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See, Hear, Speak Are Kids' Senses Ready for School?

When setting off for kindergarten or first grade, a child may feel prepared with a backpack loaded with crayons, pencils and paper. But a good start in the classroom depends on more than just school supplies. Healthy hearing, vision, speech and language are key to success at school. If a child has problems in these areas, the sooner they're spotted, the better they can be treated.

Sometimes problems with senses, speech or language can fly under the radar. A child with a lazy eye or a little hearing loss might get along just fine at home or in daycare. But when children get to school, minor difficulties may start to catch up with them. They may have trouble focusing and flourishing in the classroom. NIH-funded scientists are searching for better ways to recognize and treat these types of problems as early as possible.

Permanent hearing loss used to be caught around age 2. Now newborns are screened for hearing loss before leaving the hospital. When problems are diagnosed, most children are fitted with hearing aids in the first few months of life.

But hearing problems can also arise in older kids. "Some children can be born with normal hearing and develop hearing loss later for various reasons," says Dr. Mary Pat Moeller, who studies childhood deafness and language development at Boys Town National Research Hospital in Nebraska. Head injuries and meningitis are just a few conditions that can lead to later hearing loss.

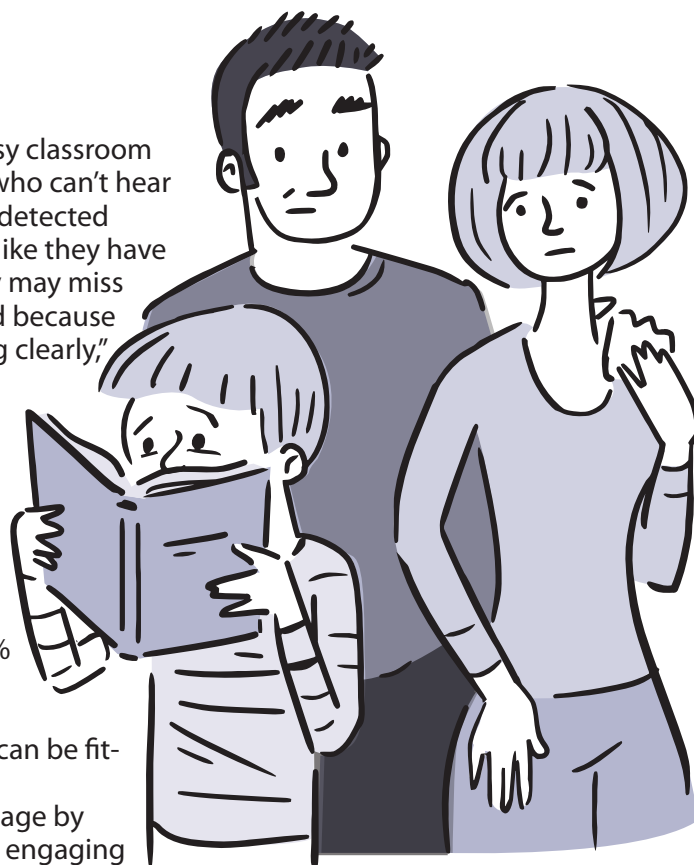
"We rely on normal hearing to pick up concepts and learn new words,"

Moeller says. But a noisy classroom can be tough for kids who can't hear well. "Children with undetected hearing loss may look like they have attention deficits. They may miss what they've been told because they're just not hearing clearly," Moeller says.

Screening for hearing loss in school-age kids is a familiar process. Children wear headphones and raise their hands as they hear a series of tones. Some 5% to 10% of school-age children don't pass these tests. Kids with hearing loss can be fitted with hearing aids.

Children learn language by listening to others and engaging in conversations. But kids with hearing loss can miss out on some of this experience. Moeller and her colleagues are studying how children with hearing loss develop language. Early results from this NIH-funded research point to several factors that can help. These include the quality and fit of hearing aids, how often kids get speech and language training and how often parents have conversations with their children.

A different source of language problems is a disorder called specific language impairment. The condition affects an estimated 7% of children in kindergarten. Kids with specific language impairment have trouble learning new words and engaging in conversation. They might produce grammatically incorrect sentences like "What he want for dinner?" or



they might have a small vocabulary. "Both of those are fundamental to being able to communicate with the teacher, to understanding what the teacher is saying to them, and to forming social relationships with their peers," says Dr. Mabel Rice, an NIH-funded researcher who studies childhood language disorders at the University of Kansas.

For example, a child with specific language impairment might not understand that "It's time to put your

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things away now” means “Put your things away.” Children who don’t understand complicated sentences can seem like they’re disobedient, Rice says. More complicated grammar is also good for making friends. Saying “I would like it if you’d come play with me” might attract more playmates than “Come over here.”



Wise Choices Signs of Eye, Ear, Language Problems

Talk with a health care provider if your child:

- doesn’t respond consistently to sounds or to his or her name.
- asks for things to be repeated or says “huh?” a lot.
- turns the volume up on the TV and other electronic devices.
- speaks unclearly.
- has trouble following spoken directions.
- leaves words out of sentences when talking.
- uses tenses (past, present and future) improperly.
- has trouble catching balls or seeing distant objects.
- has eyes that cross or point outward.
- avoids close work or holds books too close when reading.
- complains of eye discomfort, headaches or blurred vision.

In the past, parents were sometimes blamed for a child’s language disability. They might have been faulted for not reading enough to their children. But research suggests that specific language impairment has other roots. The disorder tends to run in families, which hints that **genes** play a role. Rice led a study of over 300 people, including children with specific language impairment and their families. The scientists identified a gene that’s also linked to dyslexia and other learning disabilities. The finding might eventually lead to better understanding and treatment for these disorders.

Kids don’t usually grow out of specific language impairment. Their language improves, but they can continue to struggle with subtleties even after they enter the workforce. “It is very important to identify these kids, particularly at school entry or before school entry,” Rice says. Many school districts screen children for specific language impairment before kindergarten. Language therapy can help children catch up.

Poor vision can also cause trouble in school, and the problems may go unnoticed. About 1 in 10 preschoolers has a vision problem, but kids don’t always tell others about their



Definitions

Genes

Stretches of DNA, a substance you inherit from your parents, that define characteristics such as how likely you are to get certain diseases.



Web Links

For more about hearing, language and vision at school, click the “Links” tab at: <http://newsinhealth.nih.gov/issue/Sep2012/Feature1>

symptoms. Kids might even think it’s normal to see double or for things to be blurry. But poor eyesight can cause headaches and hinder reading. Some children with vision problems might seem to have attention difficulties, since eyestrain and headaches can make it hard to stay on task.

The most common cause of vision impairment in children is amblyopia, or lazy eye. It often arises if the eyes point in different directions, or if one eye produces a better image than the other. The brain starts to shut down signals from the weaker eye. Treatment encourages use of the weaker eye, sometimes by putting a patch over the other eye. NIH-funded research has found that treatment for amblyopia is more effective if begun when a child is young.

Some children are farsighted—they have trouble focusing on up-close items. It’s less common for youngsters to be nearsighted, with problems focusing on faraway objects like the chalkboard.

To catch problems early, NIH funded a study of thousands of preschoolers to find the best ways to screen for impaired vision. “How often screening is done and what screening is done varies widely from state to state,” says Dr. Marjean Kulp, a vision researcher at Ohio State University.

The study evaluated different tests and identified a few that could best detect vision problems—even when performed by people who aren’t vision specialists.

Screenings only identify potential problems, and they don’t catch everything. Children should have regular exams by an eye care professional.

Early detection and treatment of hearing, vision and language problems can give kids a better learning experience. ■

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Safe Driving for Distracted Teens

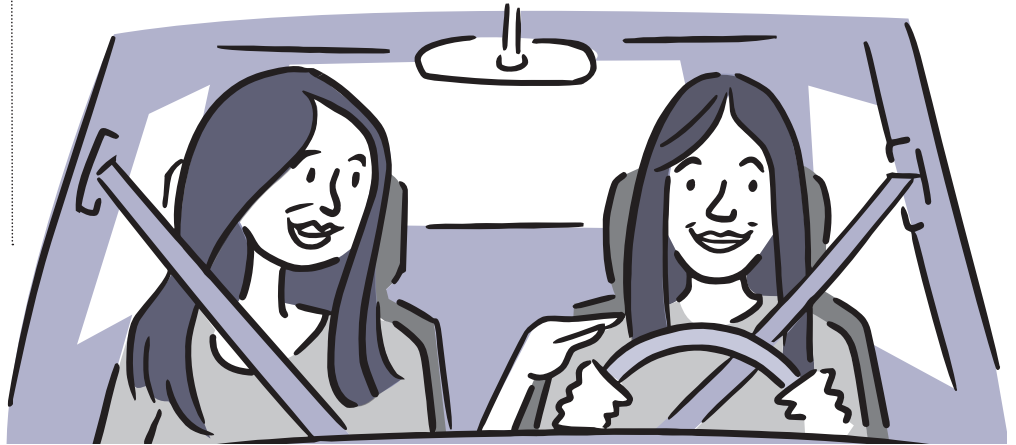
Steering in the Right Direction

Learning to drive is a milestone in a young person's life. Driving can bring freedom, especially in areas with little public transportation. But it also has its downside. Mile for mile, teenagers are involved in 3 times as many fatal crashes as more experienced drivers. Crashes are the leading cause of death for 16- to 20-year-olds nationwide. What makes young drivers more vulnerable to accidents and injuries than older drivers? And what can we do to reduce their risk? NIH-funded researchers are looking for some answers.

The highest risk for teens comes during the first 6 months that they have their licenses. Risk remains high until at least their early 20s. Studies show that teens can face a double challenge when getting behind the wheel. They're not only young, and so lack maturity; they're also inexperienced—a main cause of crashes. Decision-making and impulse control continue to develop well into their 20s as they gain experience and their brains mature fully.

Dialing or texting while driving is never safe. But when teens dial or text while driving, they are 5 to 6 times more likely to crash than adults. Adolescents are also less able to recognize and respond to road hazards. For instance, research shows that experienced adult drivers typically prepare to brake on the chance that a pedestrian might enter a crosswalk. Teens may look, but they often fail to recognize a hazard and slow down.

"It can be a situation with a perfectly reasonable, normal kid who



makes a mistake when in a vehicle, and that can be lethal," says Dr. Bruce Simons-Morton, an NIH expert in adolescent behavior and prevention research. "It only takes one instance of inattention at just the wrong time."

Learning to drive safely takes years of practice, Simons-Morton adds. "The dilemma is that teens only learn by driving, but the more they drive the greater their risk."

One solution is to limit the conditions under which teens are allowed to drive. All 50 states have laws that grant privileges to new drivers in phases—known as graduated licensing programs. Most require new drivers to hold a learner's permit for 6 months before getting a license and have a minimum number of supervised practice driving hours.

Research has shown that these graduated programs can dramatically reduce the rate of fatal crashes. "We encourage parents to set limits that are stricter than the graduated driver licensing programs," says Simons-Morton. It's also important for parents to ride with teens as much as possible when they practice. The presence of an adult passenger can reduce teenage driver crashes and near-crashes by 75%.

Simons-Morton and other NIH-funded scientists have developed a

program called Checkpoints, which helps parents to set safe limits for the first year after teens are licensed. The program restricts driving under risky conditions: at night, with other teens in the car, during bad weather and on high-speed roads. Learn more about the Checkpoints program at www.saferdrivingforteens.org.

Help your teen be a responsible driver. By setting reasonable limits, you can help young drivers travel the roadways safely. ■



Wise Choices Safe Driving for Teens

- Limit driving under risky conditions, such as at night and in bad weather.
- Limit teen passengers, especially ones that engage in risky behaviors.
- Don't tolerate texting or dialing while driving, driving after drug or alcohol use, or riding with a driver who has used drugs or alcohol.
- Make sure new drivers and their passengers always wear seat belts.



Web Links

For more information about teen driving, click the "Links" tab at:

<http://newsinhealth.nih.gov/issue/Sep2012/Feature2>

Health Capsules

For more information, click "Links" in these stories online:
<http://newsinhealth.nih.gov/issue/Sep2012/Capsule1>

Household Mold Linked to Asthma in Children

Three types of mold were more common in the homes of babies who later developed asthma. The finding highlights how important it is to prevent water damage and mold growth in homes with infants.

Asthma affects more than 6 million children nationwide. Previous studies have linked childhood asthma to indoor mold, which can thrive in homes with moisture problems. The connection between mold and asthma, however, is complicated and not fully understood. Asthma is often associated with allergies, and molds release tiny particles into the air that can cause allergic reactions.

To learn more about the link between mold and childhood asthma, researchers visited the homes of nearly 300 infants who were about 8 months old. The scientists looked and smelled for evidence of mold. They also measured levels of 36 different

types of mold in dust samples from each home.

Once the kids reached age 7, the researchers found, nearly 1 in 4 had developed asthma. The risk of asthma was greater for kids whose original homes had higher "mold scores."

Three particular species of mold were most associated with asthma. These species—*Aspergillus ochraceus*, *Aspergillus unguis* and *Penicillium variable*—are common to water-damaged buildings.

Sometimes homes that at first seemed to have no mold had high mold scores according to the dust sample analyses. Other studies have found that many homes with high mold scores have undetected mold problems. Fixing these problems can improve asthma in children.

The link between the 3 molds and asthma doesn't prove that the molds cause asthma on their own.

But it does provide evidence that indoor mold can contribute to the development of asthma.

"Previous scientific studies have linked mold to worsening asthma symptoms, but the relevant mold species and their concentrations were unknown," says lead researcher Dr. Tiina Reponen of the University of Cincinnati. Preventing home water damage and growth of these molds might help relieve some problems with asthma. ■

Video Looks at the Science of Yoga

Millions of people in the U.S. roll out their mats to practice yoga. They work on physical postures, breathing exercises, and meditation or relaxation techniques. Scientists, meanwhile, are studying how this mind and body therapy can affect your health and well-being.

A new online video from NIH sheds light on the research and science behind the practice of yoga. It highlights some of the latest studies examining how yoga affects your health, particularly difficult-to-treat

problems such as chronic low back pain. Viewers can also learn about research into the safety of yoga and how certain yoga poses specifically affect a person's body. The video offers valuable "dos and don'ts" for people who are thinking about practicing yoga.

To watch the video, *Scientific Results of Yoga for Health and Well-Being*, go to <http://nccam.nih.gov/video/yoga>. This is the second installment in the NIH-produced "The Science of Mind and Body Therapies" video series. ■



Featured Website

52 Weeks for Women's Health

<http://52weeks4women.nih.gov/>

A new, easy-to-use mobile app and website offer a year's worth of practical, research-based health information for women. Each week highlights a new topic to guide you toward a healthier lifestyle. Personal records and goal-setting features can help you stay on track. You can download the mobile app to iPhone, iPad or Android devices.



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