

Cheshire Cat Illusion

Make a friend disappear, leaving only a smile behind.

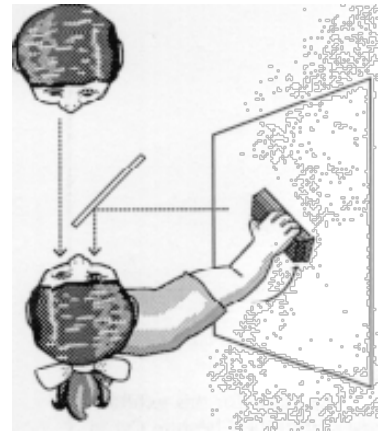
Under most circumstances, both of your eyes receive fairly similar views of the world around you. You fuse these views into a single three-dimensional picture. This activity lets you explore what happens when your eyes receive different images.

You will need the following:

A handheld mirror, approximately 4 to 6 inches (10 to 15 cm) on a side.

A white wall or other white surface (a classroom white board works well).

A partner.



Have a friend sit facing you about 4 feet away. Their face should be at the same height as yours. It will help if your friend is sitting very still against a plain, light-colored background (see the picture on the left above.) You should also try to keep your own head as still as possible.

Sit facing your friend so that the white board is on your right side. Hold the bottom of the mirror with your left hand, and put the mirror edge against your nose so that the reflecting surface of the mirror faces you. Hold it at a 45-degree angle toward the white surface. While keeping the mirror edge against your nose, rotate the mirror so that your right eye sees just the reflection of the white board while your left eye looks forward at the face of your friend. (see the picture on the right above.)

Move your hand in front of the white surface as if passing a blackboard eraser over the surface. As you look at your friend parts of their face disappear. In many cases only their smile will still be visible. Individuals vary greatly in their ability to perceive this effect; a few people may never succeed in observing it. You may have to try this several times. Don't give up too soon! Give yourself time to see the effect. The length of the effect will vary.

Hey, nothing happened for me!

Individuals vary greatly in their ability to perceive this effect. A few people may never succeed in observing it. If you have trouble seeing your friend's face disappear, one of your eyes might be stronger than the other. Try the experiment again, but this time switch the eye you use to look at the person and the eye you use to look at the wall.

What's Happening?

Normally, your two eyes see very slightly different pictures of the world around you. Your brain analyzes these two pictures and then combines them to create a single, three-dimensional image. In this effect the mirror lets your eyes see two very different views. One eye looks straight ahead at a person's face, while the other eye looks at the white wall or screen and your moving hand.

This illusion is another example of binocular rivalry - the competition between two different inputs coming from our eyes. Your brain tries to put together a picture that makes sense by selecting bits and pieces from both views. Your brain is very sensitive to changes and motion. Since the other person is sitting very still, your brain emphasizes the information coming from the moving hand, and parts of the person's face disappear. In this illusion our eyes see stimuli that are not equally interesting. The brain does not treat the two stimuli equally, and our perception does not switch evenly between the two. When one visitor waves his hand, it is the movement that attracts our attention. This becomes the dominant stimulus, while the face remains static. No one knows how or why parts of the face sometimes remain, but the eyes and the mouth seem to be the last features to disappear.

The lingering mouth gives rise to the name of this effect, The Cheshire Cat Illusion. This refers to the Cheshire Cat in Lewis Carroll's story *Alice's Adventures in Wonderland*. The cat disappears, leaving behind only its smile.





Alice came to a fork in the road.
"Which road do I take?" she asked.
"Where do you want to go?" responded the Cheshire cat.
"I don't know," Alice answered.
"Then," said the cat, "it doesn't matter."