You're alone in your room on a dark night. Suddenly you hear a loud "Thud!" You jerk the covers over your head. Your heart is racing and your palms are sweating. After a few seconds you are calm enough to look around. You discover the source of the noise and breathe a sigh of relief. It was just a book that slipped off your shelf.

Fear is one of our strongest emotions, and for good reason. The ability to identify things that can hurt us is important for human survival. Our ancient ancestors would not have made it far if they didn't have a system to handle deadly threats, from poisonous snakes to falling...
trees, says Kevin Ochsner, a **neuroscientist** at Columbia University in New York.

But when we aren't in any real danger, some frights can become frightfully fun. Writer R.L. Stine takes advantage of that idea to craft spooky tales that thrill kids. He's the author of the hit series Goosebumps. “I've always called my books 'safe scares,' kind of like a roller-coaster ride,” says Stine. “There are twists and turns, but you get off safe in the end.”

For years, Stine's stories of evil dummies, haunted masks, and monster-size hamsters have sent chills down kids' spines. Now, *SuperScience* investigates why we cringe when things go bump in the night.

**FEAR FACTORS**

Deep inside your brain are two almond-shaped structures called the **amygdala** (uh-MIG-du-la), one on each side of your brain. “The amygdala is like an early-warning detection system,” says Ochsner. These structures are on constant lookout for potential dangers.

Things that scare you—loud noises, spiders, or even pop quizzes—set off alarm bells in the amygdala. Almost instantly, the structure signals your body to release **hormones** into your bloodstream. These chemical messengers cause your breathing to quicken, your heart to pump more blood, and your muscles to tense. All of these changes prepare your body to protect itself against a threat as part of your **fight-or-flight** response.

The decision to confront a threat or run away has to be made fast! So the emotion-controlling amygdala takes over. Your **prefrontal cortex**, a reasoning part of the brain located behind the forehead, doesn't even have time to register what is going on.

If the reasoning centers of your brain determine the “danger” was a false alarm, they will rein in the amygdala to tell your body to calm down. But that initial rush of energy—the brain’s response to fear—is why some people love being frightened by books, movies, or practical jokes.

When Stine asks kids what they like best about his books, he always gets the same reply. “Kids tell me that they like to be scared,” says Stine. Many people enjoy the excitement they get from taking risks.

**SCARE TACTICS**

The key to scaring readers silly, says Stine, is getting kids to imagine themselves in the place of a book’s main character. That way it feels like

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**Words to Know**

**Neuroscientist**—A scientist who studies how the brain works.

**Amygdala**—Two almond-shaped structures in the brain that process emotion, especially fear.

**Hormones**—Chemical messengers that control body functions.

**Fight or Flight**—The body’s physical response to a stressful event.

**Prefrontal Cortex**—The part of the brain that plays a role in thought, perception, and memory.
they are experiencing the thrills firsthand. After having written 100 Goosebumps books, “the big challenge now is to come up with new scares and new kinds of surprises,” says Stine.

Some of Stine’s stories may give certain readers the creeps more than others. The reason: What we are afraid of depends on our personal experiences. When we encounter something scary, the brain stores away a memory of the event. This system teaches the brain what to be fearful of.

Luckily, there are ways to overcome the things that fill us with dread. Facing your fears and thinking them through is one way to get them under control. Books like Stine’s may help too. “Stories where scary things are happening to people who come out okay can help kids learn that they too can get over their fears,” says Ochsner. —Cody Crane

WHAT IS A PHOBIA?

A phobia is an extreme fear that won’t go away. A person may develop a phobia after having a bad experience with a certain object, activity, or situation. Doctors can help people overcome their phobias by gradually exposing them to the thing they are frightened of. That way the person comes to realize that what they are scared of can’t harm them. There are hundreds of phobias. Here are a few of the most common ones:


**Claustrophobia** (clawstroh-OH-be-uh): Fear of being confined in a small space.

**Nyctophobia** (nyecktoh-OH-be-uh): Fear of the dark.

**Trypanophobia** (try-pahn-OH-be-uh): Fear of needles.

**Aerophobia** (air-OH-be-uh): Fear of flying.