



Dolphins are not healers

Dolphins are smart, sociable predators. They don't belong in captivity and they shouldn't be used to 'cure' the ill

Lori Marino

Imagine this. Jay, an eight-year-old autistic boy, whose behaviour has always been agitated and uncooperative, is smiling and splashing in the pool. A pair of bottlenose dolphins float next to him, supporting him in the water. Jay's parents stand poolside as a staff member in the water engages him in visual games with colourful shapes. She asks him some questions, and Jay, captivated by his surroundings, begins to respond. He names the shapes, correctly, speaking his first words in months. With all this

attention Jay is in high spirits; he appears more aware and alert than ever before. A quick, non-invasive EEG scan of his brain activity shows that it is indeed different from before the session.

Jay's parents, who had given up hope, are elated to have finally found a treatment that works for their son. They sign up for more sessions and cannot wait to get home and tell their friends about the experience. They are not surprised to find that dolphins have succeeded where mainstream physicians have not. Everyone believes that dolphins are special — altruistic, extra gentle with children, good-natured. And any concerns the parents might have had about the welfare of the dolphins have been allayed by assurances from the trainers that they are happy and accustomed to the role they are playing. After all, as the parents can see for themselves, the dolphins are smiling.

'Jay' is a composite character drawn from the dozens of testimonials that appear on dolphin-assisted therapy (DAT) websites, but stories like his, stories about the extraordinary powers of dolphins, have been told since ancient times. Much of our attraction to these creatures derives from their appealing combination of intelligence and communicativeness, and the mystery associated with the fact that they inhabit a hidden underwater environment. Dolphins are the Other we've always wanted to commune with. And their 'smile', which is not a smile at all, but an anatomical illusion arising from the physical configuration of their jaws, has led to the illusion that dolphins are always jovial and contented, compounding mythological beliefs that they hold the key to the secret of happiness.

The mythic belief in dolphins as healers has been reiterated down the ages from the first written records of encounters with these animals. In Greco-Roman times, dolphins were closely linked with the gods. Delphinus was a favourite messenger of Poseidon, who repaid him for his loyalty by placing an image of a dolphin in the stars. The Greek poet Oppian of Silica declared around 200 CE that 'Diviner than the Dolphin is nothing yet created.' Aristotle was the first to recognise that dolphins are mammals. Indeed, the root of the word dolphin, *delphus*, means womb, and underscores the long-standing belief in an intimate (even chimeric) connection between dolphins and humans.

In ancient Rome and Mesopotamia, dolphins adorned frescoes, artwork, jewellery and coins, and in ancient Greece the killing of a dolphin was punishable by death. The Minoan palace of Knossos on Crete, dated to 1900—1300BC, contains one of the earliest and best-known ornamentations depicting dolphins in a fresco on the wall of the queen's bathroom. In Greek mythology, Taras, son of Poseidon, was said to have

been rescued from a shipwreck by a dolphin sent by his father, hence the image of the boy on a dolphin depicted on historical coinage.

The perception of dolphins as lifesavers is connected with beliefs that they possess magical powers that can be used for healing. The ancient Celts attributed special healing powers to dolphins, as did the Norse. Throughout time, people as far apart as Brazil and Fiji have traded in dolphin and whale body parts for medicinal and totemic purposes. Despite being saddled with these dubious supernatural attributes, there actually are several well-substantiated modern reports of dolphins coming to the aid of humans. In 2007, for example, a pod of bottlenose dolphins saved the surfer Todd Endris, who had been mauled by a great white shark off Monterey, by forming a protective ring around him, which allowed him to get to shore. But these instances are related to dolphins' ability to generalise their natural anti-predator behaviours to another species, not to anything supernatural.

The intelligence and sophistication of dolphins is not just mythological, of course. Decades of scientific research has confirmed that they possess large and highly elaborate brains, prodigious cognitive capacities, demonstrable self-awareness, complex societies, even cultural traditions. In 2001 my colleague Diana Reiss and I provided the first definitive evidence for mirror self-recognition in two bottlenose dolphins at the New York Aquarium. Published in the *Proceedings of the National Academy of Sciences*, this study demonstrated, along with many others since, that dolphins have a level of self-awareness not unlike our own.

Yet in the face of this evidence for their very real brainpower, dolphins have been imbued with religious and supernatural qualities and remade into the ultimate New Age icon.

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The person most responsible for fuelling modern, New Age notions of dolphins as morally superior spiritual healers is the late neuroscientist John C Lilly, who pioneered research with captive dolphins in the 1960s. Lilly's early work on dolphin brains and behaviour, conducted in laboratories in the US Virgin Islands and in Miami, was groundbreaking, bringing to light important knowledge about the species' large, complex brains and keen intelligence. Lilly also provided evidence for dolphin sophistication in the realm of communication, reporting that dolphins could mimic the rhythm of human speech patterns.

In a paper published in *Science* in 1961, Lilly reported in detail on the range of ‘vocal’ exchanges between two dolphins in adjacent tanks, each equipped with a transmitter and receiver — Lilly’s dolphin ‘telephone’ — and noted how their ‘conversation’ followed polite rules; for example, when one ‘spoke’, the other was quiet. Lilly drew up a dolphin lexicon showing that dolphins used a variety of communication methods, from blowing and whistling to clicking. Convinced that dolphins had a sophisticated language of their own, he suggested that the species might provide the key to unlocking humanity’s potential to commune with extraterrestrials. He became part of the initial SETI (Search for Extraterrestrial Intelligence) group of radio-astronomy pioneers, who were so impressed with his tales of dolphin intelligence that they voted to call themselves ‘The Order of the Dolphin’.

However, Lilly and his followers eventually began mixing their own quasi-spiritual beliefs with their scientific work. They also began engaging in scientifically and ethically questionable research, including giving captive dolphins doses of LSD. In one ethically dubious experiment dating from 1965, Lilly’s research assistant Margaret Howe spent 10 weeks living with a dolphin named Peter in a tank rigged up to contain just enough water for the dolphin to swim in and for Howe to wade in. Within weeks, it became clear that Peter was less interested in Howe as a room mate than as a conjugal mate, and to stave off his increasingly aggressive behaviour, Lilly encouraged Howe to relieve the dolphin’s erections.

Lilly’s claims about the superior nature of dolphin spiritual and moral qualities soared well beyond any legitimate data. ‘We can presume that they have ethics, morals and regard for one another much more highly developed than does the human species,’ he wrote in *The Dyadic Cyclone* (1976). On the back of this conviction, he attempted to set up a formal but overly expansive programme of interspecies communication and co-operation between humans and dolphins called the Cetacean Nation, which was, needless to say, never fully realised.

Despite (or perhaps because of) his controversial activities, Lilly became a counter-cultural guru and was very influential in promoting the use of dolphins in captive research. His informal studies of dolphins interacting with autistic children led him to make outrageous claims about the psychic powers of dolphins, which have since become the basis for many pseudoscientific claims made by DAT facilities.

Dolphins and whales were first captured for public display by the circus mogul P T Barnum, who kept wild-caught beluga whales in an aquarium at his museum in New York City in the 1840s and ’50s. Then, as now, dolphins did not survive well in captivity, yet the popularity of dolphin displays, in which trainers engaged in

increasingly daring aquatic gymnastics, grew dramatically, especially in the 1960s and '70s.

A key influence here was the US television series *Flipper*, dubbed an 'aquatic Lassie' and originally broadcast in 1964. It featured a bottlenose dolphin who lived in a cove and helped his human pals — two boys, named Sandy and Bud — to save people from mortal danger. But if *Flipper* was a boon to captive displays and increased public demand for dolphins, it also sparked concerns over their welfare. Marine parks responded swiftly by rebranding themselves as centres of education, research and conservation, rather than just entertainment. And the shows continued.

The public's enthrallment with dolphins and whales drives enthusiasm for aquariums and theme parks to this day. In the US alone, more than 50 million people visit captive facilities every year. Dolphin and whale shows have become increasingly extravagant, involving many different species, acrobatic interactions between trainers and animals and set designs to rival a Broadway show. Swimming with dolphins (SWD) programmes have emerged as a critical, and lucrative, component of the dolphin entertainment industry. Although some commercial operations offer opportunities to swim with wild dolphins, most SWD customers swim with captive dolphins in the convenience of concrete tanks. These SWD programmes emerged in the 1980s, and while there were just four SWD programmes in the US in 1990, now as many as 18 facilities offer dolphin 'encounter' programmes of one kind or another.

Many people describe their in-water encounter with a dolphin as one of the most exhilarating and transformative experiences they've ever had — even the highlight of their life. Others report feeling a sense of euphoria and intimate kinship with the dolphins, little doubting that this feeling is shared by the dolphins. In many ways, it was only a matter of time before the concept of dolphin-assisted therapy emerged as an enhanced version of SWD programmes, underpinned, once again, by healing theories derived from dolphin mythology, and by theme parks marketing themselves as places of science and education.

DAT took off in earnest when Lilly's early explorations became better known through the efforts of the educational anthropologist Betsy Smith, then at Florida International University. In 1971, Smith let her mentally disabled brother wade into the water with two adolescent dolphins. She noted that the dolphins treated him tenderly: she believed that they knew her brother was disabled and were attempting to soothe him. Soon after, Smith established therapy programmes at two facilities in Florida, and offered them free of charge for many years. But she later concluded that DAT programmes were ineffective and exploitative of both the dolphins and the human

patients, and in 2003 she publicly denounced them, calling them 'cynical and deceptive'.

DAT typically involves several sessions either swimming or interacting with captive dolphins, often alongside more conventional therapeutic tasks, such as puzzle-solving or motor exercises. The standard price of DAT sessions, whose practitioners are not required by law to receive any special training or certification, is exorbitant, reaching into the thousands of dollars. It has become a highly lucrative international business, with facilities in Mexico, Israel, Russia, Japan, China and the Bahamas, as well as the US. DAT practitioners claim to be particularly successful in treating depression and motor disorders, as well as childhood autism. But DAT is sometimes less scrupulously advertised as being effective with a range of other disorders, from cancer to infections, to developmental delays.

Thousands of families visit DAT facilities and end up gaining nothing that they could not have gained from interacting with a puppy

While not always promising a cure, DAT facilities clearly market themselves as offering real therapy as opposed to recreation. Under minimal standards, authentic therapy must have some relationship to a specific condition and result in measurable remedial effects. By contrast, DAT proponents cite evidence that is, more accurately, anecdotal, offering a range of explanations for its purported efficacy, from increased concentration to brainwave changes, to the positive physiological effects of echolocation (high-frequency dolphin sonar) on the human body. Parents of autistic children and others who appear to benefit from DAT believe that these explanations are scientifically plausible. The photos of smiling children and the emotional testimonials from once-desperate parents are hard to resist. Even those sceptical of DAT's scientific validity often just shrug and say: 'What's the harm?' In the worst-case scenario a child who typically knows little enjoyment and accomplishment in life can find joy, a little bit of self-efficacy and connection with others for what is sometimes the first time in his life. But amid all the self-justification, the question most often left out is: what about the dolphins?

DAT facilities will often post testimonials from enthusiastic parents on their websites, some of which are recorded just minutes after the session ended, when parents are feeling most hopeful. These websites attract other parents who are desperate to find cures for their own children. They come away impressed with the 'evidence' that DAT can improve their children's lives, and the apparently scientific approach of the staff.

It all looks so promising, and so they figure it's worth the plane fares, the time off work, and the high price tag.

Meanwhile, many of the parents featured in the enthusiastic testimonials return home to renewed disappointment. Their children fall back into their regular routine, and fall silent again. At first, cognitive dissonance will not allow these parents to consider the possibility that they've wasted their money. But later they recognise that nothing has changed, and that the initial improvement was due to the excitement of the trip, and all the personal attention their child received. Many families visit DAT facilities and end up gaining little more than they would have done from interacting with a puppy.

Equally sad are the lives of the dolphins. Hidden behind their smile, and therefore largely invisible to patients and vacationers, captive dolphins spend their lives under tremendous stress as they struggle to adapt to an environment that, physically, socially and psychologically, is drastically different from the wild. The results are devastating. Stress leads to immune system dysfunction. Often they die from gastric ulcers, infections and other stress and immune-related diseases, not helped by their sometimes being given laxatives and antidepressants that are delivered in their food.

The worst of it, perhaps, is that there is absolutely no evidence for DAT's therapeutic effectiveness. At best, there might be short-term gains attributable to the feel-good effects of being in a novel environment and the placebo boost of having positive expectations. Nothing more. Any apparent improvement in children with autism, people with depression, and others is as much an illusion as the 'smile' of the dolphin.

While there exist numerous published studies purporting to demonstrate positive results from DAT, none so far has controlled for feel-good and placebo effects. Most don't even include a minimal control group, which would provide some measure of whether even general short-term feel-good effects are due to the dolphin or to other salient factors, such as being in the water, being given conventional tasks, getting increased attention from others, and so forth. Because none of these components of the DAT situation are disentangled, there remains no credibility to the claim that DAT offers effective therapy.

DAT clients are often among the most vulnerable members of society, so the industry takes advantage of them. The pseudoscientific patina and untested testimonials serve to reel in desperate parents and people suffering with severe anxiety or depression who will do anything to get some relief. They are persuaded by words such as 'treatment' and 'therapy' and by the misuse of scientific methods, such as EEG to measure brainwave patterns, which suggest scientific legitimacy.

The consequences are potentially dire. Despite the mythology, dolphins can be aggressive. Even Lilly acknowledged that their teeth were sharp enough to snap a 6ft barracuda clean in two. A number of participants in SWD and DAT programmes have been seriously harmed by these large, wild predators, sustaining injuries ranging from a ruptured spleen to broken ribs and near-drownings. In one example from 2012 at an Isla Mujeres resort, off Cancún, one of the dolphins in a SWD programme bit a woman who was on honeymoon. 'I felt the dolphin had my whole thigh in his mouth and then I realised I had been bitten, and it was very painful,' Sabina Cadbrand told reporters when she got home to Sweden. Two other people were bitten in the same incident, including a middle-aged woman whose wound went right down to the bone.

Though it might not chime with New Age dolphin lore, the reality is that dolphins, even those born in captivity, are wild. Parents who would never place their child in a cage with a lion or an elephant seem to think nothing of placing them at very real risk (of both injury and disease) in a tank with a dolphin. Only last year, an eight-year-old girl had her hand bitten at Sea World, Orlando, while feeding a dolphin.

The public is largely unaware of the consequences, because aggressive or dying dolphins and whales are often quietly replaced by others taken from the wild or transferred from another facility. Though the original star orca whale Shamu spent just six years in captivity in SeaWorld San Diego, dying in 1971, the name 'Shamu' has been used for different orcas in shows ever since, leading to the perception that the original Shamu is alive and well and enjoying longevity in captivity.

I've conducted research with many captive dolphins over the years, most of which died prematurely. Presley and Tab, the two young dolphins that starred in my mirror self-recognition study, were later transferred to new facilities and perished shortly afterwards. Their deaths were especially hard for me to rationalise, because my own study had shown them to be self-aware creatures. They convinced me, several years ago, never to return to captive studies, and to channel the bulk of my energies into campaigning for dolphin protection and freedom. I understand that desperate people will continue to visit DAT facilities for help with their own illnesses. Sadly, they may never realise that the dolphins they seek help from are likely to be as psychologically and physically traumatised as they are.

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