

## Two-trainer therapy model leads to greater gains

A two-trainer model is dramatically more effective in teaching autistic children communication and social skills than a one-trainer model, according to research by Irene Pepperberg and Diane Sherman.

The researchers say their approach is based on studies of primates and parrots, including their own research on Grey parrots, showing that animals learn communication skills far more easily when they observe two human trainers interacting with each other than when a single trainer instructs them.

The researchers tested their method on several disabled children, including a high-functioning autistic four-year-old girl whose expressive speech initially consisted primarily of robotic imitation. The girl exhibited few social and play skills, and could request items but could not ask questions. Intensive individual and group therapy had been unsuccessful in increasing her language skills.

During the study, the researchers used two training pairs—two adults, and an adult and a child. The trainers modeled appropriate communication skills, “body language,” and play skills, demonstrating the meaning and use of words, social interactions, the exchange of roles in normal conversation, the effects of errors, and corrective feedback.

“After approximately three months of initial training with two adults in [an] isolated setting,” the researchers report, their subject responded well to adults and “could communicate with appropriate body affect (e.g., vary tone of voice, facial expressions, and body language), provide information to adults in a coherent and sequential fashion (e.g., respond to questions about her daily activities), and use appropriate speech spontaneously.” Following the training sessions with an adult and a child peer, her social and communicative skills generalized to other children as well. The girl began initiating games with peers, and noted when peers were absent and questioned them later about their health. A four-week follow-up revealed that these skills generalized to her daily life, although she continued to have difficulty with abstract questions and age-appropriate symbolic play.

Following this study, the researchers used the two-trainer intervention with six additional young autistic children. “Each child,” they say, “demonstrated improved behavior that also generalized to environments outside that of training and to individuals not involved in training.” Pepperberg and Sherman conclude, “Two-trainer modeling, in contrast to other techniques such as scripting and imitation, appears to enable the child to process, integrate, and expand the new skills and facilitates generalization to other situations and individuals.”

The researchers caution, however, that simply being exposed to pairs of non-disabled

individuals conversing is not sufficient to bring about improvement, saying, “Although children in inclusive school programs are indeed exposed to numerous behavioral models, the interactions generally are neither targeted to their specific disabilities nor uniformly directed by two trainers to the child with the disability.”

“Proposed use of two-part interactive modeling as a means to increase functional skills in children with a variety of disabilities,” Irene M. Pepperberg and Diane Sherman, *Teaching and Learning in Medicine*, Vol. 12, No. 4, 2000, pp. 213-220. Address: Irene M. Pepperberg, The Media Lab, MIT Building E15-325, 20 Ames Street, Cambridge, MA 02139.

## LETTERS TO THE EDITOR

To the Editor:

My son has autism. He is 19 years old and weighs over 200 pounds. He had been on B6/magnesium many years. Last year, I made the mistake of taking him off the vitamins.

[After I stopped the nutrients] he started yelling and laughing all day long. He started spitting, kicking, and pushing. He would have panic attacks that lasted for several minutes. I could not take him anywhere. We tried a few of the drugs that are available, but the side effects were even more frightening. The drugs made him angry and aggressive.

When I called you, you suggested that I try the B6/magnesium again. I did. Initially, I was disappointed because he was very hyperactive. Then I called Kirkman Labs, and they suggested I increase the magnesium.

In a few days he changed so much I could not believe my eyes. His yelling stopped completely, his spitting stopped, and his panic attacks stopped. He is more focused, he has started verbalizing more, he started doing well in school, and he got a job at Sears. You cannot imagine what a difference this has made in our lives.

A mother in Glendale, CA

To the Editor:

My son is five years old with pervasive developmental disorder (PDD). We recently tested his urine and were shocked by the results for gluten and casein: he was way off the norms. We were hesitant to start the [gluten-free, casein-free] diet, because as a registered dietitian I was greatly aware of the difficulties of implementing such a diet. Within a week, we saw huge gains in our son! He is far more conversational, he is more in tune to his surroundings and he seems to absorb a lot from his environment. We feel like we are meeting our son for the first time.

Lisa Moglia-Johnson  
Chatsworth, CA

## PET: temporal lobe dysfunction identified

A new study reveals abnormalities in the temporal lobe functioning of school-aged autistic children.

M. Zilbovicius and colleagues performed positron emission tomography (PET) scans on 21 autistic children and 10 mentally retarded, non-autistic controls matched for age and developmental level. In later research, they studied 12 additional autistic children.

In both groups of autistic subjects, the researchers found “a highly significant hypoperfusion in both temporal lobes,” centered in the associative auditory cortex and the multimodal cortex. The abnormal finding was detected in 76 percent of the autistic subjects.

“Temporal lobe dysfunction in childhood autism: A PET study,” M. Zilbovicius, N. Boddaert, P. Belin, J. B. Poline, P. Remy, J. F. Mangin, L. Thivard, C. Barthelemy, and Y. Samson, *American Journal of Psychiatry*, Vol. 157, No. 12, December 2000, pp. 1988-1993. Address not listed.

## MRI: Corpus callosum size reduced in autism

The corpus callosum, a thick band of nerve fibers connecting the left and right hemispheres of the brain, may be abnormally small in autism, according to a recent study.

Antonio Hardan and colleagues performed MRI scans on 22 high-functioning autistic individuals and 22 control subjects. Their data revealed a significant decrease in the anterior portion of the corpus callosum, and a strong trend toward decreased area in the overall corpus callosum.

Hardan et al. say the greatest reductions in corpus callosum area were found in a region involving projections from the prefrontal cortex. “This is consistent,” they say, “with the cognitive, neurophysiologic, and behavioral evidence of frontal lobe dysfunction reported recently in the literature.” Frontal lobe functions previously reported to be impaired in autistic individuals include spatial working memory, the ability to suppress context-inappropriate responses, and “executive function”—the ability to plan and carry out goal-directed behaviors, follow social rules, solve problems, perform several tasks simultaneously, and adapt to changing circumstances.

“Corpus callosum size in autism,” A. Y. Hardan, N. J. Minshew, and M. S. Keshavan, *Neurology*, Vol. 555, October 2000, pp. 1033-1036. Address: Antonio Hardan, Western Psychiatric Institute and Clinic, 3811 O’Hara Street, Pittsburgh, PA 15213.