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Synesthesia: A Disorder That Blurs the Senses

Some people see a color when they taste a food; the condition has 100 variations and affects about 4.5% of people

By **SUMATHI REDDY**

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For Sean A. Day, drinking coffee causes him to see a pool of dark, green oily fluid. The smell of fresh cut grass produces a dark, purple color. And when he hears a piano he sees a big cloud of sky blue mist with tiny drops of liquid plastic.

Dr. Day, an anthropology instructor at Trident Technical College in Charleston, S.C., has three types of synesthesia, a rare trait or condition in which there is a merging of sensations that are normally experienced separately. “Diet cola produces a color that’s very unpleasant, a sweat-stained yellow,” said Dr. Day, 55-years-old. “So I never drink diet cola.”

There are more than 100 different types of synesthesia experienced by at least 4.5% of the population, says Julia Simner, director of the Multisense Synaesthesia Lab and a psychology professor at the University of Sussex in England. Often, individuals will have more than one kind. About 40% of people with synesthesia have at least one family member with it, though it may be a different type.

Synesthesia isn’t considered a condition that needs to be cured. Most people

There are more than 100 types of synesthesia involving various senses.



Touch: Some synesthetes find that pain elicits colors. Others have mirror touch synesthesia which is when they experience touch by looking at someone else who is being touched.



Sight: Grapheme-color synesthesia, or seeing a particular color that is associated with each letter or number is one of the most common types of synesthesia.



Taste: Lexical-gustatory synesthesia, or tasty words, is a rare form of synesthesia in which hearing or reading a word triggers the sensation of a particular taste.



Sound: Chromesthesia or sound-to-color synesthesia is when people see a particular color or image associated with notes, intervals or timbres.

PHOTOS: MIKE SUDAL/THE WALL STREET JOURNAL.

with synesthesia actually report deriving pleasure from it. For many, it can be helpful in remembering a phone number or name or even inspiring in driving artistic work.

Studies have found that people with synesthesia score higher on certain memory and creativity tests and some research has shown they are more likely to be engaged in the arts.

Dr. Simner says she believes there should be tools made available to clinicians for diagnosis of synesthesia. She says it should also possibly be included in the Diagnostic and Statistical Manual of Mental disorder, or DSM, considered the bible of psychiatric illnesses, because of the fact that it is sometimes associated with conditions such as autism.



Some people see colors when they smell or taste coffee. PHOTO: ISTOCKPHOTO

“There are a cluster of positive and possibly negative traits that accompany synesthesia,” she says. Her lab is studying whether synesthesia is also associated with higher rates of anxiety disorder in children and OCD in adults.

Dr. Simner says she is frequently contacted by parents and teachers inquiring about synesthesia and how to test for it. In some cases it can pose learning challenges.

For example, she said they’ve had reports of children with sound synesthesia who sit next to a music room and have difficulty seeing the board when music is played.

She is currently developing a diagnostic test for children. She has a diagnostic tests for adults with grapheme-color synesthesia, one of the more common types in which people see a particular color for each letter and number.

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There is a growing number of studies documenting neurological differences in the brain structures and functioning of synesthetes.

Brain scans of individuals who see colored letters and numbers, for example, show greater activity near the color centers of the brain.

Edward Hubbard, an assistant professor in the department of educational psychology and the neuroscience training program at the University of Wisconsin-Madison, noted that the brain regions involved in processing colors are adjacent to the regions involved in recognizing letters and numbers.

Early in development there are a lot of extra connections between adjacent brain areas which get pruned with age.

“With synesthesia maybe genetic factors cause connections to be retained,” he said. “So every time we see a letter and number not only does it activate cells in the brain for reading but it also cross-activates cells that are involved in seeing colors.”

Dr. Hubbard doesn't think synesthesia needs to be treated. Still, he says sometimes it can interfere in learning for children. Having it in the DSM, he said, could help in terms of getting children to get extra time for taking a test if colored numbers can pose obstacles in math, for example.

“For adults it typically doesn't interfere with daily life,” said Dr. Hubbard.

In fact, researchers say most adult synesthetes say they great joy from their synesthesia and in some cases it inspires their work.

Carol Steen, a 73-year-old New York City-based artist, uses her synesthetic experiences in many of her paintings. She co-wrote a book on synesthesia and is co-founder of the not-for-profit American Synesthesia Association.

Her synesthesia includes seeing colored letters and numbers, as well as colored touch, sound and smell. “The colors I see don't stay still or in one place, they move, they change shapes,” she said.

For a long time she was terrified of it, and even went into sculpture rather than painting to avoid color.

“I'm trying to help people who don't necessarily know that what they have is a good thing,” she said. “What I see, most of the time, is so beautiful it inspires me to work.”

Write to Sumathi Reddy at sumathi.reddy@wsj.com

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