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# Meet the doctor who—really—knows how his patients feel

Written by Tristan Bronca on May 1, 2017

Discussed: the mechanisms behind mirror-touch synesthesia, a doctor who was shot by his patient, the diagnostic value of emotion

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Synesthesia is a cross-sensory phenomenon that, in some of its many variations, leads people to associate numbers and letters with colours, or experience sounds as tastes, textures, and smells. The original word roughly translates to "feeling" (aisthesis) "together" (syn) which seems especially apt when you consider one rare form of the condition: mirror-touch synesthesia. For mirror-touch synesthetes, the senses of sight and touch overlap in such a way that one physically feels the sensations they observe in others. It has been described as a heightened form of empathy.

Dr. Joel Salinas is a neurologist at Massachusetts General Hospital and author of the recently released memoir *Mirror Touch: Notes From a Doctor Who Can Feel Your Pain*. He recently spoke to us about the science behind the condition, some of the unique advantages of working in medicine as a synesthete, and why empathy is a tool that we can all develop with some time and effort.

**I wanted to start by asking how you decided to write the book. I remember the *Pacific Standard* piece that Erika Hayasaki did in 2015. Was that the first time there had been any sort of media attention around you?**

Yes, that was the very first time. I knew I had mirror-touch synesthesia prior to that but I wasn't really comfortable talking about it until I had some objective data and a better sense of the medical literature around it. Then one of the researchers I had been working with connected me with Erika who asked to write a profile. I remember being so surprised by the attention around it. There was this outpouring of support and that was one of the things that convinced me I should probably talk more about it.

At first I was a little unsure about my technical skill as a writer because I don't have a creative writing background. But since medical school I've written enough patient notes to fill a small library so I was surprised to see that I had a lot of stories to draw on.

**Can you explain the science behind synesthesia because I understand that some of the mechanisms behind it aren't very well understood.**

Francis Galton was one of the first people to document cases of people who had mixed senses. It wasn't until the advances in neuroimaging in the 1980s when neurologists like Dr. Richard Cytowic and neuroscientists like V.S. Ramachandran really developed some convincing data that showed it's a genuine, measurable neurobiological phenomenon. The first case of mirror-touch synesthesia was reported in 2005.

**So it's only 12 years that people have known about this?**

Exactly. There are two theories that may explain mirror-touch synesthesia. The first theory is called the threshold theory, and that has to do with a hyperactivity in the brain's mirror neuron system. That system was first discovered at the University of Parma in Italy. They were studying macaque monkeys and saw that the brain activated in a similar pattern when the monkeys watched someone eat as it did when the monkey itself was eating. We all have this mirror-neuron system and it's responsible for a normal phenomenon called vicarious tactile perception, which is usually unconscious, but there are instances where it's conscious, like when you cringe watching someone getting tackled on a football field. In about 2% of people, those areas of the brain are both overactive and larger.

The second is the self-other theory. So, not only would mirror-touch synesthetes have an overactive mirror neuron system but this theory posits that the areas of the brain responsible for telling the difference between our own body and others' are actually smaller and less active.

**I remember there was a section in the book where another mirror-touch synesthete was recounting how she was knocked out just *watching* someone else get punched in the face.**

I think some of the more complex observations need to be borne out in a lab but you could imagine that if the system is extremely active you may respond physiologically in so many ways.

**All of our readers are MDs, so I think the first question they would probably have for you is why on earth would you put yourself in a high-stress profession like medicine?**

You know, there are times where it's actually helpful for me. I was once consulted to see a young woman in the hospital who had cerebral palsy and couldn't speak. She had become combative one morning and they wanted me to recommend some medications to calm her down. When I saw her, one of the things I couldn't shake off was this mirrored sensation of rapid chest rising in my own body, faster than my own breaths. Because of that cue I recommended getting a CT pulmonary embolism protocol that revealed she had pulmonary emboli. That was why she was agitated—she wasn't angry or confused. I think that would have been caught eventually but the fact that I was able to catch it as early as I did was because of my synesthesia.

**So it has diagnostic value then?**

Not always, but there are times where it helps. I had another patient who narrowly escaped a top of the basilar stroke and when I saw him during a followup he had changed his diet, he was exercising regularly, his A1C had come down from 11 to seven. I told him he had won the gold medal of personal health. But the way his joy was reflected in me just didn't seem genuine. When I pressed him on it, he broke down crying, saying that he had been tortured with depression and anxiety over the fear that he was going to have another stroke. He described himself as a dead man walking. You can't really pick up on that sort of thing on a standard physical exam—lab tests can't tell you that, an MRI can't tell you that.

**You did a Reddit AMA back in 2015 and, as is standard I guess on Reddit, you were getting all kinds of crazy questions about what it's like to watch a surgery or see someone die. When I first came across your story I figured that that would be the most distressing part of having your condition in medicine, but the sense I got from the book was that it was actually more distressing to deal with psychiatric inpatients. Is that a fair assessment?**

It's not necessarily just the psychiatric aspect of it. If I'm seeing something totally novel and I'm surprised, there's more emotional salience around it, and if I've had a similar experience in the past—and especially if there's salience tied to that—it can be so vivid it borders on hallucination. The more exposure I get to conditions and procedures, the less vivid it is and the more manageable the mirrored sensations become. With psychiatric patients, if I'm seeing someone that's psychotic, there's a lot of unpredictable movements and there's lot of new very salient information and so it becomes very vivid for me. One of the more challenging groups of patients for me are those who have tic and tourettes. I remember this one patient who had self-mutilating tics who would bite down on the inside of his cheek and push against his mouth with his knuckle. It was so vivid it was one of those moments where I was just totally humbled by my brain.

**There was another interesting character from early in the book who was a doctor that had been shot by one of his patients.**

Oh yeah, as an intern. That was one of those moments where, within the first week, I was wondering if I chose the wrong career. He knew what I was going through, but he set the bar really high and he had no shame about it. At all. But after slowly getting to know each other over time and after he realized that I was really trying hard to help him, he opened up. One of the things he told me was that "you'll never forget me—you'll never forget your first patient."

**In the book you talk a lot about your personal relationships and how your synesthesia made it much more difficult to separate yourself from the other person. Were there any similarities there with your patients or were those always distinct experiences?**

For the most part they were distinct. In my personal life, it was really dictated by how much time I spent with the person and how open I was to experiencing what they were feeling. With patients, especially early on in my career when I saw what empathy could do, I really threw myself into their experiences, but it was easier to learn how to move away from that extreme to prevent burnout, which happens to so many doctors. I could learn 'how much empathy can I give today,' 'how much does the patient need,' 'how much is appropriate if it's a medical emergency versus someone who's coming in with a chronic condition.'

**When physicians pick up the book, what do you hope that they in particular take away from it?**

How to develop their own heightened and more engaged sense of empathy. The entire range of empathy exists in all of us, the hardware is there in our brains and we can choose to and develop it. I mean could you imagine how different the world would be if we didn't just think about what it's like to be in other people's shoes but also feel what it's like to be in other people's shoes?

*Edited for length and clarity*

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