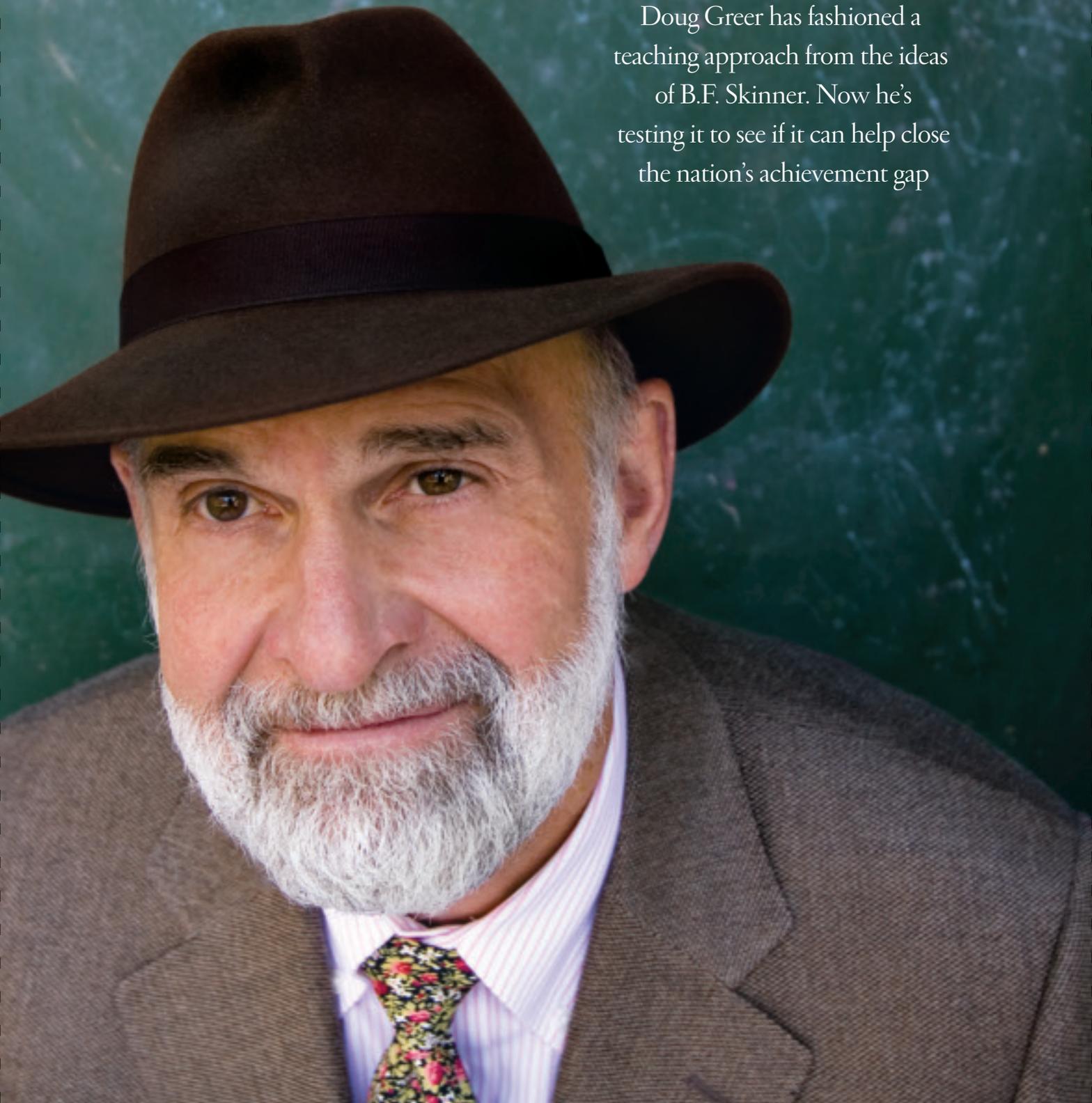


The Unorthodox Behaviorist

Doug Greer has fashioned a teaching approach from the ideas of B.F. Skinner. Now he's testing it to see if it can help close the nation's achievement gap





BY JOE LEVINE

PHOTOGRAPHS BY DEBORAH FEINGOLD

At first glance, Karla Mondello's second grade classroom in the Morris School District in Morristown, New Jersey, looks pretty much like any other. Children sit together at tables; there are drawings and paintings tacked up on the walls and math problems on the blackboard; the shelves are filled with books, a terrarium, a plastic skeleton and other cool stuff.

After awhile, though, you begin to notice the almost complete lack of disruption. The transitions from one activity to the next—even to and from recess—are accomplished seamlessly. Kids talk and laugh as they work, but in well-modulated voices. They're also working, at a variety of paces, on different things—and in some instances, those things are extraordinary. A boy named Will is



The Unorthodox Behaviorist

scribbling a math problem in his notebook: 1,248 plus 2,634. A girl named Alison, asked to read aloud, is timed at 119 words per minute, with full comprehension, and makes only two mistakes: “spotted” for “stopped” and “lettuce” for “lecture.” The book she’s reading is fourth-grade level.*

Then there are the charts. Throughout the day, Mondello and her three assistants—Kimberly Lake, Krystl Giordano and Joan Broto—barely pause as they note down each child’s accuracy and speed when reading aloud and performing math problems, knowledge of science facts, ability to work independently and vocabulary knowledge. For certain kids, they also record the frequency of undesirable behaviors, such as teasing or bullying. Later, the four teachers will graph these data for individual students and for the class. They will also chart how many times they themselves enabled children to complete a “learn unit” (a basic measure of effective teaching); the number of learn units it took them to enable a child to “meet criteria” (achieve an educational standard) and their success in praising the class at least four times a minute. (Studies have shown that the average teacher spends up to 80 percent of her time criticizing, saying no and otherwise trying to assert control.) Graphs of the weekly totals for the class on each measure are posted on one wall of the room, while the teachers pull kids’ individual files, law-firm style, from a cart on wheels.

A GRAND EXPERIMENT

In fact, this classroom is anything but typical. Of the 18 children, four are recent immigrants from South America, more than a quarter are eligible for free or reduced-price lunch, and four have been diagnosed with autism. The teachers are using a system called the Accelerated Independent Learner CABAS model for elementary and preschool children. CABAS, which stands for Comprehensive Applied Behavior Analysis in Schools, has been used in model schools to teach children of all abilities, but it is most widely acclaimed for its success with kids with autism. As the name implies, CABAS builds on an approach called Applied Behavior Analysis (ABA), which uses positive reinforcement and other ideas developed by the late behavioral psychologist B.F. Skinner.

Mondello, who holds an M.A. from Teachers College, is board-certified as a CABAS master teacher, and Lake, Giordano and Broto are current TC master’s degree students who also hold certifications in the technique. The CABAS system was developed by their advisor and program director at TC, R. Douglas Greer, Professor of Psychology and Education.

On this particular warm and rainy November

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afternoon, Greer himself—tall and balding, with a trim salt-and-pepper beard that makes him look like a leaner version of Sean Connery—sits in a child-sized chair in the back of the classroom, where the bolder kids run up and lean on his knees to chat and the shyer ones periodically approach to report their progress. (“Doctor Greer, I met criterion,” is a frequent greeting.)

Greer, who has taught at TC for the past 37 years, was himself directly mentored and befriended by Skinner. He has worked with thousands of children





WHEN WORDS FAIL THEM

Clockwise from above: The professor in consultation with a Keller student; Denise Ross, Assistant Professor of Psychology and Education, is co-authoring a book with Greer that builds on ideas about language and behavior posited by B.F. Skinner; four-year-olds writing at the Fred S. Keller School, founded by Greer 20 years ago

with autism; enabled hundreds to speak their first words; founded schools in England, Ireland and the U.S.; and trained legions of TC graduates as teachers and researchers in ABA in education, medicine and therapy. Along with other leading behavior analysts, he and his students have developed hundreds of new teaching and behavior “tactics” through systematic studies with kids, teachers and parents. Guided by the daily streams of data they record, teachers at CABAS schools (and other schools that use ABA) have been able to reach children who were previously considered unreachable.

Though it has received less attention, they have also, according to many studies, enabled children without disabilities to learn faster and to take a greater interest in what’s being



The Unorthodox Behaviorist

taught. As the mix of the second grade classroom in the Morris School District suggests, Greer's work here is aimed at putting a new exclamation point on that work. Over the next two years, assuming he can come up with \$5 million in funding, Greer plans to launch a five-year study to compare the performance of typically developing, preschool-age children who are taught by CABAS with that of peers from wealthier, more highly educated families. His goal: to test whether or not it is possible, by using the CABAS system and intervening at an early enough age, to close the education achievement gap.

"There's a huge demand for us to come do programs with kids with disabilities or in middle school kids with behavior problems," Greer says. "Now we want to do it with kids in poor communities, and we want to get them at age two, three, four or five, so that we can help them go to college." If his second graders in the Morris School District are any indication, there are genuine grounds for optimism. "We had these same kids last year as first graders, and by March, they had met all the standards for New Jersey and most of the ones for New York. These were supposed to be the toughest kids to teach because so many of them are poor, learning disabled or speak English as a second language. Yet at the end of the year they ranked in the 74th percentile nationally. Also, we've shown four to seven times more learning in our autistic kids over control or baseline measures in previously published papers. If we can do that with those kids, we can sure as heck do it with children without disabilities. And if we do, the question for society will no longer be, 'Can it be done?' but instead, 'Do we care enough to bother?'"

MAKING UP FOR LOST WORDS

The idea of widely using behavior modification in the public schools is likely to be a tough sell with some audiences. Despite his vast contributions to human psychology, Skinner is too often misremembered by the general public as the



all behavior is functional. We learn it under conditions in which we need to know and we repeat it because in some way we are rewarded by the results. "If you're learning to talk," Greer says, "you'll be more likely to say 'water, please,' if you just had salty pretzels."

guy who put his infant daughter in a box and administered electric shocks to people in mental institutions. Neither perception is accurate—it was an air-conditioned crib with clear plastic sides, and Skinner, who did all his work with pigeons, argued against



THE GIFT OF GAB Clockwise from left: a student at Keller School learns to write by tracing; three-year-olds at play; Keller School Assistant Supervisor Lauren Stolfi; a constant flow of data guides Greer's CABAS teaching methodology



The more salient question, however—even for those who see past the media stereotypes of behaviorists—is: Why teach typically-developing children with a system designed for kids with deficits in language development? The idea can seem insulting: after all, at the Fred S. Keller School in Yonkers, New York, which Greer founded 20 years ago for children with behavioral disorders and language delays, teachers routinely use cookies and toys to reward kids for speaking. Is Greer saying, then, that poor kids are so handicapped that they might as well be autistic?

The answer is a qualified *yes*. Greer believes that, like kids with autism, many children from very poor families are missing out on certain developmentally important “verbal-behavioral cusps”—language skills such as how to listen, ask, name, seek attention, modify ideas, move from seeing something to saying it, move from reading something to writing it, and how to do all these things in response to something other than food or other instant gratification (or, in the parlance of behaviorists, without direct reinforcement). The guid-



ing premise of his work in Morristown is that poverty can prevent children from successfully navigating these cusps every bit as powerfully as hardwired cognitive disorders—and that it does so specifically through language deprivation.

“Language,” Greer says, “is how humans do the world. How a kid reads, writes and speaks determines his chances in life, and it’s becoming more and more that way.”

One of the reference points for this idea is a famous study published in 1995 by the researchers Betty Hart and Todd R. Risley, “Meaningful Differences in the Everyday Experiences of Young American Children,” which found that young children of parents on welfare are exposed to two-thirds fewer words than kids from professional and white-collar families. There are many obvious

punishment and the use of aversive stimuli—but Greer says that the author of *Walden II* remains an ongoing victim of bad press.

“Skinner was a sweet, gentle guy,” he says. “I know both of his daughters, and they turned out just fine.”

reasons why this is so, all reflecting the cycle of deprivation that poverty passes from generation to generation—fewer books in the homes of poorer families, parents who have smaller vocabularies and are less likely to read to their children, and, as Hart and Risley found, parents who simply have less time and attention to give—but the bottom line is that by the time they are three, children in welfare families typically have vocabularies of only about 500 words, compared with 1,000-plus words for children from wealthier backgrounds. By the time these kids are in kindergarten, Greer says, “they may have had thousands fewer language interactions than their peers. Other research shows that the teacher then speaks to them less than to the other kids, because she doesn’t know how to deal with them, and then the kid misbehaves to get attention. By fourth grade, he’s in special ed, and by 14, she’s pregnant, and it’s a generational repeat. And it’s absolutely about poverty, not race. There were plenty of black families in the higher-income group that Hart and Risley studied and plenty of whites in the welfare group.”

WHEN THE WORLD IS NEW

To hang out with Greer is to play Watson (the fictional character, not the behaviorist) to his Holmes: you realize quickly that you may see, but you do not observe. In almost any situation, he seems to be witnessing the fundamental principles of language and behavior at work, and he relates them, in his easy drawl, in a stream-of-consciousness narrative that blends his own earthy humor with allusions to Skinner, Shakespeare, Marquez and almost anyone else who can help illustrate a point.

Yet he returns again and again to the behaviorist’s supreme articles of faith: that all behavior is functional—even bad behavior—and that we learn it under conditions in which we need to know (the “antecedent”) and we repeat it because in some way we are rewarded (“reinforced”) by the results. “If you’re learning to talk, you’ll be more likely to say ‘water, please,’ if you’ve just had salty pretzels,” Greer says. Similarly, if you have to write under conditions in which you need to affect the behavior of the reader, you’ll learn to write effectively. Grammar, spelling and all the other bells and whistles will fall into place because they have to—or, as the architects say, form will follow function.

It was Skinner who extrapolated from these principles of non-verbal behavior to identify a set of verbal functions—outlined in his 1957 book, *Verbal Behavior*—in which the speaker expresses ideas with increasing sophistication, in response to an ever-broader and more indirect range of stimuli.

At the most basic level is the “mand”—speech, sound or even

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gestures that are born of deprivation: “I’m too warm,” “I’m hungry,” “I’m thirsty,” “I need to go to the bathroom.”

Next comes the “tact”: using language to name things when one is motivated by attention from others and a desire to find out about the world.

“Marquez writes at the beginning of *One Hundred Years of Solitude*, ‘The world was so new that there were no names





MAKING THE WORLD BIGGER

Clockwise from left: Keller School teaching assistant Michelle Caputo helps a youngster learn to tell time; at the Keller School, kids can exchange tokens for free choice time when they give a correct response; Greer is popular with the younger set; using a mirror to teach generalized imitation, which aids in developing creative speech

for many things, so all the people could do was point,” Greer says. “Well, that’s what tacts do, and it’s not just names. They tell us what things are and enable us to remember stuff beyond basic sensations like pain or taste. That’s why kids of a certain age are constantly saying, ‘There’s a cow, Mommy’, ‘There’s a car’, ‘There’s

a bridge.’ It drives parents crazy, but it’s a critical way to build vocabulary, and, for it to work, it has to be reinforced by attention from the adult.”

Greer’s contribution has been to build on Skinner’s approach by doing research that incorporates the listener as well as the speaker. More specifically, he’s focused on listening processes (and other forms of observation) that precede the development of speech. Both mands and tacts are, in his words, “links between the non-verbal and verbal worlds, and

between the speaker and the listener”—building blocks that, once established, allow a child to progress. Yet to learn them, the child must first learn to differentiate. And that process, Greer says, begins with recognition of the human voice.

(Continued on page 41)

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The Unorthodox Behaviorist

(Continued from page 31)

“Even in utero, mom’s voice becomes conditioned reinforcement for listening. And when kids come out into the world, they orient toward that same voice. Then a face comes into view, and it becomes paired with that voice, and with warmth and food, and the sight of it becomes another reinforcer. And that is the first lesson in ‘same’ and ‘not same’—which is critical, like a computer dividing everything into ones and zeroes.”

Children who haven’t learned to respond to voices—either because of hard-wiring issues or environmental deprivation—remain unable to differentiate,

(There are also classes at the school that put more advanced kids with disabilities together with typically-developing children.) Teachers identify gaps in kids’ development, create conditions under which the children have an incentive to learn and then reward them for their learning behavior. For example, a teacher will hold up a cookie, perform a series of rapid motions—clapping hands, touching nose, touching mouth—and say the word “cookie.” If the child repeats the sequence and says “cookie,” he gets the cookie for his effort. Then the teacher will repeat the sequence, hold up a picture of something

else—a circle, for example—and say that word. If the child successfully imitates that sequence and says “circle,” he gets another cookie. Aided by these and other procedures, many children speak their first words.

“Those are blessed moments,” says Denise Ross, Associate Professor of Psychology and Education

at TC and Greer’s former doctoral student.

Ross and Greer have developed a variation on this “Simon Says” kind of teaching that can create what they call “a higher-order class of imitation”—one in which a child, for the first time, grasps the relationship between seeing and doing, hearing and saying. In the example above, if the child finally says “circle” without being prompted by a sequence of movements, a breakthrough has been made. He can now figure out how to take words he has learned in one context and use them in another context that he has not yet learned. Just as important, he can also

derive satisfaction (reinforcement) from the broader range of responses he can now engender from the world. Eventually all things become potential reinforcers, from the smiles of strangers to favorite TV characters to Mozart.

“It’s the reverse of Marquez,” says Greer, who is publishing these ideas this spring in a book co-authored with Ross. “The world gets bigger because you have so many words for things.”

A CREATURE OF HABIT

Greer talks a lot about reinforcement in his own life. Growing up in Tennessee, he was urged by his grandmother to help others and believe in his own abilities. Her encouragement led him to play both the tuba and double bass—as a teenager he toured with big bands, country bands, jazz groups and symphony orchestras. As young parents, Greer and his wife used reinforcing behavioral methods to teach their 18-month-old son to read; on occasion, braving public disapproval, they also stood him out on the corner of 120th Street when he acted up in the TC bookstore. In his mid-20s, warned that he was at risk for developing diabetes, Greer took up running and has since run in 25 marathons. As a researcher, he used to count the number of words he wrote every week, until the pleasure of writing became its own reward (supplemented by jazz and cigars).

Yet clearly one of the biggest influences in Greer’s life has been behaviorism itself. Greer was a 19-year-old music student at Florida State University when a roommate challenged him to read Skinner’s *Science and Human Behavior*.

“Until that point, I had this image of his ideas as being too harsh—too tied to the lab and without any connection to

(Continued on page 42)

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imprisoned with only their most basic senses to connect them to the outside world.

“Someone can come into the room and start talking, and they won’t even look up,” Greer says. “It’s like Charlie Brown on TV, only the kid doesn’t even hear that person as *wonb, wonb, wonb*. It’s just a continuous hum.”

At Greer’s Keller School, which is publicly funded but privately run, the goal is to get kids with autism and other disorders over critical developmental humps by actually supplying these missing language interactions and skills.

The Unorthodox Behaviorist

(Continued from page 41)

real life," he recalls. "Then I read the book, and I said, 'wow.' I decided I was going to develop a science of teaching that would enable kids to enjoy music. Because they weren't exactly swarming to hear classical and jazz."

After college, Greer taught music for a few years in the Florida public schools, where he quickly encountered bigger challenges than students' reluctance to check out Brahms. After bailing a school band member out of jail, he became a volunteer probation officer and was soon fielding requests from local schools to work with their special education students.

Greer says that by 1969, when he was hired as an assistant professor at Teachers College, "special education was just taking off nationally.

"Len Blackman and Fran Connor, who was then department chair, asked me to teach a course in 'behavior modification,' because all these difficult kids were coming into classrooms," Greer says. "And teachers didn't know how to deal with the learning and behavior problems they presented."

Around the same time, Greer got his second introduction to Skinner—this time face to face.

"In order to become approved to read students' Ph.D. dissertations at Columbia, you have to have your own work reviewed by a committee of faculty, and you can choose some of the reviewers from outside the University. I said, 'I'll get the best,' and I had the committee send Skinner my stuff, even though I didn't know him. A few days later, the phone rings, and this voice says, 'This is Fred Skinner, and I'm looking at your work. Why don't you come up here to Boston so we can talk about it?' I said, 'I'll be on a plane tomorrow.'"

Not long afterwards, Greer set out to test empirically the concepts outlined in *Verbal Behavior*: mands, tacts and other key elements in Skinner's scheme of language development. This work led to the creation of the curriculum and much of the teaching methodology of CABAS. In 1986, at the behest of the Westchester County Department of Public Health, he created a program, the Fred S. Keller School (named after another Greer mentor and lifelong friend of Skinner), in the basement of a southern Westchester church, mortgaging his summer house to cover the start-up costs.

Today, of the various approaches used with children with autism, behavioral methods are the ones most widely known and tested. Yet even some autistic people attack behavioral treatment. Autism is part of their identity, they argue, not a condition to be cured, and ABA subverts identity by substituting rote imitation for real learning.

In Westchester County, where last spring the legislature proclaimed May 5th as "R. Douglas Greer Day," those views are emphatically *not* shared by parents at the Keller School.

"My son has changed enormously since we came here," says Deirdre Angelastro, whose four-year-old son, Ryan, has been diagnosed with "pervasive developmental disorder" (PDD)—a catch-all name that covers a range of disorders. "He had tantrums, and his language was very scripted. Now it's more functional, and his ability to learn—in the classroom and everywhere else—has grown so much.

He makes transitions, he has conversations with his brother—he's just made incredible strides."

Barbara Kimmel, a parent educator at the Keller School (and a TC alum), says that her two typically-developing children "could use a lot of ABA, too—and so could tons of other kids. I hear how they're taught, and it's not the best. And I think, 'Why can't Doug go into regular schools and change everything?'"

ONLY TIME WILL TELL

It's not that he hasn't tried. Repeated brushes with the New York City public school system have left Greer embittered about both the bureaucracy and what he sees as a batch-production approach to student outcomes.

“The first lesson in ‘same’ and ‘not same’...is critical, like a computer dividing everything into ones and zeroes.”

"If you develop a drug that works for 68.1 percent of the population, a lot of people are going to be OK and a few are going to flourish, but many won't be helped and a few may die from the side effects," he says. "And if you develop education that way, not only will you lose the whole bottom half, but also the kids who are just one standard deviation away from the mean."

In contrast, Greer argues, CABAS—with its emphasis on instruction guided by

The Unorthodox Behaviorist

(Continued from page 42)

highly specific data about each child—can reach kids on their own level.

“We show kids how to monitor their own behavior, how to set goals for themselves and, ultimately, how to reinforce themselves for what they’ve achieved. The goal, by fourth grade or so, is to make them independent, accelerated learners—to give them control of learning, so that ultimately they become ‘bad teacher-proof.’”

More advanced kids, who have the right academic and behavioral skills in place, are taught to learn by observation rather than through direct instruction. Sometimes that’s accomplished through games that progressively build more sophisticated learning abilities. In other instances, the system relies on children’s reading skills.

“Let’s say, Alison [the quick reader in the second grade classroom in the Morris School District] is learning long division,” Greer says. “She’ll be given a written description of how to do it that includes models, or examples, of the technique. She’ll work alone, asking questions when she needs to.” For Alison, her reinforcement is the pleasure of doing the work and getting it right (and watching her graph go up). Kids who are less far along can’t work this way because they don’t yet have the skills to produce satisfying, recognizable results. They need direct instruction and reinforcement through praise and other immediate rewards.

“If you’re sounding out words, then you’re not getting the meaning of the story, so you need encouragement until that’s happening,” Greer says. “But once you can read it fast enough to say, ‘Oh, what a beautiful sunset’, you’re getting reinforced by the words themselves.”

Ultimately, Greer defines success

in terms of functionalism—that is, the degree to which behavior yields desirable results for the learner. These criteria build on the philosophies of Dewey, Peirce, Whitehead and other leading Pragmatists, but behaviorism takes it to a deeper level. Can a child ask for something she needs and get the response she desires? Draw a picture that produces the desired recognition and response? Write a recipe that can be followed or a book report that makes someone understand exactly what happened in the story and how it made her feel? If the answers are yes, then in each instance, she has crossed a new line, permanently clearing old hurdles and—just as important—shedding whatever label she has carried to that point.

“I don’t believe in autism per se,” Greer says. “I believe in linguistic deficits, and those can be changed.”

One afternoon last spring, when I joined him out at the Keller School, Greer pointed to a pretty little girl with corn-rowed hair who was talking animatedly to a teacher. “When she was 16 months, she was severely delayed and couldn’t make sounds. We did basic listener-speaker skills. She spent two years in our early intervention program and two years in our preschool program. Soon she’ll be spending part of her day in a regular-education kindergarten class.”

I asked him if that meant she was no longer autistic—if, for all intents and purposes, she was cured.

“She has disabilities—all these kids do. But, hey, DNA drives behavior, but environment changes DNA.” Greer stretched his lanky frame and stood. “She might potentially make it all the way, but at this point you can’t tell. It’s a marathon, not a sprint.” ❖

Friends of the Collge

(Continued from page 45)

In 1968, after receiving her Ed.D., Gottesman was hired to develop a program for children with dyslexia and other learning disabilities at the Children’s Evaluation and Rehabilitation Center (CERC) at Albert Einstein College of Medicine. She served for years as the Center’s Director of Psychoeducational Services and, in 1991, expanded the program to include adults. In 1999, she became founding Director of the new Fisher Landau Center for Treatment of Learning Disabilities, an extension of CERC. She retired as Professor Emeritus in 2002.

In addition to conducting research, Gottesman developed education programs for teachers, volunteers and physicians—but her greatest love was working directly with the children and adults who came to CERC and later to the Fisher Landau Center for help with their problems.

Through it all, her ties to TC remained constant, as she continued to supervise student interns and remain close to some of her TC colleagues and faculty members. She joined TC’s Board in 1990 and, in 2001, she and her husband provided the financial support to launch the renovation of the library. From the start Gottesman has been a member of the Library Committee that, under current Gottesman Libraries Director Gary Natriello, conceptualized and determined the role that the library would play within the College.

“It’s become such an exciting place, and Gary has been creative and dynamic as a leader,” she says. “It’s not just for gathering knowledge, but also for using knowledge to solve social problems and problems related to education. It’s really a model to be emulated.”

The same could be said of the woman who made it all possible. ❖