

Fears & Phobias



Andrew Newton

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The big freeze

Ever been frozen with fear...? Things happening so fast you don't know which way to run? Felt like a rabbit caught in the headlights? Don't panic! It's just part of your evolutionary survival strategy.

The fight or flight response is something which everyone has experienced sometime in their lives, but fight or flight isn't always a choice. Presented with a threatening or perilous situation, the bloodstream immediately floods with adrenalin – your heart rate increases, pumping blood to your muscles, making you ready for a sprint to safety... your mind suddenly focussed on a single goal – survival.

Not everyone however reacts in the same way. Extroverts and risk-takers are more likely to be able to see an advantage or reward in such situations. They are certainly more likely to fight if they believe they have the wherewithal to come out on top, or at least manage the threat. If an individual has been in plenty of similar scrapes, the decision to fight will come easier.

Rather than fleeing, they might see it as an opportunity to score some 'battle-scars' to show off to their friends. These individuals are going to be more likely to respond to threatening situations with fight, rather than flight – depending of course on the degree of the threat and the quickly calculated odds of survival. If not... the rapid exit strategy will be the sensible option.

Conversely, those who prefer to avoid confrontation tend to consider the potential negative outcomes. They are the sort of people who don't want to turn up at work the next day with a black eye.

No threatening situation is absolutely safe – there is always an element of risk, calculated or not, and despite of the unconscious trigger mechanism of fight or flight, an element of conscious judgement is involved in the decision-making process.

But there is a third possibility – the freeze response. It's a question of playing dead – *I'm dead and therefore no threat to you so leave me alone! With a bit of luck, you might not notice me.* Freezing is not a conscious decision – our primitive unconscious brain takes over and immobilises us. We hope that the predator will lose interest and go looking for another victim.

This sometimes works when confronted by dangerous animals, because their killer instincts are geared toward motion recognition. Given our human evolution, this probably occurred often during hunting, almost certainly when a dangerous predator had the advantage and when there was no obvious escape. In those circumstances we might do what a number of other animals do – we play dead.

When overpowered, overwhelmed or trapped, a freeze response might be the only option if the opportunity to fight or fly is unavailable.

Freezing might even be the appropriate and best response to complete surprise, which in turn is the response to a sudden and unexpected occurrence. Freezing may also give us the time to choose between fight or flight.

Surprise also serves a purpose. Our eyes widen to increase our peripheral vision – useful if we're looking for an escape route or other threats. Maybe there's something nearby that could be used as a weapon. Our mouth may fall open ready for us to shout a warning to others, scream or call for help. We can also come to a standstill when surprised, just like the rabbit in the headlights, as we devote all our energy to deciding if what is unfolding is a threat, a joke or a harmless incident.

Bystanders who are not involved in the incident are often unfairly criticised for not immediately intervening – during assaults for example – but in the main, it's because most people are too shocked to intervene.

It's also thought that freezing might have some psychological benefits. A lot of people who 'freeze' report little or no memory of the event. This may well be another survival strategy that might preserve our sanity or protect us from future psychological trauma. If we have been completely overpowered in an assault scenario, freezing might shut down our attentional systems, so that we are unable to process what is happening to us.

In other words, the event is so shocking, so overwhelming, so awful, it's thought that the individual will experience a 'red-out', where intense emotions prevent us from storing information about the trauma being experienced.

Nonetheless, even though people may be taken aback after experiencing a freeze response or be surprised at their own inability to deal with a situation decisively, as with all our emotions, it likely serves a functional and adaptive purpose. Or it may be that our unconscious mind is merely reminding us of the old adage, *He who turns and runs away, lives to turn and run away another day!*

Fright night — how we process fear

Fear is as old as life on earth. Fear is a fundamental, deeply embedded survival strategy that has evolved over billions of years. It warns and protects living organisms against threats to their very existence. From the simple pricking up of a dog's ears, to the start of a stampede on an African plain, or a complex series of anxieties in a human, fear can save our lives. And it can also give us the greatest pleasure.

We deal with fear in different ways. Fear can reduce us to tears or it can make us feel elated and alive – some people devote substantial energy to being purposely frightened, from the stomach-churning gravity of the fairground ride to the thrill of a high speed ski run down a mountain.

Conspiring together deep in the brain – the most complex structure in the known universe – are chemicals that trigger fight or flight responses, as well as positive emotions such as satisfaction, joy and excitement. Believe it or not, the high arousal state we experience when we are scared is closely linked to these other responses.

So what is it that makes the difference between a thrilling adrenalin rush and being absolutely terrified? At the most basic level, all emotions are the result of interactions in the biological/electrochemical brains.

A major factor in how we experience fear is how we process fear-creating stimuli and put them into context. Most of the time, our logical thinking brain and our emotional brain exist in harmony. But we also have the ability to change how we perceive high arousal states, so that we can quickly shift from fear to excitement to enjoyment.

For example, entering a haunted house on Halloween we anticipate there will be things jumping out to frighten us. Because we expect this, the brain can quantify the experiences. But if you walk down a dark alley at night and a stranger begins to walk toward you, the emotional and thinking areas of the brain will both agree the situation is dangerous – possibly life-threatening – and tell you it's time to run as fast as you can!

So what actually happens when we experience fear?

Fear is first registered in the brain and spreads through the body to make adjustments for the best defence, whether that be flight or fight. The process starts in the amygdala – a small almond-shaped structure in the temporal lobe. One of its purposes is to determine the emotional significance of the stimuli – or threat – for example, the amygdala activates whenever we see a human face that's expressing an emotion.

This reaction becomes much more pronounced when associated with anger and fear. A threat stimulus, such as the sight of a predator, triggers a fear response in the amygdala, which in a split second activates areas involved in preparation for motor functions involved in fight or flight. It also triggers the release of stress hormones and activates the sympathetic nervous system. This in turn leads to the vital physical changes that prepare our bodies to perform more efficiently in dangerous situations. The brain becomes hyper alert, pupils dilate, the bronchi dilate and breathing accelerates to deliver more oxygen to the bloodstream and then to the muscles. Heart rate and blood pressure increase along with blood flow. A stream of glucose is directed to the skeletal muscles while organs not vital for survival – such as the gastrointestinal system – slow down to save energy.

The hippocampus and prefrontal cortex also help the brain interpret perceived threats and are also involved in a higher-level processing of context, which helps us recognise whether a perceived threat is real or not.

For instance, encountering a large male lion in the wild can trigger a strong fear reaction, but the response to seeing the same lion roaring safely behind bars in a zoo promotes a different response because the hippocampus and the frontal cortex process contextual information, and inhibitory pathways dampen the amygdala fear response and its results. The logical circuitry of our brain reassures our emotional brain that we are safe.

So how do we learn to tell the difference?

When something scary happens we immediately go on high alert – all our attention is focused on this one event and to the exclusion of every other thought. Human beings usually learn fear through personal experiences. Peak experiences such as being attacked – or observing others being attacked, for example by a vicious dog – act as warnings that will trigger fear in future similar situations.

But uniquely in humans, fear can be learned through instruction – we often learn to fear from others. Even the proximity of a dog will then trigger a fear response. We learn safety in the same way – we become used to a docile pet dog or by observing other people safely interact with the dog.

Why do some people enjoy being frightened?

Because we are social creatures and are able to learn from one another, when we experience frightening things in the company of others, we often find that emotions can be contagious in a positive way. So, when you see your friend in the haunted house and she's progressed from screaming to laughing, your social skills enable you to pick up on that change in emotional state, and that understanding can positively influence your own.

While each of these factors (context and social learning) has the potential to influence the way we experience fear, what connects them is our sense of control. When we can recognise what is and isn't a real threat, we are also able to re-catalogue that experience and enjoy the thrill of the moment, so that we ultimately reach a place where although we are stimulated, we still feel in control. So it's our perception of control that's vital to how we experience and respond to fear.

When we overcome the initial fight or flight rush, we are often left feeling satisfied, reassured of our safety and more confident in our ability to confront the things that initially scared us.

Everyone is different, everyone sees and understands the world in a slightly different way and everyone has a unique sense of what's scary and what's enjoyable. But this raises yet another question – why do some people enjoy a well-intentioned fright while others do not?

An imbalance between excitement caused by fear in the emotional brain, and the sense of control in the contextual brain can result in either too much or too little excitement. If the experience is perceived as too real, an extreme fear response can overcome the sense of control. This can happen even in those who enjoy scary experiences – they may enjoy horror movies but be terrified by *Alien* because the alien is too real, in which case, the fear response is too strong to be moderated by the logical brain.

On the other hand, if the experience is not powerful enough to excite the emotional brain, or if it appears too unreal to the thinking cognitive brain, the experience will end in disappointment.

For example, a biologist who is unable to suspend disbelief enough to override his cognitive brain and is too analytical, will find it difficult to enjoy the *Alien* movie as much as someone who is not so cynical about 'alien' biology. But if the emotional brain is too terrified and the cognitive brain is helpless, or too suppressing, scary movies and scary experiences may not turn out to be so much fun.

Abnormal levels of fear and anxiety can lead to significant distress and dysfunction and limit a person's ability to achieve success in life.

About one in four people experience some form of anxiety disorder during their lives, and nearly 8% will be left with post-traumatic stress disorder (PTSD).

Disorders of anxiety and fear include phobias, social phobia, generalised anxiety disorder, separation anxiety, PTSD and obsessive-compulsive disorder (OCD).

These conditions usually begin at a young age, and without appropriate treatment can become chronic and debilitating enough to adversely affect a person's life. The good news is that there are effective treatments – hypnotherapy being one – that can effect rapid, positive and permanent change.

Why we fear the creepy crawlies

Some fears and phobias we learn, some, we are born with.

Most of us have never seen a poisonous snake or spider, except perhaps on a wildlife documentary, our fears temporarily put at rest by the reassuringly smooth voice of Sir David Attenborough. Yet a large number of people find these creatures repulsive.

There are plenty of other dangerous animals in the world that can harm or even kill us, but no lion, shark or wolf incites the same fear and loathing as a snake or a spider.

The truth is, many of us are born with an innate fear of anything reptilian or eight legged. This is because some animal phobias are deep rooted in our brains – rats for instance are unconsciously associated with plague or rotting food, but even they don't excite the same terror associated with the sight of an arachnid or ophidian.

Even babies who have never been exposed to the idea that snakes and spiders are nasty creepy crawlies don't like pictures of them. These reactions have been fixed in our brains for millennia, and for sound evolutionarily reasons. The fear has been passed down through our genes because of millions of years of experience.

Researchers at the Max Planck Institute for Human Cognitive and Brain Sciences in Germany and the Uppsala University in Sweden studied why stress reactions occur when very young children see a spider or snake.

They showed 16 six month-old children two sets of animal pictures – the first set consisted of eight photographs of spiders and flowers, while the second set consisted of eight photographs of snakes and fish. Each of the pictures had the same corresponding colours – the colours of the flowers corresponded to the colours of the spider, and the colours of the snake corresponded with the colours of the fish.

The researchers measured the infant's pupil dilation and found that their pupils significantly enlarged when they saw the snakes and spiders – a distinct sign that they felt stressed looking at these animals.

In developed countries, between 1% and 5% of people are affected by arachnophobia, the fear of spiders, or ophidiophobia, the fear of snakes. Arachnophobia can develop into a level of anxiety that will limit a person's life. Some people can't even enter a room unless it's been declared spider-free. My experience after living in South Africa for so many years is that the black population harbour not just a fear, but a morbid dread of snakes – they are terrified of them. And no big surprise, because around 30,000 people are killed by snakes in sub-Saharan Africa every year, out of a total of more than 100,000 worldwide!

Until recently, it wasn't entirely clear whether these fears were inborn or learned. Some researchers assumed they were learned as children, mostly from adults, while others thought they were innate. Earlier experiments (similar to the one above) had always been conducted with adults or older children and only tested whether subjects were able to spot spiders and snakes faster than harmless animals or objects, rather than detecting a direct physiological fear reaction.

This latest research has found that the fear reaction happens in infants as young as six months-old, when they are still too young to have had the opportunity to learn these

animals can be dangerous. Even the youngest babies appeared stressed, confirming the fear of snakes and spiders is of evolutionary origin. Survival mechanisms in our brains allow us to identify objects and to react to them quickly. Primates also have this ability and there's plenty of evidence to support that dogs and other higher mammals are also naturally wary of snakes. One of my neighbours in Cape Town knew he had a snake in his garden as soon as his dogs started barking.

Nonetheless, this inherited stress reaction predisposes us to recognise these animals as dangerous or repulsive, and so can develop into real fears or phobias.

Any fears expressed about spiders or snakes by parents or a genetic predisposition for a hyperactive amygdala (important for estimating hazards) can mean that increased attention to these creatures can turn into an anxiety disorder. Previous studies have shown that babies don't associate pictures of rhinos, bears or other theoretically dangerous animals, with fear.

Snakes and spiders on the other hand have been around much longer than today's dangerous mammals – unlike modern risks such as flying or being run over by a car. From an evolutionary perspective, cars and aeroplanes have only existed for a short time, and there's been no time to establish reaction mechanisms in the brain from birth.

There are still ways to help people overcome their fears. Hypnotherapy is one obvious solution, along with mindfulness and CBT. However, a healthy respect for poisonous snakes and spiders is probably a good thing, particularly if you live in countries that are also home to poisonous snakes and spiders.

Clowning around isn't funny

There's something strangely unnerving about clowns... and the cause lies buried deep in our brains.

The medical term for the fear of clowns is Coulorophobia, and it ranks in the top ten most common phobias. A surprising number of people find clowns creepy – some people suffer from a pathological fear of them.

Personally, I've always thought of clowns as irregular creatures, because I know that hiding behind the industrial strength greasepaint are men who lead an itinerant and rootless life, living from one circus tent to another, bemoaning decreasing attendance and secretly worrying about the day they will have to stop clowning and have nowhere to live.

Aside from their traditional role in the Greatest Show On Earth, travelling circuses employ clowns for manual labour. Clowns spend more time putting up and taking down the Big Top, sweeping up after the show, selling programmes, and carrying buckets of elephant dung than actually performing. It's a hard life in the circus... make no mistake.

I never saw a clown who was the slightest bit amusing, but then circuses in general have always left me cold. I have always found the whole concept outdated, cruel, irritating and pointless. The smell of the greasepaint – and circus animals – is something I can live without. Even as a kid I viewed circus clowns – throwing shaving foam pies at each other and squirting water from buttonhole flowers – antisocial and unruly. Even the traditional Pierrot clown – the smart one with the white face and the pointy hat, the one that's never on the receiving end of a custard pie in the face and never gets soaked by a bucket of water represents an understated menace. Clowns are like violent thugs after a few too many drinks – unpredictable, and yet entirely predictable.

There's something not quite human about clowns that goes beyond not normal. I have met a few in my show-business life so you can trust me on this. The red nose, the death-mask cold make-up, the garish baggy clothes, the huge shoes – it's as if we are being encouraged to laugh at someone with deformities or incurable psychiatric problems.

Most people are comfortable with robots. Robots serve us, they're programmed by us and they're predictable, even if they don't always work properly or even look like us. If they look exactly human, we can accept them without fear – unless they have some slightly exaggerated feature or unusual behaviour, such as a permanently fixed and pointless smile.

The human brain recognises a smile as something healthy, something safe and pleasant, but you can't smile all the time, because if you're smiling all the time, something's not right in your head. [I knew someone like that at college, and he used to creep me out. He is now a principal player in a well-known opera orchestra based in the north of England – always went round smiling at nothing and picking his nose.]

Whichever way you look at it, clowns look unnatural and not only because the makeup exaggerates expressions that would otherwise be natural. There is a disturbing ambiguity about face with a vivid painted smile and puzzled eyes, or worse, a sad downturned mouth with laughing eyes.

Along with the recent craze of ‘killer clowns,’ some of which have been spotted hanging around schools carrying large knives, clowns are thought of as belonging to the creepiest sections of society, along with funeral directors, taxidermists, stage hypnotists, individuals who touch other people too frequently and those who continually try to steer the conversation round to who’s the best singer on the X factor.

Historically, the purpose of jesters and clowns was to poke fun at those in power, a welcome satirical relief in times where matters of life and death were less certain. Clown’s contradictory makeup gives the observer the feeling they have something to hide.

Clowns aren’t like us – their paint job tells us they to belong a different tribe, from somewhere we probably wouldn’t like, here to steal our food, do unspeakable things to our women and possibly assault our children. We sometimes have the same problem with humans who are only slightly different from us – they are often mistrusted, hence our distrust of people who have a different colour skin or different cultural systems. This inborn and inherited mistrust is one gene away from, and often the cause of, prejudice and racism.

When we look at human faces, certain very specific parts of our brain process the information. When we look at not quite human faces, different parts of the brain get activated. When we see faces that look almost but not quite human, the brain becomes confused as to how to process the information and has difficulty in deciding which part should be believed.

This is also the reason we don’t trust aliens with large black expressionless and emotionless almond eyes – they look almost like us, but not enough to *be* like us. The same unconscious processes confuse us when we meet humans who have a different accent or dress very differently, or have unusual hairstyles or aggressive tattoos.

If something doesn’t quite move in the way we would normally expect, this too creates disquiet in the part of the brain where normal, fluid, human movement is identified and processed, so a clown’s silly walk is bound to compound the problem. This also explains one of the reasons we don’t like snakes – their slithering mobility is unlike any other animal – fish and birds we understand, but snakes... eugh!

At Johannesburg Zoo, somewhere I spent many happy Sunday afternoons with my son, animals were used to the sight of humans wandering around – humans, I should point out, of every colour and ethnicity. One afternoon I noticed that a lot of the animals – even those in groups – became visibly spooked when a clown, on his way to a kiddie’s party, walked by the pens. The zoo no longer allows clowns to wander around in their make-up, although their outlandish clothes seem to have no effect.

Freud identified one aspect of [entertainment] horror that he called *the uncanny*. This is when something appears familiar enough to be recognisable but weird enough to give you the shivers. *The uncanny* explains why we look at something and are immediately able to perceive that it’s not quite right, such as a partially decomposed human face – it’s recognisable, but far enough away from normal to make you feel uncomfortable. Clowns are the epitome of *the uncanny*.

By definition, clowns are supposed to make us laugh, but deep in the unconscious lurks an undefined fear that they won’t. We all suspect that if we’re not able to do the very thing that we’re supposed to do, it will embarrass and hurt us.

Clowns are a product of the Middle Ages – if they didn't make the king laugh, they were expelled from Court and consigned to the dung heap of life. A lot of court jesters were mutilated to make them smile all the time – the muscles that make the mouth frown were cut, which left them with an eerily unnatural and permanent smile.

Part of the problem is that the thick painted on smile or sad face doesn't match the clown's real flesh and blood expression that is plainly visible behind the greasepaint. This creates a puzzling mismatch of expression which is not only confusing, it's disturbing.

Clowns copyright their individual make-up by painting it on an egg and sending it off to Clown Central. No two clown faces are supposed to be the same, although the odds are they will be, but this pretentious record adds to the mythology that they are somehow engaged in some kind of high art. If they are, then it's a dying one because the number of registered clowns in Europe has fallen from ten thousand in 1975 to less than a thousand in 2016.

The Arts Council funded precious brigade may occasionally persuade us that clowning is akin to comic genius and that clowns present a wide range of emotional qualities that have educational value for groups of young children [they don't] and that their chicanery is highly skilled when obviously it isn't – it's inane, unfunny garbage.

I distrust clowns because they can be a nuisance. As mentioned earlier, having had some experience in show business I can assure you they all have one thing in common – they just can't turn it off – they can't stop clowning around and pulling same lame practical jokes... a personality disorder they share with circus dwarves, who are even worse because they have more energy and are forever cracking jokes about the size of their penises. [Apparently they are particularly blessed in that respect. When I was on summer season in Scarborough in 1984, I met seven of them. They spent most of their spare time shagging everything that moved.]

I feel the same about people who are perpetually full of bonhomie – they're even more irritating. They should all just fuck off. They're not funny.

The only thing we have to fear is fear itself

“The only thing we have to fear is fear itself.” **Franklin D. Roosevelt.**

All phobias are just tricks of the imagination. Some go as far as to say that phobias are a misuse of the imagination. While it's good to have a healthy respect for dangerous animals or threatening situations, you have a right not to be frightened.

If you suffer from a phobia, you will no doubt recognise the feelings of fear and disgust that goes with it – the tightness in your chest, the butterflies in your stomach, your clammy hands and the perspiration on your brow. You can feel the blood drain from your face, your heartbeat increase and the surge of adrenalin shooting through your body as oxygen is diverted to muscles and your natural metabolism stops. All your attention and energy is now ready for the battle ahead.

These are all normal responses to the things or situations we are afraid of. In fact all these responses – and more – are symptoms of fight or flight – nature's way of preparing our bodies to run, or fight to defend ourselves.

But it doesn't have to be like that. There is hope in the form of a range of therapies and techniques. The problem is that your phobia is really a fear of a fear – in other words, the only thing to fear, is the fear itself.

The physical feelings associated with your phobia will recur every time you are confronted with whatever it is that triggers them – the spider, the wiggly worm, or the holiday flight. It's happened so many times, you unconsciously expect the same physical feelings to play out every time – and you're rarely disappointed.

That's how your brain works – every time you see a spider, you remind yourself of how you felt last time, and the time before, and the time before that.

Believe it or not, this is normal, because it's part of your personal survival kit, honed to perfection over millions of years.

Even Agoraphobia – a fear of open spaces – is in all probability, inherited. Early humans would not have enjoyed being lost in the open, without shelter and prone to attack by animals that might eat you! But some fears are learned. Children learn phobias from their parents or from people they trust. Youngsters are vulnerable to negative ideas, especially if those ideas are passed to them by those they look up to, or authority figures.

Learned phobias can also be the result of unpleasant or negative experiences, possibly experienced earlier in life. Many people are afraid of flying because they found themselves in an aeroplane that happened to fly through severe turbulence – something they are actually designed for.

Or... it maybe because they were pushed into a swimming pool or attacked by a vicious dog when they were young. All these kinds of events represent 'peak experiences' which will inevitably change attitudes and beliefs – and establish triggers for the future.

Hypnotherapy can usually help sufferers put things back into some form of perspective and get over their dread. I have found, having helped numerous clients get over a range of phobias – including phobias of bananas, gloves, vomit and biscuits – that they all have at

least one thing in common... deep down they know and understand that their fear is unreasonable. It usually takes me about an hour or so to sort it out.

In the meantime, and always on the lookout for new and better ways of doing things, I was excited by the work of researchers at the Institute for the Developing Mind at Children's Hospital, Los Angeles.

Led by Dr Bradley Peterson and Dr Paul Siegel, the researchers have begun testing a new technique to allow people who suffer from debilitating phobias based on 'exposure therapy.'

Their initial study focused on 21 people with a fear of spiders, together with 21 non-phobic control subjects, and involved showing patients images of the very things they live in fear of, but in such short bursts that they weren't consciously aware of seeing them.

The researchers monitored the patient's brain's responses using fMRI scans while they 'flashed' the images. They observed activation of the neural regions that process fear but also saw activation in regions that regulate the emotional and behavioural responses to fear.

All the participants underwent separate tests that included viewing phobia-inducing images (spiders) control images not associated with phobias (flowers) and at two levels of exposure – very brief (without awareness) and longer duration (clearly visible.)

The very brief exposure to images was accomplished by way of a technique known as backward masking. This is unrelated to the 'subliminal messaging' popular in the 1950's and since proven to be nonsense.

In backward masking, a target image is shown very briefly and then immediately followed by a non-target image or 'mask' that prevents recognition of the target.

fMRI scans showed that in participants with the spider phobia, very brief exposure to spider images strongly activated the subcortical regions of the brain involved in immediate fear processing. But they did not experience fear consciously, apparently because the very brief exposures also activated brain regions that regulate fear. This had the effect of reducing the conscious experience of fear.

However, exposure to the clearly *visible* spider images deactivated areas of the brain that regulate fear responses – instead, inducing the conscious experience of fear.

Some therapies are based on directly confronting the feared stimulus, but this study shows that the brain is better able to deal with feared stimuli when they are presented without conscious awareness – that people may better face their fears if they are not consciously aware that they've faced them.

The researchers also believe their technique could be used to treat not only people with a range of phobias, but also children and adolescents who suffer from anxiety.

In the meantime, I'm now trying to think of a way of working this idea into my hypnosis based phobia cures.

So fears are just a misuse of the imagination, but for some people, audio, visual or other sensory triggers, or reminders of unpleasant past experiences, can be too much to bear. Hypnotherapists sometimes help patients overcome fears related to such experiences by using the 'Rewind' technique. I use it a lot with clients suffering from trauma and even

historical childhood abuse. The anxiety and dread resulting from those memories cannot be imagined.

By examining the brain's activity and the changes patients go through while experiencing or re-imagining those memories, researchers at Mount Sinai Hospital, New York, have shown that the imagination is every bit as powerful as the original memories when used as a curative therapeutic tool.

Exposure therapies have become a common method to help people overcome fears and phobias, anxieties and traumas, but they can be brutal – even when the therapist tries to create a safe environment and slowly introduces the fear-inducing cues. Even with the guidance of a professional, these therapies can still trigger a deeply unpleasant and even more traumatic experience. Asking a patient to recall and talk through their experience or the sensory triggers for them, can make the trauma worse – in effect, the patient is being asked to relive the horror.

The key to a permanent cure is to use the imagination as a resource. If the therapist can change the way the client thinks, the therapist can change the way the client *feels*. Of course, the memory of the trauma will still be there, but it won't hurt nearly as much. Quite often the change in the client is immediate and spectacular.

Dr Daniella Schiller, a Mount Sinai neuroscientist and psychiatrist, along with a hand-picked team of researchers, tested how well 'threat extinction' (teaching people that they can experience a cue that has become associated with something fearful that is not necessarily negative) worked for patients whose minds were re-trained with real versus imagined cues.

They focussed a lot on the effect of external stimuli on behaviour and how the brain reacts, but a lot of these processes occur deep in the brain and are therefore inaccessible. But one process – imagination – provides the key. Everyone has an imagination, and it's easy to unlock.

In order to experiment with deprogramming a fear response, the researchers first had to create one – albeit, a minimal one. So they played a musical tone to the patient and followed it with a minor electric shock. This is a quick way of conditioning a fear response every time they heard the tone – a perfect adaption of Pavlov's conditioning method.

Using Functional Magnetic Resonance Imaging (fMRI), the team was able to monitor brain activity that warned the volunteer a shock was coming. The participants were then divided into three groups.

The first group heard the same tone that had so recently signalled a painful shock was coming, but didn't get the shock. The second group was told to use their imaginations to 'replay' the tone in their own minds, and a third group was told to imagine a sound from nature, like birds singing or flowing water, as a way to simulate auditory imagination, but not the musical tone trigger.

In the group that heard the musical tone again, their brains at first retraced the same steps through the neural pathways that set in motion the fear response telling their bodies to prepare for pain. The sound kept playing, but the shock was not forthcoming.

The researchers watched as the direction of brain signals changed to travel through the 'fear suppression network.' Then, without warning, participants got another series of four shocks. Then, the sound was played again, but without the shock.

It's a complicated way to test if the association between sound and shock had stuck or been broken, but the results were clear. fMRI scans showed that the people who just imagined anything at all in place of the fear tone were not re-conditioned, and kept on experiencing both the pain of the shock itself and the fear from the tone that signalled it.

But in the brains of the people who had been given exposure therapy with the warning tone, the tone might briefly activate the same fear circuits, but then their fear response was significantly diminished. And while the brain regions involved weren't identical, the same was true for those who did exposure therapy by just imagining the warning sound. In both cases, the 'central hub' for fear suppression was in the ventromedial prefrontal cortex, according to Dr Schiller.

The scientists already knew this part of the brain plays a critical role in this extinction learning process. When doing therapy in anxiety patients, low brain function is also seen in the same area. Now we know that this central hub in the network is also active in imagined extinction or imaginal exposure therapy. Using either method doesn't erase or completely eliminate the association between a trigger and the experience of fear, but it is under better control.

Dr Schiller and her team also gained a more nuanced understanding of how to optimise exposure therapy, especially through imagination. They saw that those who generally used their imaginations weren't activating the same regions, and they weren't extinguishing their fear signals either. So it's not just any type of relaxation that helps, but specific imagery that works' to help eliminate fears.

It's easy to overcome phobias

Phobias are the most common type of anxiety disorder, affecting about ten million people in the UK. Whether you are triggered by spiders, or lifts, air travel, moths, or birds, you will recognise this as a real sense of fear that far outweighs any likely danger your trigger could logically present.

We are probably best known for our success in treating dozens of phobias and we have consistently helped people overcome their fears of anything from water, frogs, snakes, spiders, mice, small spaces, heights, dentists, clowns – and even Simon Cowell. We've discovered that most phobias are picked up in childhood and the trigger is repeatedly evaluated from a child's perspective. Even though as an adult you might know your phobia is ridiculous, you can't help behaving like the child who created the phobia in the first place.

The great news is that whatever your phobia, you can overcome it – and fast. First, ask yourself whether your behaviour is acceptable in the grown-up world. Do you scream when you see spiders? Do you flatly refuse to see a dentist, even when you've got toothache? Because when you're willing to accept that your behaviour is incorrect, you are ready to start making positive changes.

Next, try to think back to how and when your phobia might have been created. Perhaps you had a bad experience as a child, or watched a scary movie about snakes or sharks.

Remember the feelings you experienced at the time and ask yourself whether – or how – you may have misinterpreted the situation. Do you unfairly misjudge whatever you are phobic of, based on your childhood perspective?

Did the spider/snake/moth/bird actually do anything to harm you? Did it target you? Just because one dentist hurt you, does that mean all dentists are bad? Are you still unwittingly stuck in that child's frame of mind? Spiders DO NOT attack humans – they will always try to run. They are also virtually blind and very delicate. Maybe it's time to look for contrary evidence to prove that you misjudged the situation – maybe it's time to think like the adult you are.

If you find this bit difficult and you struggle to see your fear from any other perspective, ask a trusted friend to suggest a few more balanced alternatives. The aim is to get you to see the situation for what it really was and not for how it might have appeared at that time.

We can cure someone of a phobia in less than an hour, but you might need a little longer to create and confirm new positive associations in your mind.

You can build your confidence gradually. You can take a few extra lessons if you have a fear of driving, or accompany a friend to the dentist before your own appointment, or look through pictures of spiders while running through all the logical evidence in your mind.

It can help to rehearse or visualise yourself interacting with the object of your phobia and imagining everything going well.

You have got a journey ahead of you and every journey starts with one small step. Doing one small thing you couldn't do yesterday will make you realise you are OK: You are safe, and you can build on that tomorrow.

Pins and needles – managing needle phobia

Have you got Polio, Diphtheria, Tetanus, Measles, Mumps, Human Papilloma Virus, Hepatitis and B, Pneumococcus, Haemophilus? No...? Me Neither... thanks to a tiny slender needle...

Injections are a routine part of modern medicine. Not many people like having injections, and to be fair, that's understandable because being stuck by something sharp goes against our most basic survival instincts.

Around 10% of people have a needle phobia (trypanophobia) and, with the biggest vaccination programme in history coming our way, lots of needle phobics are probably wondering what it's going to be like. Some, will be genuinely too scared, even though their life might depend on it.

Even if people understand the necessity of having an injection, just the thought of it will put a lot of people off having it. Symptoms of needle phobia include dizziness, dry mouth, palpitations, sweating, trembling, shortness of breath, nausea and in extreme cases, fainting.

The symptoms occur at the same moment the 'fight or flight' response kicks in, sending chemical messengers around the body because humans are 'hardwired' to be wary of needles – the fear of sharp objects would have helped protect our ancestors from potentially fatal wounds from, for example, thorns and weapons such as knives and arrows.

A study carried out in the Netherlands revealed stress in more than 370 men and women when they donated blood. Almost every one of them, including those who didn't think of themselves as afraid of needles, experienced a surge in blood pressure or other physiological changes associated with stress.

[Reported in the journal *Vox Sanguinis*, 2018.]

No one knows what triggers an inbuilt wariness of needles into a debilitating phobia, but one possibility could be an upsetting experience with needles in childhood. More likely, the phobia is learned from others. Studies show as many as 80% of adults with a needle phobia had a close relative with the same fear. This is a common pattern with most other phobias. Children 'inherit' their mother's fear of spiders or the father's fear of ferocious wild animals. Not only that, but children's *behaviour* in such circumstances is modelled on that of their parents.

But needle phobia can be treated, especially if the patient is motivated to overcome it.

Exposure therapy and hypnotherapy, amongst other 'talking therapies' can help people manage their phobias by recognising how their thoughts affect their feelings and behaviour.

Getting the patient to first of all imagine driving past the hospital where the injection is to be administered is a first step. Then the patient can go into the hospital and talk to the receptionist or even sit in the waiting area for a few minutes. Next, a chat to the nurse who will administer the injection, and finally, the injection itself - all imagined but helping to

familiarise the patient with the procedure and the actual event. Most GPs will be happy to arrange for patients to visit a vaccination centre ahead of their appointment.

My particular approach includes getting a needle phobic client to look away while pinching themselves at the likely spot of the injection, because *that is exactly how it will feel!*

There is also another technique which can be used to prepare a client for an injection. It's based on Jacobsen's Progressive Relaxation and involves tensing the muscles in your hands, feet, arms, legs, face, shoulders, torso, and finally your whole body, for just five seconds each. I often use this as a precursor to hypnosis because it results in extreme physical relaxation almost immediately.

The exercise can be repeated four or five times. Where fear has made blood pressure rise and then rapidly fall, leading to fainting, the exercise brings blood pressure levels back to normal, making fainting less likely.

A study published in the journal *Emotion* in December 2020 found that participants who smiled as they were given an injection found it half as painful as those who kept a neutral expression, even if the smile was forced.

Researchers at the University of California say smiling may trick the brain into perceiving less pain because smiling is something usually associated with happiness. This makes a lot of sense because we know that posture can affect mood.

Needle phobia should be taken seriously and not just dismissed as somebody making a fuss. Once the causes are understood, the client can be helped to move forward, and hypnosis can be an effective short cut.

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