mystery science

# Grades K-5
# Mini-Lesson: “Why do some people get carsick?”

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# VIDEO TRANSCRIPT

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## VIDEO 1

Hi, it's Doug. Do you get car sick? I don't really, but my daughter Mira does. A few years ago, we were going on a road trip up into the mountains of Northern California. It started out fine, but then once we got up into the windy mountain roads, Mira started to not feel so well. She felt dizzy and then like she had to throw up. But almost as soon as we got there and then when she got out of the car and started walking around, she felt fine again. So carsickness isn't just unpleasant, it's a weird thing too, where you can almost feel fine as soon as you get out of the car. Someone named Felix has a question about this. Let's give Felix a call now.

**[Video Call]**

- Hi, Doug!

- Hi, Felix!

- I have a question for you. Why do people get car sick?

- Oh, that's a great question.

You may have noticed that it's not just riding in cars that can make you feel carsick. Some people get that dizzy, queasy feeling in other places too, such as riding buses, riding roller coasters, or flying in airplanes. In fact, I was surprised to find out that people all over the world have been feeling what we call carsick since long before cars were even invented. People in

ancient Greece, Rome, and China all wrote about feeling sick to their stomachs when they traveled in carts or sailed on ships as early as 2,000 years ago. So what do riding in a car, sailing on a ship, and going on a roller coaster ride have in common? You might notice that they all have to do with movement or motion. The word we use to describe this whole category of feeling sick is motion sickness, but that still doesn't answer the question. Why would being in motion make someone sick? To answer that question, it might help to wonder the opposite. Why certain kinds of motion don't make people feel motion sick and others do? After all, you don't get motion sickness from running, or jumping, or moving yourself in a wheelchair. Before I go on, I'm curious. Why do you think that some kinds of motion, like sailing on a boat, can make people feel sick while other kinds, like running, don't?

## VIDEO 2

Well, I don't know how you answered, but one thing you might notice is that all the situations where people get motion sickness are situations where they're not in control of their body's movement. If you run, for example, you're moving your body with your legs. You can control how fast you go if you move side to side or bounce up and down as you run. But when you're riding in the backseat of a car, the car is moving your body not you. You can be sitting completely still in the backseat and still be speeding down a road. Noticing this difference—that people only seem to get motion sick when their bodies were not in control of their movement—that led scientists to think that maybe motion sickness has to do with your senses. You probably know about at least five of your senses, sight, smell, taste, hearing, touch, and that there are different parts of your body for different senses. You know your eyes help you see, your nose helps you smell, your tongue helps you taste, and so on. These body parts send messages to your brain

about what your body is doing and experiencing. But would it surprise you to know that you have other senses besides these five? Lots of parts of your body send messages to your brain, your skin, muscles, joints, even a part of your body deep inside your ear, your inner ear, all send messages to your brain about where your body is in space and whether you're still or moving and how fast. When you're in control of your own movement, all of your senses are sending the same messages to your brain. Like, let's imagine you're running down a road. As you run, all your senses are telling your brain the same thing, I'm moving. Your joints and muscles tell your brain that your legs and arms are moving. You can see the ground moving beneath your feet and you feel the air rushing past you. Your brain isn't surprised by these messages, after all, you're the one making the movement happen. But when you're not in control of your own movement, now suddenly, there's a chance for your senses to send your brain different messages. For instance, instead of running down a road, let's imagine you're riding down that same road in the backseat of a car. As the car speeds forward and bounces up and down, your inner ear tells your brain that your body's moving. But what about your other senses? Think about what you see when you're riding in a car. If you look out the window, you might see the road moving by you. But if you look inside the car, you might see things that don't look like they're moving at all. Like, you might see your legs resting still on the seat or your seatbelt or the driver in front of you. Your eyes might be sending your brain signals that you're still, and at the same time, other parts of your body, you're sending your brain signals that you're moving. Scientists think that the confusion your brain experiences when it gets these mixed signals might be what makes you feel motion sick. If that theory is true, it points to a way that might help you feel better when you do get motion sickness. If you can get all of your senses to tell your brain that you're moving, that might help you feel better. How might you be able to do this? If you're in a car, maybe you could look straight ahead out the window so that you see the scenery

moving. Still, this trick doesn't work well for everyone and there's another thing too. Some people seem to get motion sickness much worse than other people. And some people don't get motion sick at all. If motion sickness comes from your senses confusing your brain with mixed messages, that doesn't really explain why that confusion makes some people feel sick, but not others, which is why some scientists think, maybe we still don't have all of this figured out yet. There may be some other pieces to this puzzle, or perhaps a different answer entirely, which we haven't figured out yet. Maybe one day, one of you will figure it out or even find a way to cure motion sickness for everybody. That's all for this week's question. Thanks, Felix, for asking it!