Consciousness: Crash Course Psychology #8

Crash Course: Psychology
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===== Intro =====

Here's a riddle, my Hobbitses: What's something we all experience, all the time, that we can't really measure, and barely have words to define?

You can't hold it in your hand, or take a bite out of it. It isn't something you learn or practice; it just IS. Consciousness.

Every science has certain concepts that are so fundamental, yet abstract, that we have a hard time finding the appropriate words to describe them. Ask a physicist and they'll tell you energy and space defy simple definitions. Biologists know if something is alive, but have a harder time explaining what life actually is.

Ask a psychologist what consciousness is, and you'll get…you'll get a slippery answer. For the purposes of this conversation, we're going to actually loosely define *consciousness as our awareness of ourselves and our environment.* It's this awareness that allows us to take in and organize information from many sources and senses, at once. American psychologist William James thought of consciousness as a continuously moving, shifting, and unbroken stream, hence the term "stream of consciousness." Others think of it as the brain's roving flashlight, shining down an unbroken beam of light that highlights one thing, and then moves on to the next. The point is, your conscious experience is forever shifting--for example, right now hopefully you're focused on the words coming out of my mouth, but with a little shift - your mind might wander to how you really should shower today, and your chair is uncomfortable, and you suddenly have to pee, and can you believe what Bernice said?! Do I smell pizza?

HEY! EYES HERE! WE'RE LEARNING!

Beyond that moment-to-moment shifting, consciousness allows us to contemplate life, think about infinity, and ride a unicycle across a tightrope while juggling melons, at least in theory. Our consciousness helps us plan our futures, consider consequences, and reflect on the past.

It is both the most familiar, and the most mysterious part of our lives. It's kind of like The Force -- but for the little universes inside our heads.

[INTRO]

===== Post Theme (1:50) =====

Throughout our daily lives, we flit back and forth between various states of consciousness, including waking, sleeping, and various altered states. These can occur spontaneously, like dreaming, or be physiologically sparked, like a drug-induced hallucination, or be triggered psychologically, through meditation or hypnosis, for example. We're going to take the next three episodes to look closely at these different states of consciousness, but let's start with what it really means to be awake.

For centuries, scientists learned what they could about the brain solely through clinical observation. And they learned a lot, for sure, but with today's technology, we're actually able to see some of the structures and activity inside a living, working brain - its electrical, metabolic, and magnetic signatures displayed on screens for our wonder and amusement. The field of cognitive neuroscience is the study of how brain activity is linked with our mental processes, including thinking, perception, memory, and language. Like other kinds of neuroscience, it uses neuroimaging technologies to consider links between specific brain states and conscious experiences.

And there's more than one way to scan a brain. Structural imaging shows the brain's anatomy and is useful in identifying large-scale tumours, diseases, and injuries. In contrast, functional imaging shows us electromagnetic or metabolic activity in the brain, like blood flow, to let us observe correlations between specific mental functions and activity in particular brain areas. So, yes, neuroimaging has been revolutionizing the field of psychology, much like telescopes and microscopes did for astronomy and biology. But on the other hand, some of this technology is very new, and there's plenty of disagreement about how to interpret neuroimaging findings. Remember, correlation does not equal causation.

So, activity in a certain brain region while having certain kinds of thoughts might be useful to know, but it's not the end of the conversation. We've already talked a lot about how function is often localized in the brain and how everything psychological is simultaneously biological--so it stands to reason our thoughts and emotions could in part be illustrated by a bright flare on a dark screen. We've also collected a fair amount of evidence that we don't just have one layer of consciousness - a single tape playing various tunes - but rather, something more like two layers, each supported by its own personal bio-psycho-social pit crew. I'm talking about one of the dual process models of consciousness--the idea that our conscious, deliberate mind could be saying, look! a squirrel! while our implicit, automatic mind is simultaneously sub-processing like a computer: colour: brown, tail: bushy, movement: climbing, distance: 20 meters, association: my sister had a squirrel phobia as a child, implicit bias: I think that squirrels are ruining America. All of which might weigh upon my behaviour upon seeing the little guy. By some estimates, all your senses are scooping up nearly 11 million bits of information, EVERY SECOND.

And yet, you consciously register only about 40 at a time. So how do we keep focused and filter out all the chatter to actually get stuff done? With selective attention, of course! Selective attention is how we focus our consciousness on one particular stimulus or group of stimuli, effectively tuning out the rest.

Your consciousness is like a spotlight on a busy stage. There are other things going on around you that your automatic, subprocessor brain is covertly registering. But for those moments when you shine your spotlight, most of the other stimuli fall away. Try it at home!

Right now, you're consciously watching this lesson on consciousness. You probably don't notice the feel of your socks on your feet, or the tongue that's inside your mouth, always filling up your mouth with tongue! But as soon as I mention it, the spotlight of your attention turns to them, you feel those socks on your feet, and you're like wow!

It's weird that there's a tongue in my mouth! The classic auditory example of selective attention is the cocktail party effect. You could be in a room with 47 people jabbering away, and yet be able to concentrate your hearing on one conversation, tuning out the rest of the voices and background music.

But, if the couple next to you were to speak your name, suddenly your cognitive radar would light up and your attention would whip around to the sound of your name, probably trying to figure out if Bernice was talking behind your back again. Bernice!! This roving spotlight of selective attention is pretty handy most of the time, for spies and laypeople alike. But it can also be dangerous, if you're being dumb, and say, texting and driving. When you shift your primary selective attention from driving to OMG, LOLOLOLOLOL, you also unwittingly activate your selective inattention, which means that you failed to see that cyclist who you almost ran over, which would not only have ruined her life but also yours so DON'T TEXT AND DRIVE! In fact, when your full attention

is directed elsewhere, you'd be astounded by the scope of obvious things you fail to notice.

It's called inattentional blindness. You may have even already been subject to one of the most famous experiments of inattentional blindness...the Invisible Gorilla or, sometimes, the Moonwalking bear. Just Google either of those things if you want to be tested on your awareness and then come back. Pretty great, right?! Given the prompt to count the number of passes one team makes, your consciousness is focused on following the players and the ball, nothing else.

You don't see the players in black, they're the distraction... also you certainly don't see the dancing gorilla...or bear...whichever one. The original version of this experiment found that about 50% of people didn't notice that there was A GORILLA WALKING THROUGH THE ROOM! THAT is how powerfully selective our attention can be. Something to remember next time you're behind the wheel. But you know who understands and exploits inattentional blindness better than anyone? Magicians! Except they call it misdirection. Famous modern magician Teller, of Penn and Teller, says "Every time you perform a magic trick you're engaging in a experimental psychology." And we can't help but be rubes. Magicians also prey on our change blindness, the psychological phenomenon in which we fail to notice changes in our environment.

And no, I don't mean climate change. I mean the failure to recognize the difference between what was there a moment ago, versus what is there now. For example, I have changed shirts several times since this lesson started. In a well-known and often-copied experiment, sometimes called the "person swap," an experimenter will stop someone in a park and ask for directions. And then, during some staged interruption, the original experimenter will leave and be replaced with a totally different person.

Half the time, the subject doesn't even notice. Fun! One of the many perks of studying psychology with me is you learn all kinds of new ways to mess with people! But while change blindness makes for some really cool parlor tricks, this failure to notice certain things can be dangerous -- say, faulty memories lead to false eyewitness testimonies in court, or when friends get deadlocked in a he-said, she-said disagreement. So, my friends, use The Force. But use it wisely. As one of my favorite psychologists once advised: "A Jedi uses the Force for knowledge and defence, never for attack." Actually, that was Yoda.

Anyway, the bottom line is, we are far less aware of what's going on around us than we think we are. And that's just when we're awake! Imagine what might slip your notice when you're half-asleep, drunk, hypnotized, or hallucinating! That's what we're gonna talk about next time.

===== End Credits =====

Thanks for watching this episode of Crash Course, if you were selectively conscious of my words, you got introduced the our constant struggle to define consciousness, learned a little bit about neuroimaging and its developing role in psychological science, how our consciousness is split into two pieces, deliberate and automatic, and how the brain can be selectively attentive, selectively inattentive, and blind to changes in some surprisingly major ways.

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