



# Conquering the last great frontier: the brain

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Janice Youngwith Just as cartographers are anxious to map unknown terrain, scientists, researchers and trained clinicians say unlocking the mysteries of the human brain may provide a road map to better understanding a host of neurological challenges including autism.

"The brain is truly the last frontier of the human body," says **Ann L. Stout**, a licensed clinical social worker utilizing a newer type of brain training called connectivity-guided neurofeedback to aid those with autism and other neurophysiologic conditions. "The more we know, the better we're able to pinpoint solutions."

**Stout**, who has more the 24 years experience in the mental health arena and currently serves as director of The Neuroconnection — a neurofeedback practice in Glen Ellyn and Naperville, says treating the brain with neurofeedback can result in dramatic and lasting improvements in a wide range of neurophysical conditions, including autism.

Characterized by deficits in social interaction, communication and restricted or repetitive behavior, individuals with an autism disorder may be unable to recognize or respond to nonverbal cues and may be prone to outbursts.

"Studies show an autistic brain is not able to communicate with itself effectively due to problems resulting from abnormally developed neuroconnections," **Stout** says.

Based on the latest research on neurofeedback with autism, the therapy focuses on brain waves produced by electrical signals produced as the brain's neurons fire.

Measured using an electroencephalogram amplifier and computer to show when optimum functioning is present, neurofeedback training sessions induce change by showing brain waves in real time.

"It's a noninvasive, non-medication and painless intervention which enhances neuroregulation and can improve the ability of the brain to function optimally," **Stout** says.

Neurofeedback has been used for more than 15 years in the treatment of attention deficit, anxiety, chronic fatigue, substance abuse, learning, mood and post traumatic stress disorders. A newer form of neurofeedback training called connectivity-guided neurofeedback has only recently been reported in evidence-based research to aid those with autism in training the brain to communicate with itself.

**Stout** cites the work of Robert Coben, Ph.D., who reported results of a large scale 2007 study of 85 children in an experimental group trained using connectivity-guided neurofeedback which showed a decrease in autistic symptoms ranging from 20 to 100 percent. "The study shows an average

decrease of autistic symptoms of 57 percent and follow up one year later showed these improvements held," she says.

Increased focus, the ability to transition without disruption, increased calmness, improved social skills and social pragmatics, fewer repetitive behaviors and improved processing speeds were all reported by study participants.

"Neurofeedback is an intervention aimed at training individuals to better regulate the biological functioning of their own brain," **Stout** says. The technique has been found to be much more effective when used in combination as part of an integrated treatment plan. "It's easy to think of connectivity-guided neurofeedback as weightlifting for the brain. We can begin to see changes in as little as 10-15 sessions."

A plethora of newer research uncovered an increased pattern of activity in specific areas of the brain in adults with autism, which may be linked to social deficits, language problems and inattention typically associated with the disorder.

"Better understanding the role of white matter in both the left and right brain areas is key," she says. "For those with autism, overstimulation or hyperexcitability of frontal portion of the brain, and under connection on the right and left side, means neurons are abnormally firing. If the brain isn't reacting typically, it can mean increased challenges in social and communication skills."

Because of the brain's lifelong neuroplasticity — the ability to change and form new connections — dramatic training improvements can be seen at any age, **Stout** says.

Shown to be effective for both children and adults, the neurofeedback approach meets the American Academy of Child and Adolescent Psychiatry's clinical guidelines for recommending evidence-based treatment.

During the course of 60 treatment sessions — each lasting 30 minutes — participants are connected by two sensors to their scalp and ears, an EEG amplifier and a computer, then give auditory and visual feedback in the form of a computer game.

When producing the correct brain waves, the brain seeks out the sights and sounds and becomes conditioned to produce correct brain wave patterns more often. Over time, the unconscious process makes changes in brain wave activity, decreases symptoms and begins producing optimal functioning.

For information on neurofeedback and connectivity-guided neurofeedback, call the Neuroconnection at (630) 858-5105 or visit: [www.theneuroconnection.com](http://www.theneuroconnection.com).

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