

Stay at Home Science



Tri-zonal Space Warper

What You Need

Tri-Zonal Space Warper Video
<https://youtu.be/zfl9R7aoky0>

What You Do

1. Prepare the video of the tri-zonal space warper to play full-screen.
2. Stare at the center of the spinning tri-zonal space warper for 60 seconds.
3. Quickly look at the back of your hand or another nearby object. *What do you notice?*
4. Now try this! Cover one eye with your hand and watch the tri-zonal space warper for another 60 seconds.
5. Switch to cover the other eye when you look at your hand. *Was the effect the same or different?*

Questions to ask

- *What did you notice happen after you stared at the tri-zonal space warper for 60 seconds?*
- *Why do you think this happened?*
- *Do you think the illusion is affecting your eyes or your brain? Why do you think so?*

What's the Science?

All nerve cells in your brain generate their electrical signals from a chemical reaction. If you keep asking those nerve cells to send the same signal for a long time they will run out of the chemical supply and become tired or fatigued. If you keep watching the spiral, then suddenly look at an object standing still, the nerve cells for one direction of motion are firing slowly because you have tired them out by staring at the spiral. Your brain overcompensates, causing you to see a standing object as expanding or contracting. How do you know if this effect happens in your eyes or brain? If the effect transfers eyes after watching with only one eye, then we know the effect must originate in the brain.

Try This

Use science vocabulary: Use related science words such as illusion, nerve cells, electrical signals as you talk and experiment together. Children learn new vocabulary words when they hear grown-ups use them in context.

Extend your experiments: Create a tri-zonal space warper of your own! Print out a copy of the illusion. Design, build and test a device to help make it spin – try using the cardboard from a cereal box, tape, and a pencil.

Keep in Mind

- Children are natural scientists; let them lead the way in their experimentation! Encourage them to ask questions and make suggestions only when they are stuck/discouraged.
- The order suggested is not the only right or perfect way. Adjust the activities based on the age, ability, and interests of the children.

Additional Resources

Tri-Zonal Space Warper Video: <https://youtu.be/G3SxAwmtYfl>

Scholastic StudyJams! The Senses: Seeing

<http://studyjams.scholastic.com/studyjams/jams/science/human-body/seeing.htm>

