Perceiving is Believing - Crash Course Psychology #7

Crash Course: Psychology
https://youtube.com/watch?v=n46umYA_4dM
https://nerdfighteria.info/v/n46umYA_4dM

===== Introduction =====

"Every rose has its thorn"
"Only the good die young"
"Slow and steady wins the race"
and "What you see is what you get".

Except that in reality: several varieties of roses do not have thorns, both the good and the bad on occasion tragically die young, fast and steady beats slow and steady every time, and what you see is, well....

Our *perception*, or how we order the cacophonous chaos of our environment is heavily influenced, biased even, by our expectations, experiences, moods, and even cultural norms. And we can be pretty good at fooling ourselves.

In the last two lessons we've learned how we see shapes and colors, hear sounds, and smell and taste the world's chemical concoctions. But our senses mean little without our brain's ability to organize and translate that data into meaningful perceptions. Without perception, your mother's face is just a combination of shapes. Without the ability to interpret scent, we couldn't differentiate the smell of toast from a grease fire. Our perception is the process that allows us to make meaning out of our senses and experience the world around us. It's what makes life understandable. But also, it means that sometimes, what you see is not actually what you get.

===== Part One: Perceptual Set =====

So that was awesome, right? Upside down, I look like me. Right side up, I look like some kind of terrifying monster. Your brain isn't used to upside down faces, so it's basically just doing its best to put the pieces together. But it knows exactly what a right side up face should look like, and that is not it! Just one of thousands of examples proving that your brain does all the work of perception and your eyes really are just feeding raw data. It's important data, but it isn't actually what we see. What we see is the realm of the mind, not the eye.

What kind of bird do you see right now? A duck, right? But if I said: "What kind of mammal do you see?", a bunny probably would've popped out at you. Now, you should be seeing both of them popping back and forth. But likely, your brain wants to perceive the image related to whichever cue you first heard or whichever image is more familiar to you. By cueing "mammal" or "bird", I influenced your expectations and you saw what I wanted you to see. Pretty cool.

Your expectations are just one factor in your *perceptual set*: the psychological factors that determine how you perceive your environment. Sometimes, seeing is believing, but perceptual set theory teaches us that believing is also seeing.

Context is another factor in your perceptual set. If the duck bunny thing was pictured with Easter eggs all around it, you'd think bunny right away, which is kind of weird considering that of ducks and bunnies, one is actually much more likely to be near egg. It's not the bunny.

And that's an example of how *culture* is also an important part of our perceptual set. As much as our perceptions are affected by context and expectations, they're also swayed by our emotions and motivations. People will say a hill is more steep if they're listening to emo by themselves than if they're listening to power pop and walking with a friend.

Most of the time, your perceptual set leads you to reasonable conclusions, but sets can also be misleading or even harmful. They're the basis of tons of entertaining optical illusions. These two tables, for example, are the same size, but the positions of their legs make that impossible for you to believe until I lay them over each other. And while all the fooling of our visual perception can be fun, it also helps us understand how it works. Our minds are given a tremendous amount of information, especially through the eyes. And we need to make quick work of it: turning marks on a paper into words; blobby lumps into the face of a friend; seeing depth, color, movement, and contrast. Being able to pick out an object from all the other clutter around it seems so simple.

But we've come to discover that it is quite complicated, so complicated that we have a name for it: "form perception."

===== Part Two: Form Perception=====

Dig a neat little dynamic called the *figure ground relationship*. It's how we organize and simplify whatever scene we're looking at into the main objects, or figures, and the surroundings, or ground, that they stand our against. The classic "faces or vases illusion" is an example. Is it two faces against a white background or a vase against a black background? If you look long enough, you'll see that the relationship between the object and its surroundings flip back and forth, continually reversing. Sometimes white is the figure and black is the ground. That figure-ground dynamic, though, is always there.

The concept applies to non-visual fields as well. Say you're at a party, holding up the wall, and you're creeping on your crush across the room, trying to casually listen in on what they're saying. As the focus of your attention, that voice becomes the figure, while all the other voices jabbering about sports, beer pong, and Sherlock, and everything that doesn't have to do with that one beautiful person all becomes the ground. Now that your mind has distinguished figure from ground, it has to perceive that form as something meaningful.

Like, for one, that large shape on the couch is a person. And further, that person isn't just any person, but the specific unique person of your dreams. One way our minds shuffle all of these stimuli into something coherent is by following rules of grouping, like organizing things by proximity, continuity, or closure.

The rule of *proximity* for instance, simply states that we like to group nearby figures together. So instead of seeing a random garble of party-goers, we tend to mentally connect people standing next to each other. Like, there's the hockey team over there, and the debate team over there, and then you got the band geeks. Why are all these people at the same party?

We're also drawn to organize our world with attention to *continuity*: perceiving smooth, continuous patterns and often ignoring broken ones.

We also like *closure*, and not just after a break up. Visually, we want to fill in gaps to create whole objects. So here, we see an illusory triangle breaking the completion of these circles on the left. But just add the little lines, close up the circles, and you'll stop seeing the triangle.

Form perception is obviously crucial to making sense of the world, or, you know, a moderately interesting party. But imagine trying to navigate the world without depth perception.

===== Part Three: Depth perception=====

As you gaze upon your one true love, the image hits your retina in two dimensions. Yet somehow, you're still able to see the full three dimensional gloriousness of their form. You can thank your depth perception for that.

Depth perception is what helps us estimate an object's distance and full shape: in this case, a nice shape that is currently too far away from you. It is at least partially innate. Even most babies have it.

=====Part Four: Visual cues=====

We're able to perceive depth by using both binocular and monocular visual cues. *Binocular* cues, as the name gives away, require the use of both eyes. Because your eyes are about 2.5 inches apart, your retinas receive ever-so-slightly different images. You know, camera one, camera two. So when you're looking with both of your eyes, your brain compares the two images to help judge distance. The closer the object, the greater the distance between the two images, also known as the *retinal disparity*.

Retinal disparity's pretty easy to see, you just hold your fingers up and then you look past them, and suddenly you have four instead of two fingers. Because those left and right images vary only slightly, retinal disparity doesn't help much when it comes to judging far-off distances.

For that, we look to *monocular* cues to help us to determine the scale and distance of an object. These are things like relative size and height, linear perspective, texture gradient, and interposition.

Relative size allows you to determine that your crush is not supporting a tiny newborn chihuahua on their shoulder, but rather grown chihuahua behind them at the back of the room.

In the absence of a chihuahua or like object, you can also judge distances using your *linear perspective*. If you've ever made a perspective drawing in art class, you'll remember that parallel lines appear to meet as they move into the distance, just like the tiled floor. The sharper the angle of convergence, and the closer the lines are together, the greater the distance will seem.

And if you've ever looked out at a mountain range, or at a Bob Ross painting, you'll understand texture gradient as the cue that makes the first ridge appear all rocky and textured, but as your eye follows the ridges into the distance, they become less detailed.

And finally,our *interposition*, or overlap cue tells us when one object, (like this oaf here), blocks our view of something else, (your crush), we perceive it as being closer. And in this case, especially annoying.

So all these perceptual concepts can be demonstrated with a fixed image, but of course, life involves a lot of movement, at least if you're doing it right. We use *motion perception* to infer speed and direction of a moving object. Your brain gauges motion based partly on the idea that shrinking objects are retreating, and enlarging objects are approaching.

The thing is, your brain is easily tricked when it comes to motion. For instance, large objects appear to move much more slowly than small ones going the same speed. And in addition to organizing things by form, depth, and motion, our perception of the world also requires consistency, or as psychologists call it, *constancy*.

Perceptual constancy is what allows us to continue to recognize an object regardless of its distance, viewing angle, motion, or illumination. Even as it might appear to change color, size, shape, and brightness, depending on the conditions. Like we know what a chihuahua looks like, whether it looks like this, this, this, or this.

In the end, though, your perception isn't just about funky optical illusions, it's about how you understand the world and your place in it, both physically and psychologically. Your sensory organs pull in the world's raw data, which is disassembled into little bits of information and then reassembled in your brain to form your own model of the world.

It's like your senses are just collecting a bunch of Legos and your brain can build and rebuild whatever it perceives: a party, your crush, a duck, or a chihuahua. In other words, your brain constructs your perceptions.

===== Conclusion=====

And if you were correctly constructing your perceptions this lesson, you learned what forms your perceptual set, how form perception works, and the many visual cues that influence your depth perception.

Thank you for watching, especially to all of our Subbable subscribers who make this whole channel possible. If you'd like to sponsor an episode of Crash Course Psychology, get a copy of one of our Rorschach prints, and even be animated into an upcoming episode, just go to https://subbable.com/crashcourse.

This episode was written by Kathleen Yale, edited by Blake de Pastino and myself, and our consultant is Dr. Ranjit Bhagwat. Our director and editor is Nicholas Jenkins. The script supervisor is Michael Aranda, who is also our sound designer, and the graphics team is Thought Cafe.