



# Highly creative people have ‘unique brain connectivity,’ study shows



Written by [Erika Watts](#) on April 15, 2022 — [Fact checked](#) by Jessica Beake, Ph.D.



New research sheds light on the neuroscience of creativity. Qi Yang/Getty Images

- **The latest research into creativity compares the brain function of exceptionally creative visual artists and scientists with a highly educated group.**
- **Scientists used functional magnetic resonance imaging (fMRI) to scan participants’ brains while they performed tasks that tested creative thinking.**
- **The researchers found that the brains of exceptionally creative**

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Researchers at the University of California, Los Angeles (UCLA) wanted to look more into how the brains of extremely creative people function. Rather than making the comparison to the average person's brain, they wanted to compare that functioning to non-creative people with comparable IQs.

The study was published in [\*Psychology of Aesthetics, Creativity, and the Arts\*](#).

## Study methods

The researchers compiled two groups of participants for the study. The first group consisted of exceptionally creative artists and scientists who were nominated by experts.

The people in this group, which was labeled "Big C," included only people who scored in the top 2% of the Creative Achievement Questionnaire (CAQ). According to the [American Psychological Association](#), the CAQ "assesses achievement across 10 domains of creativity."

These domains are visual arts. music. creative writing. dance. drama.

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The SCG participants were previously involved in another study at UCLA and were matched with people in the Big C group. The two groups were matched on age, sex, race, and estimated IQ.

The researchers used [fMRI testing](#) on both groups while they were at rest and while they were engaged in tasks. They studied brain activity in different regions of the brain.

## Creative brains study results

The study results showed that while the Big C group participants were engaged in tasks, their brains tended to make more random connections on the global scale compared to the SCG participants.

“Our results showed that highly creative people had unique brain connectivity that tended to stay off the beaten path,” says [Dr. Ariana Anderson](#), assistant professor at the Semel Institute for Neuroscience and Human Behavior at UCLA and lead author of the study.

The authors noted that the Big C groups showed “reduced small worldness” compared to the SCG participants.

“‘Small worldness’ is a property thought to increase efficiency in many networks, generally by increasing the clustering of nearby [nodes](#) into ‘cliques’ or ‘hubs’ where the average path between nodes is short,” write the authors.

“This offers evidence that reduced small worldness may characterize exceptional creativity across creative domains.”

To put it simply, the researchers compared Big C’s brain functioning to how airlines work.

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**and make novel connections.”**

## Study reactions

[Dr. Andrew Newberg](#), a neuroscientist, spoke with *Medical News Today* on the study findings.

“Interesting and well-done study on how creativity is expressed in the brain,” said Dr. Newberg. “Determining who is creative and who is not is always a challenge to these studies, but the researchers did a good job selecting highly creative people from normally creative intelligent people.”

Dr. Newberg is a professor and Director of Research at Marcus Institute of Integrative Health at Thomas Jefferson University and Hospital in Philadelphia.

[Professor Adam Green](#) also spoke with *MNT* and called the study “exciting.”

“A study like this is immediately exciting because of the sample that was

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“In most instances, researchers can’t study the people who have those kinds of ideas, and instead make inferences based on neuroimaging and behavioral measurement in more ordinary samples. This study is a rare instance in which creative brain function can actually be investigated in a group of people who are ‘Big C’ thinkers.”

– Prof. Green

Prof. Green is a lab director and Provost’s Distinguished Associate Professor at Georgetown Laboratory for Relational Cognition in Washington, DC.

## Study limitations

The authors note some limitations to the study, including the sample size being “modest.”

When Dr. Newberg spoke with *MNT*, he noted that the people tested were sometimes tested outside their areas of specialty.

“Another important limitation is that they studied these people during creativity tasks that were not specific to their creative domains,” Dr. Newberg said. “In other words, these were tasks that asked people to come up with novel uses for common items rather than artistic or scientific explorations.”

“However, the results provide new directions for looking at brain changes associated with creativity,” Dr. Newberg continued. “Perhaps future studies can explore whether creativity can be actively fostered by doing

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