

Teaching Autistic Kids to Read Facial Expressions

by Amber Dance ~ April 13, 2009

Social Cues can be confusing or even scary for an autistic child. But robots, videos and more are getting in the act, and for some it's working.

Nigel the bus loves to travel fast. When traffic slows him down, he gets angry — and shows it.

Jennie the helpful tram normally wears a sunny smile, but her lip curls in disgust when she has to transport a load of smelly fish to the market.

Nigel and Jennie star alongside six other vehicles in “The Transporters,” a series of short videos designed to help autistic children recognize the emotions in others’ faces. Since its U.S. release in January, families, schools and clinics across the country have purchased the British-made series.

For people with autism, facial expressions can be mysterious, even frightening. New tools are emerging to help them learn to decipher faces and thus better handle the social interactions they find difficult. In a scientific study, “The Transporters,” with actors’ faces grafted onto appealing vehicles, helped autistic kids learn expressions. Autism therapy robots are also under development in the U.K.; the inventors hope they will help teach basic social skills.

And at UCLA, clinicians are working on computer-based facial-training programs, as well as the possibility that medication may improve attention to social cues.

Surveys of medical records show that one in 150 American children has an autism spectrum disorder, which includes autism and related conditions such as Asperger syndrome, according to the national Centers for Disease Control and Prevention in Atlanta. These developmental disabilities cause social impairment and limited, repetitive behaviors. Children commonly enjoy predictable objects, and the vast array of unexpected expressions on a human face can be frustrating.

“The social world is confusing; it’s unpredictable and scary,” says Elizabeth Laugeson, director of a research collaboration between UCLA and the Help Group, a Los Angeles nonprofit that runs schools and outreach programs for children with special needs.

No one knows exactly why autistic people have trouble dealing with faces, says Dr. Judith Piggot, director of the UCLA Autism Evaluation Clinic. One theory is that autistic people have the capability to understand faces, but, for some reason, don’t find the process to be rewarding — and so they don’t bother.

The lack of ability, or interest, in social cues makes it hard to form relationships. At Help Group schools, and at other similar programs, social skills are an essential part of the curriculum. Children practice identifying facial expressions on their teachers or in pictures. Computer programs that present different expressions are also available.

Autistic children enjoy mechanical things, probably because their motion is predictable, Laugeson says. For example, parents often report that their autistic kids adore “Thomas the Tank Engine.”

“The Transporters” seeks to harness that interest.

The five-minute videos feature vehicles such as cable cars and trams, which run on tracks and so move only in a few predictable directions. Each vehicle sports the face of a real human actor. A character might look sad, as Jennie does when her wheel gets stuck, or excited, as Barney the tractor does on his birthday. Each of the 15 narrated episodes explores a different emotion through the story.

“The children can focus on the wheels going around . . . but at the same time, without even realizing it, they’re getting exposed to faces, getting the opportunity to learn,” says Simon Baron-Cohen, director of the Autism Research Centre at Cambridge University in the UK and developer of “The Transporters.”

The British government funded the video’s production. One-quarter of profits from sales goes to autism charities; another quarter will fund future research.

Baron-Cohen and colleagues tested “The Transporters” in a study soon to be published in the *Journal of Autism and Developmental Disorders*. They gave 20 families with autistic children, ages 5 through 8, the video and instructions to watch at least 15 minutes a day. Eighteen other families did not use the video.

The scientists evaluated the children’s facial expression skills at the start of the study, and again one month later. They found that the kids who had watched “The Transporters” were better at matching the appropriate facial expression to an emotional situation. Also, the children could identify expressions in pictures of strangers, applying their new understanding to unfamiliar faces.

That scientific evidence is important, Laugeson says, because most current therapies lack a solid scientific base.

The study focused on high-functioning children who could use language and had average IQs; Baron-Cohen is now evaluating the videos in low-functioning kids, who generally have difficulty with speech and self care.

The program will likely be useful in helping kids to start thinking about expressions of emotions, says Sven Bölte, a psychologist at the University of

Heidelberg's Central Institute of Mental Health in Mannheim, Germany. However, it will be important to show that the kids can apply their skills with faces in real-life situations, Bölte says.

Some anecdotal evidence suggests that children do extrapolate from the videos to other situations.

Six-year-old Benjamin Hollman of New Paltz, N.Y., who is autistic, has been watching "The Transporters" since its U.S. release. A month after getting the video, his mother, Jessica Greenstein, noticed him paying more attention to emotions.

Benjamin now expresses his own emotions: sentiments such as "I don't like Sam," his younger brother. He also recognizes feelings in others: When his parents had a tiff, Benjamin noted his father was "mad at Mommy," Greenstein says

Scientists at the University of Hertfordshire, in Hatfield, England, are also using technology to help kids with autism spectrum disorder (particularly those who are low-functioning) develop social skills.

Among their efforts is KASPAR the robot — short for Kinesics and Synchronisation in Personal Assistant Robotics. The child-sized robot appeals to autistic kids because it is not unpredictable like a real person, says Ben Robins, who leads the project.

KASPAR exhibits a few basic expressions, such as happy and sad. Its minimal expressions are less threatening than those of a real, complex human face, Robins believes. When autistic children meet KASPAR, they are often drawn to its face, mimicking its expression with their own, he says.

Robins hopes that after looking at the robot's simple expressions, and practicing making faces along with it, the kids will be more able to recognize those same expressions on people.

"The very fact that they're interested in exploring the facial expression, that's a huge step," Robins says. He hopes to start clinical studies of KASPAR's effectiveness soon.

Two ongoing studies at UCLA are also focused on face-to-face social engagement and facial expression recognition.

In a study, not yet published, UCLA researchers looked at the effects of Ritalin (methylphenidate) in children who have both autism and attention deficit hyperactivity disorder. At a low dose of the drug — lower than is normally used

for ADHD — the scientists found that children spent more time locking gazes with other people, indicating they were more socially engaged.

And Piggot is developing a Web-based facial-expression training program that uses video faces, just as “The Transporters” does. She expects her program to debut online in a few months.

Unlike the static pictures used in many similar training programs, faces that change over time more readily mimic real-world situations.

“A person’s emotion changes in a split second,” Baron-Cohen says. “If you have any delay in processing that information, it’s gone very quickly.”

Technology can help kids with autism, but parents should also take every real-life opportunity to engage their child with facial expressions, says Laurie Stephens, director of clinical services for Education Spectrum, an Altadena-based agency that provides therapy for kids with autism spectrum disorder.

“It can’t just be learned through a computer program,” she says. Parents should cue their kids to look at Mom or Dad’s face to identify the emotion there.