

**Host: Robert Frederick**

Hello and welcome to The Conjectural — an experiment to figure out a better way to decide what science news is and how we should talk about science. The data for this experiment? Your feedback to [TheConjectural.com](http://TheConjectural.com). I'm Robert Frederick. In this episode, a story about the mind-body connection, and putting your best face forward.



Do you know which side of your face is more attractive to other people? If you're right-handed, odds are that other people think the left side of your face is more attractive. And for centuries, when painting portraits, artists in Western Europe, for example, tended to paint more portraits of the left sides of people's faces than of the right sides by a ratio of two-to-one. And no one knows why. Could it be there's something about the left side of most people's faces that makes that side more attractive?

**Interviewee: James Schirillo**

My name is James Schirillo, I am a professor of psychology at Wake Forest University.

**Host: Robert Frederick**

James is studying this phenomenon with what he calls "real-life portraits" — or photographs. In doing so, James was looking to find more evidence of what's long been a conjecture in science: that different emotions are centered in different sides of the brain.

**Interviewee: James Schirillo**

You can see this very often and most clearly in people that have had strokes. Strokes are usually on one side of the brain versus the other. If you have a stroke of the right side, you often damage the pleasure centers of the brain, and what you end up with are people that are very depressed because the left side of their brain is regulating their emotional state. Consequently, if you get lucky — so to speak — and damage the left side of your brain and leave the right side intact, you end up with people that are very happy. They're not only happy, they often have something that is clinically called "laugh attacks," which means they will have periods in which they laugh and laugh and laugh, and actually can't control it and can't stop it in the same way that depressed people can't really stop their depression. They have what they have.

**Host: Robert Frederick**

As an experimental psychologist, James studies how the mind affects the body and how the body affects the mind. It's a specialty of psychology called "psychophysics."

**Interviewee: James Schirillo**

Psychophysics is the oldest study in psychology. It is when people became interested in questions of consciousness. And basically the term "psychophysics" means "psycho" — which implies the mind — and it's what they wanted to compare it to, which was "physics" — which meant the physics of the world, or what a physicist would study, and in essence, what we know of nature from the physicist's point of view.

**Host: Robert Frederick**

Well, it turns out there's something very physical that happens to your eyes when you see something that you also judge to be attractive. Yes, your eyes may get bigger, like you might have seen exaggerated in cartoons with characters' eyes literally popping out their heads. But no, the effect James studies is far more subtle. It appears to be entirely outside of conscious control, and it

happens so fast that you'd miss it. That's why we've come to the eye-tracking room here at Wake Forest university in Winston-Salem, North Carolina.



**Interviewee: James Schirillo**

This is the eye-tracking room, and in essence what we have in here are simply a couple pieces of equipment that measure how eyes move.

**Host: Robert Frederick**

The room is not much bigger than a closet, and so it's very cozy with the two of us in it along with the desktop computer and eye-tracking equipment.

*[in interview]* And it's a very fancy machine that does that work, right?

**Interviewee: James Schirillo**

Well it's a box, and the box actually makes a series of very interesting computations to measure both how the eye moves around, so I can get eye-movement measurements. And another thing that I get, sort of as a by product, is because it's looking at the eye and measuring how the eye is moving around, it's also looking at one's pupil.

**Host: Robert Frederick**

So it turns out that a person's pupils get bigger when viewing something attractive and smaller when viewing something unattractive. It's research that dates back to 1960, and, in part, James has been updating that research with modern methods and modern technology.

**Interviewee: James Schirillo**

For many of my pupil-measurement studies, I then measure at a thousand times per second the change of the pupil size. For the studies which have to do with how the pupil size changes in relation to various types of images that it views, I basically average over those thousand views per second — and make a, I'm basically making a 15-second recording of someone looking at a particular face.

**Host: Robert Frederick**

And that's more than enough time to look at someone's face and form a judgement about how attractive it is. And in one study, that's precisely what James asks his research subjects to do. What's new is that he then pairs those conscious ratings that people make about a picture's attractiveness with the unconscious, physiological measure of their pupil size when viewing those pictures.

Now, I have to interrupt at this point in the story, because unfortunately, for those of you who are left-handed, the results of this research applies only to right-handed people.

**Interviewee: James Schirillo**

I have all right-handed people who produced the pictures.

**Host: Robert Frederick**

So all the pictures of faces were of right-handed people, and the subjects?

**Interviewee: James Schirillo**

They're all right handed as well. And I selected for that simply because there were limitations in terms of how many subjects I could run. I used 40 subjects overall, and I didn't think I could find 40 left-handed subjects given our subject pool. It's a limitation of the study.

**Host: Robert Frederick**

That subject pool, the people who were having their pupil sizes measured, come from the university's introductory psychology classes.

**Interviewee: James Schirillo**

So they're mostly between the ages of 19 and 22. They all have normal vision — that really is the only requirement that we ask of them. Because we're using an eye-tracker, we could not use subjects that wore glasses. But they could wear contacts as long as their vision was normalized to 20-20.

**Host: Robert Frederick**

The study participants come into this room, sit on the chair in front of the desktop computer, put their chin on a chin rest and forehead against a brace so that their eyes stay the same distance away from the eye-tracking machine that sits next to the computer. Then, they look at the images on the computer screen.

**Interviewee: James Schirillo**

They are not body shots. They are just of the head. They are of the complete head. And they are images of people that average between 40 and 50 years old.

**Host: Robert Frederick**

To make those images that the 19 to 22-year olds looked at, James used two cameras to capture the left- and right-sides of the older people's faces simultaneously, getting a quarter-turn view of each side as the older people who were photographed were instructed to "smile as naturally as possible."

**Interviewee: James Schirillo**

So it wasn't a complete left side or a complete right side, but it was a side that would show both the mouth and the eye of both sides, but obviously predominantly of one side of the face. So it would be more of one eye, in fact, all of one eye, and only part of the other eye.

**Host: Robert Frederick**

So after the study participants — the 19 to 22 year olds — had looked at the images of the older people's faces for 15 seconds, they were then prompted to rate how pleasant they found each image, each face.

**Interviewee: James Schirillo**

Now you have to realize these are young people looking at older people, so the average — even though there were ten choices — was not a ten. It was closer to five. So they don't really think we're spectacular looking when we grow older.

**Host: Robert Frederick**

Now, James and co-author, Kelsey Blackburn, did all kinds of things to make sure that it wasn't the images themselves that were causing people's pupils to change size. That was a criticism of the 1960 study. So one thing they did in this study was to make all of the images grey-scale to control for variance in brightness and colors, which can affect pupil size. They also presented a very blurred image of each face first for 10 seconds to make sure the pupils were adjusted to the amount of light coming from the computer screen before revealing the clear image of each face. They also did something a little unusual: they used both the original images and their mirror-reversed images, flipped left for right.

**Interviewee: James Schirillo**

What we then do is take the difference between the image and the mirror-reversed image and we decide that that is the true viewing state that we want to measure because a picture and its reversed image always have the same contrast. That's not changing. So that's the first time that images and their reversed images have been able to be used in the study of images, basically.

**Host: Robert Frederick**

Then the participants saw the pictures randomly varied: left, right, male, female, mirror-reverse left, mirror-reverse right.

**Interviewee: James Schirillo**

So that someone might get a right side of a certain female's face, and then they would get the left side of either another male or another female's face, but it wouldn't be the same face in a row.

**Host: Robert Frederick**

And after each image, study participants rated how pleasant they thought the faces were.

**Interviewee: James Schirillo**

So what people like is left sides — the real left sides of faces.

**Host: Robert Frederick**

And that preference held whether people saw the left side of the face, or a picture of the left side of the face flipped, so it appeared to be the right side of the face. Because of this, James thinks something about the image, something about the left side of the face makes it different, makes it more attractive.

**Interviewee: James Schirillo**

The lefts and rights are different. This has been studied before with famous paintings by Rembrandt, who was able to, because he was such good artist and had such a good eye, capture the asymmetry in our faces. I can actually see it on my reporter's face, when he smiles. And we've come to know that this asymmetry in faces has to maybe do with the asymmetries in our brains. And the fact that the asymmetries in our brains, because they control the muscle groups, push the muscles around as we grow — you see it more and more as people age — and what's the conjecture for the last maybe 20 years, maybe 30 years has been that brains are asymmetrical in terms of the emotions that they regulate, and the notion has been that the right side of our brain controls more of the positive emotions...

**Host: Robert Frederick**

... and the left side of our faces...

**Interviewee: James Schirillo**

... and the left side of our brain controls more of our negative emotions.

**Host: Robert Frederick**

And the right side of our faces, so...

**Interviewee: James Schirillo**

My conjecture in my study, since subjects rated the left side more pleasing than the right side, is that they saw a bigger smile on the left side than they saw on the right side.

**Host: Robert Frederick**

And this rating of the left side as more attractive than the right side also revealed itself in the pupil sizes, too. The images that each participant thought were less attractive were correlated with smaller pupil sizes. And the higher the attractive rating, the bigger the pupil size.

**Interviewee: James Schirillo**

In essence, there's a relationship between what goes on in consciousness — we look at images, we rate them — and what goes on in our unconscious. One doesn't think, or at least in the science we don't think that we can consciously regulate the size of our pupil — it's an unconscious measure. So that makes it a psychophysical study and shows that we do have a relationship between what's going on on an unconscious level in our bodies and our conscious level of perceiving the world.

**Host: Robert Frederick**

Back at home, I do my best to put on a natural smile, and go look at myself in the mirror. For me, I'm somewhat ambidextrous, but I can still easily see the asymmetrical smile. Adjusting my smile on my right side to match that of my left, it feels somehow unnatural. Forced. It's something to keep in mind for those moments when I need to put my best face forward.

You've been listening to The Conjectural. Thanks to James Schirillo of Wake Forest University. Find us online at [TheConjectural.com](http://TheConjectural.com) where you can give feedback and support, download a transcript, and subscribe to the show. Follow me on Twitter [@TheConjectural](https://twitter.com/TheConjectural). I'm Robert Frederick. Thanks for joining us!