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[Wellness](#)

Why solving puzzles feels so satisfying, especially during a quarantine



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By Galadriel Watson

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For many long minutes, the orange glazed doughnut wouldn't come together. It wasn't a real doughnut, but a jigsaw puzzle on my kitchen table, and no matter how I configured the pieces, they refused to connect. Then — *aha!* — I saw the solution. I rearranged once again, and the doughnut took shape. What a rush!

During these days of quarantine, solving things — jigsaw puzzles, crosswords, sudokus, murder mysteries — is one of the ways many of us are amusing ourselves. These activities can be challenging, brain-aching and time-consuming, but we relish them anyway. Why?

Here, we explore the *aha!*

That eureka moment

Moments of insight — the ones that make you cry out (mentally, if not verbally) — occur when new ideas suddenly emerge into your awareness. (This contrasts with step-by-step analytical thinking, which uses conscious, deliberate thought.) An instant ago, you didn't know the solution to a problem. A flash-second later, you do. It could be where that puzzle piece goes, what word that anagram spells, which person is the villain in your novel or what strategy you should use to slam your opponent in a board game.

“This is a moment that triggers a lot of excitement. But why do we need so much drama?” asks Carola Salvi, a research scientist at the University of Texas at Austin. She offers an answer: Having an insight involves the brain's reward system, “which is the same system that responds to food and to other basic pleasures.”

A [recent study](#) out of Philadelphia's Drexel University provides some evidence. Thirty students solved anagrams while researchers used electroencephalography (EEG) to record their brain activity. Very soon after activity in the right middle frontal gyrus, located near the forehead, indicated a moment of insight, activity then occurred in the orbitofrontal cortex, above the eye, which is responsible for processing rewards. Co-author Yongtaek Oh, a doctoral candidate in psychology at the university's Creativity Research Lab, says, “Generally, such activity is associated with ‘wanting’ and ‘liking.’”

A source of rewards, more or less

However, not everyone in the study activated the rewards region equally. That's because some people are naturally more sensitive to rewards than others. If you're highly sensitive to rewards, it appears your enjoyment of the *aha!* is greater. If your sensitivity is low, your enjoyment seems more muted.

“There are certain personality types that are very, very reward-oriented,” says Salvi, who was not involved in this study. “This depends on the balance of the neurotransmitter called dopamine in the brain.”

These differences in sensitivity also explain why some people gorge on too much food, take drugs or gamble: These experiences trigger the same system. So could puzzling and other insight-inducing home activities also be addictive? Oh says that research-wise, it's too soon to know.

However, he and his teammates did make another interesting discovery. While people were working to find the solution, those with high reward sensitivity registered *less* activity in the reward area than others. Oh says, “This may mean that highly reward-sensitive individuals don't enjoy working on the problem as much as people who are low in reward sensitivity, but they enjoy solving it with an *aha!* more.”

A push in the right direction

The brief buzz creates other benefits. “We also think that it motivates people and gives you energy for wanting to actually do that idea that came to your mind,” says Salvi. While placing a jigsaw puzzle piece doesn’t take much oomph, launching into a new artistic endeavor or putting an engineering design into action does. That rush of pleasure could help facilitate this.

But is it a good idea to move ahead with a solution that popped out of nowhere? Salvi says yes. She was first author on a [study](#) that involved more than 225 participants at universities in the United States and Italy who experienced moments of insight while doing various types of puzzles. “It turns out that 92 percent of the time we have an insight, we’re likely to be correct.”

A giant step for humankind

The elation is also important on a broader scale. “I think it was a very smart move that Mother Nature did by linking the generation of new ideas and reward,” says Salvi. “Every time something is rewarding, we tend to want to do it more.”

And the more we think creatively, the more humanity moves ahead. Insight, Oh says, stimulates “curiosity and exploration and the production of new ideas that induce the advancement of all aspects of human society, including science, technology and culture. It has evolutionary advantage.”

Marcel Danesi is a professor of semiotics (the study of signs and symbols) and anthropology at the University of Toronto and author of several books on puzzles. Solving puzzles seems to be instinctive both to individuals — ask a child why a chicken crosses the road, and he or she will immediately try to figure it out — and cultures. “When cultures become conscious of themselves, the first things they resort to are things like riddles,” he says. The ancient Greeks and Romans loved challenging their minds in this way, and an expression equivalent to *aha!* appears in an ancient Egyptian manuscript.

He says that puzzling ideas tend to spread between people, even over great distances. Consider this brain-stumper, which has many variations: A traveler arrives at a riverbank with a goat, a head of cabbage and a wolf. The boat there can carry only the traveler and one other across at a time. If the traveler leaves the goat and wolf alone on either bank, the wolf will eat the goat. If the goat remains with the cabbage, the cabbage will also meet its end. So how can they all cross safely?*

To solve a puzzle like this, someone may start a flowchart or diagram. “Once you start doing this, you’re developing a science,” he says. “It leads to logic. This has occurred over and over in the history of puzzles.”

Order and escape

Of course, the greater good is probably not why we’re so keen on jigsaws, mysteries and other insight-giving activities in times like pandemics. “Puzzles give psychological order to the chaos

we feel,” Danesi says. “When you come out of it, when you’ve solved the puzzle, then life seems to work better. I’ve had anecdotes throughout my life and experiences where, as people do puzzles, they seem to come out better in terms of mental health.”

Salvi warns that pressures such as anxiety — which is an issue for many of us right now — reduce our ability to achieve moments of insight. So does a lack of time — which may *not* currently be the case. “I do think that, for some people, solving problems might be a very, very nice way to feel momentarily rewarded and put your mind away from the news,” she says. “It’s a way to escape reality.”

Little pleasures should be cherished these days — and getting a spark of excitement while seeking them can make them even better. “When you get that feeling,” Danesi says, “you feel really damn good about yourself.”

Which is why — mystery novel waiting on my coffee table and doughnut done — I’m now embarking on my fifth puzzle this pandemic. As a joy-boosting bonus, this one’s embellished with pretty gold foil.

* To get the wolf, goat and cabbage across the river safely, the traveler should follow these steps:

1. Cross with the goat, leave it on the far side and return to the original riverbank alone.
2. Cross with the wolf, leave it on the far side and return to the original riverbank with the goat.
3. Leave the goat on the original riverbank, cross with the cabbage and leave the cabbage with the wolf.
4. Return and get the goat.

Galadriel Watson is a freelance writer and author of books for kids, including “[*Running Wild*](#)” and “[*Extreme Abilities*](#).”