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Play attention: ADHD and neurofeedback training



Sheila Wayman

A pioneering non-invasive, non-medical treatment for children with ADHD is now being offered in Ireland

Zara Lynch was "always very headstrong". Her mother, Michelle, says she was the child who would blurt out answers in class without being asked, would jump the queue of children waiting to take their turn on the slide and had to be asked over and over again to do a simple thing, like brush her teeth.

As a result she was in trouble with teachers, found it difficult to make friends and was getting into frequent arguments at home in Co Meath. At age eight, Zara was beginning to realise it herself but seemed unable to change.

"Mum I can't help it; it just comes out of my mouth," was what she often told Michelle. "She would say herself, she just had a horrible year in school last year," says Michelle.

This year it is different. Zara, now aged nine, is going to school in the morning with a smile on her face, no longer having had up to 10 arguments with her mother before she even stepped out the door. She isn't habitually talking out of turn in class and has made friends with girls "who wouldn't have given her the time of day before", says Michelle.

So what happened? It started when Michelle saw a television programme in which another mother talked about a very similar scenario with her eight-year-old son and explained how neurofeedback training had helped him.

It was a "light bulb" moment for Michelle. She discussed it with her husband and then contacted the Actualise Neurofeedback Clinic at Dublin City University's Healthy Living Centre to make an appointment for Zara to be assessed.

Not clinical
There is nothing clinical about the interior of Actualise. An array of thank you cards on the wall with the message "thank you for making me smile again" - sit on cabinets dividing a consultation area with comfortable seating from the business end housing two computer screens on a table. Only the white polystyrene heads, on which different sized EEG (electroencephalography) caps are stored, suggest that this is no run-of-the-mill office.

Neurofeedback training is a scientifically proven way of making the brain work bet-

ter - essentially brain training. While it has various applications, it was approved by the American Academy of Paediatrics in 2012 as a Level 1 "best support" intervention for children suffering from attention-deficit hyperactivity disorder (ADHD).

It is such children, aged from five to early teens, who are the majority of clients both here in Dublin and at a second Actualise clinic in Galway. Some with other conditions, such as anxiety or planning disorders, also attend.

At an initial consultation, explains clinic director Dr Michael Keane, the parents and child talk about the diagnosis and/or symptoms and staff make an EEG recording of the child's brain function.

"Our job is to link their symptoms to their brain function," he says. They analyse recordings of the child's brainwaves to see if there is a link between the reported behaviour and some dysfunction in the brain.

Distinguishing between "good" and "bad" brain function is done by comparing the brainwaves with those in a normative database. Keane draws an analogy with measuring heart rate: most people would have a resting heart rate of about 60 so if yours is 200, a considerable deviation from the norm, it would be cause for concern.

In the case of children with ADD or ADHD, "we are often looking at frontal and pre-frontal problems in the brain and that area controls a lot of the executive functions like impulse control and inhibiting responses - like blurring things out and sustaining attention and reducing distractibility".

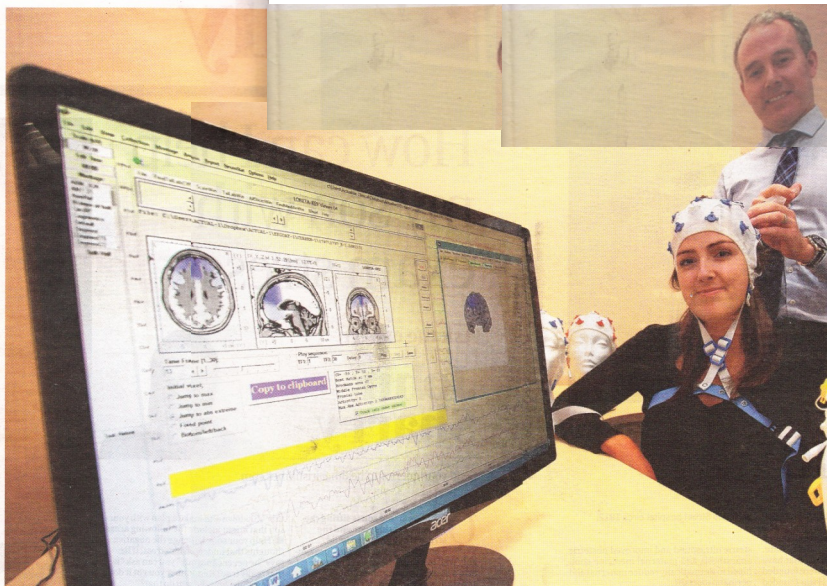
The post-assessment report will explain to the parents if and how the symptoms are linked to the way the brain is functioning and whether or not neurofeedback training could change that.

This investigation of the brain can be "very validating", not only for the child but also for the parents, he says, as it tells them they're not a "bold kid" or "bad parents".

Keane often points out to children that nobody would blame them if they broke a toy and that an EEG, just like an X-ray, pinpoints where the physical problem is.

"That is the value of objective data," he says, showing that the brain, like any other organ in the body, can work well or not so well.

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Children are also assured they are in good company when they hear that members of the Connacht rugby team - topping the Pro12 league at the time of writing - have done neurofeedback training with Keane in an effort to improve their performance.

If parents opt for this non-invasive, non-medical intervention, it is not about "trying to change the child per se", says Keane, "but to give them some control over brain function, which is why we insist on calling it neurofeedback training because they are learning a skill".

A question often asked of him is "will it last?" His answer is that if you learn a skill that makes your life easier, you want to keep doing it, so it is naturally reinforced - and once it is reinforced, it will stay.

So what does neurofeedback training involve? Before the child sits down for the first session, wearing an EEG cap with sensors wired up to a computer, the assessment will have indicated which area of the brain needs to change to help their behaviour.

"The brain is dynamic: sometimes it will perform well, sometimes it will perform poorly," says Keane, a chartered psychologist who went on to specialise in neuroscience. By reading the child's brainwaves, the technology will capture those milliseconds when the brain is functioning better at something, such as concentration, and play a video for that split second.

Neurofeedback training is a scientifically proven way of making the brain work bet-

"The brain is dynamic: sometimes it will perform well, sometimes it will perform poorly," Dr Michael Keane demonstrates equipment in the clinic at DCU.

PHOTOGRAPH: NICK BRACKSHAW

the brain says 'I like watching that video', so the behaviour that caused the video to play is more likely to happen again . . ."

Is it a conscious effort? "It is about as conscious as riding a bicycle," he replies. "You just know what it feels like. It is certainly conscious, but explaining it is difficult, and that's exactly what people will say: 'I don't know what I'm doing but I know how to do it'."

As soon as the child gets good enough at concentrating to play the video on the screen, the level of difficulty is increased.

Keane says that, on average, about 15-20 sessions are required. This can be enough to make a change that breaks the cycle of behaviour and it is important that the child's whole "social system" reinforces the improvements.

You want to help mum and dad, teachers, the soccer coach and friends to see that this child can be different and, as a result, their responses should be different, he says.

Actualise is hiring a behaviour analyst to work with them, who will do a functional behaviour assessment with the child and parents, to "upskill" the parents in trying to understand what is going on and help them support their child.

"Telling mums and dads that they need to change is not always an easy message," admits Keane. It's not just about handing over your six-year-old and asking for him to be "fixed" because he is driving the family crazy.

It is an intervention that sits, in my opinion, in the future in the context of other interventions with the family.

HADD Ireland, a support organisation for people affected by ADHD, says it recognises that neurofeedback is being widely discussed as a possible intervention for the condition. However, it is not endorsing it.

In a statement to *The Irish Times*, it says:



"HADD Ireland supports evidence-based intervention. At present, neurofeedback is not evidence-based, but we remain hopeful that further research may support its use and it can be added to the long list of psychosocial interventions that can be used to support people with ADHD in achieving their potential."

The organisation "advises parents and adults to consider the available evidence supporting neurofeedback, and the costs involved, before committing to this intervention".

Ohio State University is currently sponsoring a clinical trial it describes as "the first to test with adequate power" for a specific benefit of neurofeedback as a treatment for ADHD.

Several randomised controlled trials have shown significant benefits but these are inconclusive, it notes, because they were not "double-blinded".

The new two-site randomised trial, ex-

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