

ONE STEP AT A TIME

A rewards-based therapy fosters positive behavioural changes in children with autism and helps them develop skills, writes **Jeanette Wang**

Friends used to tell Jai how blessed she was to have such a compliant, easy-going child who didn't throw any tantrums. It wasn't until her son was 2½ years old that she realised why: Etash had autism. "I was pretty devastated," says Jai, 32. "I was in denial for about five months after he was diagnosed."

At 27 months, an age when most toddlers are able to communicate, Etash was non-verbal. He was eager to play with other kids, but didn't know how to and wasn't able to start a conversation. He babbled constantly and never called his parents "mum" or "dad".

Concerned, Jai took him to a paediatrician, who referred her to a developmental doctor, who gave the diagnosis. When she finally accepted the reality soon after Etash's third birthday, Jai decided that ignoring his condition was not the best thing to do.

"I did my research and found that early intervention is essential for kids with autism," says Jai, who was living in India at the time.

She came across a therapy called applied behaviour analysis (ABA), an evidence-based scientific teaching method founded in the US in the 1960s that has shown to be highly effective for bringing about positive behavioural changes and developing skills in all types of learners – especially for children with autism.

As she researched more she realised India couldn't provide the special education expertise

she needed. She decided to move back to Hong Kong, where she had previously worked for seven years as an analyst for Goldman Sachs.

The day after she landed in Hong Kong in 2013, Etash was registered at Autism Partnership, one of the world's largest and most established ABA service providers for autism spectrum disorders.

Two years on, Etash, who turned five in May, is almost on par with his peers in terms of development. During the interview with the *Post*, he negotiates with his mother about lunch.



Dr. Jeremy Greenberg

"Can I eat a fish burger?" the boy asks.

"Fish burger is too boring," Jai says.

"Fish burger is not yucky, it's yummy," says Etash.

"What about chicken nuggets?" Jai asks.

"What about an ice cream burger?" the boy quips.

Catherine Tam, an ABA practitioner who supervised Etash's programme, says he's one of the most successful cases she's had in her 10 years with Autism Partnership.

Dr. Jeremy Greenberg, a PhD in ABA and director of special education provider The Children's Institute of Hong Kong, says ABA is "very effective" and it has worked for all of his patients, "some faster than others".

The success of ABA in autism spectrum disorder – estimated to affect one in every 100 people – has seen it grow in popularity worldwide. In Hong Kong, Greenberg says there's been an increasing awareness of ABA in the past few years.

Autism Partnership, in Quarry Bay, is believed to have been the first formal organisation to offer ABA in Hong Kong when it opened in 1999, according to Dianna Yip, a board certified behavioural analyst (BCBA) and founder of Plai Behaviour Consulting. Today, there are at least six different special education service providers offering ABA.

When Greenberg moved to Hong Kong in 2009 with his wife and four children, he was the ninth BCBA in Hong Kong, he says. The city now has 36. And more are on the way to cater to demand: Greenberg, who founded the Hong Kong Association for Behaviour Analysis in 2010, started a part-time, two-year BCBA course in 2012 to increase the supply of local practitioners. This summer, Polytechnic University agreed to host the course.



A one-on-one session at The Children's Institute of Hong Kong.

ABA uses a highly individualised system of rewards to change behaviour and teach new skills. Reinforcements are carefully selected to motivate the child to learn: for one child it could be the computer, for another the piano, or something as simple as a high five.

Practitioners observe behaviour, identifying specific things to work on, breaking them down into small steps and modifying them progressively. Detailed data are recorded to track progress. Sessions are conducted both one-to-one and in groups, with a recommended therapy time of 20 to 40 hours a week.

"Behavioural analysts make decisions based on what they see the learner is able to do, not on what they think the learner is able to do," explains Greenberg.

"Each time the student responds, the teacher records if the answer is correct or incorrect. At the end of the day, the teacher looks at the data and plots the results on a graph. Over time, the graph will show a trend

if the child understands or not. The "golden age" for the best outcome for ABA therapy is three to six years old, Tam says, though there's still benefit for older children.

ABA is not without critics. Psychologist Ole Ivar Lovaas, who pioneered the use of ABA on children with autism, used "aversives", such as striking children or giving them a mild electric shock, when they did not comply. These are no longer used, but the programme is still criticised for being overly demanding. Some have likened the approach to "dog training".

Not all ABA is the same, the practitioners say. Service providers and practitioners have their own teaching styles.

"Like autism, ABA is on a spectrum," says Tam. "It can be rigid – table tasks and using food as reinforcement – or flexible and contemporary, like what we do, with natural instructions and incidental learning."

Greenberg adds: "There are some general rules that ABA practitioners are supposed to

follow, but there are different interpretations of the rules. Frankly it's not monitored as well as it should be and I think that's an issue."

Family involvement and support is key for success in ABA programmes. Consistency of therapy between school and home is vital. Etash's progress was due a lot to his parents, Tam says – he wasn't just getting therapy in the classroom but all day at home.

"We'd create barriers for him to encourage him to use his thinking, processing and problem-solving skills," says Jai, who was trained by Tam.

"For example, he'd take a shower and I wouldn't put out his clothes. He'd then ask me, 'Mummy, where are my clothes?' Or we'd dress funny to go out, like wearing pyjamas to Ocean Park or a thick winter coat on a hot day, and he'd say, 'Mummy you're not dressed properly'."

Unfortunately, not all parents are like Jai. "In Hong Kong, many parents work long hours.

It is difficult to conduct parent training and have them follow through," says Yip.

ABA's reach in Hong Kong is also limited by language and cost. Most practitioners operate in English, and programmes – which can cost more than HK\$600 an hour – are not subsidised by the government.

A former director of the HKABA, Yip stepped down to work with a local organisation to set up an action group to promote ABA awareness among locals. The group's website will launch in August or September.

"There was never a thought that ABA wouldn't work for Etash. Its science backing is very strong," Jai says. "It's beautiful to see him realise he has a voice – he's very bossy now. He doesn't take it for granted, and I can't take him for granted either."

Etash pops his head into the interview room.

"Are you done?" he asks.

"I'm done," Jai says.

"Great," says the boy, "let's go to McDonald's."

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LAB REPORT

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Less is more with resveratrol

Resveratrol, a natural compound found in red wine, has shown in mice studies to potentially prevent cancer, ageing, heart disease and neurodegenerative disorders. But what is the most effective dose for humans? A new study finds less may be more: as little as a dietary dose of resveratrol equivalent to that found in a large glass of red wine. Doses 200 times higher than this were previously used in clinical trials, and the researchers say this could be why studies have so far failed to show resveratrol's benefits in humans. In the new study, colorectal cancer patients took capsules of either a dietary dose or those 200 times higher every day for a week before surgery. The researchers detected resveratrol in intestinal tissue from both groups, indicating that even low concentrations of the compound target the gut. Notably, in mice with hereditary colorectal cancer, a low dose of resveratrol proved more potent than a high dose in blocking tumour growth. However, cancer protection was seen only in mice fed a high-fat diet, hinting that lifestyle may factor into the compound's anti-cancer effects.



Sleep could make your memories more accessible

Forgotten something? Sleep on it. New research published in the journal *Cortex* finds that sleeping not only prevents memories from being forgotten, it also makes them easier to access. Scientists from the University of Exeter and the Basque Centre for Cognition, Brain and Language, had study participants learn made-up words either prior to a night's sleep, or an equivalent period of wakefulness. They were asked to recall words immediately after exposure, and again after the period of sleep or wakefulness. Where participants forgot information over the course of 12 hours of wakefulness, a night's sleep was shown to promote access to memory traces that had initially been too weak to be retrieved. Researcher Nicolas Dumay explains: "Sleep almost doubles our chances of remembering previously unrecalled material. The post-sleep boost in memory accessibility may indicate that some memories are sharpened overnight. This supports the notion that, while asleep, we actively rehearse information flagged as important."



Blood markers linked to postpartum depression

Postpartum depression is a debilitating disorder that affects almost 20 per cent of new mothers, putting their infants at increased risk of poor behavioural, cognitive and social development. A team of researchers from institutions in the US and England have found a marker in the blood linked to the hormone oxytocin that can identify women who might be at particular risk. Oxytocin plays a positive role in healthy birth, maternal bonding, relationships, lower stress levels, mood and emotional regulation. Using data from a longitudinal study of parents and children in the UK, the researchers identified a relationship between genetic and epigenetic markers in the oxytocin receptor that increase the chance of a woman developing postpartum depression. "Our data needs to be replicated, but it is our hope that the oxytocin receptor marker we have identified will be useful to clinicians in identifying women at risk for postpartum depression," says Aleeca Bell, the study's first author, of the University of Illinois, Chicago.



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