



Executive Health

Inside T. Boone Pickens' Brain

Christopher Helman 06.30.08, 12:00 AM ET

T. Boone Pickens gets a brain scan, and we tag along to find out how a billionaire really thinks

T. Boone Pickens arrived early for his brain scan. It was late March, and he was raring to go, with a flight to catch in a few hours. Pickens didn't need a brain scan. At 80 the oilman and financier is healthy and having some of his best years in business. "Of all the taxes I've paid, 90% of them were after I was 70," says Pickens, who forwarded \$200 million of his capital gains to the U.S. Treasury last year. Worth \$3 billion at last count, he's still drilling for oil and buying water rights. His Mesa Energy in May bought 667 wind turbines from GE and has spent \$2 billion so far developing a 4-gigawatt wind farm, the world's biggest, in the Texas panhandle.

Pickens had dropped by the University of Texas at Dallas Center for BrainHealth to donate his gray matter to science for an hour. It was a thrill for Denise Park, the neuroscientist lured to the center last year from the University of Illinois with some of Pickens' money. He gave \$11 million to the center last year and another \$100 million to the UT-Southwestern Medical Center and the UT-M.D. Anderson Cancer Center. On this day Pickens became a subject of Park's ten-year study to measure how brain function changes with age. Each of 350 participants, ages 20 to 89, will perform a series of tests while inside a thrumming magnetic resonance imaging machine.

Park is in the earliest stages of developing a neural model to explain why some brains deteriorate while others continue to flourish. "Pickens is an ideal subject because he's much more active than other people his age," says Park. To prove his memory is still strong, Pickens rattles off the names of his grade school teachers: Christine Providence, Ethel Reed, Christine Mackey. "I'd rather surround myself with sharp young minds than play golf and gin rummy all day," he says.

Pickens changed out of his suit and into workout clothes for the 40 minutes in the MRI. There was a slight delay as the researchers frantically tracked down his doctors to make sure that the new surgical pins in his broken wrist were not ferrous. Had they been, the MRI's powerful magnet would rip them right out of his arm. Word came back that they were titanium, so no danger. Pickens used the pause in the schedule to check in with his traders in Dallas. "We beat every cat in the alley today," he said, smiling. He took out his hearing aids, doffed his glasses and slid inside the MRI tube.

Inside the machine was a computer screen showing simple verbal challenges. In the first test, Pickens was presented with a series of nouns and had to click a "yes" or "no" button to indicate whether he thought they were living or nonliving things. "Cat" was easy, "unicorn" a little harder. As the answers became less obvious (is a sponge living?), his brain had to bring on more circuitry.

To process the MRI data, a computer overlaid on Pickens' brain a virtual three-dimensional grid of 50,000 cubes called voxels (a word hinting at volume and pixels). Every two seconds the MRI took a reading of each voxel's oxygenation level, a sign of how much blood was flowing to that tiny chunk of gray matter. More blood flow equals more activity, and those locations showed up in bright colors. After 40 minutes Pickens was itching to get out. The doctor asked him to sit upright for a while to make sure he felt okay. "I feel great," said Pickens, already up on his feet and putting on his shoes.

So, how'd he do? "I was truly astonished," says Park. "Mr. Pickens brain activated in places that young brains activate."

Neuroscientists are coming around to the view that the brain is a malleable organ, rewiring itself based on its owner's activities and experiences. The hippocampus, for example, is a part of the brain in the medial temporal lobe, which is very active in spatial navigation and memory. A study in 2000 showed that London taxi drivers, who have to memorize the city's maze of streets, possess hippocampi much larger than average.

Aging brains rely less on the hippocampus as memory degrades and more on the frontal cortex, which is more focused on reasoning skills. Sandra Bond Chapman, director of the Center for BrainHealth, says older brains switch over to emphasize "gist" processing. They get the big picture even if the details escape them. This makes

sense to Pickens: "I've seen so many things, it doesn't take me long to make a decision on a deal."

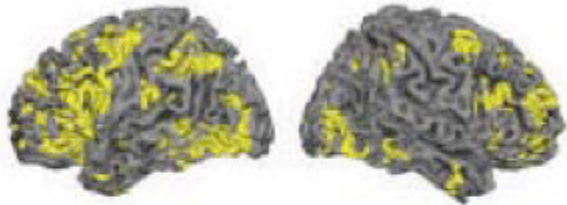
Most of Pickens' brain activity during the living-nonliving test was on the left side of his frontal cortex, exactly where young brains would handle the job. As the words got tougher, his brain became even more active on the left side. In contrast, most older adults would bring on more right-side processing power, a phenomenon called bilateral activation.

In the second test Pickens had to judge the length of lines and the relative distance between lines and dots. In younger brains this kind of judgment happens on the right side of the parietal lobe. Older brains tend to bring in a lot of left brain for help. Pickens showed strong right-brain function.

The third test involved passively viewing images of faces and places. Looking at faces activates a particular part of the ventral visual cortex called the fusiform face area. There's also a spot called the parahippocampus that lights up when we see places. Pickens' brain lit up in exactly the spots it was supposed to. Park says it is not possible to locate the face area in about 25% of brains, and in those that you can, activity tends to become less pronounced with age. "His brain is very healthy. Relative to his age group, Mr. Pickens has a primarily unilateral brain that is very specific in its response," says Park.

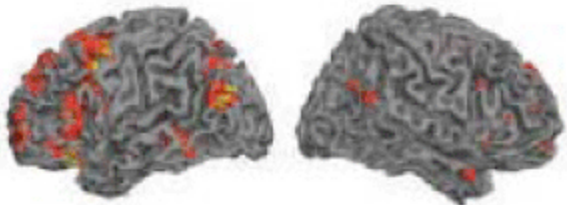
Pickens does all the right things to keep a brain healthy: trying new activities and exercising regularly. On mornings that Pickens is in Dallas he works out with his trainer. He's never smoked, doesn't drink coffee and hasn't touched a glass of Scotch in six years. As Pickens was on his way out the door to catch his flight, a researcher tried to give him the customary \$70 cash payment for donating his time. He turned it down. "That makes 11 million and 70 dollars he's donated to the center," says Pickens' handler, Jay Rosser.

Easy Decisions



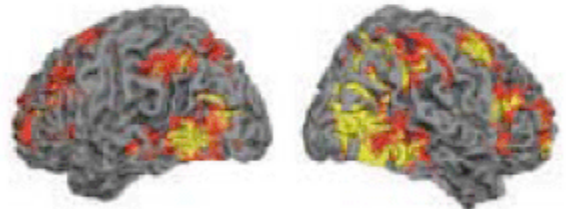
IT'S A SIGN OF GOOD HEALTH THAT THE LEFT HEMISPHERE OF T. BOONE'S BRAIN PROVIDES MOST OF THE NEURONS WORKING ON EASY QUESTIONS—WHETHER "CAT" AND "BOOK" ARE LIVING OR NONLIVING THINGS.

Harder Decisions



ON TOUGHER QUESTIONS—ARE "ZOMBIE" AND "UNICORN" LIVING OR NONLIVING?—RED PATCHES SHOW EXTRA BLOOD FLOW. PICKENS AGAIN RELIES ON THE LEFT SIDE, A WELL-ORGANIZED BRAIN RESPONSE.

Judging Distances



HOW FAR IS A DOT FROM A LINE? CLEARLY A RIGHT-BRAIN QUESTION. THE MOST ACTIVE SPOTS ARE IN RED. MANY SENIORS' BRAINS LIGHT UP ALL OVER. PICKENS JUST TURNED 80; HIS BRAIN AGE IS MORE LIKE 55.

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