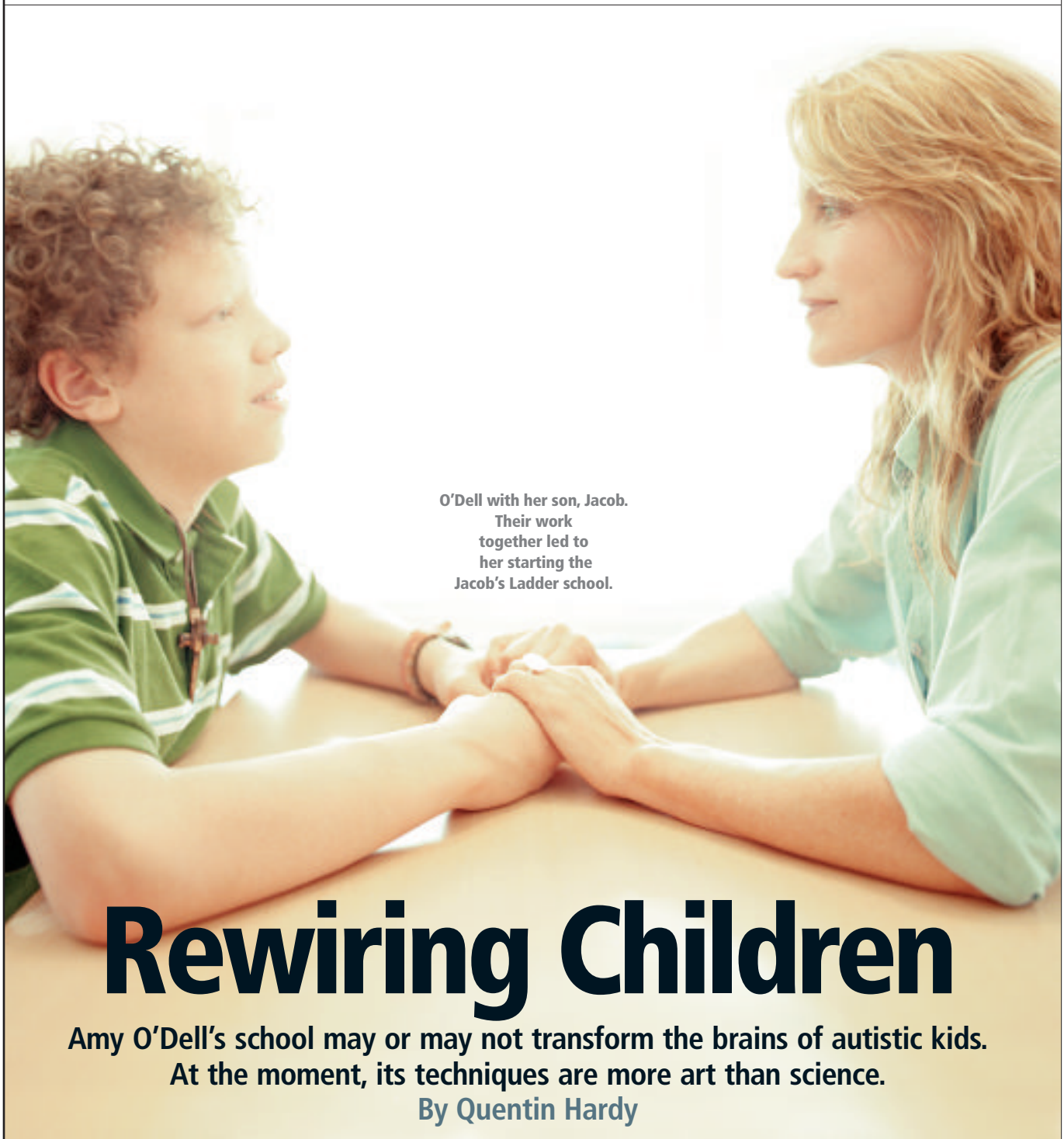

O'Dell with her son, Jacob. Their work together led to her starting the Jacob's Ladder school.

Rewiring Children

Amy O'Dell's school may or may not transform the brains of autistic kids. At the moment, its techniques are more art than science.

By Quentin Hardy

AMY O'DELL WORKS OUT OF a house in a bosky suburb 20 miles outside Atlanta. The upstairs kitchen doubles as an office and consultation room. Downstairs there's a cabinetlike device with inflatable plastic sacks to stimulate muscles and calm hyperactive children. In other rooms and cubicles O'Dell and her aides work with children, forming sounds and matching colors.

The attached garage has also been turned into a workplace. At one end of it sits O'Dell's 14-year-old son, Jacob, who ten years ago doctors diagnosed with pervasive developmental disorder. Parents of kids like him were told their children could be institutionalized for life. Now he's sitting quietly reading a book on ancient Greece while nearby a girl with cerebral palsy is learning how to make "snow angels" with her body on the floor. She came to O'Dell unable to move herself around. The "floor angels" are teaching

PHOTOGRAPHS BY DAVID STUART FOR FORBES

her brain to know what it means to crawl.

This is Jacob's Ladder, the school O'Dell founded in 1999 to treat children with neurological disorders. Most of its students are on the severe end of the autism spectrum. O'Dell takes 15 to 20 kids full-time, and another 40 part-time. Some 600 families use her physical and academic exercises at home, following up via phone and video, some from as far away as Africa.

O'Dell's form of therapy—intensive sensory and motor-skills training to help the brain build and strengthen neural pathways—has never been subjected to an unbiased clinical trial or peer-reviewed by a medical journal. Nor have her results been replicated by others. On those scores it is not different from discredited autism therapies such as chelation, listening to Mozart, gluten-free diets and swimming with dolphins. But there is evidence that the theory underlying O'Dell's therapy has some scientific validity. The theory is that the brain is, to a degree not appreciated by doctors a few decades ago, "plastic"; it can adapt to neurological deficits.

Michael Merzenich, a UC, San Francisco professor, has developed computer games that might help Alzheimer's patients improve brain function *(FORBES, Mar. 27, 2006)*. A California woman who was born with atrophied frontal lobes is nonetheless attending college. Robert Coben, a neuropsychologist on Long Island, has recently published in the peer-reviewed *Journal of Neurotherapy* a study of autistic children who, by playing special computer games, have improved connections among neurons in the frontal and temporal lobes, resulting in fewer repetitive behaviors, better socialization and improved language skills.

Harvard Medical School pediatric neurologist Martha Herbert, who has not looked at O'Dell's school but has published papers on brain imaging of people with autism, says, "We'd be crazy not to look at this. If you can get kids to change, and study the changes, it will tell us things about the situation, so we're not trapped by broad labels."

O'Dell, who has a master's degree in education from Clemson University, began her therapy career when confronted with her infant son, Jacob. He was clumsy and unable to connect with people; he would stare for hours at a ceiling fan and wave his hands excitedly. When Jacob was 2 and a half years old, O'Dell took on his case herself.

She quit working and studied brain function at neurological centers in Minnesota and Utah. She homed in on the ability of brain-damaged people to acquire skills. Figuring the brain's capability could be applied to a kid on the autism spectrum, O'Dell began to tutor Jacob ten hours a day at their home in Rabun Gap, Ga.

Her family was living on her then-husband's $3,000-a-year income, all he was making from his startup business. Success with Jacob was excruciatingly slow. "I spent two years getting him to learn the first five letters of the

O'Dell tutored Jacob ten hours a day at home in Georgia.

"I'm just giving a chance to max out their potential."

alphabet and a few colors," she says. "Nothing happened; the ability was not wired into his head. I had to build up his visual cortex, build the pathways so he could make sense of things."

For months she had him wear glasses that cut his peripheral vision and shone a flashlight with a dark center into his eyes for increasingly longer periods. The idea was to limit the amount of information coming in, building up Jacob's ability to discern what was directly in front of him. Over time Jacob learned to sort flashcard squiggles as letters.

O'Dell started Jacob's Ladder when the boy was 5, a year after moving to Atlanta. Within five months, four families there asked her to work on their kids.

Treatment begins with a 500-item questionnaire for parents, covering diet, behaviors and family life. O'Dell interviews the child for a day, looking at the child's ability to hear, manipulate things, move and make noise. Her goal is to find 100 basic exercises, ones as basic as regularly squeezing knuckles or touching a right hand to a left knee, that can help a child begin to organize his or her world. Exercises, tagged to whatever learning style gets results, become more complex as performance improves.

O'Dell charges $900 for the evaluation and design of a system of exercises for parents to do at home. Required supplies, purchased elsewhere, run another $300 or so. The fee for the school, which has a staff of 25 largely unlicensed aides trained by O'Dell, is $2,950 a month.

Jenna Hockaday, 5, began at Jacob's Ladder last summer. "She would rock, isolate herself and mostly ignore everybody," says her mother, Eileen. She goes three times a week for two hours of exercises, from deep pressure on her arms and legs to staring at cards through glasses pierced with pinholes. She backs it up with home exercises. "Now she engages with me and other kids, writes letters and is potty trained," her mother says. "We've made her brain work harder."

O'Dell has critics along with defenders. "There is a high probability this has contributed to Jenna's success," says Howard Schub, Jenna's neurologist. But the idea that the treatment is rewiring the child's brain, he says, "has a long way to go to be proven. This is repetitive behavior treatment with early intervention … a nice combination of other people's views."

Given the number of kids on the autism spectrum, it is still questionable whether O'Dell's methods can be captured, encoded and distributed. O'Dell's longest-serving assistant has been with her ten years, and yet she says she does not feel she could do the work on her own. O'Dell has had discussions about creating software to encode her system of diagnosis and treatment, but nothing has come of it so far.

O'Dell tells her clients not to expect miracles. "My promise is not a normal typical child like you thought you'd have," she says. "I'm just giving a chance to max out their innate potential. You do the work, you'll see a change." **F**