may feel impossible. A little nibble triggers an urge to eat more. Some people feel driven to keep eating to the point where the food's no longer enjoyable. You know the resulting weight gain will harm your health. So why do you keep eating when it's not in your best interest?

Out-of-control behaviors around food can look and feel remarkably similar to an addiction to drugs and other substances. In fact, imaging studies have shown that addictive drugs can hijack the same brain pathways that control eating and pleasurable responses to foods. NIH-funded researchers are closely studying the biology of overeating to try to find new ways to help people curb these out-of-control behaviors.

"There's an addictive element to foods—especially high-fat, high-sugar foods—that drives many of us to overeat," says Dr. Nora Volkow, director of NIH's National Institute on Drug Abuse. She's been studying the brain's role in drug addiction and obesity for more than 20 years. Volkow and other scientists have found that high-calorie foods, like addictive drugs, can trigger the brain's reward system, releasing brain chemicals such as dopamine that make you feel terrific. So it's natural to want more. In fact, wanting more helped early humans survive.

"Our brains are hardwired to respond positively to foods that have a high content of fat or sugar, because these foods helped our ancestors survive in an environment where food was scarce," Volkow says. "In today's society, though, highly rewarding foods are everywhere. And our brain's reward system for foods is now a liability."

Seeing, smelling, tasting, or even hearing certain cues—from food ads on the radio to the smell of cinnamon buns in a shopping mall—can make us crave fattening foods when we're not even hungry. Brain studies show that food cues can be especially strong in people who are obese or at risk for weight gain. In one NIH-funded study, volunteers who had a heightened brain response to a sip of a milkshake when they weren't hungry were more likely to gain weight a year later.

While some brain areas drive us to seek sweets and fatty foods, other regions at the front of the brain can help us control our urges. We can help our "rational" brain regions take control by avoiding tasty temptations and developing healthy habits.

"Each of us should be aware if there are certain foods that we can't



stop eating once we start. Avoid having them at home. Don't buy them or start eating them, because that might trigger binge eating," Volkow says.

Make healthy eating a part of your everyday routine by swapping unhealthy habits with healthy ones. Eat fruit instead of cookies as a daily dessert, or have a mid-day snack of crunchy carrots instead of potato chips. Instead of walking directly to the refrigerator after work, take a walk through your neighborhood. Over time, healthy habits can become wired in your brain. You'll do them without even thinking.

"Childhood and teen years are ideal times to develop healthy habits," Volkow says. "Healthy eating habits will help protect them in the future against the diseases associated with obesity." ■



Wise Choices Control Your Eating

- **Stick to a shopping list.** It helps to shop when you're not hungry.
- **Remove temptation.** Don't bring high-fat or sugary foods into your home.
- **Change your surroundings to avoid overeating.** For example, don't eat while watching TV. Meet friends in places that don't serve food.
- **Use smaller plates.** We tend to eat most of what's on our plates, no matter the size.
- **Don't reward successes with food.** Choose other rewards you'll enjoy, like a movie, a massage, or personal time.
- **Seek help.** Ask friends and family for support. Consider enrolling in a class or program.
- **Forgive yourself if you overeat.** We all have occasional setbacks.



Web Links

For more about out-of-control eating, click the "Links" tab at:
newsinhealth.nih.gov/issue/Sep2016/Feature2

Health Capsules

For links to more information, see these stories online:
newsinhealth.nih.gov/issue/Sep2016/Capsule1

Preschoolers Benefit from Peanut Allergy Therapy

An experimental treatment protected many preschoolers from having an allergic reaction to eating peanut. The promising approach may one day stop peanut allergy in its tracks.

Peanut is one of the most common causes of food allergies. A peanut allergy usually starts in childhood and lasts a lifetime. Allergic reactions to peanut can be mild, but sometimes they're severe and life-threatening.

Avoiding peanut is the best way to prevent an allergic reaction. But it's hard to steer clear of peanut. It can be hiding in foods you might never suspect.

An NIH-funded study enrolled 40 young children (about 9 months to 3 years old) who were newly diagnosed

with a peanut allergy. The treatment, called oral immunotherapy, involved eating a small amount of peanut protein every day. The daily amount slowly increased over time. The children were randomly assigned to get either a high- or a low-dose treatment. A group of 154 peanut-allergic children who avoided peanut were studied for comparison.

After about 29 months of treatment, the children stopped eating peanut for 4 weeks before eating peanut again. Overall, almost 80% of treated kids could eat peanut with no allergic response. Only 4% of the control group successfully reintroduced peanut into their diet. Scientists continue to monitor the children to see

how long the treatment effects last. "This study provides critical evidence supporting the safety and effectiveness of peanut oral immunotherapy in treating young children newly diagnosed with peanut allergy," says Dr. Marshall Plaut, a food allergy expert at NIH.

The experimental treatment is still being tested in clinical trials. It should only be given under a doctor's care. Never give peanut products to a child who has peanut allergy. It could cause a dangerous reaction. ■

Be Sweet to Your Feet

Your feet work hard to get you where you need to be. But years of wear and tear can be rough on them. So can disease, bad circulation, poorly trimmed toenails, and wearing shoes that don't fit.

So be kind to your feet. Exercise, especially walking, is a great way to increase blood flow, which helps your feet stay healthy. Try simple foot exercises, such as sitting and rotating your ankles one way, then the other.

Foot problems are sometimes the first sign of more serious medical conditions such as arthritis, diabetes, and nerve or circulatory disorders. Check your feet often, looking for cuts, blisters, or ingrown toenails. Talk with a doctor if you notice numbness or severe pain in your feet. ■



Wise Choices Tips for Happy Feet

- Wash your feet regularly, especially between your toes.
- Wear clean socks.
- Wear well-fitting, comfy shoes.
- Wear shoes when you're outside.
- Put your feet up when you're sitting, to help circulation.
- If you're sitting for a long time, stand up and move around every now and then.
- If you cross your legs when sitting, reverse or uncross them often.

More at go4life.nia.nih.gov/tip-sheets/foot-care



Featured Website It's a Noisy Planet. Protect Their Hearing.

www.noisyplanet.nidcd.nih.gov

Kids and teens are often exposed to noise levels that could permanently harm their hearing over time. Learn about the causes of noise-induced hearing loss and how to prevent it, so your kids—and you—can have healthy hearing for life.



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