

The rubber hand illusion

Which information is more important to the human brain: what we see or what we feel? Watch a psychologist trying to answer this question with a simple demonstration.

Tasks

Do the preparation task first. Then watch the video and do the exercises. You can also read the transcript.

Preparation task

Match the definitions (a–h) with the vocabulary (1–8).

Vocabulary

1. rubber
2. an illusion
3. my own; your own; etc.
4. to stroke something
5. simultaneously
6. to adopt something
7. to be overridden by something
8. to rewire

Definition

- a. to start using something new; to incorporate something
- b. to gently move your hand against something
- c. to change all the 'wires' (the electrical connections) in a house, machine or the human brain
- d. a flexible material, similar to soft plastic
- e. to become less important than another thing
- f. a false idea or situation
- g. happening at the same time
- h. something which belongs to me, you, etc.

Task 1

Are the sentences true or false? Circle the correct answer.

	Answer	
	True	False
1. The narrator says that the illusion is fun, but not scientifically important.	True	False
2. In the illusion, Larry first strokes the rubber hand and then strokes the real hand.	True	False
3. After stroking the two hands for a few minutes, the brain starts to prepare for a surprise.	True	False
4. The first volunteer says that the rubber hand starts to feel like her own hand.	True	False
5. The illusion shows that the brain prefers information from our eyes to information from our muscles.	True	False
6. Neuroplasticity is the name for the idea that the brain can be confused by plastic hands, feet, etc.	True	False
7. In some cases, the rubber hand illusion makes a permanent change to the brain.	True	False
8. Larry says that psychologists usually like strange things.	True	False

Task 2

Write the word from the box that best completes each sentence.

hopefully	simultaneously	surely	temporarily
-----------	----------------	--------	-------------

1. We're going to just stroke your fingers, the rubber finger and your real finger.
2., this will convince you that the rubber hand is your own, that your brain will actually adopt this hand.
3. Slowly but, you should feel that the hand you're looking at is actually part of your body.
4. The brain may be rewiring itself to adopt the plastic hand as its own.

Discussion

Would you volunteer to participate in this experiment? Can you describe any other unusual facts about the human body?

Transcript

Larry: Hi.

Eddie: Hi.

Larry: I'm Larry.

Eddie: Hi. Eddie.

Larry: Very nice to meet you, Eddie. We're going to do a little demonstration here called the rubber hand illusion. It's going to be a little scary ...

Narrator: This illusion may look like fairground fun but it reveals one of the most important new ideas in brain science.

Larry: ... Thank you. Right there. Good. And can you put this hand down right over here? And just curl it up like the rubber hand's curled up, a little bit. All right? Now, what I'm going to do is try to position the rubber hand, so it looks like it's your own.

Eddie: OK.

Larry: OK. Could you imagine that being your own hand, kind of?

Eddie: Yeah.

Larry: What we're going to do is we're going to just stroke your fingers simultaneously, the rubber finger and your real finger. And hopefully this will convince you that the rubber hand is your own, that your brain will actually adopt this hand.

Narrator: In the illusion, simply watching the rubber hand being stroked at the same time as the real hand is enough to trick the brain into adopting it as its own.

Larry: We like 'weird'.

(Eddie laughs)

Larry: And slowly but surely, you should feel that the hand you're looking at is actually part of your body.

Eddie: It feels like you're touching my hand with that one.

Larry: Right, so it feels like this is your hand that I'm touching, right?

Eddie: Yeah.

(Larry hits the rubber hand)

Eddie: Oh!

(both laugh)

Larry: Are you OK?

Eddie: Yeah! Yeah!

Larry: Good! Try that at home with your kids. Yeah!

Larry: The rubber hand illusion is a wonderful example of how multi-sensory perception can influence how we perceive our own body. I mean, that's how deep multi-sensory perception

runs. When you hold your hand out, it's generally thought that you know it's there because of the information you're getting from your muscles and your tendons and that sort of thing. But what the rubber hand illusion does is show how that can be overridden by visual information.

Larry: OK, here comes your fun surprise.

Narrator: The rubber hand illusion shows the powerful connection between what we see and what we feel. But it reveals even more than simply the way our senses are connected. It hints that a fundamental change in the brain is taking place.

(Larry hits the rubber hand)

Man: Oh!

(both laugh)

Larry: Isn't that strange?

Man: Yeah. That ... that's creepy.

Larry: So what might be going on in the rubber hand illusion is that the brain is actually changing to accommodate the new rubber hand, going through some sort of, you know, structural change that we call neuroplasticity.

Narrator: Neuroplasticity is an exciting new idea that suggests the brain can change in response to experience. And this is what's taking place in the rubber hand illusion. The brain may be temporarily rewiring itself to adopt the plastic hand as its own.

Larry: You're really feeling like it's your hand now, huh?

Woman: Yes.

Larry: Is that a little weird?

Woman: Yes.

Larry: Yeah, we like 'weird' in perceptual psychology. Here we go.

(Larry hits her hand, both laugh)

Larry: Was that scary?

Woman: Yes!

Larry: Good! We like that!

Answers

Preparation task

1. d
2. f
3. h
4. b
5. g
6. a
7. e
8. c

Task 1

1. False
2. False
3. False
4. True
5. True
6. False
7. False
8. True

Task 2

1. simultaneously
2. Hopefully
3. surely
4. temporarily