

Hard-Wired Math Skills

The ability to count may be hard-wired into the brain -- a basic mental ability on which the eventual mastery of arithmetic may rest, according to new research.

Specific sets of neurons in the brain are designed to rapidly process quantities and numbers. This may be what allows people to make rapid guesses about relative size -- and in prehistoric times might have allowed animals roaming the tundra to quickly estimate the numbers of their friends and foes.

Neurons in the prefrontal cortex of the brain -- the executive center that makes rapid-fire decisions -- quickly rewire themselves to recognize different numbers of objects, according to an animal study published in the Sept. 6 issue of *Science* by Andreas Nieder, David J. Freedman and Earl K. Miller of the Massachusetts Institute of Technology.

Monkeys in a computer experiment were able to associate frames that contained a certain number of dots with other frames that had an identical number of dots. The researchers showed that specific neurons in the animals' brains rewired themselves to "recognize" specific numbers of dots; those neurons were quickly reactivated when shown the same number again.

Compiled from reports by Guy Gugliotta, Rob Stein and Shankar Vedantam