NEW

VOLUME 4

Psychology Now

TAKE CONTROL OF YOUR MIND FOR A HAPPIER, HEALTHIER LIFE

"IT'S SO UNNECESSARILY PAINFUL TO BE A PEOPLE PLEASER"

Exclusive

MICHELLE ELMAN

ON HOW TO BE **SELFISH** AND LEARN TO SET **BOUNDARIES**

132 pages OF EXPERT ADVICE

PRIDE, PREJUDICE & HOW TO COME OUT

THE SHOW Must Go On

+

STOP PROCRASTINATING

LEARN TO EMBRACE CHANGE

UNDERSTAND ANXIETY BETTER

THE HARSH Reality of LIFE IN PRISON

Digital Edition

FUTURE

VOLUME 4 REVISED EDITION

Welcome to

VOLUME 4

Psychology Now

TAKE CONTROL OF YOUR MIND FOR A HAPPIER, HEALTHIER LIFE

Understanding human behaviour and mental processes, whether our own or those belonging to others, is essential if we want to make better decisions and lead happier lives. Why do we feel certain emotions in specific situations? Why do we behave in particular ways? And what can we do to overcome the things that hold us back? Delve into the world of psychology and build a better relationship with your mind. Learn how to be kind to it, unlock its full potential and use it to your advantage.

In the pages that follow, we explore the role live music and theatre play in making us happy, the impact of procrastinating, the science behind anxiety, and the psychological challenges people in the LGBTQ+ community have to face – but also the benefits of coming out and being true to yourself. We also look into how reverse psychology works, why some people are rude, and how we define suffering.

Packed full of expert guidance from psychologists, counsellors and other professionals, we also speak exclusively to Michelle Elman about the importance of being selfish and setting boundaries.

The mind is a powerful tool. Learn how to take control of your own mind today for a happier, healthier tomorrow.

FUTURE

VOLUME 4

Psychology Now

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WHICH *therapy* IS FOR ME?

There's a multitude of problems therapy can help with and just as many approaches to take. How do you know which is right for you?

WORDS SARA NIVEN

PSYCHODYNAMIC PSYCHOTHERAPY

Stemming from Sigmund Freud's psychoanalysis, Freud believed that psychological problems are rooted in the unconscious mind, and experiences from a person's past can influence their thoughts and behaviour in later life. Positive change is seen as happening as a result of uncovering repressed events and linking them to present difficulties. You might spend significant time discussing your childhood or recalling dreams, with your therapist suggesting connections. This approach also emphasises the idea and exploration of transference, where feelings you experienced in previous relationships may be projected onto your therapist – for example, you view them as a critical teacher or favourite uncle.

Suitable for A wide range of issues, including depression and anxiety.

Considerations Some people might prefer to focus on the present than revisit their childhood. Therapy may take place over a longer time frame than some other approaches.

PERSON-CENTRED THERAPY

This form of therapy falls into a category called 'humanistic', where the client is seen as able to solve difficulties themselves, given the right conditions. Developed by psychologist Carl Rogers in the 1940s, there is an emphasis on the counsellor showing unconditional positive regard (UPR), which refers to non-judgemental warmth and acceptance. The therapist aims to ensure a client feels heard and understood, and enables them to lead the session and set the pace. Compared to a psychodynamic counsellor, a person-centred one is more likely to occasionally reveal their own experiences (self-disclosure) if they see it as helpful for emphasising understanding.

Suitable for All ages and a wide range of issues, including grief, depression, anxiety and stress.

Considerations The outcome of person-centred therapy depends on what a client chooses to talk about in sessions. Some people might want more directive help than this form of counselling typically provides.

GESTALT THERAPY

Gestalt therapy is another form of humanistic therapy based on the belief in a client's natural ability to achieve healthy balance and growth. Developed by psychotherapists Fritz and Laura Perls, it places a strong focus on immediacy in addition to the client/counsellor relationship.

Although any skilled therapist will pay attention to your body language, a Gestalt therapist is more likely to comment on this. They might tell you they notice you tapping your feet when discussing a particular topic, for instance, and encourage you to »

> "SOME PREFER TO FOCUS ON THE PRESENT THAN REVISIT CHILDHOOD"

> "A CBT THERAPIST WILL BE MORE DIRECTIVE AND ENCOURAGE YOU TO CHALLENGE NEGATIVE BELIEFS"

consider what that means. There might also be aspects of role playing and creativity, using pebbles or other objects. The 'empty chair' is a well-known Gestalt technique where a client is encouraged to address a chair as though someone they have an unresolved issue with is sitting there.
Suitable for Issues including anxiety, depression, low self-esteem and relationship problems.
Considerations Some people enjoy the more creative techniques used in Gestalt therapy, while others might feel uncomfortable. As with any form of counselling, feeling safe and having a good level of trust with your therapist is key.

COGNITIVE BEHAVIOURAL THERAPY (CBT)

CBT falls under the category of behavioural therapy and is goal orientated. A CBT therapist will be more directive and encourage you to challenge and change negative or outdated beliefs that are causing difficulties. They might also set 'homework' to do between sessions.

This could be a good approach for conquering a specific fear, such as starting to drive again after a road accident. While a person-centred counsellor would focus on empathy and understanding, a CBT therapist would be aiming to uncover the beliefs and fears you have about this, challenge these and take steps towards overcoming them.
Suitable for In addition to depression and anxiety, CBT can be used to treat obsessive compulsive disorder (OCD), phobias and substance abuse issues.
Considerations Therapy tends to be focused on specific goals and outcomes and is often relatively short term. Exposure therapy (where you confront situations you generally avoid) can be challenging.

DIALECTICAL BEHAVIOURAL THERAPY (DBT)

An adaptation of CBT, which uses some of the same skills, DBT was developed in the 1970s and is aimed at people who struggle with very intense emotions. For this reason, it is the therapy of choice for treating people diagnosed with borderline personality disorder (BPD). Like CBT, it focuses on change but there is more of an emphasis on mindfulness and learning how to regulate emotions and tolerate distress without turning to harmful coping mechanisms.
Suitable for Mental health conditions, including BPD, self-harm, eating issues, addiction and PTSD.
Considerations People undergoing DBT might be asked to commit to more than just one-to-one sessions – group skills training, phone coaching and homework could also be involved.

TRANSACTIONAL ANALYSIS (TA)

Transactional analysis focuses on the way you relate to others, be that your partner, your boss or a family member. Developed by psychiatrist Eric Berne in the late 1950s, it divides the human personality into three basic ego states: parent (with nurturing and critical sides), adult and child. This aims to increase our understanding of interacting with others and the responses we get, such as regularly being in critical parent mode when speaking to your partner, which then results in conflict.

TA therapists also look at our beliefs in terms of 'scripts' and help a client re-evaluate any unhelpful ones formed while growing up, which are impacting negatively on them, for example, 'I must never make a mistake'.
Suitable for A range of issues, including relationship difficulties, low self-esteem and workplace challenges. TA is often applied outside of the therapy room, for example in coaching or educational situations.
Considerations Supporters of TA cite the simple models and language, which are much easier than some other theories for clients to understand and apply to everyday situations.

EYE MOVEMENT DESENSITISATION REPROCESSING THERAPY (EMDR)

Developed by a psychologist called Francine Shapiro in the late 1980s, EMDR aims to help the brain to reprocess traumatic memories. Clients won't lose the memory but ideally it should not continue to trigger such strong emotions.

EMDR has a specific structure, with eight stages that a therapist works through with you. After the initial stages, therapy involves activating a disturbing memory while introducing what is called bilateral stimulation (BLS) involving eye movements, physical tapping or other stimuli to activate both sides of the brain.
Suitable for EMDR is recognised by the World Health Organization (WHO) as a treatment for post-traumatic stress disorder (PTSD). It can also be used for a range of other issues, such as unresolved grief and mental illnesses, including personality disorders.
Considerations Talking about difficult memories in detail isn't seen as a significant part of the process, which could be helpful for people keen to avoid that, although they will be asked to recall experiences. This therapy isn't considered suitable for clients with substance abuse issues.

ART THERAPY

As the name suggests, this form of psychotherapy uses art as a form of communication and way of addressing difficult emotions. Complex emotions can be put onto paper or canvas, and creating and discussing the resulting art with a therapist can help give clients clarity over intense but confused feelings and connect with their unconscious mind.
Suitable for Art therapy can be used by people in a wide range of situations, including physical illnesses, such as cancer, learning disabilities, eating disorders and dementia. It can also be used with children.
Considerations You don't need to be a budding Michelangelo or Monet to have art therapy – no artistic skills are necessary; however, some people may feel less comfortable than others expressing themselves in this way. A skilled therapist should provide plenty of opportunity to work through the emotions the art session brings up.

INTEGRATIVE THERAPY

Rather than specialising in one, many therapists now train in a range of different therapeutic approaches and use these like tools in a toolbox, to be taken out according to what seems most useful at the time. One week they might work in an entirely person-centred way, allowing the client to lead the session. Another time, they might outline the ego states that are part of TA theory to help the client gain insight into a relationship difficulty, or draw on Gestalt training to suggest the 'empty chair' exercise.
Suitable for Integrative therapy is increasingly common and seen as suitable for many issues including bereavement, relationship difficulties and eating disorders.
Considerations This is a more 'bespoke,' form of therapy with less structure than some others, but shouldn't be experienced as confusing or completely random. Integrative therapists work to tailor their approach to a client's needs, not use different ones just for the sake of variety.

HYPNOTHERAPY

Hypnotherapy isn't a theoretical approach or considered a traditional talking therapy that falls under the remit of the British Association of Counselling and Psychotherapy or the American Counseling Association.

However, there is evidence that it can be an effective form of treatment for anxiety and anxiety-related disorders, such as headaches and irritable bowel syndrome, while others report finding it helpful in addressing a range of other difficulties.

During sessions, hypnosis combined with talking therapy aims to work on both a conscious and subconscious level, to bring about positive change while adjustments can be made to limiting beliefs that have influenced or directed the client's life.
Suitable for Anxiety, phobias, addictions, low self-esteem, insomnia and stress-related conditions.
Considerations Hypnotherapy isn't advised if you have psychosis or a personality disorder. As with any form of therapy, it is important to ensure a hypnotherapist is suitably trained and check them out with the relevant regulatory body.

Whatever therapy you opt for, it is essential your therapist is properly qualified and works to professional standards. In the UK, the best way to establish this is via the ***British Association for Counselling and Psychotherapy (BACP)*** *(www.bacp.co.uk/about-therapy/how-to-find-a-therapist)*, and in the US, the ***American Counseling Association (ACA)***. *(www.counseling.org/aca-community/learn-about-counseling/what-is-counseling/find-a-counselor)*

THE Need TO KNOW

It might have killed the cat, but curiosity remains one of mankind's greatest assets

WORDS JULIA WILLS

The Cambridge Dictionary defines curiosity as 'an eager wish to know or learn about something'. As a behavioural trait, it comes in an assortment of types. Ian Leslie, in his book *Curious: The Desire To Know And Why Your Future Depends On It*, outlines three types: 'diversive curiosity', the desire to explore new places and people; 'epistemic curiosity', the deep dive you take when finding out about a particular topic; and 'empathetic curiosity', which is wanting to find out more about the people around you.

Animals, too, exhibit curiosity in their exploration and information-gathering, as Richard W. Byrne explains[1]. However, a species' level of curiosity depends on the trait's usefulness. The rat is a particularly curious animal, and that drive to explore, gather and store information is likely to have enabled white rats to colonise the globe.

As children, we bubble over with curiosity. However, as we grow up, it can wither. Worse, we can come to believe that it's a bad thing. After all, didn't it kill the cat?

Fading interest

Felines apart, author and expert on creativity and education, Sir Ken Robinson maintained that "Curiosity is the engine of achievement." Yet, as he pointed out in his TED talk on Creativity[2], education focuses on seeking to instil answers rather than generate questions. The best thing, he felt, that a teacher could do was inspire curiosity in their pupils. It's something that Einstein, one of history's greatest thinkers and creators, would certainly have agreed with. As he said, "It is nothing short of a miracle that modern methods of instruction have not yet entirely strangled the holy curiosity of inquiry."

Neuroscience suggests another explanation for our diminishing inquisitiveness. Brains in early childhood possess great plasticity and lay down lots of neural pathways based on the information we gather from all that curious exploring and experimenting. However, as we grow older, our brains lose some of that flexibility and we rely on those earlier pathways to deal with the things we've seen and done before. It's a way of conserving brain energy, basically trading off that incessant, early curiosity and fascination, for economy and competence in coping with ordinary life. Essentially, it's a neural version of 'Been there. Done that. Got the curiosity T-shirt.'

Whatever underlies our shrinking sense of wondering, research repeatedly shows that we'd be better off continuing to cultivate it.

The benefits of curiosity

Emily Campbell's article for *Greater Good Magazine* (*Six Surprising Benefits of Curiosity*[3]) reveals that curiosity is linked to lower levels of anxiety, a greater satisfaction in life, achieving academically, building empathy and improving our relationships with others. Not only that, but she highlights research by Dr Jodi Halpern[4] indicating that doctors who are truly more curious about their patients tend to achieve better health outcomes for those in their care. Further benefits from staying curious reported by Leigh Weingus in his article for Huffington Post (*5 Benefits Of Being A Curious Person*[5]) include protecting your brain health through staying mentally active by taking up new activities.

Tell me more

Research shows that the dopamine system of the brain is activated when something novel happens or appears. Dopamine is often thought of as a feel-good neurotransmitter. However, as Russell Poldrack, a psychologist, neuroscientist and researcher at the University of Texas at Austin, explains in his HuffPost article, *Multitasking: The Brain Seeks Novelty*[6], research, particularly that done by Kent Berridge at the University of Michigan, suggests that rather than produce pleasure, dopamine actually stimulates our craving to continue the activity, in this case the desire to find out more.

It's easy to see how this brain chemistry has helped us. Basically, we're not here today because our ancestors focused on the familiar. It was because their brains reacted to new events – say, the tiger lurking in the bushes – that encouraged them to find out more and kept them alive.

Curiouser and curiouser

Alice in Wonderland might have coined the phrase, but it's an accurate description of the mindsets of many of the most remarkable thinkers in history. As individuals, they see the same things as us, but have to know more. Or, as Bernard Baruch, the US economic advisor through the two World Wars, summed up: "Millions saw the apple fall, Newton was the only one who asked why."

Thomas Alva Edison, the genius inventor, only attended school for three months before it was decided that he was too fidgety and distractable to fit in. Consequently, his mother home-schooled him, which serendipitously gave him the freedom to indulge his remarkable curiosity. He reportedly read his way through every book in the local library. Not just the ones about science – all of them. Leonardo da Vinci, whose brilliance included sculpture, painting, engineering, anatomical understanding and technology, was reputed to have never left home without his trusty notebook, so that he could jot down the questions that sparked his curiosity and investigate them later. Marie Curie, whose pioneering work in radioactivity saved countless lives, likened her driving curiosity to the 'spirit of adventure'.

Curiosity catalysed our ancestors to question, experiment and learn, leading us out of the Stone Age to the Bronze Age and the Iron Age and, finally, to the Information Age. It has sparked our greatest achievements and discoveries and continues in our personal lives to bring greater contentment. So, perhaps the cat was simply unlucky, because for us humans, curiosity continues to be essential, both to our survival and our ability to flourish. ■

HOW TO BE MORE CURIOUS

WELCOME MAKING MISTAKES

Sir Ken Robinson said that being prepared to be wrong is key to creativity. As he pointed out, mistakes are frowned upon throughout education and so it's hardly surprising that we shy away from getting things wrong. Yet, it's an important step to seeing things differently and coming up with fresh ideas.

LISTEN WELL

Suspend your tendency to jump into a conversation or pre-judge someone. Listen with your full attention and truly understand their situation or point of view.

TRY SOMETHING NEW

Perhaps try a new recipe, a new holiday destination, or a book on a subject you know nothing about.

ASK MORE QUESTIONS

Ask others for their thoughts and ideas. Ask yourself questions when you are trying to solve something or help someone. And, most importantly, never be afraid to ask and ask again.

CARRY A NOTEBOOK

When we open our minds and look around us, all sorts of questions present themselves throughout the day. Why not jot some down and then, like Leonardo, devote some time to finding answers? You'll be surprised where this leads you.

*1. *Curiosity in animals* – Center For Curiosity; 2. *Sir Ken Robinson: Do schools kill creativity?*; 3. berkeley.edu; 4. *Researcher offers steps to help doctors move past anger with patients* – berkeley.edu; 5. HuffPost UK Wellness – huffingtonpost.co.uk; 6. HuffPost Life

WHY WE SHOULD ALL BE MORE Selfish

Putting yourself first has more benefits to you and even the people around you than you might realise

WORDS SARAH BANKES

From a very young age, we're told to be kind, to share, to see things from other people's viewpoints, to put others first and to be polite, amongst many other life lessons. And while these are important skills to learn – equipping us with qualities that turn us into decent human beings – taking these instructions to the extreme can actually be detrimental to our own mental health and wellbeing.

As children, we probably remember our parents coming out with the following sorts of phrases (and as parents we're probably guilty of repeating these to our own children):

"Give Grandpa a kiss goodbye, go on, don't be rude..."

> "PRIORITISING YOUR NEEDS CAN BENEFIT EVERYONE INVOLVED"

"I know you don't like mushrooms, but we're guests, so eat up..."

Telling kids to do things they really don't want to do doesn't make us bad parents – nor does it make our parents wicked for doing the same – but it does send out a message that other people's feelings are more important than our own. Coupled with the idea that to be selfish is a negative trait, we're brought up to believe that to be a good person, we must at all times be selfless, altruistic and self-sacrificing, and these beliefs lead to a whole host of problems.

We can't blame our parents for everything, though. A study carried out in 2016/17 by a team from University of California, Los Angeles suggests that altruistic behaviour might actually be the default option in our brains. According to their research, an area of the prefrontal cortex can be specifically affected to make people less giving.

What's wrong with being selfless?

Excessive selflessness leads to an inability to say no. We live

in fear of appearing rude and upsetting or offending people. As we go about our lives pleasing everybody else, if we don't burn out first, we run the risk of ultimately becoming bitter, resentful and pretty unhappy, as prioritising everybody else leaves little time to do the things we want to do.

Perhaps a distinction needs to be made between good and bad versions of selfishness. A total disregard for other people's feelings isn't always necessary when it comes to putting yourself first. However, being aware of your needs and being assertive enough to prioritise them can benefit everyone involved.

For example, a friend asks you to go shopping and, even though you already have a busy schedule and want to say no, you say yes because you don't want to let her down. What happens? You end up being late because you're squeezing it in around other things. Consequently you're stressed before you've even stepped foot inside a shop; you spend the entire trip annoyed with your friend for 'dragging you along', when actually you could have said no; and you're anxious about the next commitment in your jam-packed diary! What would the outcome have been if you'd said no? You'd feel less stressed, for sure, you'd have more time to focus on the other things you're doing that day, and you wouldn't resent your friend. And the friend? She might initially feel somewhat put out, but she wouldn't have to put up with a late, grumpy, stressed-out shopping companion! Being supposedly 'selfless' isn't always beneficial to the people you think you're helping out.

More often than not, the issue goes far deeper than wanting to please other people for *their* sake. If you'd considered the shopping situation rationally and truthfully, the friend could probably have found someone else to go with, so the real issue was perhaps not so much not wanting to let her down, but more about not wanting her to be disappointed in you. Being a people-pleaser is usually a result of seeking approval or wanting to be liked, which is often a consequence of previous life events.

Stress and anxiety are just two of the consequences of being excessively selfless. If you don't start prioritising your needs, you become ineffective at what you're trying to be, whether that's a good friend, a reliable employee or a good parent. This can then lead to low self-esteem, depression and burnout. Taking time out from the kids might feel like an indulgence but if a one-hour bubble bath is what you need to unwind and destress, your kids are going to be much happier with a relaxed parent than one who is trying to do everything for everyone, and not giving themselves a well-earned break.

Over the following pages, we talk to author and life coach Michelle Elman about how to prioritise your needs and set boundaries.

Exclusive INTERVIEW Michelle Elman

Life coach, speaker and author Michelle Elman speaks to Psychology Now editor Sarah Bankes about why we should be more selfish

Why do you think selfishness holds such a stigma in society?
I think it holds a stigma more for women, which I know is controversial. It's connected to the word 'selfless', and there's an expectation for women to be selfless, whereas men aren't brought up with this caretaker, 'putting everyone else first', 'make sure you're a good wife and mother' mentality. Women have been brought up to use their relationships and connections as the things that validate them being 'good enough'. Women are almost expected to be martyrs and to give everything that they have within themselves, and if there's anything left, absolutely take care of yourself, but only if there's anything left. Just make sure you take care of everyone else first. By this point, there is nothing left for you!

Can selfishness really be a positive personal attribute?
Every word has a positive and negative association. A word like 'stubborn', for example, is generally seen as negative, but it comes with a positive. The general perception of the word 'selfish' is that you don't care about anyone else. If you look at the definition of it, it's putting your needs first with a disregard for other people's needs. But what people don't always understand is that in order for you to care about your needs, you do actually have to disregard other people's needs, not as an option but as a compulsory thing. For example, if I get an email from my boss at 10pm, for me to ignore that email, I have to respect and put my need for rest before my boss's need for a reply to that email.

> "SETTING BOUNDARIES WILL COME ABRUPTLY TO THE PEOPLE IN YOUR LIFE"


© Michelle Elman

People interpret selfishness incorrectly; they think you're this really insensitive person who doesn't care about anyone's feelings, who believes the world revolves around you. It's not about that though – it's about you putting you first on your priority list, and I think if everyone in the world did that, not only would we all be mentally healthier, but I also think there would be fewer judgements. A person who cares so much about other people has a lot of opinions on other people's lives. If you spent more time thinking about you, you wouldn't care so much about what other people are doing with their lives.

'Selfish' is always a retaliation word or an insult thrown at someone who's simply set boundaries. Because it is interpreted so negatively, I feel like we need to reclaim the word. When we want to use the word 'selfish', we tend to replace it with phrases like 'self-love' and 'self-care', whereas actually what we mean is being more selfish. We try to dilute the word so it's more palatable, but no one makes changes in their lives by watering it down like this. A change in your life like setting boundaries will come abruptly to the people in your life, because it's a big change. You're going to get bad reactions, but making it fluffy with words like 'self-love' and 'self-care' means you avoid the practical conversations of acknowledging that it is hard work and you are going to have to change, and there's no easy way to go through that journey.

What do you mean by boundaries?
Boundaries, to me, are how you teach someone to treat you. They're the line between who you are and who the world wants you to be. It's all about treatment. It's about what you allow, what you want, your needs and so on.

Self-love can't really be defined because it's such a fluffy concept, but I see boundaries as the practical side of self-love. You can identify

“SELF-LOVE CAN’T BE DEFINED, BUT I SEE BOUNDARIES AS THE PRACTICAL SIDE OF SELF-LOVE”

MANIPULATION

“This comes across controversial, but people-pleasing is actually a form of manipulation, because you’re trying to control everyone in the room and how they react. If you want someone to like you, you might behave in a certain way and it’s to get the response you want to get. Manipulation sounds like an extreme word, but it’s actually about wanting to influence a person in a way that benefits you, which is exactly what people-pleasers are doing. It’s not even always intentional – sometimes it’s completely accidental, and it often stems from a traumatic past experience, whether in childhood or adulthood.”

In the *In All Honesty* podcast, Michelle is joined by five other board accredited life coaches to give open, honest answers to whatever questions you might have

a self-loving person more through their behaviours than giving the word a definition. Someone who loves themself turns up on time because they have respect for other people’s time, because they respect their own time!

Do you think certain personalities are more inclined to be excessively selfless?
There are certain people who will find setting boundaries easier, mainly in my experience straight men. Men don’t seem to understand boundaries as much as women do. When I explain what my book is about and what’s meant by boundaries, a lot of men respond with, ‘Well, isn’t that just common sense?’ But if you’ve never been taught to put someone else first, then you don’t understand that it’s not second nature to everyone.

People-pleasers will definitely find it harder to set boundaries. People-pleasing usually stems from childhood as a result of some sort of trauma, often from growing up with someone in your family who was particularly volatile, so you’d learn to control people’s reactions. For example, if your parents argued a lot, you’d learn to see the warning signs before the argument took place, whether it was the frown on your mum’s face or the huff that your dad was making. As a child when you see that taking place, you want to jump in and dilute the situation before it happens, and this ultimately creates people-pleasing tendencies. It’s often people-pleasers who have really high empathy because they have that detection system to sense the mood of the room. As an adult, they could walk into a room where a massive argument has just taken place – they’ve missed the argument but can sense the energy because they’ve been trained to do that. It comes back to boundaries again, because when a child has grown up in a volatile environment, it’s usually because the family has very bad boundaries. If parents had good boundaries, they’d be able to have that disagreement without it getting volatile and by keeping the child out of it. It’s all connected.

I don’t think there’s anyone in the world who fits any personality type where you’re exempt from boundaries or it’s impossible to learn boundaries. It will be harder for some people than others though.

What would you say are the consequences of excessive selflessness?
It’s definitely not sustainable, because you’ll eventually burn out. What usually happens if you’re very selfless is you never voice your opinions. The flipside of boundaries is asking for what you need. People who are very selfless never ask for what they need, so if your boundaries are repeatedly quashed, you get a build up of anger and resentment, and when you don’t communicate or voice »

Body confidence coach, Michelle is photographed here at YMCA's Be Real Campaign in London in January 2018

CAREER HISTORY

Michelle is qualified as a five-board accredited life coach, a Master Neuro-Linguistic Programming (NLP) Practitioner, Master NLP Coach, Time Line Therapy™ Master Practitioner and Master Hypnotherapist. She also has a degree in psychology and has trained in Provocative Therapy.

Having undergone many surgeries, Michelle used to hide her scars but has learnt to embrace them

that anger, it turns into rage. Take road rage or getting cross with a waiter, for examples. It's not about the cars on the road or the waiter; you're angry about something else so you're projecting it in a different place. It's largely because you don't feel you have the right to not only be selfish, but to also ask for what you need and to have your feelings heard.

To be selfish and get your needs met is the same as being selfish enough to feel that your feelings are valid. When you don't put yourself first, you often rely on the people around you to decide if your feelings are valid. I get asked a lot, "Is it reasonable to feel this way?" and I say, "Your feelings are your feelings. It doesn't matter if someone else wouldn't have the same feelings as you – your feelings are valid and important." In everyday life, these people might not necessarily ask that question, but rather say things like, "I

> "IT'S SAD AND UNNECESSARILY PAINFUL TO BE A PEOPLE-PLEASER"

don't know why I feel this way, I'm being stupid," dismissing their own feelings and relying on other people to decide how they should feel. It's so sad and unnecessarily painful to be a people-pleaser, and you miss out on so much of life.

What made you realise you needed to start putting yourself first?

I was 20 and I was at a friend's birthday party. Until that moment, if you'd asked me what my best quality was I'd have said I'm a good friend and a good girlfriend. I probably wouldn't have even used the word 'good', I'd have probably used the word 'reliable'! So, I went to this party and looked at my phone to see that I'd missed a number of calls from my boyfriend. I also had a WhatsApp message, an iMessage and a Facebook message, all from him. I thought something serious had happened, so I went outside to call him back. He picked up and said, "That's strange, you're usually at my beck and call." It wasn't anything urgent – he had just wanted to talk to me and I hadn't picked up! That was the moment! I could blame him, but I was the person who always dropped everything. There was something about the fact that not only did he know I was always at his beck and call but he had the nerve to say it to my face, which screamed disrespect. At the time, I laughed it off.

Michelle speaks openly about her own life experiences and motivations for putting herself first

The following week I got into an argument with the three girls I lived with. It was the last few months of university and we were all really stressed, but in the row, one of the housemates said to me, "Do you know how much we have to tolerate living with you?" I was in a bad way with my PTSD at the time, and it was such a wake-up call that made me think, 'Why do I have people in my life who "tolerate" me?' Just moments later, I went on Instagram and saw a quote that said: 'Find people in your life who will celebrate you, not just tolerate you'.

These three consecutive things made me wonder what I'd done to fill my life with people who treated me like this, and why I hadn't done something about it. I was at a stage where I finally loved my body, and I was confident with my scars and the way I looked, but I was still surrounding myself with people who treated me awfully, so I questioned whether I could truly love myself when everyone else was dragging me down.

Would you say that being selfish actually nurtures friendships and relationships then, rather than causing friction?

I don't have as many friends as I used to, but I certainly have better friends. When you're more selfish, you end up attracting people who like you for you, not for what you can do for them. When you start saying no to people, you realise who's actually in your life because you always drop everything for them. Being told 'no' might be annoying or inconvenient for the recipient, but they need to respect that that's what you need at the time.

It's a two-way thing, though – I never used to be very good at saying no, but I also wasn't good at respecting other people's 'no's either. When you have good boundaries, you're selfish enough to say what you need and validate your own feelings, then it tends to be reciprocated in the relationships around you.

Do you have any tips for people who find it difficult to set boundaries or are worried about appearing rude?

If you're concerned about coming across rude, you're still placing the other person's response or reaction as a higher priority than your boundary. Their response is not your responsibility. You shouldn't be preoccupied with how you're going to come across. If you set a boundary as politely as you can, a person can still perceive you as mean or rude, but ultimately it's not about how mean or rude you're being – it's about how inconvenient you're being to them.

Practise saying no to people who aren't in your life. For example, tell the waiter that you don't like your food if you don't like it; tell your hairdresser that you're not happy with your hair if you're not happy with it. »

SCARRED NOT SCARED

In 2015, Michelle set up a campaign called Scarred Not Scared to give more representation to people who have scars. Having had many operations in her lifetime, Michelle shared her own experiences of surgery and scars, and continues to promote body confidence and body positivity. She has worked with brands such as Dove, Johnson & Johnson, Paramount, BooHoo, Marina Rinaldi, Simply Be, Katy Perry Fragrances and Always.

In 2020, Michelle was named as one of *The Sun*'s 50 most inspirational women in the UK, and recognised as one of the top 100 creatives creating change

THE JOY OF BEING SELFISH

Michelle's second book was released in 2021. She explores boundaries in greater detail, and offers advice and tips on how to set them. *The Joy of Being Selfish* (£14.99/$19.95, Welbeck).

I don't eat fruit, and someone asked me recently how I get by without insulting the people around me. The way you eat doesn't affect anyone! It's not rude to leave food on your plate; it's not a personal insult to their food! But when you're a people-pleaser and not used to putting your needs first, you think everything is rude.

We teach people bad boundaries in very accidental ways. We train our children to be polite, without realising we're training them to ignore their needs.

Sometimes when we talk about being selfish, people think it's over massive things and have visions of me storming out of every room if everyone doesn't oblige to every single thing I want. It's not about that though. It's about really simple things. I was recently watching an episode of *Fleabag* on holiday with a friend and I fell asleep during the episode. The following night, I wanted to catch up and my friend agreed to waste her time re-watching the episode she'd seen the previous night, but only if I agreed to stay awake for the next one afterwards. That was her setting a boundary. Of course, I could have set my own boundary and said no, but I wanted us to watch the series together. Some might say it was a compromise, but I hate that word, as it implies both parties have lost out somehow! It sounds like a silly and trivial example, but these small things can easily turn into big arguments, especially in relationships.

On that same holiday, my friend and I were at the beach and I was hungry when she wasn't, so I said "I'm going to get lunch." A little while later, she got up and said, "I'm going for a walk." There was no codependency, neither of us went off sulking because the other wouldn't join. It required a level of selfishness, but we both felt okay saying what we needed in those moments, and were happy to get our needs met regardless of what the other person was doing.

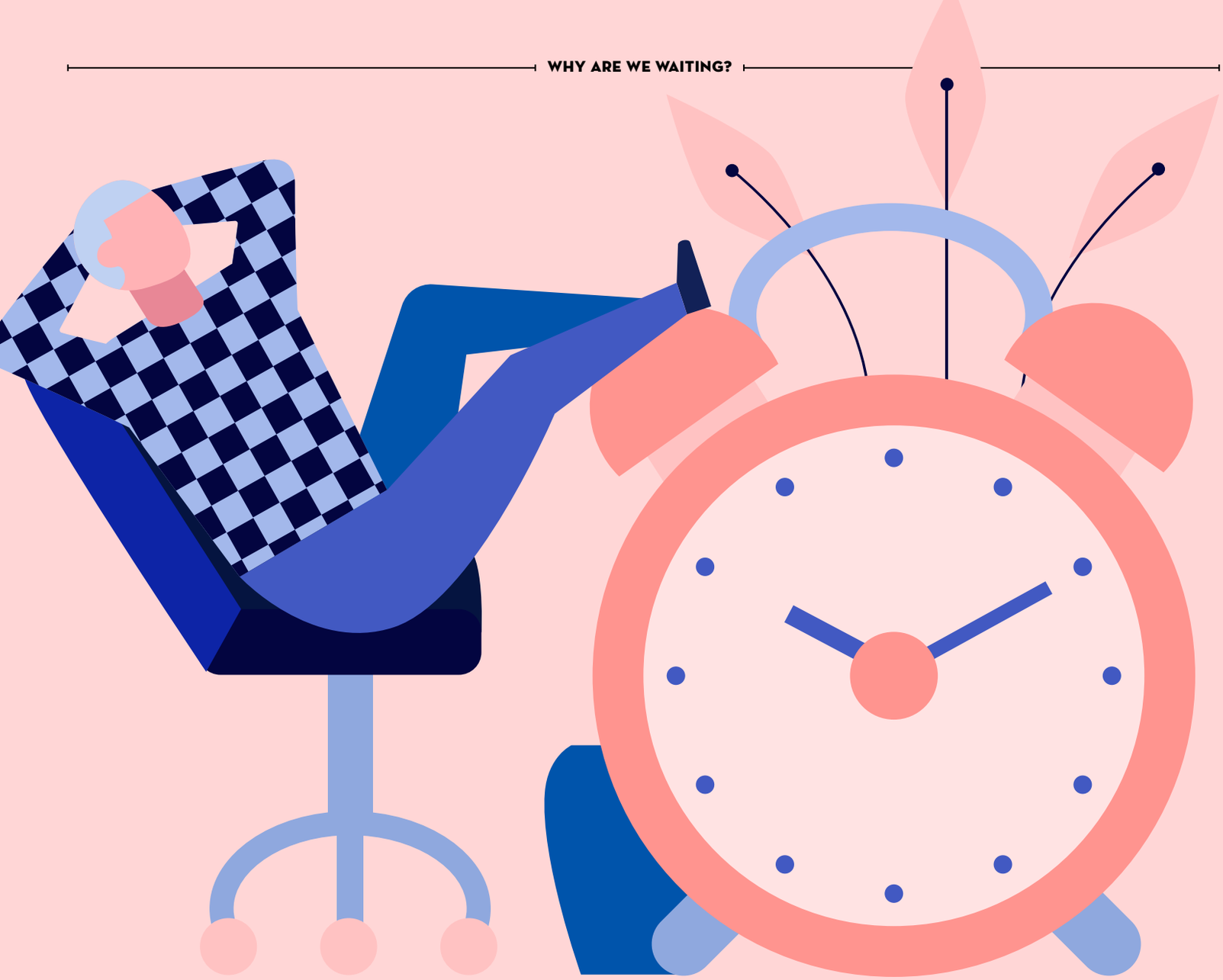
Discover more at **michelleelman.com**

> "WE TEACH PEOPLE BAD BOUNDARIES IN VERY ACCIDENTAL WAYS"

DO YOU NEED MORE BOUNDARIES IN YOUR LIFE?

Shared from Michelle Elman's book, The Joy of Being Selfish, *here is a list of warning signs that you might need more boundaries. The more statements that are true, the more you struggle with boundaries – and all the more reason you need them in your life.*

I find it hard to voice my opinions when I disagree with someone ..... *TRUE / FALSE*
People regularly talk about me behind my back ..... *TRUE / FALSE*
I struggle to say "no" ..... *TRUE / FALSE*
If someone is in a bad mood around me, my mood is affected ..... *TRUE / FALSE*
I find it difficult to end phone calls ..... *TRUE / FALSE*
I feel guilty when I ask for what I need ..... *TRUE / FALSE*
I have been described as passive-aggressive ..... *TRUE / FALSE*
I worry that if I don't agree with someone, their feelings will be hurt ..... *TRUE / FALSE*
I would rather everyone else be happy even if I am unhappy ..... *TRUE / FALSE*
If someone hurts my feelings, I will try to forget about it ..... *TRUE / FALSE*
My life is often full of drama ..... *TRUE / FALSE*
I replay conversations in my head after they have happened ..... *TRUE / FALSE*
When people fight around me, I feel like I have to fix it ..... *TRUE / FALSE*
I find it difficult to express anger and would rather stay silent ..... *TRUE / FALSE*
I work longer hours than the rest of my colleagues ..... *TRUE / FALSE*
I am the peacemaker in my family ..... *TRUE / FALSE*
I give more in my friendships than I get in return ..... *TRUE / FALSE*
I overshare when I feel uncomfortable or in new relationships ..... *TRUE / FALSE*
I value other people's opinions more than my own ..... *TRUE / FALSE*
I often feel resentment and I do not know how to express that ..... *TRUE / FALSE*
I am uncomfortable when the conversation is about me ..... *TRUE / FALSE*
I agree to things I don't want to do to keep the peace ..... *TRUE / FALSE*
I feel guilty when expressing my opinions ..... *TRUE / FALSE*
If another person has an incorrect opinion of me, I want to change it ..... *TRUE / FALSE*
When I tell people information in confidence, it is rarely kept private ..... *TRUE / FALSE*
I feel responsible for other people's happiness ..... *TRUE / FALSE*
I have relationships in my life that I would label as "toxic" ..... *TRUE / FALSE*
I am scared to be honest, in case it turns into an argument ..... *TRUE / FALSE*
People have described me as a "pushover" or "too nice" ..... *TRUE / FALSE*
I cannot trust the people in my life to be there for me ..... *TRUE / FALSE*
Other people in my life need me to be the strong, reliable one ..... *TRUE / FALSE*



WHY ARE WE Waiting?

What's behind our tendency to procrastinate? And what can we do about it?

WORDS JULIA WILLS

"Oh, I can't think about this now! I'll go crazy if I do! I'll think about it tomorrow." Scarlett O'Hara's lament in *Gone with the Wind* voices a sentiment familiar to all procrastinators. And, being human, that means all of us at some time or another. We've all found ourselves with something that needs doing now and instead of knuckling down, we busy ourselves putting laundry in the washing machine, scrolling through Facebook, or making yet another cup of tea. In fact, sometimes it seems that we'd rather do anything – anything at all – than what we actually need to do.

Past masters of the last minute

Perhaps there's some consolation in knowing that we're not alone and, moreover, that some of the highest achievers in history have fought against their own resistance. Leonardo da Vinci took 16 years to complete the *Mona Lisa*. Victor Hugo, author of *Les Misérables*, was allegedly so plagued with procrastination that he'd ask his servant to take away his clothes and leave him cold and naked in his study until he started writing again. Taking the gold medal for procrastination (that's if he could be bothered to turn up) is the 18th-century playwright Richard Sheridan, who was still writing the last act of *The School for Scandal* on opening night while the first two acts were being performed on stage. Procrastination, or wilfully putting things off even though we know it'll make things worse for us, has a long and illustrious history. But why does a behaviour that causes us such anxiety continue to flourish?

Under pressure

Of course, some people don't see it as a problem at all, insisting that they work best under pressure. Psychologists would call this a cognitive distortion – a thought pattern in which the thinker interprets reality incorrectly. Others might include, 'I'll feel more like it later', or 'I don't have everything I need to do this yet'.

Some claim benefits to the behaviour. For example, John Perry, emeritus professor of philosophy at Stanford University, points out in his book *The Art of Procrastination* that contrary to intuition, procrastinators are people who actually do get a lot done and that putting things off and being distractable can be great tools, if you use them in the right way.

It's a puzzle that has excited a lot of curiosity in psychological research over recent years, which has attributed the behaviour to a problem with time management or our ability (or lack of it) to manage our moods and emotions.

Research conducted by psychologists, however, suggests that those who deliberately delay because they believe it's how they achieve best might, in fact, be fooling themselves. As behavioural science writer Eric Jaffe shares in his article *Why Wait? The Science Behind Procrastination* for the Association for Psychological Science, researchers Tice and Baumeister rated students for procrastination and tracked their academic performance, stress levels and health throughout half of the academic year. The results showed that although procrastinators benefitted initially, perhaps enjoying more free time, as the term went on they achieved less academically and endured higher levels of both stress and illness than non-procrastinators. The researchers concluded that despite short-term benefits, procrastination left individuals "suffering more and performing worse than other people."

Further research by Tice and Ferrari involved telling students they'd be doing a puzzle at the end of the session but that they would have an opportunity to practise it ahead of time. They were either told that the puzzle was an important test or that it was simply for fun. Significantly, chronic procrastinators only delayed using their practice time when they believed the puzzle was important to their grades. From this, Tice and Ferrari concluded that procrastination was a self-defeating behaviour.

Perpetual postponers

Dr Joseph Ferrari, a distinguished professor of psychology at DePaul University, Chicago, concludes that "while everybody may procrastinate, not everyone is a procrastinator." He goes on to define 'chronic procrastinators' as those who always face problems in finishing tasks and for whom procrastination is a way of life – a maladaptive one. His work indicates that some 20% of normal, healthy adults fall into this category, a figure that has been repeated across the globe, suggesting that it is not simply something that happens in the West. But while chronic procrastinators invariably delay, the rest of us may indulge in situational procrastination, postponing in some areas of our lives but not others. Academic procrastination is an example of this, enacted by those students who regularly find themselves burning the midnight oil to get essays in on time but have no such problems off curriculum.

Mind the gap

As Jaffe reports, Dr Timothy A Pychyl (director of the Procrastination Research Group, Carleton University, Ottawa) concludes that procrastination is a "self-regulation failure... You know what you ought to do and you're not able to bring »

> "SOME OF THE HIGHEST ACHIEVERS HAVE FOUGHT AGAINST THEIR OWN RESISTANCE"

yourself to do it. It's that gap between intention and action." Debate has largely centred on whether that gap lies in time-management or mood control.

Time and motivation

Piers Steel, professor in organisational behaviour and human resources at the University of Calgary, is a leading authority on the science of motivation and productivity research. He told us that he sees motivation as "a result of desire, expectancy and time, and each of them can be a cause of self-regulatory failure." In his book, *The Procrastination Equation*, he explains the processes behind our inaction in a formula:

(Expectancy × Value) ÷
(Impulsiveness × Delay)

In simple terms, procrastinating is determined by how confident you feel of achieving something (expectancy) multiplied by how important it is to you to succeed (value) divided by how likely you are to surf the net, read emails, go off-task instead (impulsiveness) multiplied by how far away your deadline is. Steel's book then offers 23 different techniques for building expectancy and value and reducing impulsivity and delay in order to jumpstart motivation and leave procrastination for another day. Despite being "old-school" as he put it, he sees an overlap between the two schools of thought around procrastination, agreeing that both mood and time-management techniques can affect the components of his equation.

Deadline or dreadline?

Many psychologists, however, regard procrastination as far more than a problem with time-management. Their research

10 WAYS TO STOP PROCRASTINATING

Check out your cognitive distortions. Are they really making your life easier?

Ditch the distractions, email notifications, text pings and music.

Be the proverbial 'early bird'. In his book, *Morning: How to Make Time*, Allan Jenkins advocates the power of morning working, as it's likely to be when you're freshest and distractions fewest. Give it a go.

Clear everything away that you don't need for the job – whether you're at your desk, at an easel, decluttering your wardrobe, icing a cake or packing a suitcase.

Make sure you're clear about what you actually need to do. A lack of clarity can invite procrastination.

Break the work down into smaller steps. Then take the first one. After all, that's how a journey of a thousand miles begins. Better still, give yourself a reward for making a start.

Try the Pomodoro Method. Set a timer to 25 minutes. Work for that time, then take a five-minute break before sitting down to work for the next 25 minutes. Do this four times, then take a longer break of 15 to 30 minutes. Brains get bored easily, stuck on the same old task. Giving yourself regular mini-breaks can counteract this.

Accept support from other people. Ask non-procrastinating friends for suggestions. Take advice on how best to approach the job. Perhaps make yourself accountable to someone other than yourself for meeting a deadline. If needs be, consider some expert coaching.

Celebrate your wins. Allow yourself to feel great for meeting a deadline. Be mindful of how that sense of achievement feels.

Forgive yourself when you end up still procrastinating. We're all human, and frustration won't help. Of course it's hard to change a familiar habit. Cut yourself some slack and try again.

> STUDIES HAVE LINKED CHRONIC PROCRASTINATION TO DEPRESSION AND LOW SELF-DISCIPLINE

focuses on the emotional components of behaviour. As Dr Fuschia Sirois, a UK psychologist, says in her interview with Adam Grant in his TED Talk *WorkLife with Adam Grant: The real reason you procrastinate*, the problem is not one of avoiding work but of avoiding feelings: "A task may elicit lack of confidence, feelings of incompetency, insecurity. Fear of failure. Anxiety. You put that task aside and you've just regulated your mood. Now you feel better. It's like, ah, great. I don't have to think about it anymore."

Chronic procrastinators experience anxiety and guilt beneath the temporary relief of doing something else. A number of studies have linked chronic procrastination to high neuroticism, depression and low self-discipline. Significantly for a behaviour that makes us feel bad, procrastinators don't learn from the experience. This ties in with Sirois's research. In Jaffe's article, Sirois concludes, "If you're focused just on trying to get yourself to feel good now, there's a lot you can miss out on in terms of learning how to correct behaviour and avoiding similar problems in the future." So, it seems that this quick-hit of feeling better right now prevents learning how to behave differently next time.

The good news is that whether you are a chronic procrastinator or just find yourself procrastinating on particular occasions, research into time-management and emotion-control yields lots of practical strategies to help us ditch the problem.

Getting things done

Professor Steel, if obliged to settle for just one of the many techniques he outlines in *The Procrastination Equation*, chose removing temptations. "Whatever temptation you have, and likely it is something on your smartphone, the easier it is to access, the more you likely use it and while using it, you are almost certainly procrastinating. Make the temptation harder to get to and your procrastination will go down."

Professor Ferrari, however, maintains that procrastination is self-sabotaging, is learned and can be changed. In his book, *Still Procrastinating?*, he draws on more than 20 years of scientific research to support his conclusions and help us understand how to leave procrastination behind to lead a more fulfilling and fruitful life. He explains that procrastination is "a serious issue, with personal and societal consequences." For him, it is not a matter of improving time-management skills. Indeed, he points to research that shows that enhancing time-management skills, improves, well, time-management skills, but does not improve performance. Basically, a procrastinator will find ways not to use the time-management techniques he or she has learned.

Ferrari believes that the solution to procrastinating lies in creating new thoughts around the behaviour and checking in with yourself to consider why you are really doing it. For procrastinators, he explains, not having enough time can provide a convenient excuse to fail. Why? Because it protects self-esteem. Delaying enables a procrastinator to claim, 'It wasn't my fault! There just wasn't enough time to do it properly!' Here, he suggests changing the thought underlying the behaviour, to "stop believing that your self-worth and your identity as a person depend solely on how well you perform tasks." In other words, use the time to try your best and yes, allow yourself to fail; then learn from it. His book offers several helpful strategies to deal with procrastination, including breaking the task down into manageable chunks, starting small and removing distractions such as listening to music.

Of course, some people will find challenging procrastination easier than others. Research has shown links between procrastination and impulsivity, and procrastination and diagnosed ADHD. Procrastination is also known to be a habit that frequently goes hand-in-hand with other self-defeating behaviours, such as refusing help or feeling guilty after good things happen unexpectedly.

Making time for change

In conclusion, it's safe to say that there's clearly been no slacking in the amount of scientific attention given to the problem of procrastination! Yet, whether a problem of time management, a failure to regulate our moods and emotions, or a mixture of the two, it continues to blight working life, productivity and personal wellbeing. Across society, it regularly causes people to put off medical appointments and lose valuable timely intervention, overlook investing in a pension and annually incurs penalty costs for completing legal obligations such as filing taxes. However, it can be beaten. Scarlett, it seems, was half-right. Tomorrow certainly is another day, but in order to take advantage of it, we need to change our habits today. Because by knowing ourselves better and choosing to break the procrastination habit, we can achieve more, stress less and truly enjoy life. ■

THE SCIENCE OF Rudeness

Road rage, interrupting colleagues, talking at the theatre – we are all familiar with rude behaviour, but do you know the science behind bad manners?

WORDS CHARLIE EVANS

1 RUDENESS CAN CAUSE INADVERTENT BUT SERIOUS HARM

The performance of medical teams can be detrimentally affected by rude interactions.

Have you ever had someone say something rude and moments later you think of the perfect witty response? You're not alone. But dwelling on these interactions and that snappy comeback distracts your brain and affects your ability to focus, recall facts, piece together information and remember things properly. Doctors, surgeons and nurses are no different – their cognitive function and performance can be seriously impacted by rude behaviour, which is no joke when other people's lives are in their hands. One study found that medical teams exposed to a staged rude encounter earlier in the day performed less well when asked to diagnose and treat a medical mannequin compared to teams that experienced a neutral staged encounter. It's estimated that error due to rudeness could account for over 40% of medical mistakes.

2 YOU MIGHT GET RUDER WITH AGE

Older people can lose their inhibitions, making them more likely to say exactly what they're thinking.

Scientists have discovered that rudeness impacts your brain's frontal lobes; the regions responsible for your working memory. As we get older, these parts of our brain start to deteriorate and can impair 'executive functioning' – the ability to plan into the future and control the things you say and do. Research in the field has used tests such as the Stroop test, where participants are asked to say the colour of the ink and not read out the word. For example, being shown the word 'red' written in green ink and expected to say the colour green. We struggle to do this because we have to get our brain to override the automatic impulse to read, so it's a good test on the ability to control and inhibit your own thoughts. Older people are less able to do this, which might be why they can sometimes be more blunt and make inappropriate remarks.

3 BAD MANNERS ARE CONTAGIOUS

Other people's behaviour can spread like a disease and influence our own.

Forget trying to avoid catching germs on public transport – there's something else passing between morning commuters that you could catch: bad manners. It only takes one person to shove past you or say something nasty and you're instantly at a higher risk of passing on negativity to other people. Research investigating the contagiousness of rudeness has shown that workers are more likely to respond with hostility to customer emails after watching videos of employees interacting aggressively. When paired with partners on a graduate course, students who thought their first partner was rude would act more rudely in turn towards their second partner. This social phenomenon happens with positive interactions too, meaning you can feel happier around happy people.

"ERROR DUE TO RUDENESS COULD ACCOUNT FOR OVER 40% OF MEDICAL MISTAKES"

4 NEGATIVE WORKPLACES ARE LESS EFFICIENT

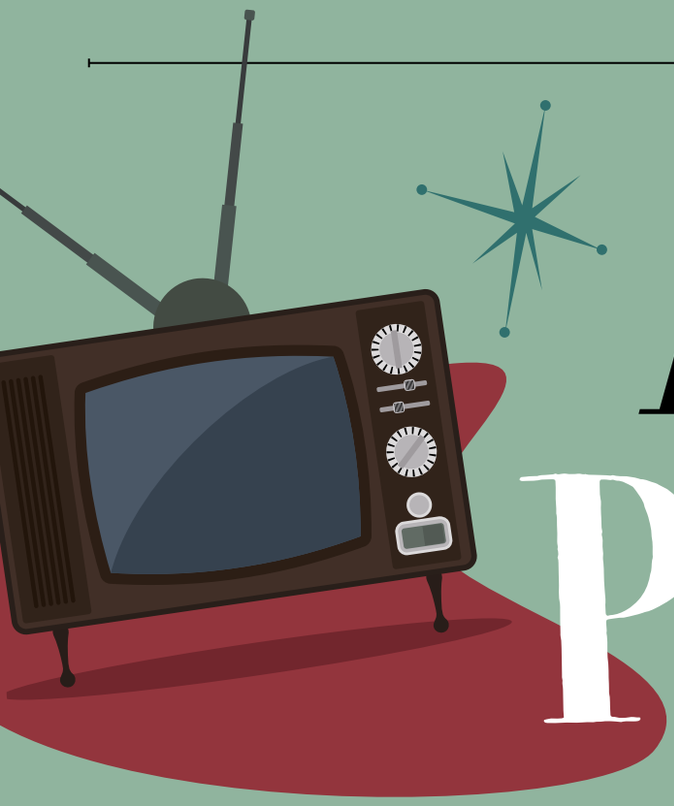
Nastiness at the office can cause you to lose focus and spend less time working.

Rudeness in the workplace can have dramatic effects on your productivity. Whether someone is insulting you, ignoring you, or withholding information from you to make your job harder, research suggests that after encountering incivility in the workplace you are more likely to spend more time slacking off. This can be because you're more likely to spend time avoiding rude people and more time thinking about leaving the company, in addition to the loss of motivation and morale that comes with working in a difficult environment.

5 BAD MANNERS PARTLY EVOLVED TO PROTECT US FROM DISEASE

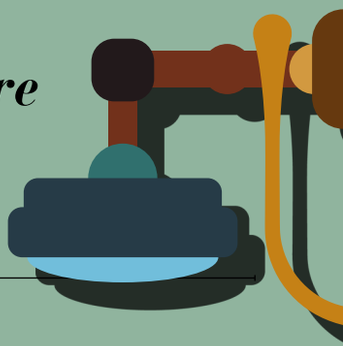
Communities may subconsciously separate themselves from strangers.

New theories suggest that where diseases are common, individuals are ruder to strangers. From an evolutionary perspective this makes sense: new people might bring new diseases, and being rude will keep them at a distance. Research suggests that countries with a higher disease prevalence are also countries where people are more likely to show prejudice towards people from other countries. Particularly in locations where deadly disease is common, individuals are more likely to be focused on the welfare of their own group rather than being polite to strangers. ■



PAST perfect

Many of us enjoy a wander down Memory Lane. But might nostalgia be more than just a happy-sad feeling?



WORDS JULIA WILLS

From John Travolta in *Saturday Night Fever* to *Sesame Street*, from Raleigh Chopper bikes to Nirvana, everyone has their nostalgia hot-key. A word, a scent, an old snap, a snatch of song and you're off, travelling on a personal flying carpet back towards a fondly remembered past. Fittingly perhaps for something that has always looked back over one shoulder, nostalgia has a long history. But not all of it has been rose-tinted.

The word itself comes from the Greek 'nostos', meaning homecoming, and 'algos', meaning pain. The condition was named by Johannes Hofer, who first recorded it as a disorder of neurological origin in 1688.

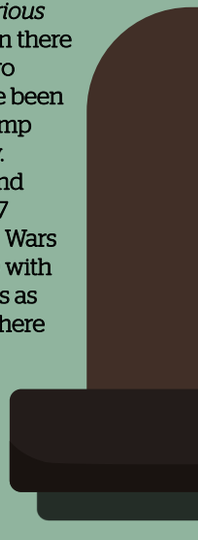
> "THE CHOICES WE MAKE IN OUR YOUTH INFLUENCE OUR PREFERENCES"

Its symptoms included a heavy heart, indifference to daily life, a deep longing for home and a tendency to see or hear ghosts of loved ones. It afflicted both mind and body, filling the individual with yearning, sorrow and anxiety. Hofer witnessed it in Swiss soldiers who were serving abroad in the 17th century – men who were emotionally felled by longing when they heard a folk melody from their Alpine homeland. For some, it only took the clang of cow bells to bring the 'problem' on. Of course, there were several 'cures' on offer, remedies that included leeches or opium. Yet nothing worked nearly so well as returning the afflicted individual to his native land. Nothing, that was, apart from fear of the death penalty, inflicted on Russian troops entering Germany in 1733. The punishment, that of being buried alive, is reported to have been carried out at least twice, and is believed to have conferred rapid 'immunity' on the rest of the army.

Modern nostalgia

Over the years, nostalgia has sometimes been confused with homesickness. In fact, it wasn't until research done as recently as the 1970s by Fred Davis, research professor of sociology at the University of California, that defined homesickness as a longing for place, while nostalgia is a longing for the past. One is kindled by geographical distance, the other by temporal separation.

Never far from the human heart, nostalgia is something that the movie world has long taken advantage of. Some days it feels as though you can hardly turn around without noticing that a favourite movie has been re-imagined, rebooted, remastered or simply re-incarnated in a sequel. *Rocky*, *The Karate Kid*, *X-Men* and *The Fast and the Furious* have all run to several sequels. Then there are all those prequels and superhero origin stories. Some franchises have been going so long that they can timestamp the different generations in a family. Think about it: when did you first find that the Force was with you? In 1977 when *A New Hope*, the original Star Wars movie, arrived in cinemas? Or, 1999 with *The Phantom Menace*? Maybe it was as late as 2015's *The Force Awakens*? There are TV channels devoted to classic movies and reruns of beloved sitcoms; Enid Blyton is enjoying fresh readers in bookshops across the world; you can buy typewriter-style keyboards



that work with tablets, and music festivals all over the globe continue to belt out the songs of the 1970s, '80s and '90s.

Nostalgia sells. It's something that Hollywood and other businesses have long understood. Namely that the choices we make in our youth influence our preferences and, more importantly for the bottom line, our buying habits for life. Think about your favourite chocolate bar. How long have you been regularly choosing that particular brand over newer temptations? Ever wondered why? Nostalgia's warm feeling is the secret ingredient in so many things – entertainment, fashion, music, revamped brand icons and resurrected old-school technology. Vinyl records, anyone?

The reminiscence bump

This is the term that scientists give to that sweet spot in our library of memories, generally between the ages of 16 and 25, where memory storage increases. It makes »

sense that more memories are laid down in our formative years, those times when we are in a period of change, discovering adulthood, working out who we really are and what we want to do with our lives. Of course, it's also the time in our lives when more events tend to be novel – our first kiss, our first heartbreak, learning to drive, graduation day – again making them more potent. Memories of the songs we listened to, the friends we made and the things we experienced from those times can remain with us for our whole lives. Which might account for all those middle-aged rockers, sporting beloved Status Quo and Rolling Stones T-shirts.

Oddly, however, it's the millennials who appear to be the most nostalgic of all. An article by Digiday[1] reveals that they are experiencing 'early-onset nostalgia'. A combination of factors is suggested. Firstly, millennials are reaching adulthood in a time of economic uncertainty, making them yearn for happier days, and secondly, they are the first generation to have access to their whole lifetimes chronicled by digital media. As they wistfully look back, they have a wealth of sources to immerse themselves in. As Jamie Gutfreund, CMO of Deep Focus Agency, points out, this "information overload has compressed their sense of time". All of which suggests that nostalgia, as an engine of big business, won't be a thing of the past any time soon.

The good old days

Traditionally, nostalgia flourishes at times of change or upheaval. Social, cultural and technological change can all trigger it. The pastoral cottages dreamt of as the Industrial Revolution took hold have much in common with the way we might yearn for a time before the internet or the ubiquitous mobile phone. However, the danger lies where nostalgia becomes weaponised, for example, by fuelling nationalism, such as was the case after World War I, where unrest in Germany encouraged a fond remembrance of how it used to be, which in turn helped drive the rise of political parties such as the Nazis. Yet, for the most part, nostalgia is a bittersweet wistfulness about our own pasts, a habit that we readily indulge. But why? Short answer? Because it's good for us.

10 WAYS TO NURTURE NOSTALGIA

Revisit an activity from your childhood, for example making daisy chains, roller-skating, cycling and so on.

-

Write a letter to someone by hand.

-

Reread a favourite book.

-

Vintage crafting is in vogue again – macramé, flower-pressing, tie-dying. What pastime could bring back the past for you?

-

Dust off the photo album or scroll back through your phone pictures.

-

Visit a charity shop, thrift store or antiques market and spot something that triggers memories from your past.

-

Play a board game you loved. Mouse Trap or Monopoly? Invite friends and family to play.

-

Sing along to your favourite musical movie – *Grease*, *Dirty Dancing*, *Mamma Mia!*, *La La Land*...

-

Visit a town you spent a childhood holiday in.

-

Look up a school friend on Facebook.

> "BY BUILDING OPTIMISM, IT CAN HELP PEOPLE COPE WITH PSYCHOLOGICAL DIFFICULTIES"

The best days of our lives

Research into nostalgia has found that it can help us counteract loneliness, build self-esteem, encourage us to persevere and remind us that we are not alone. Nostalgia, it's thought, deepens meaning for us in our own lives. As we know, daily life is often routine and can seem a little mundane, but those milestone moments of memory through the years can give us a sense of self-worth. The fun we had, the things that mattered to us, old friends, old times, old happiness, a life well lived. Nostalgia as a feeling exists across continents and in different countries; similarly, its comfort centres on fundamentally human experiences, such as weddings, holidays and friends.

Research[2] led by Dr Wing Yee Cheung at Southampton University suggests that

nostalgia, by building optimism, can help people cope with psychological difficulties. We contacted Dr Jacob Juhl, a lecturer in psychology at Southampton University, to find out more. He explained that, "nostalgia serves a regulatory role. Research has shown that unpleasant states, for example, loneliness, boredom, and meaninglessness, trigger nostalgia. Nostalgia, in turn, helps restore a sense of social connectedness and meaning in life." So could it lead to a therapeutic role in treating anxiety and depression in the future? "The research so far suggests that if a person is feeling a bit down or a bit anxious, nostalgia may be helpful. It is possible that nostalgia could also help cope with clinical depression and anxiety, however, this is not yet known."

I did it my way

There has also been suggestion that nostalgia, by triggering a feeling of self-worth and of having led a meaningful life, might even help protect us from anxiety around our own deaths. However, again that remains something for future research to discover. Dr Juhl explained that the effect had not been directly tested, but that "given our findings that nostalgia prevents death thoughts from turning into death fears, it is reasonable to suspect that nostalgically reflecting on one's life could help people who are facing death maintain psychological equanimity."

Of course, some people might be wary of looking back too much. We asked Dr Juhl whether he thought there might be a limit as to how much nostalgia was good for us, or even if it was possible to accidentally overdose on it. He thought not. "An important thing to keep in mind is that not all reflections on the past are nostalgic reflections," he explained. "Research to date suggests that nostalgic reflection has a lot of benefits and is indeed adaptive for living in the present and facing the future. However, I don't suspect that all types of past-oriented thought are adaptive. There is no evidence that people who seem stuck in the past are actually engaging in nostalgic reflection. Given nostalgia's capacity to help people face the future, a highly nostalgic person would not be someone who appears stuck in the past."

Nostalgia has certainly come a long way since being seen as a disease that needed purging or, worse, led to 'sufferers' being executed. As research at Southampton University has shown, its benefits to our wellbeing conclusively demolish those early fears. Better still, through further study, it may reveal even more rewards, perhaps leading to new treatments to relieve clinical anxiety and depression. ■

MUSIC, NOSTALGIA AND ALZHEIMER'S

Music is a fast-track to nostalgia, spinning us back to the time when we first heard a particular song or symphony. This is believed to be due to the fact that listening to music stimulates several areas of the brain, lighting up centres for memory, movement and emotion too. It also activates the visual cortex, which could account for why listening to an old favourite brings back memories of the friends, places and occasions where you heard it first. Music that people loved earlier in their lives has been shown to alleviate some symptoms of Alzheimer's, such as anxiety and difficult behaviours. Lyrics of songs are often remembered even when other memories have faded. Perhaps most significantly, even in the late stages of the disease, favourite songs can help a person to relax.

*1. digiday.com/marketing/early-onset-nostalgia; 2. *Personality and Social Psychology Bulletin* 2013

INSIDE Anxiety

The brain's natural fear response evolved to keep our species safe, so what happens when it goes wrong?

WORDS LAURA MEARS

The word anxiety comes from the Latin 'angere', which literally means 'to choke'. It describes the feeling of physical and emotional unease we experience when anticipating a threat. It has been critical to our success as a species, making us feel uncomfortable in the face of danger for thousands of years.

The purpose of anxiety is adaptation. It prepares us to fight or flee if possible, or freeze in place if not. It initiates rapid activation of the sympathetic nervous system, a network of nerves that reach into every corner of the body. These nerves spit out a chemical called noradrenaline, also known as norepinephrine. Related to adrenaline, this chemical initiates a wave of changes that prepare the mind and body for physical action. The heart rate rises, the breathing quickens, the blood vessels in the muscles dilate, and the mind becomes hyper alert.

> "SIDE EFFECTS INCLUDE NAUSEA, DIZZINESS, HOT FLUSHES AND IRRITABILITY"

Researchers disagree about whether anxiety and fear are the same. They both alert us to danger and trigger similar protective biological responses. But, while the focus of fear is often external danger, the focus of anxiety can be anything, physical or psychological, real or hypothetical. In times of physical danger, the changes the fight or flight response triggers are essential. But, often in the case of anxiety, the source of the threat is less tangible.

When there is nothing to fight against or flee from, the physical fear reaction can feel very unpleasant. Side effects include nausea, tingling, dizziness, hot flushes, restlessness, trouble concentrating, irritability, and a feeling often described as an unshakeable sense of dread.

Anxiety disorders

One in four people experience cycles of anxious thoughts and feelings that become so intense that they start to impact their everyday lives. This is when normal human »

THE ANXIETY RESPONSE

A CORTEX
The brain's information-processing areas trigger anxious feelings, consciously or subconsciously.

AMYGDALA
The fear centre senses danger and initiates the fight or flight response.

LATERAL PERIAQUEDUCTAL GRAY
The amygdala sends signals to the lateral periaqueductal gray, which tells the muscles to prepare for action.

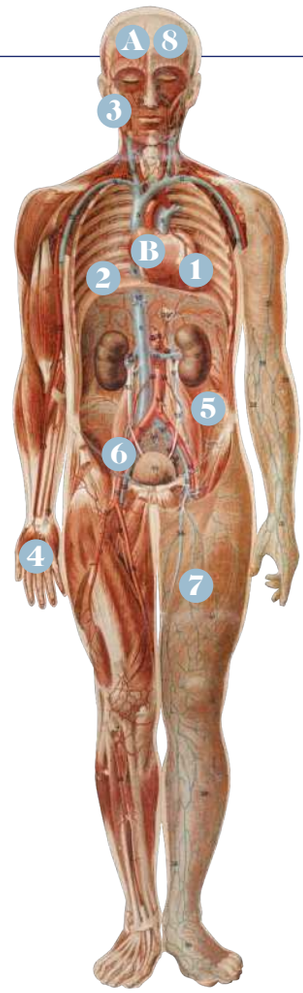
HYPOTHALAMUS
The amygdala contacts the hypothalamus, telling it to switch on the sympathetic nervous system.

PITUITARY GLAND
The hypothalamus sends chemical messages to the pituitary gland, which starts pumping hormones into the blood.

ADRENAL GLANDS
Hormones from the pituitary gland arrive at the adrenal glands, telling them to make the stress hormone cortisol.

SYMPATHETIC NERVOUS SYSTEM
The sympathetic nervous system releases noradrenaline, and the adrenal glands release adrenaline, two major fight or flight chemicals.

B HEART AND LUNGS
The body responds by increasing the heart rate, quickening the breathing, and diverting blood to the muscles.



THE EFFECTS OF ANXIETY

1 PALPITATIONS
Adrenaline ramps up the heart rate, causing the heart to pound or flutter in the chest.

2 BREATHLESSNESS
The muscles scream for oxygen as the body prepares to fight or flee, causing a sensation of breathlessness.

3 HOT FLUSHES
The blood vessels widen to deliver more oxygen to the muscles, making the skin feel hot.

4 SWEATING
The nervous system triggers sweating in the hands, feet, face and armpits.

5 NAUSEA
Blood moves away from the intestines and the muscles slow down causing cramping and nausea.

6 DIARRHOEA
Contractions in the large intestine speed up to empty the bowel.

7 TREMBLING
The muscles prepare to jump into action, and become twitchy and overexcited.

8 PANIC
The physical symptoms feed back to the brain, magnifying feelings of restlessness and panic.

WHAT CAUSES PANIC ATTACKS?

Panic attacks can start without warning, flooding the body with a wave of physical symptoms that seem to have come from nowhere. But these events don't happen totally out of the blue. Researchers at Southern Methodist University have shown that signs of an impending panic attack can begin up to an hour beforehand. Monitoring people with panic disorder revealed that, in the run-up to a panic attack, blood carbon dioxide levels start to fall. Then, just before the panic attack begins, they suddenly rise. This makes the brain think that it is suffocating, triggering feelings of intense fear. The link between carbon dioxide and panic attacks might explain why slow, deep breathing is such an effective treatment. It helps to restore the body back to its normal balance.

anxiety becomes an anxiety disorder. This group of psychiatric conditions can be acute or chronic, lasting a short amount of time or persisting for years. There are many types, ranging from generalised anxiety and panic attacks to phobias and obsessive compulsive disorder.

Doctors have known about anxiety disorders for centuries. The father of medicine, Hippocrates, described a man called Nicanor, who had a phobia of the flute more than 2,000 years ago. Hearing the sound of the instrument would cause him intense anxiety. At the time, there was no diagnosis and no treatment. Clinical understanding of anxiety has improved dramatically over the centuries, but it wasn't until relatively recently that the biology of fear, panic and anxiety started to become clear.

One of the first researchers to investigate anxiety was Ivan Pavlov. The physiologist noticed strange behaviour in his animals after a traumatic event. In September 1924, a storm flooded St Petersburg. Pavlov's dog kennels were submerged. To escape the rising water, the dogs had to swim to the laboratory on

> "RECENTLY, THE BIOLOGY OF FEAR, PANIC AND ANXIETY BECAME CLEAR"

the floor above. They endured terrifying sights and sounds on their journey, including lashing rain, crashing waves and falling trees.

After the storm subsided, some dogs returned to their training as though nothing had happened. But others became troubled and withdrawn. Writing about one of the dogs, Pavlov explained, "the animal was abnormally restless and all conditioned reflexes were practically absent... the animal now would not touch the food". This dog was experiencing post-traumatic stress disorder. All the staff could do to reassure it and restore its normal behaviour was to keep it company.

Why only some of the dogs developed anxiety after the flood is a big question in anxiety research. Individuals can experience the same life events and emerge with completely different psychological reactions; they seem to have their own thresholds for anxiety disorder development. It is likely that these thresholds are influenced by genetics.

Genetic causes

The centre of the brain's fear response is a pair of walnut-sized structures called the amygdala. This cellular junction box communicates across the brain. It receives inputs from the sensory system, keeping a constant watch for signs of danger. If it detects a problem, it sends signals to the hypothalamus and the brain stem, which activate the fight or flight response.

One of the brain areas that sends signals into the amygdala is a group of cells called the raphe nuclei. These cells send out the feel-good brain chemical serotonin. This chemical has gained a reputation for being the 'happy hormone', but its role in anxiety is not so positive.

A group of antidepressants called selective serotonin reuptake inhibitors (SSRIs) help to improve mood by keeping serotonin around in the brain for longer, but they can also increase anxiety. Researchers at the University of North Carolina Healthcare wanted to understand why, so they tracked the activity of serotonin nerves in the brains of mice. They traced serotonin-induced anxiety back to a group of cells that connect the raphe nuclei to a brain area called the 'bed nucleus of the stria terminalis'. »

TYPES OF ANXIETY

GENERALISED ANXIETY DISORDER

This common form of anxiety has no specific trigger. People experience uncontrollable worry about a variety of aspects of life, from work to relationships.

PANIC DISORDER

People with panic disorder experience regular sudden panic attacks. The frequency can range from a few times a month to more than once a week.

SOCIAL ANXIETY DISORDER

People with social anxiety experience overwhelming worry before, during or after interacting with other people. It is sometimes known as social phobia.

POST-TRAUMATIC STRESS DISORDER

This type of anxiety, often abbreviated to PTSD, is most often triggered by a traumatic life event. Symptoms include flashbacks, nightmares and extreme alertness to danger.

PHOBIA

A phobia is an overactive fear response to something specific, like an object, a situation or a bodily sensation. Even thinking about the subject of the phobia can trigger anxiety.

OBSESSIVE COMPULSIVE DISORDER

Also known as OCD, this type of anxiety has two key features. First, frequent unwanted (obsessive) thoughts. Second, repetitive (compulsive) behaviours that help to relieve the thoughts.

HEALTH ANXIETY

This type of anxiety focuses on bodily health, with intense worry about being or becoming unwell. The physical sensations of anxiety itself can make these worries worse.

Sometimes known as the 'extended amygdala', this brain area links the parts of the brain that sense danger with the parts of the brain that trigger a response. Serotonin signals here change the messages that reach the brain's fight or flight switchboard, the hypothalamus. When serotonin levels increase, the hypothalamus flips the parasympathetic nervous system 'off', and the sympathetic nervous system 'on'. This causes anxiety to rise.

Changes to the serotonin signalling system appear frequently in studies searching for the genetic causes of anxiety. Researchers have identified mutations in several serotonin-related genes that appear to increase the risk of anxiety disorders. These include the genes for the receptor that detects serotonin, the transporter that clears it away, and the enzyme that breaks it down.

Some individuals with these genetic changes even have visible differences inside their brains. Scans have shown that genetic differences in serotonin signalling can alter the connections between the amygdala and a part of the brain called the fusiform gyrus, which is responsible for face detection.

Another group of brain chemicals that play a role in anxiety are the catecholamines. These include the fight or flight chemicals adrenaline and noradrenaline (also known as epinephrine and norepinephrine). Nerves that make noradrenaline start in a part of the brain called the locus coeruleus, or 'blue spot', which communicates with the amygdala. It has a powerful role to play in vigilance and attention, and it helps to tune incoming sensory signals.

Nerve impulses from the locus coeruleus dial up the amygdala's fear response. They instruct the fear centre to send messages to the hypothalamus that tell it to release a chemical called corticotropin-releasing hormone. This tells the brain's pituitary gland to release a hormone that prepares the body for incoming stress. Researchers at Boston Children's Hospital found that blocking corticotropin-releasing hormone makes cautious mice fearless. They visit brightly lit areas, walk across narrow planks, and don't hesitate to investigate strange new objects.

Environmental factors

Not everyone with alterations in their genetic makeup will go on to develop anxiety. Genetics might determine a person's underlying threshold for developing a particular anxiety disorder, but life events determine whether that threshold will ever be breached.

Research has shown that anxiety disorders rarely occur on their own. In fact, 60-90% of people with anxiety also have another mental health condition. This might be depression, substance misuse or another

COPING WITH ANXIETY

Take these simple steps to sooth a mind in overdrive:

SORT YOUR THOUGHTS

Are your worries practical? If so, plan to do something about them. Are they hypothetical? Write them down and set aside dedicated time to worry about them later.

BREATHE INTO YOUR BELLY

Anxiety triggers muscle tension across the body. Consciously relax your abdominal muscles by taking slow deep breaths into your belly, in through the nose and out through the mouth.

MAKE A SELF-SOOTHE BOX

Prepare for anxious moments by filling a small box with comforting objects. Add one item for each sense to soothe the brain's fear centre.

TAKE A BATH

A hot afternoon bath can change your mood. The warm water relaxes your muscles, resets your body clock, and improves your sleep.

TALK TO SOMEONE

Sharing anxious thoughts with someone else can help to break the cycle of rumination. Speak to a trusted friend, a mental health professional or a helpline listener.

WALK IT OFF

Fight or flight chemistry prepares the body to get up and go, so exercise is a good way to put the body's overreaction to good use.

TRACK DOWN YOUR TRIGGERS

It can be hard to work out what triggers anxiety. Keep a journal to help spot those hidden patterns and learn to work around them.

ASK FOR HELP

Don't wait for your anxiety to get really bad before you ask for professional help. It can be easier to manage if you seek help early.

If you, or anyone you know, is affected by anxiety, the following charities and helplines are ready to offer free support.

UK
Mind *www.mind.org.uk*
Samaritans *116 123*

US
Anxiety and Depression Association of America *https://adaa.org/*
National Alliance on Mental Illness (NAMI) *1-800-950-NAMI (6264)*

Australia
SANE Australia *www.sane.org*
Lifeline *13 11 14*

type of anxiety disorder. Sometimes one disorder directly causes another. Other times, several disorders have the same underlying causes, making people likely to develop them in combination.

Treatments

The frontline treatment for those struggling is cognitive behavioural therapy (CBT), a talking therapy that helps people learn to break out of cycles of negative thoughts. It encourages people to look closely at the connections between their thoughts, feelings, physical sensations and actions.

According to researchers at the Norwegian University of Science and Technology, CBT is far more effective than medication for treating anxiety. Drug treatments might dampen the physical and psychological symptoms, but the effects are often only temporary. CBT addresses negative thought patterns directly. In a trial that compared the two types of treatment, 85% of participants improved using CBT alone.

One of the challenges in treating anxiety is the amount of time it takes for people to come forward and ask for help. According to a paper published in *Nature Reviews*, it often takes between three and 30 years. But research has also shown that asking for help early can make anxiety easier to manage. ■

DO ANIMALS GET ANXIOUS?

The brain chemistry that triggers anxiety evolved because it is essential for our survival. The pathways that drive our overactive fear response are the same ones that underpin our ability to sense and respond to real threats. We share those pathways with all other mammals, making it likely that they are capable of experiencing anxiety too. It's hard for scientists to measure anxiety in animals because they can't tell us how they're feeling. But their behaviour can be a giveaway. In dogs, for example, separation from a trusted owner can trigger the same kinds of physical anxiety symptoms seen in humans. They become agitated, their muscles tremble, and they can be sick or lose control of their bowels. Treatment for anxiety in animals is similar, too. It involves making them feel safe, providing distractions during distressing situations, and seeking professional support when it becomes too much to manage at home.

WHAT IS Personality?

We're all different and have a unique combination of attributes, but what is it that makes someone who they are?

WORDS STEPHANIE PAPPAS

Each person has an idea of their own personality type – if they are bubbly or reserved, sensitive or thick-skinned. Psychologists who try to tease out the science of who we are define personality as individual differences in the way people tend to think, feel and behave.

Psychologists have mostly given up on trying to divide humanity neatly into types. Instead, they focus on personality traits.

The most widely accepted of these traits are the Big Five: openness, conscientiousness, extraversion, agreeableness and neuroticism. Conveniently, you can remember these traits with the mnemonics OCEAN or CANOE.

The Big Five were developed in the 1970s by two research teams. These teams were led by Paul Costa and Robert R. McCrae of the National Institutes of Health, and Warren Norman and Lewis Goldberg of the University of Michigan in Ann Arbor and the University of Oregon, according to *Scientific American*.

The Big Five are the ingredients that make up each individual's personality. A person might have a dash of openness, a lot of conscientiousness, an average amount of extraversion, plenty of agreeableness and almost no neuroticism at all. Or someone could be disagreeable, neurotic, introverted, conscientious and hardly open at all. Here's what each trait entails:

Openness

Openness is shorthand for 'openness to experience'. People who are high in openness enjoy adventure. They're curious and appreciate art, imagination and new things. The motto of the open individual might be, 'Variety is the spice of life'.

People low in openness are just the opposite: they prefer to stick to their habits and avoid new experiences, and probably aren't the most adventurous eaters. Changing personality is usually considered a tough process, but openness is a personality trait that's been shown to be subject to change in adulthood. In a 2011 study, people who took psilocybin, or hallucinogenic 'magic mushrooms', became more open after the experience. The effect lasted at least a year, suggesting that it might be permanent.

Conscientiousness

People who are conscientious are organised and have a strong sense of duty. They're dependable, disciplined and achievement-focused. You won't find conscientious types jetting off on round-the-world journeys with only a backpack; they're planners.

People low in conscientiousness are more spontaneous and freewheeling. They may tend toward carelessness. Conscientiousness is a helpful trait to have, as it has been linked to achievement in school and on the job.

Extraversion

Extraversion versus introversion is possibly the most recognisable personality trait of the Big Five. The more of an extravert someone is, the more of a social butterfly they are. Extraverts are chatty, sociable and draw energy from crowds. They tend to be assertive and cheerful in their social interactions.

Introverts, on the other hand, need plenty of alone time, perhaps because their brains process social interaction differently. Introversion is often confused with shyness, but the two aren't the same. Shyness implies a fear of social interactions or an inability to function socially. Introverts can be perfectly charming at parties – they just prefer solo or small-group activities.

Agreeableness

Agreeableness measures the extent of a person's warmth and kindness. The more agreeable someone is, the more likely they

"INTROVERSION IS OFTEN CONFUSED WITH SHYNESS"

are to be trusting, helpful and compassionate. Disagreeable people are cold and suspicious of others, and they're less likely to cooperate.

Men who are high in agreeableness are judged to be better dancers by women, suggesting that body movement can signal personality. (Conscientiousness also makes for good dancers, according to the same 2011 study.) But in the workplace, disagreeable men actually earn more than agreeable men. Disagreeable women didn't show the same salary advantage, suggesting that a no-nonsense demeanour is uniquely beneficial to men.

Being envious, which can lead to people being perceived as not agreeable, was found to be the most common personality type out of the four studies by a report published in August 2016 in the journal *Science Advances*. Envious people feel threatened when someone else is more successful than they are.

Neuroticism

To understand neuroticism, look no further than George Costanza of the long-running sitcom *Seinfeld*. George is famous for his neuroses, which the show blames on his dysfunctional parents. He worries about everything, obsesses over germs and disease, and once quits a job because his anxiety over not having access to a private bathroom is too overwhelming.

George may be high on the neuroticism scale, but the personality trait is real. People high in neuroticism worry frequently and easily slip into anxiety and depression. If all is going well, neurotic people tend to find things to worry about. One 2012 study found that when neurotic people with good salaries earned raises, the extra income actually made them less happy.

In contrast, people who are low in neuroticism tend to be emotionally stable and even-keeled.

Unsurprisingly, neuroticism is linked with plenty of bad health outcomes. Neurotic people die younger than the emotionally stable, possibly because they turn to tobacco and alcohol to ease their nerves.

Possibly the creepiest fact about neuroticism, though, is that parasites can make you feel that way. And we're not talking about the natural anxiety that might come with knowing that a tapeworm has made a home in your gut. Undetected infection by the parasite Toxoplasma gondii may make people more prone to neuroticism, a 2006 study found.

Other personality measures

Sensing and intuition refer to how people prefer to gather information about the world, whether through concrete information (sensing) or emotional feelings (intuition). Thinking and feeling refer to how people make decisions. Thinking types go with logic, while feeling types follow their hearts.

The Myers-Briggs system is rounded out with the judging/perception dichotomy, which describes how people choose to interact with the world. Judging types like decisive action, while perceiving types prefer open options. The system further identifies 16 personality types based on a combination of four of the categories, leading to descriptions such as ISTP, ENFP, ESFJ and so on.

The use of this system is controversial, as research suggests that types don't correlate well with job satisfaction or abilities. ■

CAN PERSONALITY CHANGE?

Maybe. A study published in the January 2017 journal *Psychological Bulletin* synthesised 207 published research papers and found that personality may be altered through therapy. "For the people who want to change their spouse tomorrow, which a lot of people want to do, I don't hold out much hope for them," said study researcher Brent Roberts, a social and personality psychologist at the University of Illinois. However, he continued, "if you're willing to focus on one aspect of yourself, and you're willing to go at it systematically, there's now increased optimism that you can affect change in that domain."

WHY *Live Arts* MATTER

How do performances compare when you take away the screen between?

WORDS AILSA HARVEY

Performance arts are more accessible today than ever before. From your home you can stream a multitude of genres, but could the projection on the screen in your living room ever replace the buzz of a live event? Whether you want to immerse yourself into a theatrical drama, feel the beats of your favourite songs resonate throughout your body, or stimulate your eyes with dancers' aesthetics as they parade around you in perfect synchrony, live performances place you amid the action.

The power that comes with being positioned in a live venue is immense. As the entertainment unfolds immediately before you, your eyes are the only lenses required. The details you experience come down to the elements you focus on. Will you pay close attention to the main character as they drive passion into their monologue? Or will you perhaps analyse the actors in the background, remaining focused and in character during their role of setting the scene? You are equipped with the ability to personalise your viewing experience, a choice that a recorded event deprives you of.

Live events were invented to bring people together. They have the power to hold a room filled with thousands of people, and contain a transfixed silence like no other. This works because the large majority have specifically chosen this event to align with their interests. The room might be filled with thousands of diverse people, but they have all come together for the same reason, and in the hours of the performance the room is bonded by what they are witnessing together.

The impact of shared experiences

For those who spend a lot of time alone or experience loneliness, attending a live event can increase the feeling of inclusivity. As many of these events involve only observing, even people who attend one alone are able to feel like they are part of a large group. Sitting next to strangers, even without speaking, audience members can feel like they are sharing something in common. Studies have shown that attending a theatre or similar concerts every few months can reduce the chances of feeling lonely by 33%.

When listening to music in particular, the limbic system becomes more activated. The limbic system is a set of structures in the brain responsible for controlling our emotions, and oftentimes during live events these raised emotions can encourage people to socialise with those around them. The combination of this activity in the brain making event-goers more inclined to chat and the densely populated arenas in which the events are held means feelings of loneliness can quickly begin to fade.

One type of live event that is bound to leave you feeling uplifted, or maybe even with pleasantly sore facial muscles as a memento of a good time, is comedy. Laughing can relieve stress and anxiety, boost your overall mood and even be contagious. However, you might have noticed a difference between experiencing a funny event yourself and sharing it with a friend. When laughing with others, your laughter is more likely to last longer and can also make you bond more with those around you. This is why during a comedy event, with a room full of people sharing the comedian's reminiscent tales or cleverly constructed one-liners, large proportions of the audience can be left in hysterics as they wipe away the tears falling uncontrollably down their faces.

When you hear the sound of laughter, the areas of the brain that are used most when you smile and laugh become activated to prepare you for laughter too. Watching a

> "ATTENDING A LIVE EVENT CAN INCREASE THE FEELING OF INCLUSIVITY"

comedy on television might give you a chuckle, but being surrounded by the sound of thousands of bodies laughing can make you enjoy and appreciate a joke far more than you would alone.

In general, the collection of people in one area can make us feel included, but a sense of belonging can come at live events that are tailored towards a niche audience. Music is one topic that can divide even those who have the most in common. You might wonder how someone can dislike your favourite band, but at the same time you recoil at the sound of someone else's. When attending a live gig, you don't even have to communicate with those around you to know that almost everyone in the arena »

MAKING MEMORIES

One of the core qualities of a live event is that it is likely to hold a more significant place in your memory than a televised one. Part of this is due to the amount of time we dedicate our thoughts to a live event. Unlike when you select a short series to watch, live events require more commitment. After an extended period of securing tickets and planning the event – from organising who is going, to selecting a suitable time and the rising excitement that appears shortly before the day – your mind is already used to processing this live event.

When streaming entertainment, less commitment is required. You can play something and change your mind within an instant. There are no repercussions and you are likely to forget the short event faster than you will a live one. Live events incorporate all your senses. You might feel the heat of an arena, the movement of the crowds, new smells and the irreplicable sounds of the chattering, screaming and laughter as the venue fills up. Aside from the main source of entertainment, a lot can be taking place around you to observe, and these senses aid you in securing a memory.

has something in common with you. This sense of belonging can be experienced live through the synchronised singing and chanting of the crowd surrounding you. Not only does it create a unique atmosphere, but it can provide an air of appreciation. This connection can heighten your adrenaline in ways that watching a recorded live event can't.

Live music and the body

Music is a powerful tool. By simply listening to it, we are able to relax our minds and reduce stress, motivate ourselves, energise our bodies, relieve pain and improve our memory and concentration. All of these benefits can be achieved alone, through the power of headphones or speakers. But, you may have noticed that this simply can't compare to how you feel when you're singing and dancing to the tunes of a live band.

The sound of music has gathered groups of people for centuries, due to the chemical impact it has on the brain. When listening to music, the reward circuit in the brain is triggered, causing dopamine to be released. This chemical can provide us with the feeling of reward.

> "PSYCHOLOGICAL STUDIES SHOW THAT LIVE MUSIC ACTUALLY HAS A UNIQUE IMPACT ON OUR BRAINS"

So, why do people opt to listen to music live in fields or halls, rather than in the confines of their home? Psychological studies show that live music actually has a unique impact on our brains. Those who attend a live music event together, such as a festival or a concert, fire brainwaves in synchronisation with other listeners. This synchronisation is significantly higher than that which occurs when there are fewer listeners or when the same number of people are listening to a recording. In one study, those whose brainwaves were recorded were asked questions about their experience of the events. Those who showed higher synchrony also displayed more enjoyment, and experienced a stronger sense of connection to the performers on stage.

But why are our brains emitting these invisible signals during a concert? Our conscious experience is created by the brain processing and making sense of the information around us. This information is organised into signals called oscillations or brainwaves. These will be largely dictated by the rhythm of the music being played, and when they match the brainwaves being produced by other concert-goers, people are likely to feel bonded. It is this same rhythm-detecting method that is used to bond a mother and baby before birth as a baby's brain tunes in to the sound of its mother's heartbeat. Live music has adopted this core human trait for survival, as part of its ability to keep people feeling inclusion and belonging.

The socialisation and connectivity is what contributes to the festival mentality. People are motivated to attend festivals on an annual basis, and sometimes more regularly. In the cases of the larger festivals,

much of the appeal is the escapism that comes from spending extended periods listening to music and attending live events for multiple days. The psychological concept of escapism is a way to distract the mind from the thoughts that enter your head during general daily life. While all art performances have the ability to transport you to a different world in some way, physically attending a live event pushes the thoughts of work or home life further from the mind. At a festival, this form of escapism can be extended for multiple nights. With everybody looking to enjoy their favourite music and absorb the party atmosphere, these live events provide a space for everybody to immerse themselves and relax, with limited pressures or responsibilities.

Live events like festivals and concerts also provide audiences with a space to move. When we hear music, areas at the front of our brains are activated. The level of stimulation created in these regions line up with how much we enjoy the music. Meanwhile, at the base of the brain, the cerebellum helps to control the coordination of the body's movement. These areas work together to ignite our drive for dancing to the music and help to keep us moving to its beat. Unless you are someone who avoids dancing in public, a live event is the ideal location to fulfil your dancing desires. Dancing along in a space specifically designated for the activity makes dancing with others more appealing and perhaps more natural than jumping from the sofa when watching an event on the television.

Empathetic theatre

Our exposure to live arts events is not only an exciting and glamorous experience, but it also helps to enhance cognitive ability and mental wellbeing. From a young age, live arts can contribute to the building of a person's character, expand interests and shape perspectives and mentality. One way in which attending theatre in particular has proved to change an audience's outlook on a topic is through empathy. When exploring the story of a character embodied before you, the events on stage can seem quite real, and often help audiences better understand what the character is experiencing.

Psychologists have found that those who attend a play that's based on a disadvantaged group become more empathetic towards people in that situation after leaving the theatre. Following a theatre trip centred on a particular issue, audience members are more likely to donate to relevant charities.

The empathy created isn't limited to problems encountered in a specific theatrical performance. For some people, semi-regular theatre trips and analysis of characters' stories means that they become more charitable in general. For young children, age-appropriate

productions can teach empathy in a safe and fun environment. Without being taught in a forced manner, children can use plays to understand situations that are different to their own. The more a young person is able to put themselves into another character's shoes, the more empathetic they can be outside of these performances when learning about real-life situations.

Psychology for performers

There are many benefits to the mind of an audience member at a live event. For this reason, the primarily accepted interpretation is that the performers are working to deliver something special to those who have paid to see them. However, the audience members are not the only people gaining from the experience of a live event. When on stage, presented with row after row of faces, eagerly anticipating your next move, the performers themselves are more likely to perform well. This is called the audience effect and, more specifically, social facilitation.

Social facilitation can be observed in even the simplest tasks, and involves an individual putting more effort into their work when in the presence of others. It even makes a difference if someone who isn't being watched thinks that they are. Studies show that this is more likely to occur during activities such as live performances, whereby the actors, singers, dancers or other performers have practised and perfected their show. When performing a difficult task, or one that isn't well practised, an audience can reduce someone's success (possibly due to pressure), whereas, after significant rehearsals, those producing live events »

COMFORT IN NUMBERS

The human brain is programmed to feel comfortable in large groups. Having been constantly targeted by other animals, some of the earliest people needed to find comfort in numbers to survive. The survival traits of our early ancestors might seem a world away from the civilised attendance at a live arts event, but the way we mentally respond in groups is similar in some ways. Experiencing heavy plot-lines, outrageous jokes or calming music can greatly impact the emotions we feel while we consume live entertainment. As everyone in the room will witness the event proceedings at the same time as you, the reactions from other people can help you to strengthen and validate your emotional responses.

are often incredibly familiar with their routine. In front of a live audience, those on stage are keen to impress the crowds and are likely to portray some of their best performances compared with average ones in the practices running up to the event.

One of the factors that is impacted by an audience, and can create social facilitation, is a person's mental arousal level. This level is altered by a combination of alertness, situational awareness, vigilance, level of distraction, stress and direction of attention. Having a large audience can stimulate these levels and help a performer to channel their energy effectively.

When there is a constant feeling of being watched, more pressure is put onto a performance to go well, and those producing it are more likely to stay focused and alert. Aware of the large number of eyes staring back at them, those performing often pay more attention to their surroundings and play to any unexpected changes more smoothly. This improvisation can be key to keeping an audience unaware of any mistakes. Raising the level of arousal too high can have detrimental impacts, and it's essential to learn this balance and adjust to an audience's presence. Signs of this level becoming overly elevated include nerves showing in a performance, anxiety and being unable to focus on their role due to the overwhelming distraction of the audience.

Performer proximity

One of the core elements of live performance can't be re-created any other way, and that is the sheer joy that fans thrive off when being in close proximity to a performer. Being in the same room as the people on stage is a highlight for many attendees.

Have you ever been to watch someone famous with a friend and one of you has claimed 'They looked right at me!'? Whether it's imagined or real, when there is nothing but air between your eyes and a performer you admire, you may feel that your participation at the event is much more valuable and personal than when you simply add to their viewer statistics on television.

It is possible for people to become emotionally attached to celebrities, and so when you end up watching them at a live event, and in the same space as them, it can feel like you are finally meeting a friend you know well. Celebrities can also have this effect on people who aren't even big fans. Simply the fact that they are famous is enough to excite some crowds. The celebrity to non-celebrity ratio is so large that famous people seem almost untouchable. Leading parallel lives, it is unlikely that you will have many encounters with a particular celebrity. For famous performers, live events are

FROM STORYTELLING TO THEATRE

When you break down the core qualities of a theatre performance, this live art is simply a large storytelling session, the actors having mastered the most effective ways to relay the best fictional or true tales. Flocks of people pour through theatre doors to be taken on an emotional and visual journey. Storytelling is one of the oldest forms of live performance and it is likely to be how they first began. Since people were able to speak, they were passing down stories of their ancestors and recounting adventures from their day. As the simplest way to communicate, there was no technology to record these events, and live arts were an essential part of education and entertainment.

Theatre in particular can be traced back to ancient Greece. Around 600 BCE, people began to express their stories in more dramatised fashions. Gathering in designated areas to perform, as we do today, Greek theatres were occupied as a luxury form of entertainment. They were also reserved for special occasions such as religious festivals.

Storytelling is deep-rooted in human history, and one theory is that this is because humans need to perform to others in order to make sense of the world. The narrative theory states that people have always needed to share their encounters and stories with others. Today, live events still hold this role in sharing pure entertainment and presenting a message to a large group in a way that will move and impact them.

> "DOPAMINE IS RELEASED IN THE BRAIN WHEN WE ARE EXPECTING SOMETHING GOOD"

a chance to interact with many thousands of fans at one time. It's the only time you are guaranteed to see someone you might not know personally, but know surprisingly vast amounts about. When you see them across the crowded venue, your brain will process them as an acquaintance, because it is familiar with the face, and you are sure to be filled with some form of excitement.

If you are a fan of the performer, you are likely to watch recordings of their work frequently at home. But, having a date and time for when you will see them in real life builds anticipation that doesn't happen when content is available to stream at any time. When you start counting down the days until you can attend a particular event, the brain is constantly preparing for it. At the base of the brain, the cerebellum is referred to as the non-thinking part. When you become aware of a live event that you will be attending, the anticipation that follows comes from this area of the brain. Dopamine is released in the brain when we are expecting something good, and this neurotransmitter works in the body to reduce pain and increase excitement when we look forward to a live event.

Crossing the boundary

As a member of the audience, you might be fooled into thinking that there is a distinct format separating you (the audience) from them (the entertainer), but sometimes this boundary fades. Live performances extend the possibilities for a performer, enabling them to interact with the audience. For example, comedy shows often pick on the audience, converting an unexpected observer into a comedy prop, as they are brought onto the stage. For some audience members, this situation rivals some of their most embarrassing nightmares, while others enjoy the attention that comes with their taste of the limelight.

Another technique, often used in theatre to capture the audience's attention is an 'aside'. This is when a character turns to address the audience and begins telling their side of the story as well as their deepest secrets. More often than not, there will be an occasion when you feel as though the actor is looking into your eyes as they speak. This can make audience members feel important and involved in the emerging plot.

This shift, from outside observer to confidant, enables everyone offstage to connect on a deeper level with the characters' emotions. Asides are far more effective when performed live than they are in a film, as the actor can enter the spotlight and turn towards you. Imitating a standard face-to-face interaction, the body language is picked up by the brain as it is in daily life. You might find yourself becoming more attentive to what the character has to say, as your mind believes that – although you are one in a sea of faces – the character is divulging information solely to you.

Endangered events

During the Covid-19 pandemic, entertainment venues were forced to shut as people were unable to gather in large groups. From the grandest opera houses to school halls used for small events, people had to come to terms with the fact that there was nowhere they could appreciate this form of entertainment. But, with virtual events being streamed into people's homes, how different would the industry be if all performances used this technology, and performers never saw their audience?

When people began making a living from their ability to hold an audience and captivate them, they needed an audience to be a brutal measurement of their success and talent. If your presence on a stage managed to draw an audience, you were doing something right, while a dispersing crowd would be harsh but instant feedback. Today, the televised dramas, comedy sketches and music that is added to streaming services involve high production and long waits for the producers and performers. Entire productions need to be shot, processed, finalised and scheduled before sharing with the world. While they are being recorded, there is no accurate way of truly knowing whether the content will become popular. The statistics answer this question later, and if there are only a small number of viewers or listeners, it might feel like the work has been done in vain.

The human connection we experience at a live event simply can't be transported through a recording. Have you ever watched a funny television show by yourself, and thought of people whom you wish were there to share it with you? This need to share in happiness is a human trait that is greatly amplified in live venues. Taking your eyes off the performance for a while and witnessing the number of people around you who are absorbed in the same shared experience provides an atmosphere that is unique to live arts. There is something about spending time with a mass of people who all lead different lives, but have come together at a particular venue at a particular time. During the hours that you're a member of the audience, you're part of a shared community of the moment.

The walls surrounding the venue make the viewer aware that they are part of an exclusive group. Even though the performers might go on to re-create the same show to further thousands as they tour the world, no two displays will be identical. On services like Netflix, this personalisation is lacking. You will know that many thousands of people are watching with you, and are being provided with an exact replica of the material you are consuming. To imagine sharing this experience with an even larger number of viewers might seem more inclusive from the statistics, but when you can't witness their enjoyment, the reality is that you are actually watching it alone. Witnessing the large group surrounding you and being able to feel the presence of musicians, comedians, speakers and actors is exclusive to live events and something that has remained both special and appreciated.

Regrets ARE GOOD FOR YOU

Stuck in a rut of wishing you'd done things differently? It's hard to break free, but processing regrets can help us move forward

WORDS CLARE BOWIE

Ever wish you'd left the house earlier, reworded that email or stopped short of being cajoled into a full head of highlights? We all have regrets, big and small, and the good news is that we should be giving ourselves permission to have them. No more ruminating over what we did or didn't do – the new goal is not to be a victim of the past, and to learn to accept ourselves just as we are.

1 ACKNOWLEDGE REGRETS

Regrets are a common experience and it's unrealistic to believe that life can, or should, be devoid of them. The sorrow over 'fundamental regrets' (relationships, work, health, life choices and so on) can "run deep and feel very intense," says Karin Sieger. The key is to acknowledge their existence and then learn how to manage them. Nobody can sashay through life getting it correct every time, making all the right decisions at exactly the right moments. Of course, there may well be a job or relationship that you still dwell on but, by acknowledging that these feelings exist, you can learn to rationalise their impact by choosing the level of emotional pull they have over you.

***DO IT** Take back control by giving yourself permission to acknowledge that the regret exists, but detach from the emotional impact you are feeding it with. "Regrets can make us feel stuck and block us from growing and fulfilling our potential," says Sieger. Remind yourself that regrets are human – we all have them.*

2 ACCEPT THE PAST

Inflexible thinking can trap us in a cycle of regretting past decisions, according to Windy Dryden. "We blame ourselves for what has happened rather than seeing our behaviour in a wider context and understanding why we took the path we did, based on the information we had at the time." We may have spent years regretting a decision like not going for a new job, deciding not to breastfeed or emigrating to the other side of the world, when the truth is that that decision probably made sense at the time. It's only with hindsight it perhaps falls short of the romantic fixed narrative we had constructed for ourselves; the impossible standards we have set in our personal or professional lives.

***DO IT** Dryden suggests we try switching the negative conversations in our heads to productive ones. Instead of 'I should have done that', self-berating, try asking the harder questions, 'I wonder why I did/didn't do that?'. The answers will help you to remove your blinkers, accept your past self and open the door to repair.*

3 BREAK THE HABIT

Okay, so you've realised that regrets can be persistent and very convincing. Sieger refers to them as "slippery and seductive," because they draw you in and exhaust your emotional reserves. To help you move on and break the cycle of ruminative regret, Dryden suggests the next step is to "neither engage nor try to eliminate them." Try thinking of something you regret, like a conversation with a friend where you gossiped too much. Don't dwell on all the details, fuelling your frustration and shame. Instead, allow the memory to exist but not consume or rule you.

***DO IT** If you feel the familiar negative thought pattern seeping in, breathe slowly inwards and think to yourself, 'What can I learn from this?'. Remind yourself of Dryden's words: 'I thought it was right at the time I did it. It may have been bad, but I'm not bad'. Breathe deeply, exhale the negative emotion and choose not to re-engage with it.*

4 LEARN FROM REGRETS

Regrets represent our conscience and they can motivate us to take corrective action in the future. Pinpoint what it is that makes you feel regretful, and what traps you keep falling into. Perhaps you drink too much, overspend, or speak without thinking first. Aim to tweak your future responses. Making a poor decision does not mean that you are doomed to permanent failure. As Sieger reminds us, "Regrets can turn into the experiences that help you unfold your potential."

***DO IT** Practise mindful strategies like counting to ten before reacting in triggering situations. Be aware of the impact of your words. Focus on things you can control, like starting a spending diary or monitoring your alcohol intake.*

5 LET YOURSELF OFF THE HOOK

Sieger's most powerful message is that we should forgive ourselves and step away from negative thought patterns by "acting on regrets, responsibly and fairly towards others and most of all towards ourselves." Remind yourself that it's never too late and, if handled correctly, many an important life lesson and positive change can grow out of regrets. Candi Williams reiterates this thought process and describes how limiting it is to try to live a life where everything is 'perfect'. She recommends that we focus on living purposefully rather than perfectly, so that we can reach a place where we no longer "magnify flaws and play down strengths."

***DO IT** Williams advises us to conserve our energy for positivity rather than wasting energy holding on to pain. "Learn to let go of things that hurt you, no longer serve you or make you question your worth." The release you feel will "give you more time and space to focus on things that really matter – things that bring you happiness, joy and self-love."*

KARIN SIEGER

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WINDY DRYDEN

Emeritus professor of psychotherapeutic studies at Goldsmiths University, Windy specialises in single-session and very brief interventions. He's written many books, including *Ten Steps to Positive Living* (Routledge).

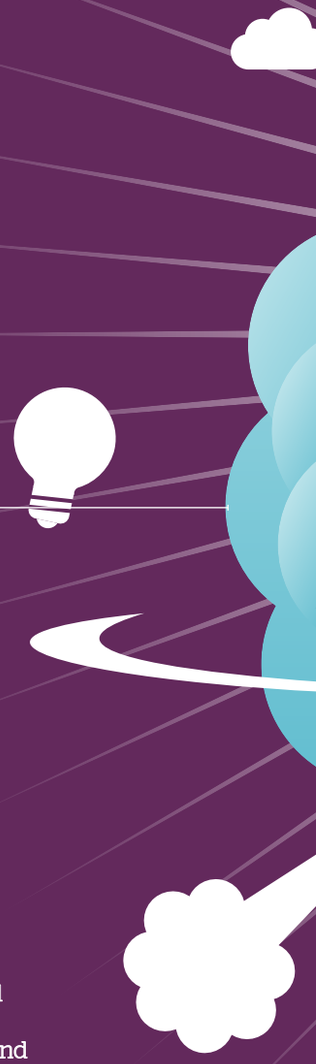
CANDI WILLIAMS

Candi is the author of *How to be Perfectly Imperfect* (Summersdale).

"REGRETS CAN MOTIVATE US TO TAKE CORRECTIVE ACTION"

HOW TO THINK YOURSELF *Smart*

Explore the possibility of taking your IQ into your own hands and improving it



WORDS SCOTT DUTFIELD

Staring down at the Sunday newspaper crossword, unable to work out nine down, you might be left questioning your intelligence and wondering if there's a way to sharpen your know-how. In recent years, digital stores have been flooded with a host of different 'brain-training' apps all promising to help us think ourselves smart, but is that really possible?

Firstly, what exactly is intelligence? Is it something that we solely obtain from school, through our years of life experience, or perhaps a combination of the two? The concept of human intelligence is one that has been debated and researched for more than a century, with no clear answers.

However, what scientists have managed to agree upon is that it can be divided into two categories. The first is known as crystalline or crystallised intelligence. This refers to the intelligence that you might find useful in a pub quiz and centres on an acquired knowledge of the world. The second type, fluid intelligence, is the built-in smarts to problem solve and make decisions. Fluid intelligence is what is measured when taking an intelligence quotient (IQ) test.

So can we think ourselves smart? Cognitive training involves activities and tasks that are designed to help improve our intelligence or stall the inevitable decline of cognitive functions as we age. Brain-training exercises are delivered as repetitive tasks that measure certain cognitive functions, typically assessing what is known as 'working memory'. This is where you can retain information while at the same time completing another task without losing that information. When it comes to brain training, such tasks are a way to improve your working memory, which in turn has been found to improve your fluid intelligence. The idea is that over a set amount of time – for example five 30-minute sessions of training a week for four weeks – repeating these tasks might help you 'think yourself smart'. By gradually improving your test score, much like lifting weights at the gym, these exercises are designed to pump up your brain.

One such breakthrough in these tests appeared in 2008 from neurobiologists Susanne Jaeggi and Martin Buschkuehl, who published a training exercise called the dual n-back task. The basis of the test centres around participants listening to a flow of letters and assessing whether or not the letter matched one previously spoken, while they simultaneously watch a grid of boxes and note when a box appears in the same position as a previous one. Yes, it's just as mentally taxing as it sounds. It was believed that the dual n-back task showed dramatic improvements in peoples' fluid intelligence scores over time, showcasing that what was once thought to be built-in intelligence could potentially be upgraded using these types of tasks. Although Jaeggi and Buschkuehl's dual n-back task was one of the first intensive studies into improving fluid intelligence, 'brain-training' games and apps have been no stranger to the commercial market – one of the most popular being *Dr Kawashima's Brain Training* for the Nintendo DS released back in 2005. However, there are still debates about the real-world applications of brain training, with some arguing that the improvements are limited to the task itself and not applied to everyday life. »

INSIDE THE BRAIN

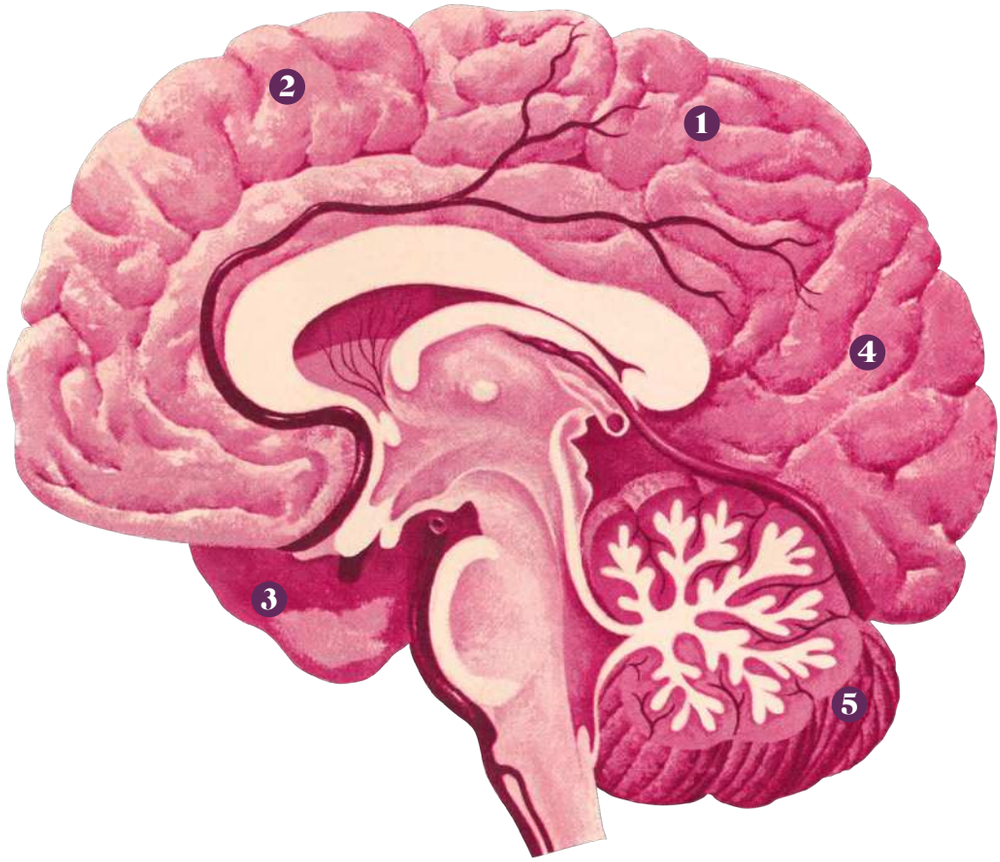
What roles do the different regions of our brains play in our intellect?

1 PARIETAL LOBE

Positioned at the top of the brain, the parietal lobe contains the somatosensory cortex, which is responsible for interpreting sensory information such as pain, pressure and touch. Sensory information from all around the body is processed in this part of the brain.

2 FRONTAL LOBE

The frontal lobe is involved in aspects of our intelligence that include motor function, problem-solving, personality development and language processing. Split into two halves, the left portion of the lobe controls the right side of the body and vice-versa.



3 TEMPORAL LOBE

Located at the base of the brain in close proximity to the ears, this lobe is home to the primary auditory cortex, which plays a significant role in processing and interpreting the language and sounds that we hear. It also contains structures that are involved with the formation of long-term memories.

4 OCCIPITAL LOBE

This area of the brain is home to our visual cortex, a region whereby visual information is received, interpreted and processed. Located at the back of the brain, the visual cortex stores that visual information and links mental images to different memories.

5 CEREBELLUM

Sitting at the base of the skull, this tennis-ball-sized region of the brain plays a large part in our motor control, movement and balance. Only occupying around 10% of the brain's overall volume, it houses more than 50% of the brain's total neurons. This high concentration of neurons has led scientists to believe that it plays a role in higher level cognitive abilities and general intelligence along with its known sensory-motor function.

IS BIGGER BETTER?

Well, if Albert Einstein's brain is anything to go by, then yes, bigger is better. A postmortem study of the brain of the extraordinary physicist revealed that his parietal lobes were 15% larger than that of the average brain. As only one of the many explanations for Einstein's academic aptitudes, having a bigger brain might affect your intelligence, but some science suggests it's not by much. In a 2018 study led by the University of Pennsylvania, researchers found that out of 13,600 people, those with larger brains did perform slightly better on tests of cognition. Researchers explained that having an additional 100 cubic centimetres of brain tissue would increase the schooling age of a person by less than five months, implying it takes much more than just a big brain to be smart.

THE PROBLEM WITH IQ

Defining intelligence has been a controversial subject within the science community, with many attempting to provide the best possible explanation of how to label the way our brains work. Some even question the legitimacy of the existing standardised testing of intelligence, IQ.

One rather colourful theory was proposed by Harvard professor Dr Howard Gardner back in 1983, whereby he outlined eight different types of intelligence and retains the view that IQ testing is too limited. When applied to the way children are taught in schools, his theory suggests focusing on these intelligence types for effective learning.

LINGUISTIC INTELLIGENCE
LANGUAGE AND WORDS

LOGICAL-MATHEMATICAL INTELLIGENCE
NUMBERS AND REASONING

VISUAL-SPATIAL INTELLIGENCE
PICTURES

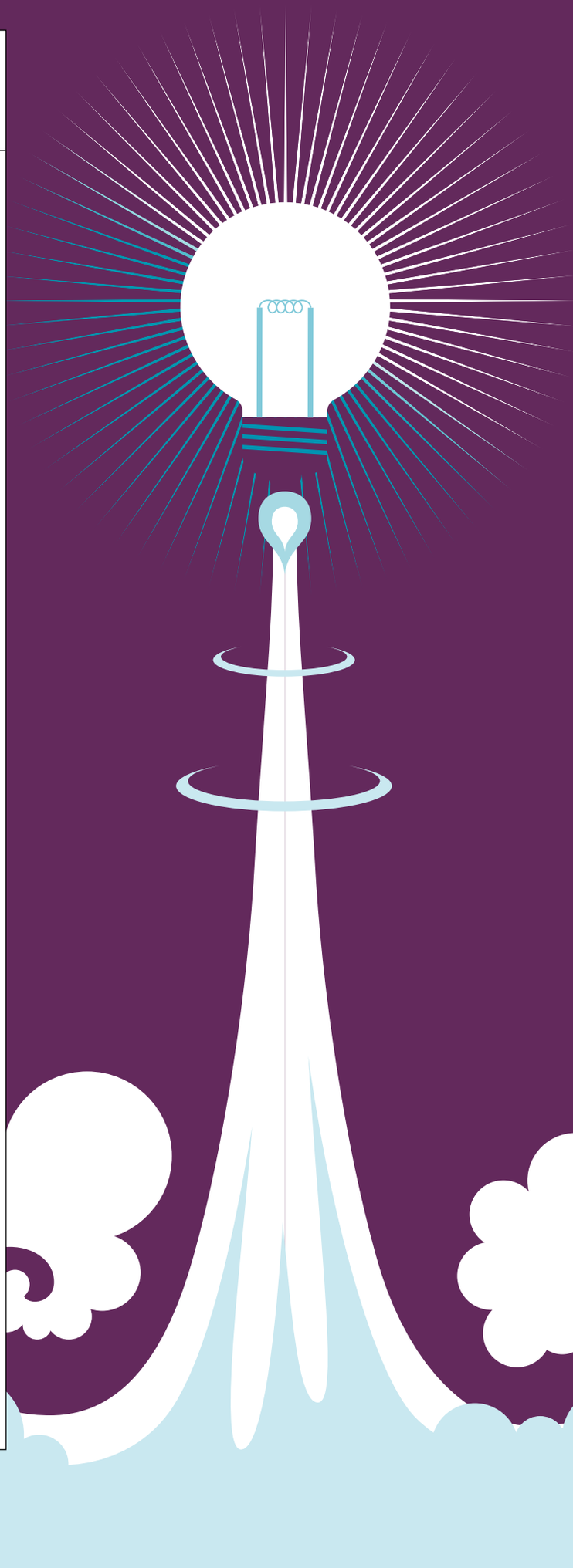
BODILY- KINAESTHETIC INTELLIGENCE
PHYSICAL DEXTERITY

INTERPERSONAL INTELLIGENCE
SOCIAL SKILLS

MUSICAL INTELLIGENCE
MUSIC ABILITY

INTRAPERSONAL INTELLIGENCE
SELF-REFLECTION

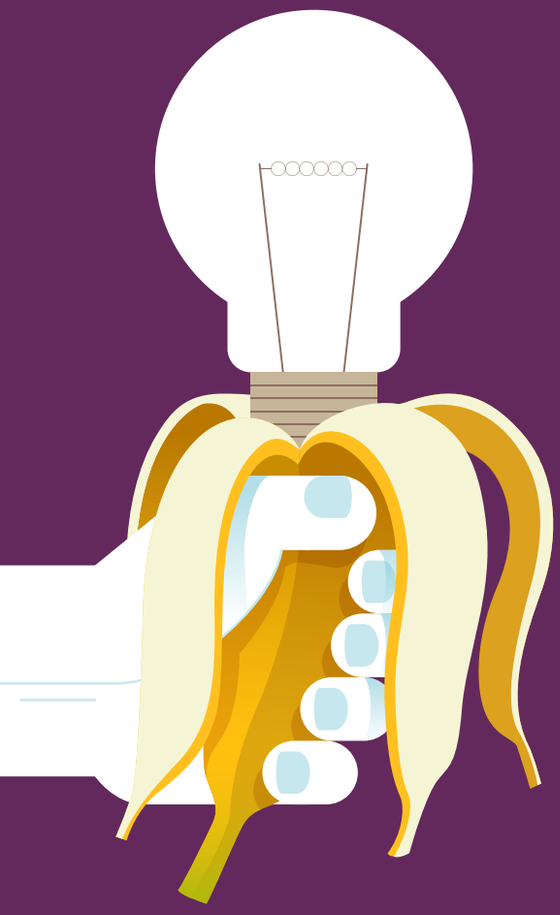
NATURALISTIC INTELLIGENCE
NATURE SMARTS



10 AT-HOME TIPS TO BOOST YOUR BRAIN

1 EAT 'BRAIN FOOD'

What we eat can have a massive effect on how well our brains perform. Foods such as blueberries, tomatoes, eggs and broccoli have all been linked to improving our cognitive functions. However, sources of omega-3 fat-rich foods, like salmon or flaxseed, have been at the forefront of brain-boosting foods for some years. Their high essential fatty acid levels are thought to promote healthier brain cells and are used in the construction of cell membranes. Also, low levels of a fatty acid called docosahexaenoic acid, found in oily fish and algae, have been linked to the increased risk of developing Alzheimer's disease. However, what powers our brains on a day-to-day basis is a form of sugar called glucose, which is released into the bloodstream after the stomach breaks down carbohydrate-rich foods.



BUILDING BRAIN CELLS

How eating omega-3 keeps us thinking smart

SENDING SIGNALS

The omega-3 fatty acid molecules assist the membrane fluidity and the generation of signals through the neuron and onto the next, in turn generating a message.

EN ROUTE

Digested omega-3 travels up towards the brain via the bloodstream. However, all tissues of the body will take some omega-3 to incorporate it into their own membranes.

DIET

The human body is unable to synthesise omega-3 fatty acids on its own, and so needs to obtain them through food, such as oily fish.

SUPPORTING NEIGHBOUR

Ion channels, along with the cell membrane, exchange ions, such as potassium and sodium, which generates an electrical message or signal.

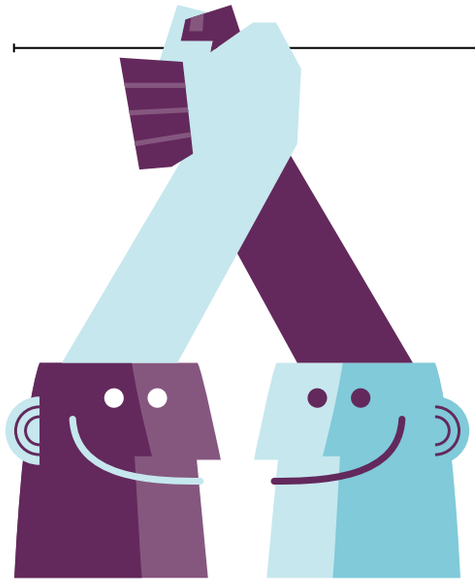
WATERPROOF

The head of the omega-3 is hydrophobic, which means it prevents any adjacent fluid and ions from penetrating the cell membrane and generating a false signal.

NEURON MEMBRANE

Omega-3 is packed into the cell membrane of the neurons. Not only does it give it its overall structure, but it also plays a role in the way the neurons send information.

"IT'S IMPORTANT TO REMAIN SOCIAL, NOT ONLY FOR FUN, BUT FOR YOUR BRAIN"



2 STAY SOCIAL

The Covid-19 pandemic showed us how important face-to-face social interaction is. It's important to remain social, not only for fun, but for your brain. Whether it's having a household games night or catching up with friends on a video chat, being social has been shown to improve and help preserve memory functions. Conducted between 1998 and 2004, subjects who were more 'socially integrated' showed higher scores on memory tests conducted every two years.

3 PRACTISE MINDFULNESS

Our ability to make the right decisions is tied to our fluid intelligence and how well we can rationally consider information and make the right choices. Mindfulness, the act of paying attention to the present moment and understanding ourselves, has been found to improve mental health, but also help to better decision-making. Researchers have shown that a brief period of mindfulness, as little as 15 minutes per day, resulted in people making more rational decisions based on available information in the present moment, leading to positive outcomes.

4 BELIEVE YOU CAN AND YOU WILL

Self-belief is a great way to not only boost your confidence but also improve your smarts, a study has shown. When told it was possible to get smarter, it was found that students retained 85% of what they had been taught in class. However, the second group of students were informed it was not possible, resulting in only 54% of them retaining the information. It's thought that belief plays a role in the ease of brain neurons to cooperate.

5 STAY ACTIVE

Keeping up with regular exercise can keep your mind sharp as well as help you stay fit. Studies have found that those who regularly exercise have bigger thinking and memory regions of their brains. Regular exercise has also been found to reduce the body's level of insulin resistance, stress and inflammation, along with promoting the release of chemicals that promote the growth of new blood vessels in the brain. However, one of the most immediate ways exercise can help the brain is by reducing stress. This is achieved by regulating your body's stress hormone, called cortisol. High levels of cortisol in the body have been found to negatively impact the way we think and our memory. »

CHANGE OF MIND

How cortisol changes the cells inside our brains

CORTISOL CASUALTY

Oligodendrocyte cells are thought to negatively impact learning and memory. The brain doesn't typically make them in adulthood, but as high levels of cortisol build in the brain, the oligodendrocytes are produced.

HIPPOCAMPUS

The seahorse-shaped hippocampus is a brain structure that sits in the temporal lobe and plays a critical role in memory formation.

MISGUIDED TRANSFORMATION

High levels of cortisol have been found to redirect how stem cells in the hippocampus develop. Cells earmarked to be astrocytes instead become oligodendrocytes.

ASTROCYTE

These are the most abundant glial (not producing electrical impulse) cells in the human brain. They form the bridge to connect neuronal signalling for learning and memory.

OLIGODENDROCYTE

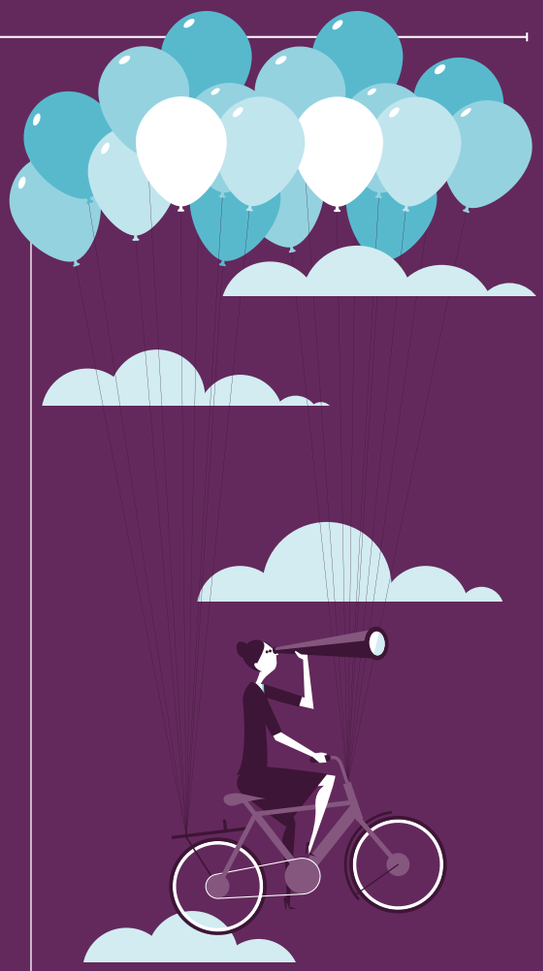
This type of cell is responsible for producing the myelin sheath that coats a portion of the neuron.

6 GET LOST IN FICTION

Burying your head in a textbook will help grow your crystalline intelligence and gain knowledge. However, poking your nose into a work of fiction is believed to improve your emotional intelligence. Immersing yourself in books filled with detail, allusion and metaphors activates the same regions of the brain that would be simulated in real-life situations. Reading moral dilemmas in fiction, for example, is known to exercise the brain and increase our capacity for empathy.

7 PLAY SOME VIDEO GAMES

It was commonly believed that playing video games did the opposite of improving the way our brains work. However, plugging in your console and spending the afternoon in a virtual world might have some cognitive benefits. Researchers have found that playing action-oriented video games increases our ability to analyse situations and make quick decisions, along with improving our ability to perceive shapes and colour.



8 LET YOURSELF DAYDREAM

It might seem counterintuitive that drifting off into a daydream would be related to intellectual ability. However, research has shown that letting your mind wander could be a sign of a high brain capacity. A 2017 study from the Georgia Institute of Technology found that those who frequently daydream scored higher on intellectual and creative tests than those who didn't. Researchers also scanned the brains of the participants using Magnetic Resonance Imaging (MRI) to evaluate their brain efficiency or capacity to think and found that daydreamers had more efficient brain systems. The next time you find yourself aimlessly gazing through a window, don't fight it but rather let your mind wander – it could be helpful in the future.

9 LEARN TO PLAY AN INSTRUMENT

It might be time to dust off that guitar that's tucked away in the attic or pick up that recorder for the first time since leaving school to help improve your cognitive function. Other than acquiring a new skill, learning to play an instrument has been found to engage almost all parts of the brain, and improves language and cognitive skills.

THE MYTH ABOUT MODAFINIL, THE 'SMART DRUG'

Whether you're cramming for a university exam or working late on tomorrow's big presentation, popping a 'smart pill' might sound like the perfect solution to get you through. Back in 2014, a drug called modafinil hit the newsstands, being branded as a 'smart drug' to improve brain performance. Typically used to treat patients with narcolepsy, the pill promotes 'wakefulness' in those who take it. However, when it comes to boosting our brain power, studies have shown that modafinil did not improve cognitive function, but instead slowed study participants' responses when compared to those given a placebo pill.

10 DRINK GREEN TEA

How much difference can a cup of green tea make to the brain? Well, a long-term study published in the science journal *Experimental Gerontology* has found that a chemical compound found in green tea called catechin might be able to reduce cerebral atrophy – loss of brain cells – and function. The study used mouse subjects over 12 months and discovered that green tea catechin effectively suppressed atrophy, along with improving brain function in the brains of older mice subjects.

Q&A

DR CLAUDIA VON BASTIAN

Dr von Bastian is a lecturer in psychology at the University of Sheffield, and explains some of the evidence behind brain training and how it might not be for everyone.

How does our intelligence change as we age?

The developmental evidence and life span studies show that fluid intelligence and crystalline intelligence both grow and increase and become better. Crystalline intelligence more or less grows all life long, whereas in fluid intelligence it grows and grows and grows up to around the 20s, and then it starts to flatten. Then it goes down in older age and you have a decreased fluid intelligence compared to earlier in life. You can think of it as like an inverted 'U' curve shape, but not an extreme 'U'. It's growing steeper in early life until the frontal lobes are fully developed in the early 20s, and then it flattens, and then it gradually decreases. In crystalline intelligence, it rises and rises and then maybe in midlife it reaches a plateau, but then it very slightly increases further or at least stabilises, but it doesn't decrease.

Can brain training help flatten that curve as we age?

That would be the idea behind brain training, that you would be able to counteract that decline, especially in ageing. However, the evidence for that is very, very weak. It depends a little bit on what your goal is. If you want to really flatten the curve so that you don't have that decline in a meaningful way, that is what we don't have any evidence for. What you can do is just practise the tasks that are assessed extensively, and then you will show better test scores, but it doesn't mean anything if you don't seek to generalise it to other contexts. I would say at the moment the evidence isn't there that this really works.

Is there a particular age where brain training would be most effective?

I know of no convincing evidence, but I would say so. Intuitively you would think that it would help most when you are in development or already on the decline, so you would think it helps most for older adults, or if you're still developing, so it might help most for young children, but there is no convincing evidence that actually confirms that, even though it would be plausible.

Are brain-training tasks a 'one-size-fits-all' solution?

That would be ideal, right? But that's exactly the problem when people try to find this one-size-fits-all kind of approach, this kind of quick-fix solution that could make people miraculously smarter, but that doesn't seem to work. For example, brain training that tries to make your kids smarter by practising working memory. It might be better to actually practise maths if you want to improve your maths skills. Or if you want to improve some certain aspects of your daily life, it might be better to actually practise those aspects rather than trying to do this brain training as a quick-fix solution. I think, if anything, you would need more tailored interventions than broader interventions.

WALKING IN *Someone* ELSE'S SHOES

What is empathy and why is it so important to our own and others' wellbeing?

WORDS JULIA WILLS

The terms sympathy and empathy are often confused. It's hardly surprising given that both are about relating to someone else's distress, but whilst sympathy is about feeling sorry for someone, empathy is about imagining yourself in their unique situation.

Author and professor Dr Brené Brown sums up this distinction in her RSA talk[1]. In this, she shares that empathy is about connecting with others, while sympathy forces disconnection. She tells us about the findings of Theresa Wiseman, a nursing scholar, who distilled the four qualities of empathy as: the ability to take the perspective of another person; of suspending judgement; of recognising the emotions experienced in the other person and communicating that recognition. Significantly, for Brown, there's no requirement for the empathiser to sort things out for the person in crisis or, worse, aim to put a brighter spin on their situation.

Psychologists Daniel Goleman and Paul Ekman identified three types of empathy: cognitive, emotional and compassionate. Cognitive empathy is logical and about understanding what is going on in someone else's mind. Emotional empathy is the ability not only to recognise someone's feelings,

but to share and feel them too. Compassionate empathy motivates us to help. So, if a friend's dog has died, cognitive empathy enables us to rationally understand that losing a beloved companion is very distressing; emotional empathy might bring us to tears too, while compassionate empathy could motivate us to invite our friend out for a coffee and a chat.

How and why do we experience empathy?

As Mary E Bates, PhD explains in her article *Empathy as a "Danger Antenna"*[2], when we see another person in pain it stimulates the anterior cingulate cortex of our brains, the same area that's active when we personally experience the pain. Empathy, as a behaviour, is hardwired. Her article then focuses on research conducted by the Netherlands Institute for Neuroscience, which suggests the presence of another reason for empathy's biological basis. In the experiments led by neuroscientist Christian Keysers, two rats were put face-to-face: one was electrically shocked ('the demonstrator') and the second witnessed this ('the observer'). The observer picked up the fear of the demonstrator. As Keysers points out, this makes sense in evolutionary terms: being able to pick up another's fear acts as an early warning system. The flow of information, however, was revealed to be two-way: the observer's reaction affected the demonstrator's response to the shock. If the observer was less frightened, the demonstrator's fear level also dropped. Keysers concluded that, "Empathy proper can then build upon this mechanism. Empathy is then a side-effect of a selfish motive to detect dangers."

Empathy helps us to connect with others, to develop relationships and to understand one another. It enables friendships and partnerships, cooperation and harmony. And it starts young. As Vanessa LoBue, PhD, aka The Baby Scientist, tells us in her article *Promoting Empathy in Our Kids (And in Ourselves)*[3], it starts in infancy. Children of 14 to 18 months old will try to help an adult who appears to be in distress and will attempt to comfort their mother if she is upset.

Why it's good for us

Empathy helps us to live peaceably together. It catalyses our desire to care for one another, to nurture, protect and find harmony with people who think differently to us. It's the essential ingredient in strong friendships, partnerships, marriage and at work. It bonds us as fellow humans. Perhaps it's most useful when the behaviour of those around us seems unusual: empathy enables us to appreciate why they feel that way. That connecting with others is something that applies in both real and fantasy worlds. After all, creating empathy is a key skill for writers who want to engage their audience. For us to root for a character, we need to understand them even when we don't particularly like them. It's the reason we cheer for the Don Drapers, the Walter Whites and the Carries of the literary and movie worlds. Sure, we might not want them as our friends, but we certainly understand why they do what they do.

Why it's not

Surprisingly, empathy has some downsides. One is that we don't all feel it to the same degree. As LoBue explains, children who naturally feel more negative emotions are vulnerable to feeling empathy more intensely and this can cause them distress. On a personal level, it can be exhausting and, in more extreme cases, lead to problems such as mood swings and the relentless need to fix everyone's problems.

And there are social snags, too. Paul Bloom, Yale psychology professor and the author of *Against Empathy: The Case for Rational Compassion*, explains that feeling as overwhelmed as our distressed friend may not be the most helpful response for them. Similarly, we wouldn't want our doctors, nurses and carers to feel so much empathy that they couldn't effect the best treatment for us. Putting empathy to one side, he says, can enable us to be more rational in our decision making, for example in protecting the environment. By overriding empathetic concern for those around us today we can make global changes that will benefit future generations.

How to cultivate empathy

We can boost our empathy by opening up to new experiences, such as volunteering or reading more fiction, particularly about characters who aren't like us. We can listen more actively, talk to strangers and be curious about their lives, which enables us to really imagine what it is like for them.

It seems that empathy can be a mixed blessing. Some experts point to its dangers, yet it feels counter-intuitive to look at something so naturally human and kindly in this way. Perhaps the answer lies in indulging it more mindfully, of being aware of instances where it might lead us astray and, in that way, making it an even more powerful force for good.

US AND THEM

Research by Kevin Arceneaux, professor of political science at Sciences Po Paris, reveals that we are less likely to feel empathy for people who are different to us. We asked him why he thought this was. He replied: "Empathic response is mentally taxing. For this reason, the human mind seems to put some limits on empathic response. Research has shown that we are far more likely to react with empathy toward a single person in pain than we are to thousands of people in pain. It is possible that a similar logic applies to out-group members. Humans have a tendency to draw a circle of empathy around their in-group because it helps them avoid being overloaded. Why their in-group? One common explanation is that empathy developed as a way to motivate helping behaviour, which in turn makes group living possible. But it is often not possible to help everyone in need. In those instances we need a hierarchy of who gets help". Asked whether we might learn to empathise better with out-groups, he said that it was possible, but we needed to be motivated to do so. "I'm working on this question with my colleague Ryan Vander Wielen at Stony Brook University. We have conducted a study to see if compassion training – which goes beyond getting people to take the perspective of other people but to actively feel compassion toward them – helps people be more empathetic toward out-group members. We find that it can, but the effects are quite small."

1. *Brené Brown on Empathy* – YouTube; 2 & 3. *Psychology Today*

Living OUT LOUD

Shame, denial and prejudice often muddy the waters when it comes to coming out. But despite worldwide barriers, there's still hope at the end of the rainbow for LGBTQ+ people

WORDS POPPY-JAY ST. PALMER

There's no one way to come out. For many members of the LGBTQ+ community, coming out is a rite of passage, an exciting life event filled with acceptance and self-discovery. For others, it's an uphill slog interrupted by constant barriers like shame, disapproval from friends and family, and even violence.

And then there's being out. Some people are out to friends but not family. Some are out to family but not friends. Some are out everywhere except work, or everywhere except their grandparents' house. Despite the growing acceptance of diverse sexual orientations and gender identities, the world is still riddled with people who refuse to accept, or even tolerate, the LGBTQ+ community.

Criminal identities

Though the coming out experience is one of joy and relief for some, negative attitudes towards the LGBTQ+ community have led to many members' journeys not being quite so rosy. Many queer people live in shame and denial as a result.

Growing acceptance and positive media representation of queer people might

sometimes make coming out seem like a redundant act. However, a lot of people, cultures and governments all over the world make it difficult to come out not just proudly but safely. Today, homosexuality is illegal in 69 countries. Most of those countries hand out fines and jail time to people (men in particular) found engaging in same-sex activities, but ten of them – Afghanistan, Brunei, Iran, Mauritania, Nigeria, Qatar, Saudi Arabia, Somalia, Yemen and the United Arab Emirates – actually threaten the death penalty.

Historically, the LGBTQ+ community hasn't been given the best deal in other parts of the world either. Even countries that are now considered to be at the forefront of human rights upheld deplorable laws not that long ago. In the UK, homosexuality was finally decriminalised in 1967, but even then it was only decriminalised for men over 21 who engaged in homosexual acts in private. While the age of consent for straight sexual partners has been 16 since 1885, it remained at 21 for same-sex pairings until 1994, when it was lowered to 18. The age was finally equalised and brought down to 16 in 2000.

Outlaw and proud

Though homosexuality wasn't a crime in the UK in the 1980s, many older and middle-aged queer British people still carried trauma caused by Section 28. Introduced by Thatcher's Conservative government, Section 28 of the Local Government Act 1988 forbade local authorities from 'intentionally [promoting] homosexuality or [publishing] material with the intention of promoting homosexuality'. It also banned state schools from promoting 'the acceptability of homosexuality as a pretended family relationship'. Alongside reinforcing the idea that being queer was something negative, the legislation made it very difficult for queer people to find support and guidance. Section 28 remained in effect until 2000 in Scotland and 2003 in England and Wales.

> "PEOPLE, CULTURES AND GOVERNMENTS MAKE IT DIFFICULT TO COME OUT"

Life for queer people in western countries has changed dramatically since the turn of the century, but it's still not ideal. Take the United States, for example: when the Supreme Court granted same-sex couples in all 50 states the right to marry in 2015, a lot of the country erupted into celebration, waving rainbow flags and throwing confetti. And yet barely a fortnight goes by without hearing the name of another trans person who was assaulted or killed in the US because someone didn't like the fact that they were trans. According to the Human Rights Campaign, at least 350 trans people worldwide were the victims of fatal hate crimes in 2020, with the majority being Black and Latinx transgender women. A fifth of that number were murdered in their own homes. 152 were killed in Brazil, 57 in Mexico and 28 in the United States.

The violence and discrimination against the trans community is unrelenting. It's not surprising so many people struggle with self-acceptance when they know disclosing their gender identity could endanger their life. We even have a specific day – Transgender Day of Remembrance, held on 20 November each year – to honour and remember those lost to prejudice and ignorance, be it through murder or suicide.

THE SINGULAR 'THEY' AND BEYOND

Everyone has a pronoun. We hear our own and use other people's hundreds of times a day. And, largely thanks to nonbinary people, they/them pronouns are currently making an impact. Though they/them might feel quite modern, it's actually far from – the *Oxford English Dictionary* traces the singular 'they' back to 1375, where it appears in medieval romance *William And The Werewolf*. 'They' is a far more versatile word than 'he' or 'she': it can be used as a plural or singular, when you don't know who you're talking about ("Someone has trodden their muddy boots through the hall!"), and when you don't know someone's gender ("Their look is very androgynous."). After coming out, many people of diverse gender identities like to experiment with pronouns beyond the very binary he and she to find the perfect match for them. You can even go beyond they/them with neopronouns like xe/xem, ze/hir and ey/em.

The panic defence

Though some countries have laws in place to protect minority identities from harm, legislation only goes so far in others. Take the 'LGBTQ+ panic defence' (previously called the 'gay and trans panic defence'), which is sometimes used in assault or murder trials where the victim has been queer or transgender. As defined by the LGBT Bar, the defence is a 'legal strategy which asks a jury to find that a victim's sexual orientation or gender identity is to blame for the defendant's violent reaction, »

including murder'. In short, it legitimises violence against the queer community.

If a defendant is on trial for attacking or killing someone under the LGBTQ+ umbrella – a gay man, for instance – they can argue that they found same-sex sexual advances so offensive or frightening that they were essentially provoked into reacting, and were acting in temporary insanity or self-defence.

Similarly, the defence is often used by men accused of assault, manslaughter or murder following sexual encounters with transwomen. Many claim to not have realised their victims were transgender until after the fact, and so 'justifiably' (in some people's eyes, at least) lashed out in panic. The strategy was infamously used in the trial following the murder of Matthew Shepard, a gay 21-year-old college student who was brutally beaten to death by two men in Colorado in 1998. Despite the public outcry, the defence is still used in many countries today.

Seeking refuge

Though many governments around the world are moving in the right direction when it comes to granting their LGBTQ+ citizens legal protections, others are doing the opposite. For hundreds of thousands of members of the community, being open about their sexuality and/or gender identity is enough to endanger their lives.

> "FOR MANY QUEER PEOPLE, IT'S SAFER TO LIE ABOUT THEIR IDENTITIES THAN COME OUT"

In 2020, research by the University of Sussex found that LGBTQ+ asylum seekers' claims are routinely rejected in Europe and the UK because of a widespread 'culture of disbelief' and an 'impossible burden of proof'. Over the research period, four out of ten claims were rejected because decision-makers didn't consider the claimants to be in danger, and one in three were rejected because they simply didn't believe the claimant's sexual orientation or gender identity.

Moira Dustin, who led the UK part of the Sexual Orientation and Gender Identity Claims of Asylum (SOGICA) study, said: "These findings of course sit within a broader picture of the 'hostile environment' to immigration. But it's even easier for officials to turn away people applying for asylum on SOGI grounds, because they are even less likely than other claimants to have evidence to support their claim: what can they produce, when they're in danger and fleeing? How likely are they to have with them photos or letters proving past relationships? These are people who are fleeing their home country not out of choice, but out of necessity. If they could speak with one voice, I believe they would say, 'I am who I say I am.' Not being believed is their top concern."

Researchers interviewed hundreds of LGBTQ+ asylum seekers and their professional supporters to hear their stories. One claimant attempting to escape Zimbabwe – where sexual activity among men can earn them up to 14 years in prison – shared that they had trouble getting UK immigration officials to believe them. "None of the things that I said they believed," they said. "Not even one. I don't know how many questions I had, I think I had 300 and something, none of them were believed. They just believed that I am from Zimbabwe. The rest, nothing." For many queer people, it's safer to lie about their identities than to come out and risk being rejected for asylum.

Compulsory heterosexuality

One of the most obvious causes of shame and denial when faced with coming out is the fact that many people with diverse sexual and gender identities grow up learning that those identities are wrong. Numerous cultures all over the world have spent countless centuries maintaining that people should be heterosexual and cisgender – and when some aren't, they're at best unusual and at worst abominations. Needless to say, that way of thinking doesn't help when it comes to self-esteem.

In 1980, poet and feminist Adrienne Rich proposed and popularised a theory to support this in her essay *Compulsory Heterosexuality and Lesbian Existence*. According to Rich, heterosexuality is assumed and enforced by a patriarchal and heteronormative society. She believed that people are able to adopt heterosexuality regardless of their sexual orientation, while heterosexuality is socially promoted as the natural state, with deviation from that state being seen as unfavourable. Everyone is believed to be straight unless proven otherwise.

Rich's concept of compulsory heterosexuality initially only included women, and revolved around the argument that it can be seen as a political institution that supports the patriarchal domination of men over women in society. However,

later revisions of the essay detailed that it impacts men as well. Tolman, Spencer, Rosen-Reynoso and Porche (2003) found that even straight men feel negatively impacted by compulsory heterosexuality, both through feeling groomed to aggressively pursue women and through the kinds of relationships between men that society viewed as 'normal'. As a result, minority sexualities in people of any gender are viewed as abnormal. "The retreat into sameness," wrote Rich, "assimilation for those who can manage it, is the most passive and debilitating of responses to political repression, economic insecurity, and a renewed open season on difference."

Internalised homophobia

Though some members of the LGBTQ+ community grow to feel proud of their identities despite negative societal influences, others aren't so fortunate. As such, internalised homophobia has long been a serious problem within the community. News readers relish stories about homophobic politicians and preachers later coming out as gay, but most cases come with far less irony. Even people who are open about their sexualities can be internally homophobic, and negative feelings can materialise for a number of reasons, from their upbringings and bigoted family members to public opinions in the media.

Internalised homophobia is closely linked to mental health and can manifest itself in a number of ways, including but not limited to: denial of your sexual orientation to yourself and others; attempts to change your sexual orientation; engaging in obsessive thinking or compulsive behaviours; low self-esteem and negative body image; contempt or disrespect for more open or obvious LGBTQ+ people; projecting prejudice onto other targeted groups; alcohol and drug abuse; and even thoughts of and attempting suicide.

Conversion therapy horror stories

Conversion therapy is a pseudo-science practice designed to 'cure' LGBTQ+ people of their sexual orientations and/or gender identities. The 'techniques' used by those who carry out conversion therapy can often be equated to abuse, sometimes torture. In the 20th century, mental health practitioners would regularly resort to experimentation when it came to tackling different sexual orientations and gender expressions – everything from hypnosis and electroshock aversion therapy to masturbatory reconditioning, castration and lobotomies.

Techniques have changed over the years, with counselling and prayer being common practices but, according to a 2020 report by queer organisation ILGA World, more horrifying methods like electroshock therapy, forced internments in 'clinics', food deprivation and even exorcisms are still carried out in numerous countries today. And the worst part is they're carried out legally.

"Our research shows that, today, the main driving forces behind these harmful practices are religious leaders and prejudice," said Lucas Ramón Mendos, ILGA World's Senior Research Officer. "Many have ended up seeking 'conversion therapy' for themselves as they perceive their sexual orientation and gender identity in conflict with their religion. It is vital that we pay special attention and listen to the members of our communities with lived experiences of faith." »

THE GENDER GLOSSARY

CISGENDER

Someone who identifies as the gender they were assigned at birth, the opposite of transgender

GENDER DYSPHORIA

When a person experiences discomfort or distress when their sex assigned at birth doesn't match up with their gender identity

GENDER IDENTITY

A person's innate sense of their own gender (such as male, female, nonbinary and so on), which might not correspond to the sex they were assigned at birth

GENDER RECOGNITION CERTIFICATE (GRC)

A document that enables trans people to be legally recognised as their affirmed gender and be issued a corrected birth certificate

GILLICK COMPETENCE

Used in medical law to decide whether someone under 16 is able to consent to their own medical treatment without parental permission

INTERSEX

Someone who is born with both male and female biological attributes, or whose attributes don't fit societal assumptions about what constitutes male and female

NONBINARY

An umbrella term for people who don't identify strictly as a man or a woman (some more specific nonbinary identities include genderfluid, agender, genderqueer, Two Spirit and so on)

TRANSGENDER

Someone who doesn't identify as the gender they were assigned at birth, the opposite of cisgender

Ban the 'cure'

Even the UK has only just started the process of banning conversion therapy, with England and Wales planning to scrap the practice. In 2018, results of a survey of 108,000 members of the UK LGBTQ+ community suggested that 2% had undergone therapies to 'cure' their sexual orientation and/or gender identities, and 5% had been offered them. Religion also factored into the results – 10% of respondents were of the Christian faith and 20% were Muslim. More than half of respondents said their therapy was conducted by a religious group, while one in five said it was conducted by healthcare professionals. The figures increase further among the transgender community, with one in ten trans men saying they had been offered conversion therapy, and one in 25 saying they had undergone it.

Shortly after the results of the survey were released, Theresa May's government vowed to end conversion therapy as part of its LGBT equality plan. Nothing much happened, however, until May 2021, when the Queen's Speech set out the legislative agenda for banning the therapy, and an accompanying note from No.10 said it would ensure the action doesn't have 'unintended consequences'.

Though many view conversion therapy as unethical and cruel (numerous influential religious leaders all over the world have even spoken out against it), the practice is sadly still legal in more countries than it's not. Only a handful, including Brazil, Ecuador and Malta, have introduced a full or partial ban, while another handful have regional bans or bans with loopholes in place. Around 20 US states have criminalised conversion therapy, but many of the states' laws don't include 'treatment' carried out by religious counsellors and organisations. In Germany, conversion therapy is illegal, but only when inflicted on children under 18 or on adults in cases of coercion or deceit.

> "PEOPLE WHO ARE OUT HAVE LOWER STRESS HORMONE LEVELS AND FEWER SYMPTOMS OF ANXIETY, DEPRESSION AND BURNOUT"

Mental health in the queer community

A lot of information can be gathered about the current struggles faced by the LGBTQ+ community when it comes to mental health, and the results would be shocking if the causes – prejudice, discrimination, negative representation – weren't so obvious. A recent study carried out by British charity Stonewall, which asked more than 5,000 LGBTQ+ people across Britain about their lives and experiences, highlights the disparity among people with different sexual orientations and gender identities.

The results revealed that more than half of the LGBTQ+ people surveyed had experienced depression in their lives, three in five had experienced anxiety, and one in eight aged 18 to 24 had attempted to end their life. The numbers increase even more for trans and nonbinary people, and those of other marginalised gender identities: 41% of nonbinary people said they'd harmed themselves in the year preceding the study (compared to 20% of queer women and 12% of queer men), and almost half of all trans people had thought about taking their life – a huge jump from the national average of around 20%. Other factors also played into the statistics, such as race, age and socio-economic backgrounds. For example, mental health struggles were more common among Black, Asian and minority ethnic members of the LGBTQ+ community, as well as younger members and those from a more deprived background.

However, those who seek help for mental health issues often run into barriers. Research shows that LGBTQ+ people face widespread discrimination in healthcare settings. Stonewall's study also revealed that one in eight people have experienced some form of unequal treatment from healthcare professionals because they're LGBTQ+, and almost a quarter of those people surveyed had witnessed discriminatory or negative remarks against the community. It's unsurprising that many of its members (one in seven, in fact) avoid seeking healthcare for fear of discrimination from staff. Even more shockingly, 5% of LGBTQ+ people's healthcare visits have resulted in being pressured to access services to question or change their sexual orientation.

To give a more well-rounded picture of the struggles LGBTQ+ people face when it comes to accessing mental health and other medical services, the study also included first-hand accounts from participants. Elijah, 19, said: "I got sectioned after a suicide attempt and the nurse said that my mental health problems were due to allowing Satan in my soul. If I just accepted my true gender then God could forgive me."

A lack of resources and services tailored to the LGBTQ+ community is sometimes to blame for mental health problems. Seventy-year-old Rosemary said: "I am being treated for depression, which is caused in part by not being able to access any LGBT senior age-related groups within 80 miles of me. I would be actively involved in such a group if I could find out, but there is nothing. I feel very isolated."

The other end of the rainbow

To say coming out comes with its risks would be an understatement, but for many people, the positives outweigh the negatives. Sharing your sexual orientation or gender identity can even have a positive impact on your mental health, according to a 2013 study carried out by the Centre for Studies on Human Stress at the Louis H Lafontaine Hospital in Montreal. The study revealed that lesbian, gay and bisexual people who are out to others have lower stress hormone levels and fewer symptoms of anxiety, depression and burnout. The results found that gay and bisexual men had lower depressive symptoms and stress hormone – medically known as cortisol – levels than heterosexual men, and that lesbian, gay and bisexual people who were out to friends and family had lower levels of psychiatric symptoms and lower morning cortisol levels than those who were in the closet. Lead study author Robert-Paul Juster said: "Coming out is no longer a matter of popular debate but a matter of public health."

Similarly, a 2018 study published in the Journal of Adolescent Health found that young transgender people who used their chosen names at home, school, work and with friends reported fewer depressive symptoms and less suicidal thoughts and behaviours. The study included responses from more than 129 trans participants, 74 of whom reported using their chosen name that aligned with their gender identity, as opposed to the name that they were given at birth. The results were undeniable; those who used their chosen names experienced a 74% drop in severe depression symptoms, a 34% drop in suicidal ideation and a 65% drop in suicide attempts.

"This study shows that the factors that support the social transition of transgender youth – like getting to use their chosen name – make a big difference for their mental health," said Dr Stephen T. Russell of the Population Research Centre at the University of Texas. "Other factors that could support their social transition are likely to also promote their mental health, like using preferred pronouns, getting to dress as they choose, or using the appropriate restroom."

Living authentically

The prospect of living authentically is enough to tempt some people out of the closet. Accepting your sexuality and gender identity and opening up about it can do more than just build your self-esteem (which in itself is no small thing). Coming out can help LGBTQ+ people develop closer relationships with family and friends, connect with other people within the community, and dispel myths and stereotypes through sharing firsthand experiences and educating others. Being visible can also help other queer people who aren't quite there yet. Closeted people often look to those who are out and proud when seeking help and support, or just looking for someone to talk to. Even if your experience of coming out was traumatic, openly accepting your sexuality and gender identity could make someone else's journey a little bit better, whether you know it or not.

In reality, LGBTQ+ people never stop coming out – to new friends and colleagues, to growing family, to healthcare professionals. But with a shift in social norms and a lot of practice, it definitely gets easier. ■

5 TIPS FOR COMING OUT

BE PATIENT

After accepting your identity, it's common to feel pressure to come out ASAP. But there's no need to rush – take your time and tell as many or as few people as you like.

FIND YOUR CREW

Guidance from other LGBTQ+ people goes a long way when you're new to things. Research local or online support groups, and connect with queer friends for support.

CONSIDER LOGISTICS

You might feel like shouting from the rooftops, but always put your safety first. If your family reacts badly, do you have financial independence or somewhere to crash, just in case?

PREPARE FOR SURPRISES

Before coming out, it can be hard to judge how close friends or relatives will react. Prepare yourself for negativity, as well as surprises. Sometimes people are more accepting than expected.

DON'T LOSE HOPE

Even after initial bad reactions, friends and loved ones of LGBTQ+ people do sometimes come around. If you don't want to lose a connection, hang in there. They might just come to their senses

THE Hunger GAMES

Is it possible for an impulsive food choice to be turned into a healthy choice when we're hungry?

WORDS SARA G MILLER

It's a scenario you've probably experienced: you go to the supermarket hungry, and you end up with a shopping cart filled with foods you probably wouldn't buy if you weren't feeling famished.

But researchers from the Netherlands may have found a way to make healthier choices when shopping hungry.

It's true that "when people are hungry, they tend to make impulsive decisions," said lead study author Tracy Cheung, a doctoral candidate in psychology at Utrecht University in the Netherlands.

"Think of the phrase, '[your] eyes are bigger than [your] stomach' – you buy too much food, more than you actually need, for example," Cheung said. "Or people may pick out tasty, but unhealthy foods that are immediately satisfying."

But in a 2017 study, published in the journal *Appetite*, Cheung and her team wanted to see if this impulsivity could be used to help people make healthy choices.

The researchers hypothesised that 'because hungry people are impulsive, they would be more likely to use heuristics, which are essentially mental shortcuts or decisional rules of thumb'.

In the study, the researchers used a type of heuristic called the 'social proof heuristic'. "Basically, this type of heuristic is just being a copycat," Cheung said, "and doing what the majority is doing."

The study consisted of two experiments. In the first, about 200 participants were asked to take an online survey, which included a question about how hungry they felt on a scale of 1 (not at all) to 7 (very hungry). Then, the participants were presented with six pairs of foods, one healthy (such as a salad) and one unhealthy (such as a quesadilla). But half of the participants were given additional information – for each of the food pairs, a bar graph showed that most 'previous participants' had selected the healthier choice. This served as the social-proof heuristic.

The second experiment was similar, but instead of surveying people online, the researchers included hungry people in the real world – they visited a cafeteria and surveyed people who were about to eat, comparing them to people who had just eaten. As in the first experiment, the nearly 190 people were asked to choose between several pairs of foods, with a healthy choice and an unhealthy choice. Half of the participants were also presented with the social-proof heuristic, in this case, a pie chart showing that most 'previous participants' had selected the healthier option.

The researchers found that when hungry people saw a chart that promoted the healthier choice, without explicitly hearing that it was the healthier choice, they would opt for the healthy option.

"The big takeaway is that impulsivity, as experienced in a pang of hunger, isn't always bad, so long as there are signals in the environment that promote healthy food choices," Cheung said. Such signals could include arrows in the grocery store leading to the fresh produce section, or fresh fruit placed next to the cash registers, the researchers wrote in the study.

By installing these heuristics to promote healthy choices, "an impulsive choice could be turned into a healthy choice," according to Cheung.

> "BECAUSE HUNGRY PEOPLE ARE IMPULSIVE, THEY WOULD BE MORE LIKELY TO USE MENTAL SHORTCUTS"

HOW DOES Hypnosis WORK?

Discover the science behind hypnosis, and how it's used to alter behaviour and even assist in surgery

WORDS SCOTT DUTFIELD

It makes for some lighthearted entertainment when a group of willing volunteers walk on stage and stare blankly at a swinging pocket watch before remarkably transforming into a group of clucking chickens, but is hypnosis more than just a stage show?

Hypnosis is by no means a modern-day technique, with the first recorded medical use described in the Egyptian Ebers Papyrus, which was written in about 1550 BCE. Over time, the skill of sending people into a deep trance has evolved to tap in to the subconscious and implant suggestions to change addictive behaviours or treat ailments.

However, much like many other aspects of how the brain works, scientists remain relatively baffled by the phenomenon of hypnosis. It is collectively understood that its success is based on a person entering a heightened state of relaxation and focus through verbal and visual guides, at which point it's believed that our brains are more susceptible to suggestion. There are two main theories as to why this works and what it does to our brains. Altered-state theory explains that hypnosis is much like sleep in the sense that when in a trance-like state the brain's processes work differently, although you are not awake to acknowledge them. The non-state theory suggests that a hypnotised person is still aware of what's happening, unlike when you're asleep, and they are actively »

> "SCIENTISTS REMAIN RELATIVELY BAFFLED BY THE PHENOMENON"

> “AN INSTRUCTION WILL BE GIVEN FOR AN ACTION TO BE CARRIED OUT YEARS LATER”

STAGES OF HYPNOSIS

There's a host of different techniques used to induce a trance during hypnotherapy...

PRIMING

This is where the hypnotherapist prepares or outlines the patient's trance. This might involve carrying out an interview about the goals of the treatment.

PREPARATION

The patient is placed in a comfortable position with their eyes closed. Breathing techniques might then be used to help relax the patient.

INDUCTION

Hypnotic induction involves one of several techniques. The patient may be guided into a meditative state through calming visual cues, such as imagining a beach.

HYPNOTIC STATE OR TRANCE

Following a successful induction, the patient will enter a state of heightened relaxation, both physically and mentally.

SUGGESTION

Intended to replace or edit subconscious thoughts, a hypnotherapist will use verbal communication to make suggestions to alter behaviour.

EMERGENCE

A cue set by the hypnotherapist in the priming stage – such as a sound or word – may be used to bring the patient out of their trance-like state.

participating in the hypnotist's instructions. However, there is still some debate and uncertainty behind which theory is correct.

So how do you become hypnotised? In a nutshell, a hypnotist or hypnotherapist 'induces' a person into a state of relaxation using verbal suggestion, typically using some sort of sleep analogy. After placing more and more emphasis on their imagination about something that is not in their real environment, a person begins to enter into a hypnotic state. However, not everyone is susceptible to hypnosis. A person's 'hypnotisability' can range from them being completely immune and unresponsive to any hypnotic technique to a small percentage of the population being highly hypnotisable and susceptible to suggestion. Those who are highly responsive to hypnosis have shown that the technique can be used during surgery. Some patients have even been known to respond to posthypnotic suggestions, whereby an instruction will be given for an action to be carried out years later.

As a method of therapy, those within the extreme limits of hypnotisability can benefit from the well-documented advances in treating problematic behaviours such as smoking, or the treatment of obesity and anxiety. Hypnosis is much more than a theatrical performance we can see on stage – it can be a rather useful medical tool.

Can animals be hypnotised?

You may have seen videos online in which a seemingly alert chicken is held on the ground and a line is drawn moving away from its beak. When directed to look at the line, the chicken suddenly stops in its tracks. Appearing to be fixated and motionless as if under a hypnotic trance, is the chicken truly hypnotised? The chicken isn't actually hypnotised, but is displaying what scientists call tonic immobility, a fear-potentiated response. It's thought that the chicken believes its life is in danger due to the unfamiliar stress of being restrained and held to the ground. Focusing the chicken's attention in this way while pinning it down sends the chicken into a catatonic state, making it appear paralysed. Animals such as ducks, sharks, snakes and rabbits all display this behaviour to avoid predators, almost like playing dead.

Under the hypnotic knife

Although we're unlikely to see open-heart surgeries or transplants carried out solely with hypnotic pain alleviation, there are examples of hypnosis managing pain during less invasive procedures. In 2014, Alama Kante, a Guinean singer based in Paris, underwent surgery to remove a parathyroid gland tumour from her throat. Although not a

THE INVENTION OF HYPNOTHERAPY

Staring deep into the eyes of his patients, Franz Anton Mesmer, a German physician, took Europe by storm with his claims of curing ailments using what was then thought to be a new science: animal magnetism. In the late 18th century, Mesmer believed that the body was surrounded by a magnetic 'fluid', and with the aid of a magnet or an individual thought to have a 'higher natural magnetic force', such as himself, he could alter the fluid and thus relieve the patients of their issues, all while putting them into a suggestive mental state. Word spread about Mesmer's technique – now known as 'mesmerism' – throughout Vienna, where he lived. However, so did rumours that the treatment was ineffective and had been disproved by his peers. As more and more people heard of the Mesmer scandal, he fled to Paris to continue his work of fraudulent mesmerism once again. Having built a new reputation, Mesmer secured high-profile clients, including royalty when Queen Marie Antoinette called upon his services. However, once again the scandal of his inaccurate science caught up with him, forcing him to travel around the rest of Europe before dying in Germany in 1815. Although Mesmer's theory of animal magnetism was fraught with inaccuracy, he did get one thing right: the suggestive mental state he induced in his patients went on to be the basis for the effective hypnosis we see today.

life-threatening condition, without treatment the singer's career may have come to an end. A world first at the time, Kante underwent the surgery without anaesthesia and instead entered a hypnotic trance-like state, which enabled her to sing during critical moments of the surgery so surgeons could ensure they did not damage her vocal cords. The surgery was a success, while Kante was blissfully unaware as she envisioned far-away Senegal.

Q&A

DEIRDRE BARRETT, PH.D

Deirdre is an assistant professor of psychology at Harvard University and author of *The Pregnant Man and Other Cases from a Hypnotherapist's Couch*. She gives us an insight into the benefits of hypnosis and who might be susceptible to hypnotic suggestion.

Are there any factors that determine whether you're more or less susceptible to hypnosis?

Yes. There's a little bit of research that suggests it may have some biological element. Identical twins seem to have some correlation between their hypnotic susceptibility. We certainly think that a lot of it is learned behaviour or just variables that we don't completely understand. Susceptibility or absorption – meaning absorption in imaginative involvement – questionnaires are the best predictors. They are basically questions that have to do with experiencing informal trance-like phenomena at other times, such as did you ever have an imaginary companion as a child? When you imagine something, can you picture it very vividly? When you are focused on reading a novel, does someone have to call your name much more loudly or repeatedly before you hear them?

It's about vivid imagination and about tuning out the real environment or sometimes experiencing physiologic sensations such as queasiness, cold or hotness as somebody suggests them or you're looking at a visual stimulus about them. That sort of scale predicts response to a formal hypnotic induction quite well. People may not realise quite how much they can do this, but in a sense they're already tending to do that sort of thing to informal suggestions, and the ability is manifesting itself in everyday life in milder ways.

Why do people forget what's happened during the time they are hypnotised?

Most people do remember what's happened. If the hypnotist suggests that you will not remember anything, the average person will remember. It's people in the top 10% of hypnotisability who are able to have suggested amnesia. It's an even smaller group that seems to have spontaneous amnesia, and of those you can hypnotise a person and suggest that they'll now recall what happened. Then there are a few people who just never recall, and yet presumably something was registering. People sometimes have psychologically caused amnesia to very traumatic sudden events. There are psychological disorders in which people don't remember certain kinds of material, so it's something that the human brain is capable of, but that we don't usually have on-demand control over.

How effective is hypnosis in treating lifelong behavioural issues such as smoking?

Hypnosis is a really dramatically effective treatment for people who are highly hypnotisable. It's really having no more than a bit of a placebo effect for people of low hypnotisability. For things like habit changes, there are two things that predict how well the treatment will go, and one of them is how hypnotisable the person is, but also motivation, how badly the person wants to quit, how willing they are to apply willpower to this. There may be some people who go into a very light trance and only get a bit of help in resisting urges to smoke, but are nevertheless very motivated in the general sense, who will then quit smoking. However, for the high hypnotisables you really get to tune out the physiologic withdrawal. Just like with pain control, it doesn't do anything dramatic for most people, but you can tune out extreme pain if you're a high hypnotisable. I have worked with and seen high-hypnotisable patients who were lifelong smokers who after one session just said they had no desire to smoke. They reported disgust at cigarettes and no cravings. ■

Understanding SOCIAL STATUS

It is one of the most powerful incentives of human behaviour, but how exactly does our social standing affect our everyday lives?

WORDS EMMA GREEN

Leading neuroscientist and professor of psychology Michael Gazzaniga once said, "When you get up in the morning, you do not think about triangles and squares. You think about status. You think about where you are in relation to your peers." It is something that drives nearly every decision that we make, from what we wear, to whom we associate with and the career path that we eventually take.

But when we talk about status, what exactly do we mean? Social status is often confused with social class, or what is otherwise known as 'sociometric status'. Whereas social class refers to an individual's position in society in relation to their economic background – such as their occupation and income – social status concerns the level of prestige, respect and influence that person is afforded by other people. Although someone may be low down the pecking order in regards to their sociometric status, in terms of their standing within their peer groups – such as their friendship circle or workplace – they might reign supreme.

Pursuing status, after all, is a universal human behaviour, whether we are conscious of it or not. Just like other animals, humans have evolved to care about status, because having a high ranking within a pack ensured our survival and access to resources such as food and potential mates. Although our social status may no longer be a matter of life and death, we still crave it. The ventral striatum, deep within the brain, acts as a reward centre, and becomes especially activated at the beginning of adolescence whenever we receive social rewards such as attention or approval from others. We suddenly become keenly aware which of our peers are receiving the most praise and respect, and which ones are deemed more powerful and influential, and we start to seek this out for ourselves.

This type of behaviour isn't just confined to a playground setting. All societies have some form of social hierarchy as a way of allocating resources, leadership and power. Status is usually determined in two ways. Some societies value what is called 'ascribed status', the social position that is assigned to an individual at birth, based on factors such as their gender, race and family background. A baby born into a royal family will be given greater status compared to a baby born to a commoner, although the capabilities of either child at that point are unknown. However, the process of infant socialisation requires that each child be ascribed a ranking at birth.

In general, less-developed societies place greater emphasis on ascribed status, over which a person's ranking remains relatively fixed and rigid throughout their lifetime. Fortunately, there is also another form of status known as 'achieved status', which is the position an individual earns through his own personal abilities and accomplishments. We tend to value achievement much more in Western societies, due to our cultural values of individualism, democracy and meritocracy. This is reflected in our love

HOW TO BECOME POPULAR

According to Professor Mitch Prinstein, there are two very different routes to obtaining social status. In his book, *The Popularity Illusion*, he explains that the first type reflects what most scientists would regard as 'status'. Prinstein defines status as "not a measure of how well liked a person is, but rather of his or her dominance, visibility, power and influence." The other type of popularity is what he describes as 'likeability', which are those people who are beloved by their peers because they make "others feel good, and included and valued."

The first type of popularity is something we so often see with playground bullies, who use aggressive tactics such as physical violence, spreading rumours and gossip or ostracising others to maintain their dominant position in the school's social hierarchy. Although they may appear to be 'popular' with others, researchers have found that only 35% of those who were ranked as high in status were also ranked as highly likeable by their peers.

Another problem with this type of popularity is that it is essentially fickle. As we so often see with celebrity culture, one day you are king of the castle, and unless you can maintain your position at the top, somebody else will come along, and you are suddenly old news. What we should be cultivating is 'likeability', a much more sustainable type of popularity, where our value as a person is dictated by intrinsic qualities such as kindness and generosity, rather than extrinsic factors such as our appearance, who we're dating or how much money we have.

for the classic 'rags-to-riches' archetype, which is represented so often in the media that we choose to consume and the public figures whom we place on pedestals.

It could be argued that Western societies have become increasingly more obsessed with social status in the course of the last few decades. Factors such as globalisation, the internet, the development of social media and the rise of celebrity culture have meant that more and more ordinary people have had access to opportunities that would have been inconceivable in the past. Now anyone can have their five minutes of fame, curate an image of perfection on social media, or advance their career prospects through higher education. And when we witness our fellow peers reaping the social rewards that come with attaining a higher status, we want our share too.

However, this shift in our cultural attitude towards pursuing prestige hasn't been without its repercussions. Political scientist Robert Putnam published the book *Bowling Alone: The Collapse and Revival of American Community* in 2000, and found that the social changes that had occurred in the previous 40 years had led to the public's conception of a 'good life' to morph from that of marriage, family life and community to that of wealth and status instead.

Although focusing on attaining status isn't necessarily a bad thing, valuing it too much over other areas of our lives can end up having a detrimental impact on our mental health. Professor Mitch Prinstein has conducted research on popularity and peer relations for two decades with his Peer Relations Lab, at both Yale University and the University of North Carolina. In his book, *The Popularity Illusion: Why Status is Toxic But Likeability Wins All*, he claims that the "relentless pursuit of status puts us at risk for a wide range of serious life problems, including addiction, loneliness, and depression. The efforts required to obtain status – behaviours such as aggressiveness, disregarding the feelings of others and selfishness – should not be what we esteem for ourselves or for our society."

Low-status individuals can also suffer the negative effects of our preoccupation with status. "Status differences can be demoralizing," says Professor Cameron Anderson. "Whenever you don't feel valued by others it hurts, and the lack of status hurts more people than we think." At the University of California Berkeley's Haas School of Business, Anderson conducted an extensive study into whether status was a fundamental human motive. After Anderson and his team pored over hundreds of studies, they discovered

that status did in fact play an essential part in one's psychological wellbeing.

The findings from these studies reflect the different outcomes for those who fall poles apart on the social spectrum. They showed that those who had low status within their communities were more likely to suffer from depression, anxiety and even cardiovascular disease. Other similar studies have found that those who were not so popular during their school years were at greater risk of a myriad of problems in later life, including substance abuse, obesity, illness and even suicide.

This is not to say, though, that procuring status is something that we should avoid altogether. Having a status system in place incentivises people to accomplish great feats in their desire to move up the social ladder and to reap the rewards that inevitably come with that. The success from those individuals' efforts then helps to advance us as both a civilisation and a culture. That in itself is surely something worth pursuing.

> "PURSUING STATUS IS A UNIVERSAL HUMAN BEHAVIOUR"

FINDING *Meaning* IN SUFFERING

In 1942, psychologist Viktor Frankl was transported to a concentration camp. What he endured there formed his ideas about human psychology and how to find significance in life's darkest moments

WORDS EDOARDO ALBERT

Lying in his bunk, Viktor Frankl smelled the cigarette smoke rising from the next bed. He did not need to look over to know that the man lying there would not get up when the siren dragged them all from their short rest. The smoking man no longer believed he had the strength to carry on, and was smoking his carefully hoarded cigarettes (the camp currency) rather than bartering them for extra soup. As Frankl joined the other inmates shuffling to the morning roll call, he realised that the man he had left staring up at the ceiling, enjoying his last cigarette, had lost any will to live. Looking within himself, Frankl realised how thin the thread holding him to life was. He needed a reason to live. A reason to endure the suffering. But all meaning, all reason had been stripped from him when they loaded him into the railway truck and sent him, with his family, to the camp. If he did not find that reason soon, he knew he, too, would be staring up at the ceiling, smoking his last cigarette.

The Doctor and the Soul

Viktor Emil Frankl was 37 years old. He had been born in Vienna on 26 March 1905 to Jewish parents, Gabriel and Elsa Frankl. Vienna, thanks to its connections with Sigmund Freud and his circle, was the home and centre of psychoanalysis, and Frankl had corresponded with Freud as a youth before studying medicine. Having qualified as a doctor in 1930, Frankl specialised in psychiatry, working at Steinhof Psychiatric Hospital where he specialised in treating women who had attempted suicide. His treatments were effective and he began writing up his research into the manuscript for a book. But on 12 March 1938, Nazi troops marched into Austria, annexing the country into the German Reich.

Persecution of the country's Jews began immediately. New identity papers altered his name to Viktor 'Israel' Frankl and he could no longer call himself a doctor, but rather a Fachbehandler ('specialist handler'). In 1940, Frankl moved his practice to the Rothschild Hospital in Vienna, the only hospital in the city still treating Jews, and became head of the department of neurology. The Nazis were already euthanising – murdering – mentally ill patients. Frankl saved many in his care (at considerable risk to himself) by changing their diagnoses so that they were no longer recorded as being mentally ill.

Despite the looming threat of deportation and the worsening situation for Jews in Austria, Frankl started writing his first book, *The Doctor and the Soul*, which laid out the framework for what would become logotherapy, his distinctive school of psychotherapy. In 1941, Frankl married a nurse at the Rothschild Hospital, Tilly Grosser. Tilly fell pregnant with their first child but the couple were forced to abort the baby by the Nazis.

In 1942, Viktor, Tilly and Viktor's parents were arrested and sent to the Theresienstadt concentration camp and ghetto. Theresienstadt served both as a holding camp, before Jews were transported to the extermination camps, and as a 'model ghetto' serving as a façade to deceive outsiders. Parts of the camp were 'beautified' into a sham village for a Red Cross visit in 1944. Prominent Jews were temporarily housed in better conditions in an effort to hide the reality of the Nazis' Final Solution – the total extermination of European Jewry.

Despite this dual role, the camp's conditions hastened the death of the inmates and some 33,000 people died at Theresienstadt during the war, including Frankl's father. In Theresienstadt, Frankl »

worked with Regina Jones, the first female rabbi, to help people (disorientated and despairing following their transportation and arrival at Theresienstadt) to overcome the temptation to commit suicide.

However, in 1944, Viktor and Tilly Frankl were transported from Theresienstadt to Auschwitz-Birkenau concentration camp. Frankl had managed to save the manuscript of his book, *The Doctor and the Soul*, but when he arrived, all prisoners were stripped of all their clothes and possessions. The manuscript was consigned to the flames; Frankl's carefully guarded work, that had helped to sustain him until then, was lost. Unknown to Frankl at the time, his mother was transported to Auschwitz-Birkenau shortly after he and Tilly arrived, but she was killed immediately upon her arrival, gassed in the extermination chamber. Viktor and Tilly were separated, with Tilly being transported to Bergen-Belsen concentration camp. Concentration camp prisoners were, of course, not allowed to write letters. After their separation, Viktor had no way of knowing what was happening to his young wife.

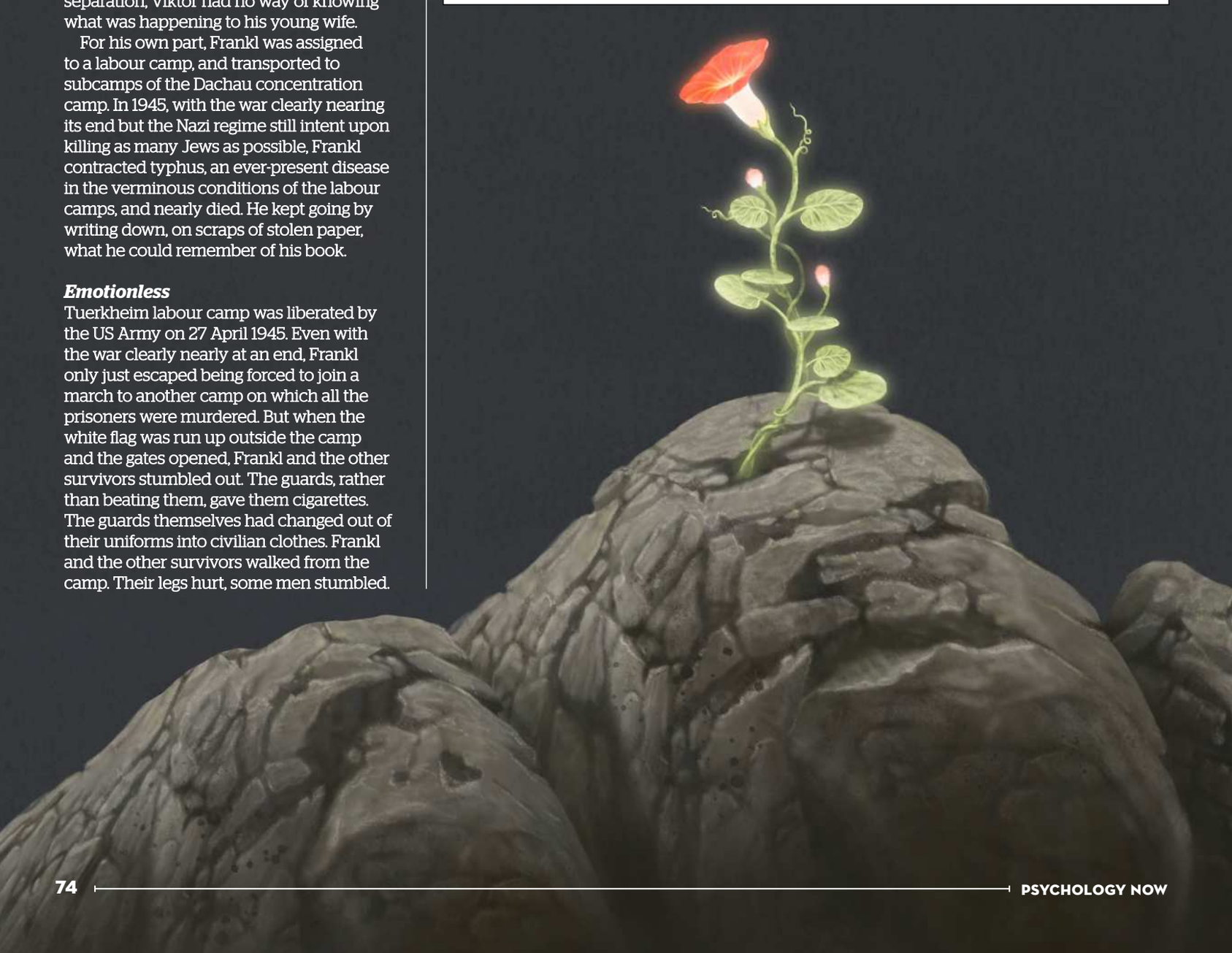
For his own part, Frankl was assigned to a labour camp, and transported to subcamps of the Dachau concentration camp. In 1945, with the war clearly nearing its end but the Nazi regime still intent upon killing as many Jews as possible, Frankl contracted typhus, an ever-present disease in the verminous conditions of the labour camps, and nearly died. He kept going by writing down, on scraps of stolen paper, what he could remember of his book.

Emotionless

Tuerkheim labour camp was liberated by the US Army on 27 April 1945. Even with the war clearly nearly at an end, Frankl only just escaped being forced to join a march to another camp on which all the prisoners were murdered. But when the white flag was run up outside the camp and the gates opened, Frankl and the other survivors stumbled out. The guards, rather than beating them, gave them cigarettes. The guards themselves had changed out of their uniforms into civilian clothes. Frankl and the other survivors walked from the camp. Their legs hurt, some men stumbled.

CHANGING OUR PERSPECTIVE

Frankl tells the story of one of his patients after the war. He was an old doctor, a GP, whose beloved wife had died a couple of years previously. Since her death, the doctor had fallen into a deep depression, for he had loved her very dearly. When the doctor came to see Frankl, Frankl asked him what he thought would have happened if it had been he who had died first, leaving his wife alive. The doctor said that she would have suffered terribly. Whereupon Frankl pointed out that the doctor, by living, had spared his wife that suffering and taken upon himself the responsibility of mourning, which would have fallen to his wife had he died first. At that, the doctor found a meaning in his suffering, placing it as a sacrifice in memory of his wife.



> "HUMANS ARE CREATURES THAT REQUIRE MEANING AS MUCH AS WE NEED AIR AND FOOD"

But they carried on, trying to grasp what had happened. They were free. The day they longed for had arrived. They had survived. But the word still had little meaning for them. Coming to a meadow, they looked at the flowers. But still they felt nothing.

That night, when the prisoners met again in their hut – where else were they to go? – one asked if they had felt joy on this day of liberation. Another prisoner replied that he had not – and the answer was true for all the men there. Joy might come later, with many other emotions. But for now, everything seemed as if it were unreal, for no man had lived in the camps and not dreamt of freedom only to wake and find that he was still in hell. Frankl and the other prisoners were still unsure if they would wake again into the nightmare.

While the horrors of the camps were over, Frankl still did not know what had happened to his wife and family. He made his way back to Vienna, only to learn that Tilly was dead, as were his mother, his brother and his sister-in-law. The only other member of the Frankl family to survive was his sister, Stella, who had managed to escape to Australia in the early years of the war.

Man's search for meaning

Viktor Frankl had lost everything: his wife, his parents, his brother and his life's work. He lived. They had died – as had so many others. Now he had to find a reason to live. Returning to his medical practice, Frankl wrote, in nine days, a book describing his experiences of the camps and his observations as to how to survive in the face of the random, brutal suffering imposed on the prisoners. The book was called *Ein Psycholog Erlebt das KZ* (*A Psychologist Experiences the Concentration Camp*). In 1959, it was published in English under the title *Man's Search for Meaning*. It became a bestseller and hugely influential, for it lays out Frankl's answer to that question, derived from his experience and that of so many others of the death camps. There's probably never been a psychological theory that has been experientially tested under such extreme circumstances – and hopefully there never will be again.

Viktor Frankl had lived through hell. The book, and his work, were testament to how he had done so and why he could live on. As such, they are ideas that have been tested in the bitter fire of the most extreme suffering. Let us see what Frankl has to say.

"He who has a why to live for can bear with almost any how." Frankl quotes this text – taken from Friedrich Nietzsche's *Twilight of the Idols* – twice in *Man's Search for Meaning*. For Frankl, this summed up the philosophy, the psychology and the experience of the camps. Those men who had a reason to live, lived; those without, died. But it was not as simple as that. For even those with reason to live were killed, by whim, cruelty, fate and the commandant simply needing to fill a quota. There was no guarantee of life in the camps: death came without warning, whatever the attitude of the prisoner.

In Frankl's view, humans are creatures that require meaning as much as we need air to breathe and food to eat. Where his great Austrian predecessors, Sigmund Freud and Alfred Adler, had located the engine driving humanity in the instinctual drives for sex and power respectively, Frankl had recognised that people have a fundamental need for meaning in their lives. His approach came to be called the Third Viennese School of Psychotherapy.

At his medical practice in the 1930s, Frankl had noted a growing ennui among his patients, a listlessness and boredom deriving from a lack of purpose and meaning in their lives. In his work with suicidal patients he identified this lack of meaning as being at the core of why people attempted to take their own lives and he developed his unique school of psychotherapy as a means to help patients find that meaning in their lives. Frankl's experiences in the camps served to confirm for him the truth of his basic insights.

Logotherapy has the clue in the name. 'Logo' comes from the Greek word 'logos': 'word' or 'meaning'. While Frankl was Jewish, he was well aware of the first sentence of the Gospel according to John: "In the beginning was the Word and the Word was with God and the Word was God." In the Greek in which the Gospel was written, the sentence reads: "In the beginning was the Logos and the Logos was with God and the Logos was God." To Frankl, in distinction to Freud and Adler, man is a spiritual being and at his core lies the quest for Logos – meaning. Meaning is what motivates us, above food, power, sex, status, all the appetites and desires that other schools of psychology focus on, often denying any spiritual meaning or level to humanity whatsoever. Frankl concluded that it is the will to meaning that is fundamental, in distinction to Freud's pleasure principle and Adler's will to power. According to Frankl, people want their lives to matter.

Existential distress

However, life – particularly modern life – makes it difficult for many people to find meaning. This seems to be a peculiarly recent phenomenon, certainly in its widespread form. There are vanishingly few cases of medieval peasants or lords bemoaning the lack of meaning in their lives. But then they lived in the drama of the battle for their souls, where the creator of everything, God, and his adversary, the devil, were in daily conflict for the prize of that very individual's soul. The medieval peasant knew that, even if his lord ignored him, his God had died for him, and fought daily with the devil for him. It was a meaningful life.

However, the modern world has seen an explosion of existential distress, where Frankl defines 'existential' as having three meanings: the particularly human mode of existence; the meaning of existence; and the will to meaning, which is the attempt to find a meaning in one's own existence. Existential distress generally starts with a failure to find a meaning in one's own existence, which broadens into despair at the meaning of existence and can finally lead to attempts to end that human mode of existence and bring an end to this existential distress in death.

According to Frankl, the frustration of the attempts to find meaning in life lead to particular types of neurosis that he terms noögenic neuroses. But while existential distress causes mental anguish, it is not necessarily a mental illness, but rather a sign that the person is missing meaning in their life and needs to find it. Logotherapy exists to help the patient find the meaning in their life but it accepts that some tension – the result of the gap between the meaning of our life and its accomplishment – is inevitable and indeed a necessary part of mental life. The struggle for a goal is part of a healthy, lived life.

Existential distress can manifest as boredom, a thoroughgoing ennui. Frankl terms this the existential vacuum that underlies a modern life cut free from the sorts of traditions and customs that anchored our forebears.

Getting personal

But if the will to meaning is fundamental to humanity, what sort of meaning does Frankl propose we adopt? Is he proposing some form of psychologised religion? No. While Frankl was, and remained, a practising Jew until his death, logotherapy is not a disguised religion. What distinguishes Frankl's view of »

> “THEY STILL HAD THE POWER TO CHANGE THEIR OWN ATTITUDE”

HUMOUR AMID HORROR

In the camps, Frankl realised the liberating power of humour, even in the darkest of circumstances. Often, the humour practised and the jokes told by Frankl and the other prisoners were rather black indeed, but they provided distance and release. The jokes pricked at fate and its Nazi face even if they could not undo it. Frankl later used this insight in logotherapy. Self-detachment, at least in the capacity to laugh at oneself, is often a very useful stage when seeking to overcome neuroses. Thus logotherapy makes use of paradoxical intention. For instance, if a patient is a compulsive stammerer, then the logotherapist might ask them to imagine stammering in a stressful situation and then, in that situation, to deliberately try to stammer. Trying to consciously stammer breaks the stammer itself. The humour necessary to accompany such a course of action also greatly helps the therapy.

meaning in the context of human existence is his belief that meaning is personal, particular and unique. He gives an analogy in *Man's Quest for Meaning*. Say you asked Magnus Carlsen, the world chess champion, "What is the best chess move?" He would likely look at you as if you were mad. There is no single best chess move. The best move, or even a good move, depends entirely on the situation of the game at the time the move has to be made. To Frankl, this is true of our lives. Everyone has a specific vocation, shaped by their own unique experiences and abilities, a vocation that no one else can ever undertake for it is unique to you and nobody else. Therefore everyone is an irreplaceable player in the game of life: no one can ever take your go for you.

One of Frankl's key insights when developing his philosophy and psychology was that the question of the meaning of life could be reversed. It is not that one should ask what is the meaning of one's life, but rather recognise that life is putting that question to us. Life questions us, not the other way round, and it is in our answers to life's questions that we find the meaning we have sought outside ourselves. Thus everyone is responsible for their own life. To Frankl, responsibility for one's life is the foundation for one's growth, and one of the key tasks of the logotherapist is to help the patient understand where their responsibilities lie: to another person or people, to an ideal, to a work being created, to their conscience. Thus logotherapy stands as the polar opposite to various modern schools of self-actualisation, because we are responsible for something other than ourselves: meaning is fulfilled in giving. The greater the gift of oneself – to a spouse, to children, to a cause – the greater the meaning to be found in answering the examination that life puts before us.

Creation, experience, attitude

According to Frankl, there are three avenues towards a meaningful life: by creation or doing; through experiencing something or encountering someone; and by the attitude we take towards suffering when it is inescapable. The way of creation and doing is the way of the artist and reformer. The way of experience or encounter is finding meaning in beauty, nature, art and through loving another person in their unique and particular essence. Thus, meaning can be found in love, and Frankl regards human love as something exalted and primary, as fundamental as sex rather than merely a cultural construct to tame our sexual drives. According to Frankl, love is more real than sex for it is through love that sexual relationships become avenues of meaning, our primary drive.

It is the final meaning, the meaning of life when life is full of suffering, where Frankl offers the insights born of his experience of the concentration camps. Sometimes, suffering is inevitable. Most often, this is a result of disease or accident: an incurable cancer, a paralysing fall. Sometimes it can be internal: mental illness, a broken relationship. For Frankl and the other people in the camps, it was the Nazis. The suffering of Frankl and his fellow prisoners was immense – inconceivable for most of us – and unavoidable. They could not escape. The guards at the camps did everything to depersonalise the prisoners: people were reduced to the numbers tattooed on their forearms. Death was often random and, when it approached, inescapable: there was little that Frankl or the other prisoners could do to avoid it.

Many despaired. But Frankl realised – as did many of the other prisoners – that while they were powerless to change their circumstances, they still had the power to change their own attitude to their circumstances. While living in the camps, an inmate might live by their conscience or deny it and become a beast, preying upon their fellow prisoners. Some of the worst were prisoners who were set as Capos – overseers – of their fellow inmates. Even in dying, a prisoner might die in the light of the meaning of their life rather than in denial and despair of it. Father Maximilian Kolbe, a Polish Catholic priest imprisoned in Auschwitz, took the place of another man sentenced to death in the starvation chamber, then led the men dying with him through their final ordeal. The Nazi guards expected the men locked into the starvation chamber to turn into animals, killing each for food, the end coming quickly in a merciless struggle for life. But Kolbe led the men in there through their dying, and rather than tear each other apart, the men supported and encouraged each other, lasting so long that in the end the guards murdered Kolbe by injecting him with carbolic acid.

There was no final escape. Kolbe and the other men in the starvation chamber all died. But they died by their terms, answering the dreadful question that their lives posed of them with their whole hearts and their whole souls and every sinew of their strength. They died but they were not broken. The meaning of their lives transcended their ending and shaped it. They were not determined by the circumstances of their death.

That was what Frankl learned in the Holocaust. That even when bound by suffering, we are still free to shape our attitude towards that suffering and make it an instrument of our life's meaning. Perhaps the greatest freedom – the most meaningful – may be found in the conditions of bondage and suffering. "He who has a why to live for can bear with almost any how." ■

"HEAR, O ISRAEL"

For two years at Theresienstadt, Frankl had been able to hide and preserve the manuscript of his first book. When he was transported from Theresienstadt and loaded onto the train with hundreds of others, he took the manuscript with him, hidden under his coat. It was Frankl's meaning, the creation he had carried with him since the baby Tilly was carrying had been aborted by the Nazis. But when the train arrived at Auschwitz, all incoming prisoners were stripped naked and had any personal belongings taken from them. When Frankl came up for inspection, he was waved into the left-hand line of new arrivals. Those allocated to the right-hand line (by far the greater number), were taken straight to the gas chambers.

Frankl was assigned to a work camp, but for that he needed some clothes. He was given the clothes of a man who had been put into the right-hand line. In the pocket of the man's coat – Frankl never learned his name – he found a page torn from a prayer book. On that page was the Shema Yisrael, the most important of all Jewish prayers, the foundation of their identity as a people: "Hear, O Israel, the Lord our God, the Lord is One."

HOW DO WE *Sense* TIME?

The science behind why time flies when we're having fun

WORDS CHARLIE EVANS

When you are waiting for a bus, you can usually estimate how long you've been standing there. Our ability to keep track of time is important in almost every aspect of day-to-day life, from playing a musical instrument to holding a conversation.

That little internal alarm that says you've been standing in the shower for too long comes from a type of temporal processing supported by two neural clocks. Researchers previously thought that our intuitive timekeeping ability came from a part of the brain called the striatum. Studies have shown that this region is activated when people pay attention to time, and patients with Parkinson's disease – which disrupts the striatum – can have difficulty telling the time.

Scientists predict that the striatum consistently pulses with activity, a little bit like the ticking of a clock. However, recent studies suggest that in order to be conscious of the passage of time, your brain also relies on the hippocampus to remember how many pulses from the striatum have occurred. This concept is known as the interval timer theory, and it explains how we unconsciously judge time spans on the scale of seconds to hours.

You will notice that time spent with your friends seems to pass much faster than when you're writing an assignment. Neuroscientists have found that this is because your brain stops recording these pulses of activity when you stop paying attention to time, such as when you're engrossed in an activity. When this happens, the brain puts fewer 'ticks' of its internal clock in storage, making it feel like less time has passed.

On the other hand, in situations where you are more actively aware of the time – like when you're waiting for a delayed appointment – your mind will be counting every tick because you have little else to distract yourself with, making the passage of time feel much slower. So the next time you find that the day is dragging on, try to take your mind off the time to distract your internal clock.

"TAKE YOUR MIND OFF TIME TO DISTRACT YOUR INTERNAL CLOCK"

YOUR BRAIN'S INTERNAL CLOCK

The interval timer theory explains how your brain keeps time like a neurological metronome...

START THE CLOCK

A 'start' signal is activated by the onset of an event that lasts a familiar amount of time, such as the three minutes it takes to boil some water in a kettle.

SYNCHRONISATION

This triggers specific cortical nerve cells (which usually fire at different speeds) to briefly fire together at the same time. They then return to their original firing rates, but because they all started simultaneously their activity follows a particular pattern.

DOPAMINE

A subtype of brain cells called spiny neurons monitor the cortical neurons' activity, keeping track of how many times their firing patterns repeat. When the event finishes – in this case, once the kettle has boiled – bursts of dopamine are sent towards the striatum.

MEMORY

The release of dopamine causes the spiny neurons to commit the firing pattern of the cortical neurons at that particular instant to memory. This creates a kind of 'time stamp' for the given event. Research suggests that there are unique memories for a whole range of different intervals.

TIME'S UP

Now the spiny neurons have 'learned' these intervals, they will monitor cortical firing rates until they match the memory for the time stamp that signals that particular event is over. Once this occurs, the striatum sends signals to other areas of the brain involved in memory and decision making, giving you an internal 'time's up!' alert.

What is GASLIGHTING?

Gaslighting is psychological manipulation to make you doubt everything about yourself – and it can be horribly effective

WORDS EDOARDO ALBERT

It's a long time since gas lights lit our homes, so it might seem strange that this most modern of psychological power plays is named after a defunct form of illumination. The *Oxford English Dictionary* named 'gaslighting' as one of its words of 2018; it's only in the last few years that it has entered the mainstream as a technique of psychological manipulation.

The word itself comes from Patrick Hamilton's 1938 play, *Gas Light*, and the films based on the play released in 1940 and 1944, both called *Gaslight*. In the play and films, a husband causes his devoted wife to doubt her own sanity by secretly turning down their home's gas lights while denying her perception that the light is changing. The term was adopted in psychoanalytic thought in the 1970s but only really came to prominence a few years ago along with concerns about 'fake news'. It has been seized upon since then because it describes a range of manipulative behaviours that it would be otherwise hard to label.

Gaslighting occurs in relationships where there is an imbalance of power. It is most common in romantic relationships but it can occur in a wide variety of other relationships, from parent and child through to boss and employee right up to the level of the state and the citizen. Gaslighting is not some inborn or genetically predisposed condition but rather it is a set of behaviours that are learned and then used. The gaslighter, by denying the other person's perceptions, feelings and opinions, systematically undermines their self-worth and, ultimately, can make them doubt their sanity. Gaslighting is a method to exert control and power in a relationship but it is not, in itself, a psychological disorder. However, as a technique of control it is often employed by people with narcissistic personality disorder. Typical ploys in the gaslighting playbook include:

Denying
The gaslighter flatly denies doing something the other person knows they did.

Lying
Gaslighters lie. A lot. And they are good at it. Gaslighters may also spread rumours about the other person to ramp up the psychological pressure, for instance telling family members or colleagues – confidentially of course – that the other person is suffering an emotional crisis that makes them unreliable in some way.

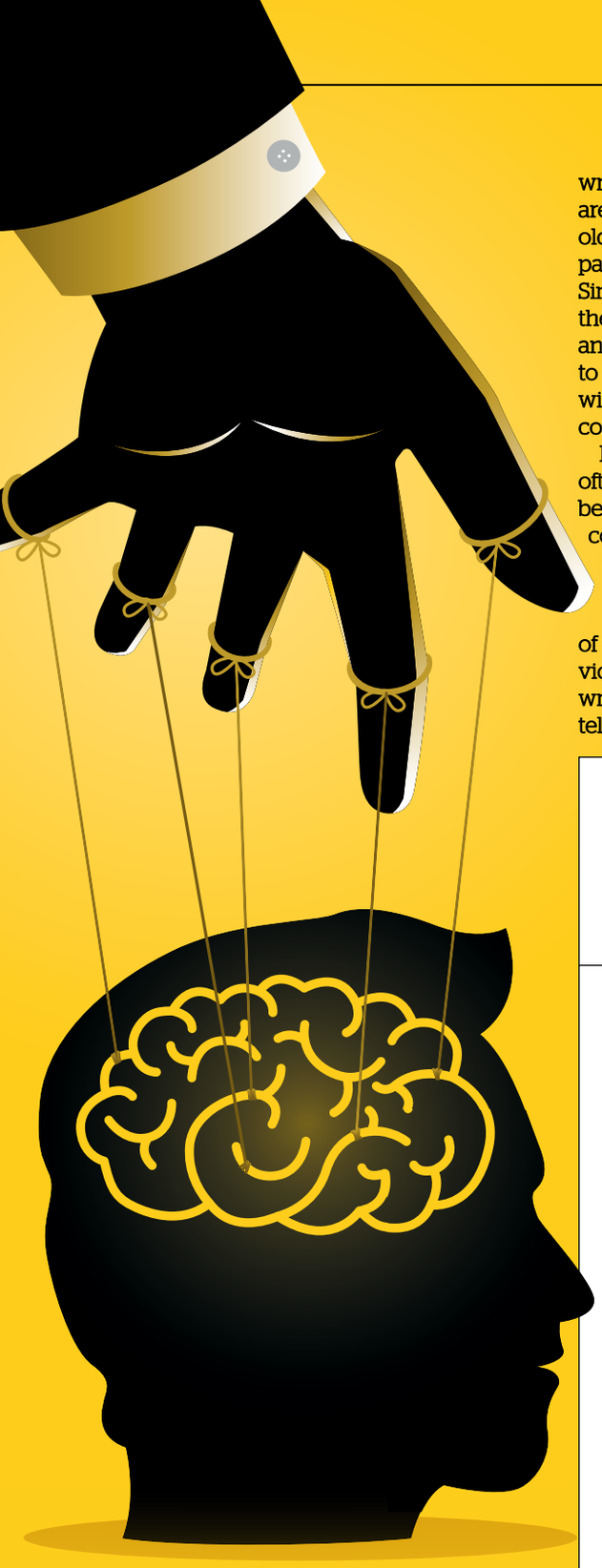
Shifting the blame
Gaslighters are skilled at changing the terms of reference of a conversation so even when the other person is trying to bring up an example of the gaslighter's bad behaviour, it always ends up that the other person is to blame.

Minimising
The other person's thoughts and feelings are, at best, trivial. A typical gaslighter response might be, "Oh, you always overreact to everything."

Diverting
If the other techniques don't work, then a gaslighter will divert the conversation on to something else.

The fundamental technique of gaslighting is to convince the victim that their perceptions and feelings are false while the gaslighter's perceptions are true. The perceptive reader may note how this technique can be scaled upwards – and indeed it has been in various totalitarian states in history. In *1984*, George Orwell provides a fictional example of a state that manipulates reported reality in such a way as to convince its citizens to doubt their own perceptions and accept those of the state. Communist propaganda, according to the writer Theodore Dalrymple, was designed not to persuade but to humiliate: everyone knew it was a lie but all the citizens had to silently accept the lies as truth or even spout the lies themselves. The government propaganda attending to the Covid-19 pandemic has also provided some excellent examples of how a state can gaslight its people. Governmental gaslighting is one of the most naked examples of the power dynamics involved in gaslighting. The gaslighter seeks to control the victim so it is particularly attractive to states seeking to control their own people.

The victim of gaslighting is not powerless, however. Although it might take the dawning realisation that something, somehow, is



wrong to realise what is going on – gaslighters are usually skilled at what they do – the old saw that knowledge is power applies particularly to relationships with gaslighters. Since a gaslighter seeks to undermine the other person's thoughts, perceptions and feelings, everything that they can do to validate those thoughts and feelings will act as armour against the gaslighter's constant assault on their self-esteem.

In domestic contexts, however, gaslighting often escalates to violence, so it might be necessary to do some of these things covertly. Keeping a secret diary allows the victim to confirm his or her own perceptions and memory of what has happened against the gaslighter's denial of them. There's nothing so affirming for the victim as being able to check back and see, written down, that the gaslighter really did tell them, for example, to fix dinner for 6pm, not 8pm. Over a period, the secret diary enables the victim of gaslighting to validate their own perception and understand the particular pattern of gaslighting that is being used against them. With knowledge comes renewed power: either to leave the abusive relationship or to confront the gaslighter with the evidence of their own bad faith. In some cases, particularly those gaslighters with narcissistic personality disorder, this will probably not achieve much. However, some gaslighters are trapped in patterns of behaviour they observed in their own parents and may be able to break out of the pattern. Whatever the outcome, the first step is for the victim to realise what is happening, to trust their own perceptions, and to take steps to distance their perceptions and feelings from the gaslighter's attempts to manipulate them. As in the film, they have to learn to believe their own eyes again. ■

WHAT GASLIGHTING FEELS LIKE

The aim of the gaslighter is to keep their victim off balance and questioning their own perceptions so it can be very difficult to tell if you are being gaslighted. But if you are experiencing some combination of these feelings, then you might be being gaslighted.

Confusion. At some level, the relationship does not make sense.

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You realise that you are lying to family and friends in order to protect the gaslighter.

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It becomes difficult to make even simple decisions on your own.

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You find yourself apologising for everything, even when you know that it's not your fault.

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You start wondering if you are too sensitive.

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You start feeling that you are no longer the person you used to be.

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You realise that you are becoming cut off from other relatives and friends.

These are all signs of an abusive, gaslighting relationship. If you are concerned that this might be happening to you, in the UK try contacting **Relate** (*www.relate.org.uk*). In the US contact **The Hotline** (*www.thehotline.org/1.800.799.SAFE*) and in Australia **Relationships NSW** (*www.relationshipsnsw.org.au/1800RESPECT*).

"GASLIGHTING IS A METHOD TO EXERT CONTROL AND POWER IN A RELATIONSHIP"

THE KEY TO Motivation IN SPORT

How can the power of our minds instil power in our bodies?

WORDS AILSA HARVEY

Motivation is all about change. More often than not, the best feelings and rewards come to people who have earnt them. How can we push ourselves to explore the limits of our abilities? And when we reach the boundary of our comfort zones, how can we strive to widen its circumference? The key to achieving this centres around motivation. Motivation is any behaviour that is persistent and goal-directed.

Motivation plays a huge part in sport and exercise. Some people fall in love with a sport the moment they try it. Whether it's the thrill that comes from adrenaline sports, or the satisfaction and pride that is felt when improving at a specific skill, sport can make us feel good. For others, the main appeal to sport is the experience at the end. The accomplishment at winning something and being awarded the title of 'best' can not only boost someone's confidence, but make them feel addicted to winning. It can also inspire motivation. If you've achieved something once, why can't you replicate it next time? Knowing the possibilities is likely to make someone work even harder.

> "MOTIVATION IS ABOUT THE BRAIN'S ABILITY TO PREDICT REWARD"

A motivated brain

What is the science behind this drive? Motivation is all about the brain's ability to predict reward. As you cross the finish line first, score the winning try on the rugby field or achieve your first hole-in-one on the golf course, your brain releases high levels of the neurotransmitter dopamine. For this reason, dopamine is often referred to as the 'feel-good chemical', but it is actually released before this point. Dopamine is one of the driving factors in your body's biological motivation. Take the first example. You have crossed the finish line of a running race in first place. But, what happened beforehand? As you stand on the start line, your eyes and other sensory organs send information to your brain to tell it you are at the beginning of a race. Your brain will begin to release dopamine at this point.

Next, dopamine sends a signal to a part of your brain called the nucleus accumbens. This area of the brain is responsible for triggering reward behaviour. Think of it as a sports coach. Just like the person who tries to lead you onto the right path to success, this part of your brain is an expert. It learns about the different stimuli, and which will result in a good outcome. The nucleus accumbens will communicate with other areas of the brain to keep you focused on winning. When your legs get tired, your brain will assist your motivation, and keep you pushing forward. If you had no reason to keep going, you would come to a standstill at the first sign of discomfort. Dopamine is released even when you fail to meet your target. However, in these circumstances it's directed to a separate area of your brain and used as a deterrent so that you try even harder next time to avoid these feelings of disappointment.

Why do we need motivation?

For sport, motivation is essential for success. The best athletes endure pain on a daily basis because their minds thrive on the rewards. As pain is designed to tell your body to stop

doing something, many people give up when training gets uncomfortable. If it were easy, we would all be Olympians. Similarly, our ability to motivate ourselves keeps sports teams returning to their next match after a significant loss against an opponent. If teams and individuals let defeat override their drive to make a comeback, there would never be a rematch, there would never be improvement and there would never be that even larger sense of accomplishment when a long-awaited victory is accomplished.

There are three main aspects that impact the result of any sporting performance. Motivation is just one third, but it is arguably the most important, because it's the only one you can control.

The first factor to consider is biological ability. Each sport tests a different skill, and people can train hard to better their ability to perform them. However, some people are at a significant advantage. The type of muscle – slow-twitch or fast-twitch – can determine how well a person can perform endurance or power sports. Slow-twitch muscles can work for a longer period of time without tiring, but fast-twitch can fire rapidly for a shorter time. If an athlete trains as a powerlifter or sprinter, it's more advantageous to be built with fast-twitch muscle fibres. Other biological traits that influence performance in sport include the capacity that blood has to deliver oxygen around the body, and height. These things are significant to sport, but you are powerless to control them.

The second performance factor to consider is the conditions. If a football team is surrounded by a booing crowd during an away game, this can throw them off their performance. Meanwhile, wet weather can limit visibility in sport and hot, humid conditions can put extra strain on the body. Despite all the possibilities that can arise in these two categories, you can control your outlook. If you remain motivated and learn to teach yourself to overcome adversity, your motivation might push you higher towards the basketball hoop than your taller friend, and block out the sound of the away crowd with the focus you have learned.

Intrinsic vs extrinsic

As much as you hear that 'it's the taking part that counts', the majority participating in a competitive sport feel better after a triumph. But, the main reason this win feels good can separate the sporting community. There are two main forms of motivation; intrinsic and extrinsic.

For someone who is intrinsically motivated, the gyms they attend to keep fit, the pain they endure during an endurance event, or the relentless persistence they display when perfecting a primarily technical skill is done because the actions and progress make them feel good. The main reason that they want to improve is to better themselves, or extend their enjoyment in what they do. Contrastingly, an extrinsically motivated »

sportsperson participates with external rewards in mind. Talent often comes with reward, whether that be recognition, prize money or extended opportunities. Especially when sport becomes professional, these elements play a larger part in motivation. In reality, most people will use both types to drive their performance. It's entirely possible to be one of the most elite athletes and remain training because you're passionate about the sport you compete in. For these people, training motivation might be instigated from a deep love of the sport, but during a competition, extrinsic factors come into play. Oftentimes, intrinsic motivation leads to extrinsic motivation. The more you practise a skill, the better you become; and the more you feel rewarded by performing a sport, the more you are likely to practise. As people become better at the activity they love, they are provided opportunities to compete for rewards.

Getting in the zone

Considered the ultimate form of motivation, some athletes are able to enter the 'flow' state of mind. During sport, this is when someone becomes so transfixed on their performance that they lose focus of the rest of their surroundings. By channelling their mental energy towards their motivation to perform at their optimum level, people can lose their sense of time, avoid distractions from their surroundings and become totally absorbed in the task of the sport. When asked to describe this feeling, those who have experienced flow state admit to feeling stronger and more positive than usual. Elements of doubt or worry about failing vanish. Because of this, many athletes and coaches strive for this result during training and competition. Only motivation wins during flow state, destroying any negative emotions that might hold a person back.

Many world records have been accomplished while the athlete was in flow state. One example occurred in 1968. Long jumper Bob Beamon broke the world record with a distance almost 60 centimetres greater than the previous record. When describing how he felt during the jump, he said it had never happened like that before. He "blocked out everything in the world, except [his] focus on the jump." By 1977, sports psychologists had gathered some of the first data and quotes about this state of mind. Some of the indications of flow state were documented and included space-time disorientation, effortless high performance, narrow focus of attention and loss of all fear.

What happens when athletes lose their drive?

While it's important to strive for motivation to better performance in sport, it's vital that athletes don't overdo it. Sometimes, those

5 WAYS TO ENHANCE YOUR MOTIVATION

REMEMBER YOUR LONG-TERM GOALS

To make significant progress, you will need to work hard and outside your comfort zone. If you start to doubt yourself, take some time to remember the reasons you set today's target.

EXERCISE IN COMPANY

Joining a team sport, or finding a training partner at a similar level to yourself, means that when one of you is feeling less motivated, someone else can motivate you instead.

SET SMALL GOALS ALONG THE WAY

Aside from your main goal, set regular and achievable goals. This will build your brain's reward system and maintain a positive relationship with the sport.

MAKE WORKOUTS FUN

If you want to build motivation to keep exercising, look for a sport that you find enjoyable as well as hard work. You will find that your exercise goals come more easily.

LEARN FROM DEFEAT

When faced with disappointment, explore the reasons why you didn't do well. You can learn from the experience and use it to motivate your next event.

> "YOU MIGHT FIND THAT YOUR MOTIVATION TO ACHIEVE YOUR GOALS IS SHORT-LIVED"

who over-train and incessantly strive to be better can be overcome by physical and emotional exhaustion. Called burnout, this lack of motivation results in people who were once highly passionate about their sport becoming withdrawn and losing interest. This then results in their athletic ability, which they dedicated so much time to perfecting, begin to decline.

Motivation works by setting standards high, but if these become too high, a level of perfection is set. As athletes improve, their goals sometimes get stretched one step ahead of their place. Eventually, this can cause burnout, and athletes might find that constantly setting goals higher, disables them from reaching them. Studies show that burnout is more common during professional settings, where the standard is set based on extrinsic motivation, rather than intrinsic. Because you're motivated for yourself when you use intrinsic motivation, you can set yourself more manageable goals. If these standards you set yourself are taking away from your enjoyment of the sport, you can reduce these, because your main rewards come from your pleasure. However, if you were training with a specific external goal in mind, such as trying to attain a scholarship, there are a specific set of standards you need to meet. Those who are less advanced in the sport need to exert themselves much more to secure a place, while others who know they can meet the requirements can carry out more relaxed training. Say, for instance, that two athletes succeed in securing the same scholarship by carrying out these two contrasting training methods. It might be that shortly afterwards, the person who over-trained and added more stress begins to fall backwards in their progress. Motivation relies on the brain analysing the outcome of winning. When stress takes over this feeling of reward, it reduces the brain's ability to channel motivation.

From short-term to long-term

You might find that your motivation to achieve your goals is short-lived. If this is the case, it's worth evaluating your goals. Evidence suggests that goals that are extrinsic are more commonly short-lived, while intrinsic motivation continues for longer. This is because reward-based motivation is usually centred on an event in the near future, while when taking a journey to explore your personal capabilities, you will be more accepting of a longer time frame.

Whether the aim for motivation is to encourage a child into a sport, achieve a personal best or win during a professional event, the best way to make these successes long-term is to find a sport that makes the person happy. If the motivation being used is purely for one event, such as a charity run, motivated by sponsors and gratitude or a child doing well in sports day because they have seen the prize up for grabs, then this motivation can disappear at the same time the event ends.

The same can be observed in the world's most high-profile athletes. It's common for Olympians to feel lost following a successful Olympic Games. For many, the motivation used in training prior to the Games is based on performing well and securing a medal or high position. A lot of pressure is placed on the Olympics, which occurs only once every four years. Athletes who achieve what they set out to at the Games can lose motivation, because the extrinsic motivation is no longer there. Meanwhile, those who face defeat can struggle to pick themselves up and re-motivate.

Therefore, the best way to achieve long-term success in any sport, at any level, is to not lose sight of the main reasons you began the sport. True motivation can't be forced and, while there are ways to channel your motivation, the only way to reach your long-term goals is to truly want to. ■

ARE PERSONAL TRAINERS EFFECTIVE?

The thought of a personal trainer or coach shouting at you as you practise your sport can sound uplifting to some people, and extremely daunting to others. However, people with both views arrange sessions with personal trainers. Sometimes, the encouragement from another person can increase an individual's motivation. For example, personal trainers are very vocal in order to drive positive thoughts. When someone faces difficulty in a particular exercise, they might begin to doubt themselves. This is a crucial moment, where they can either stop and not push themselves or they can test their physical and mental strength. It's at this point that someone enthusiastically saying, "You can do this! You're doing great," can boost intrinsic motivation and make them feel good within themselves. Next time they face a similar challenge, their brain will strive for the reward they felt, and it can establish a positive and productive sporting mindset.

HOW DOES *Reverse psychology* WORK?

There's good news for frustrated parents trying to get their kids to eat their vegetables (or go to sleep, or clean their rooms), as science shows that using reverse psychology can, indeed, work

WORDS SARA G. MILLER

Reverse psychology is part of a phenomenon of psychology called 'reactance'. "The idea of reactance is that people are deeply motivated to protect their freedoms," says Jeff Greenberg, a professor of social psychology at the University of Arizona. "When people feel that their freedom is threatened – for example, they think someone is taking away their ability to make their own choices – they react against that threat. Thus, they may feel angry or defensive and try to reverse the threat," says Greenberg. Essentially, reverse psychology takes advantage of a person's reactance.

When you use reverse psychology on a person, you're threatening their perceptions of freedom. "Threatening this freedom makes it more appealing to choose to exercise that freedom," says

> "THERE ARE PHASES IN CHILDHOOD WHERE CHILDREN ARE MORE SUSCEPTIBLE TO REVERSE PSYCHOLOGY"

Greenberg. "Take, for example, a kid who won't eat his broccoli. When a parent says, 'You can't eat the broccoli', suddenly, eating it becomes more appealing to the kid," explains Greenberg. "So, although the kid never wanted the broccoli in the first place, he felt free to choose. When you take that freedom away, eating the broccoli becomes more attractive."

However, Greenberg notes that using reverse psychology doesn't always work: "It is more likely to work on people who are more prone to reactance. People who are irritable, stubborn and emotional tend to be more prone to reactance. People who are more agreeable and compliant, on the other hand, tend to be less prone," Greenberg explains. "There's also some limited evidence that men are a little more prone to reactance than women," he adds.

As for your toddler who just won't eat their broccoli, Greenberg notes that there are phases in childhood where children are more susceptible to reverse psychology. "Between the ages of two and four, for example, children can be more emotional and more rebellious, so reverse psychology might be more likely to work on them," Greenberg reveals. "But by the age of four, when kids are a bit more socialised and less likely to throw temper tantrums, they start to become less susceptible to reverse psychology."

The other classic example is adolescence. "When teens are rebelling against their parents, they might be susceptible to reverse psychology," Greenberg says. "That's a time period when parents say one thing, and teens want to do the opposite."

Greenberg points out that children, particularly younger children, are less cognitively developed, and therefore might not realise that their parents are using reverse psychology on them, whereas adults are more likely to see through it.

"Indeed, attempts to use reverse psychology on adults can backfire," Greenberg says. "They'll react against the attempt to manipulate them with reverse psychology. You can end up with 'reverse reverse psychology' in a sense. But there's no reason to say it won't work on adults; it just has to be very subtle." ■

THE Disorder THAT 'WAS'

Hysteria was one of the most common disorders of the 19th century, but it's not even a diagnosis any longer

WORDS EDOARDO ALBERT

The history of hysteria as a disorder tells us more about social pressure and expectations, and how these can be turned into a recognised medical disorder, than about an actual psychological condition. Indeed, in 1980 the diagnosis of hysteria was removed from *The Diagnostic and Statistical Manual of Mental Disorders* (DSM), the combined handbook and guide for psychologists and psychiatrists. So how can a mental disorder simply disappear?

The word 'hysteria' comes from the Greek word 'hystera', meaning womb ('hysterectomy' derives from the same word), and it was noted by Hippocrates, the physician who became synonymous with medicine. Hippocrates thought that the uterus, as an organ, was able to move around the body and the symptoms of hysteria were the result of its peregrinations. While this sounds ludicrous to modern ears, it's worth bearing in mind that our ancestors were

not stupid, but that detailed knowledge of the inside of the human body rests upon the accumulation of evidence from the detailed dissection of human corpses, a practice that was long forbidden – for obvious reasons – and remained unpleasant even when allowed. Noting symptoms that included paralysis, fainting, anxiety, spasms and shaking, shortness of breath and fits, Hippocrates recommended that the best cure was regular marital intercourse to anchor the hystera in its correct position. Thus began the association of hysteria with women, although the symptoms can occur in men as well.

The diagnosis is one of the most ancient there is: it is noted in an Egyptian papyrus dating from 1900 BCE where its cause was also attributed to a wandering womb. With such a range of associated symptoms – nervousness, sexual licence or frigidity, agitation, irritability, amnesia, vomiting, strange shaking movements, hallucinations and insomnia have also all been taken as indicating the disorder – it's no surprise that hysteria became a widely diagnosed disease, so much so that it could be called the characteristic illness of the 18th and 19th centuries that did not have a bacteriological cause.

With so many people – almost all women – being diagnosed with the illness in the 19th century, hysteria became a focus for the burgeoning field of medical science and in particular a Frenchman, Jean-Martin Charcot (1825-1893), who was doing pioneering work in neurology (in particular multiple sclerosis and Parkinson's disease). Charcot was one of the first doctors to insist that hysteria was as likely to occur in men as women, but was frequently misdiagnosed by physicians, and he treated many of his patients with hypnosis, further heightening the public profile and notoriety of the diagnosis.

One of Charcot's students was an Austrian, Sigmund Freud. Working with a patient, Anna O, who had hysterical symptoms, Freud developed his theory of psychoanalysis, the most influential of the psychological theories of the first half of the 20th century. Psychoanalysis was the first of the 'talking cures' that have now developed into the very wide range of psychological counselling and therapies available and, as such, it provided a valuable corrective to some of the bizarre treatments for hysteria that were prescribed before, such as uterine massages involving the internal stimulation of the female patient until a 'paroxysmal convulsion'. Reading the descriptions of these treatments, they seem to come very close to institutionalised sexual assault.

With the rise of feminism from the 1960s, psychologists became increasingly uncomfortable with the female-focus of the disorder and its implications for social control and personal control, so that by 1980 the diagnosis was phased out completely. Of course, that did not mean the symptoms associated with hysteria disappeared, but they were now subsumed under different diagnostic headings, that of dissociative disorders and somatic symptom disorder. Somatic symptom disorder includes many of the physical signs associated with hysteria in the past, including shortness of breath, pain, weakness and fatigue, but it is not caused by any physical disorder. The patient with somatic symptom disorder is not malingering, however, as he or she genuinely experiences these symptoms.

Dissociative disorders, as the name suggests, involve feelings of disconnection from the self and periods of amnesia, as well as having multiple identities and sometimes feeling no pain. Dissociative disorders are generally a result of being subject to prolonged periods of stress and are a mental reaction to this.

In its history, hysteria has gone from being one of the oldest recognised disorders, to being among the most commonly diagnosed conditions in the world, to ceasing to exist as a discrete medical diagnosis. It is a salutary tale of the role that culture plays in medical thought and a reminder that the future might well judge us as harshly as we judge the doctors who diagnosed 18th- and 19th-century women with a disorder that we now believe does not even exist. Those doctors were among the leading thinkers of their time, progressive in opinion and attitude. It's more than likely that, among the burgeoning diagnoses and dysphoria of today, there will be some that our descendants will look back upon with comparable horror and disgust. ■

MASS HYSTERIA

In 1374, in villages along the River Rhine, people began to dance. They danced and danced, sometimes for days on end, until their shoes were worn and their feet were bloody. The dancing plague spread to France and the Netherlands before dying away. Then, in 1518, in Strasbourg, people began compulsively dancing again. These medieval dancing frenzies are among the most famous examples of mass hysteria, a social version of some of the symptoms seen in individual hysterics. In it, a tranche of symptoms spreads rapidly within a group of usually tightly connected people without any physical root cause. It is by no means a purely medieval syndrome. Modern examples include the Tanganyika laughing epidemic in 1962, when the girls at a boarding school began laughing uncontrollably; the West Bank fainting epidemic in 1983 when hundreds of Palestinian schoolgirls and some Israeli women soldiers fainted or felt dizzy; and the 2007 William Byrd High School twitching incident, where pupils and a member of staff started twitching, trembling and feeling dizzy. And in retrospect, we may well think that much of the reaction to the Covid-19 pandemic has verged upon mass hysteria. We may not be so distant from our medieval forebears as we think.

> "PSYCHOLOGISTS BECAME INCREASINGLY UNCOMFORTABLE WITH THE FEMALE-FOCUS OF THE DISORDER"

Understanding AVERSION THERAPY

The science behind the controversial therapy that punishes patients in the hopes of breaking their bad behaviour

WORDS SCOTT DUTFIELD

Aversion therapy is a psychological conditioning method that aims to cure patients' bad behaviours or horrible habits. According to some studies, this practice can yield remarkable results. For example, a 1988 study claimed that up to 61.4% of its smoker subjects quit after five days of aversion treatment. Another in 2010 revealed promising results, with 81.8% of its nail-biting patients showing significant nail growth after therapy.

In the modern era, aversion therapy has, to a great extent, fallen out of favour when compared to the height of its use around 60 years ago. Some aversion treatments are still used today, but due to ethically questionable methods and the development of more effective practices, aversion therapy remains largely a historical anecdote in the field of psychotherapy.

The theory behind the therapy

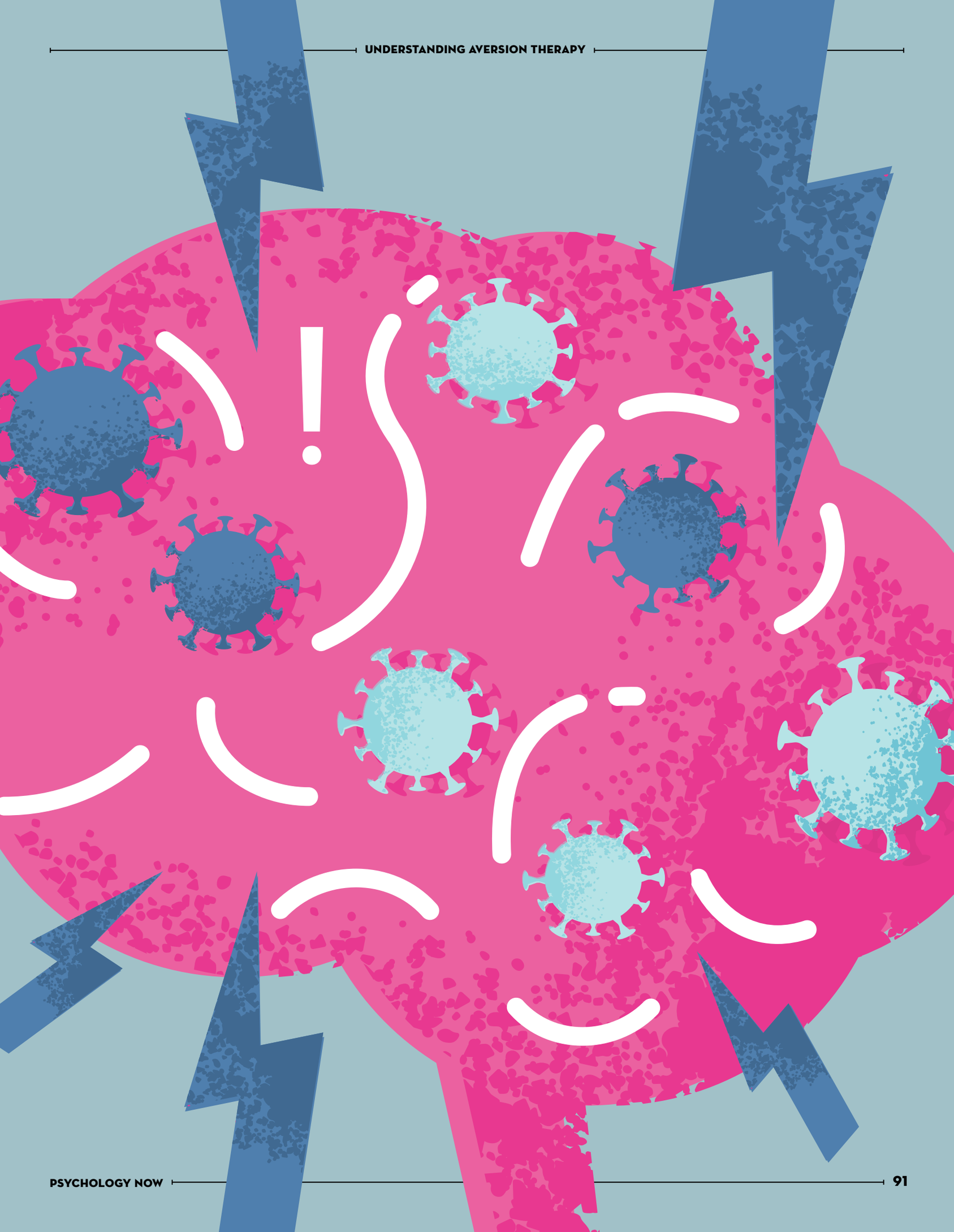
Ultimately, the purpose of aversion therapy is to suppress a negative behaviour or habit by associating it with another negative or punishing stimulus. It's modelled on the way humans naturally developed learnt behaviours. This is referred to as classical conditioning, whereby a conditioned stimulus becomes associated with an unconditioned stimulus to produce a behavioural reaction referred to as a conditioned response. For example, a person passing a house with a vicious barking dog in the garden (the unconditioned stimulus) will eventually make the association between the house (the conditioned stimulus) with the vicious dog and possibly feel nervous or even fear when next passing the house (the conditioned response).

This associated behavioural response was first outlined by Russian scientist Ivan Pavlov. He famously carried out experiments on canine subjects to stimulate the production of saliva in response to a stimulus by associating that stimulus with food. Pavlov's dog experiments provided the foundation for what we now refer to as classical conditioning and learnt behaviour. Understanding this principle has paved the way for scientists to use it as an agent of behavioural change in humans, in the form of aversion therapy.

Putting principles into practice

There are several ways in which this form of therapy has been administered over the years, and one of the most prevalent and diverse methods has been electrical aversion therapy (EAT). This method of treatment involves delivering an electrical shock to the patient when they either exhibit a negative behaviour they are seeking to eliminate, or when shown images associated with a behaviour. For example, a smoker may be shown images of cigarettes or exposed to the smell of smoke, while simultaneously given an electrical shock. This cause-and-effect style treatment then creates an »

> "SOME AVERSION TREATMENTS ARE STILL USED TODAY"



THE POWER OF IMAGINATION

Although no one scientist can claim to have invented aversion therapy, in the mid-1960s, American psychologist Joseph Cautela was the first to describe a collection of therapeutic procedures – under the umbrella of 'covert conditioning' – to alter behaviours in a similar way to aversion therapy. What separated physical aversion therapy methods from Cautela's procedures was that stimuli were presented only in the patients' imagination. The procedures were used to alter behaviours such as smoking, overeating and even homosexuality. Rather than using electric shocks or vomit-inducing pills, Cautela's method instructed patients to close their eyes and listen to a narration of a series of scenes, a bar or wine cellar for instance. While conjuring these scenes in their imagination, the narration of a scene turns foul, to induce nausea in the patients. It was hoped that this feeling of nausea would become associated with the subject of the scene, such as alcohol in the bar, thus altering the desire to drink.

association between smoking and the pain of the shock to alter the smoker's behaviour.

The same principle is employed in the use of shock collars when training dogs. If the dog displays negative behaviour, such as aggression, a shock is delivered by the collar. This makes an association between the discomfort of the collar and the aggressive action. However, the use of such devices is controversial, and shock collars are banned in several countries.

Electrical aversion therapy for humans is still offered as a supplementary treatment alongside other methods. Although some tech companies have tried to cash in on the science behind aversion therapy by creating their own do-it-yourself devices. For example, American tech brand Pavlok provides self-administered shocking bracelets for wearers to zap themselves when displaying a behaviour, such as craving cigarettes.

Chemical aversion therapy

One of the most common conditions that aversion therapy still seeks to solve is addiction. Since the early 1900s, aversion therapy has been used to treat alcoholism. Rather than electrifying patients or showing them negative images related to alcoholism, physicians use oral medication to make patients develop a negative relationship with alcohol. Known as emetic drugs, these chemical agents – more commonly used in cases of poisoning – cause those who ingest them to quickly vomit. Herein lies the potential to create a negative association with alcohol.

A common emetic drug is ipecac. In a 2017 study, published in the journal *Frontiers in Behavioural Neuroscience*, researchers investigated the efficacy of emetic drugs to repress alcohol use. A group of 13 participants suffering from alcohol use disorder were admitted to the Schick Shadel addiction treatment centre in Seattle. In their rooms, they were presented with an array of their favourite alcoholic beverages. During the treatment process, patients repeatedly tasted and swallowed the beverages, which were also laced with an ipecac-derived drug called emetine. As a result, the patients quickly expelled the ingested alcohol, thus beginning the association between the negative feeling of vomiting and the use of alcohol. Treatment lasted ten days, and patients received a booster aversion treatment around 30 to 90 days after the trial had ended. The results of the study showed that 69% of the patients remained sober 12 months after the conclusion of the trial.

Aversion therapy is also used to tackle less serious behavioural issues. Nail biting, also known as onychophagia, can be a problematic behaviour potentially leading to a higher risk of infection, damage to the

> “THIS THERAPY’S DOWNFALL WAS THE RISE IN CONCERNS OVER ITS USE – AND MISUSE”

teeth and ingrown nails. Therefore, aversion therapy can be employed to make a negative association with biting the nail in the hopes of removing the behaviour. However, electric shocks and ipecac pills would be needlessly extreme options for patients of such habitats. The application of a foul-tasting nail polish has been known to help patients form the necessary negative association. The benefit of such a simple and comparatively mild method is that it can be used in children, when the habit tends to arise. Other methods, such as snapping an elastic band on the wrist when feeling the urge to bite nails, are also commonly used in older patients.

On the surface, it seems as though aversion therapy can be an effective tool for altering harmful behaviours, in particular when tackling addictive behaviours such as alcohol or smoking. However, this form of therapy does not explore the root cause for the behaviour; it merely intends to adjust it.

It has been argued that the claims of aversion therapy’s effectiveness are often based on studies with small sample sizes, and their apparent success may in fact be owed to adjacent treatments or potential external factors. As a result, this form of treatment has seen a massive reduction in use over recent decades. But the biggest downfall for this kind of therapy was the rise in ethical concerns surrounding its use – and misuse.

The dark side of aversion therapy

Any psychological treatment that seeks to change or alter behaviour has the potential to go beyond the boundaries of what is ethical. Aversion therapy not only has the potential for misuse, it has infamously been used unethically to rid patients of behaviours or ‘illnesses’ deemed to be undesirable.

Throughout its history, aversion therapy has been a controversial form of treatment. A particularly sinister example is its use in conversion therapy. Until 1992, homosexuality was listed on the International Classification of Diseases (ICD-10). Therefore, the prior decades saw many men and women seek treatment to ‘cure’ themselves based on the bogus promises made by conversion therapists. Some were even forced into treatment, including children as young as 13.

The popular method for treating homosexuals during the 1960s and ’70s was electrical aversion therapy. In a similar way to how smokers were treated, patients were often shown images of the same gender in various stages of undress and simultaneously shocked as a misguided attempt to rid them of any homosexual urges or desires. The same style of images was shown of the opposite gender and no shock was delivered, thus suggesting a conversion to heterosexuality. However, unlike aversion therapy for smokers, which often saw shocks administered by a device on the arm, shocks were often delivered to the genitals. This sinister practice was not exclusive to the treatment of sexual orientation, but also expanded to other behaviours deemed to be socially immoral at the time.

There is no scientific evidence that aversion therapy can change a person’s sexual orientation. Studies have found that such attempts can have negative health impacts – both mental and physical – on those who undergo treatment. Unfortunately, conversion therapy isn’t a practice that can be looked upon solely through a historical lens – it remains legal in many countries around the world.

The issues surrounding the ethics of aversion therapy in medical settings are still being debated today. For example, in March 2020 the United States Food and Drug Administration (FDA) made a pivotal decision to ban the use of electrical stimulation

devices (ESDs) for the treatment of self-injurious or aggressive behaviour. These devices use electrodes applied to the skin to deliver shocks to patients displaying these types of behaviours. There was, however, only one US facility using ESDs at the time of the ban: the Judge Rotenberg Educational Center in Massachusetts, whose use of ESDs was condemned as a form of torture by the UN.

Research has shown that not only do these methods of treatment have the potential to worsen behaviours, but they also negatively impact the patient’s mental and physical health. Problems can range from an increased risk of depression and anxiety, to burns or tissue damage. The controversial use of these devices has also been heavily linked to their ill effects on patients with intellectual or developmental disabilities. For example, conditions such as autism prevent patients from making the association between the negative behaviour and the stimulus of the shock, rendering the treatment ineffective.

CHANGING CRIMINAL MINDS

In Stanley Kubrick’s dystopian classic *A Clockwork Orange*, audiences saw a violent killer undergo tortuous aversion therapy to eliminate his murderous feelings and modify his behaviour. In reality, the use of aversion therapy to treat the behaviour of criminals has not proved particularly effective. Several studies from the 1960s explored the use of aversion therapy to treat certain criminal behaviours, often related to sexual deviants such as paedophiles and sex offenders. However, a 1999 review of various studies conducted between 1970 and 1998 found that the success rates of such treatments were questionable – the researchers found that there was only a 30% reduction in reoffending amongst sex offenders over seven years.

THE IMPACT OF Prison

The criminal justice system is designed to punish, but how does this environment of extreme discipline affect the mental health of those inside?

WORDS AILSA HARVEY

Prison life isn't designed to be an easy ride. From the initial lifestyle shock on the first day of a sentence, to the struggles of readjusting to 'normal' life outside of prison, the consequences of committing a crime can take their toll on a person's mental wellbeing. How can losing the right to liberty also oppress the mind? And what happens when a place designed to deter crime becomes a comforting place to be?

Two timelines have an impact on the psychology of someone in prison. First, there is the timeline followed on a daily basis, which includes repetitive tasks,

limited control and the constant threat of violent outbreaks that makes relaxation almost impossible. The second timeline holds the events of the outside world. While in prison, some inmates are completely oblivious to major global events that take place beyond the prison walls. This timeline might still be moving, but is not being followed. When finally released from prison, significant changes can make people feel out of touch with the world, adding more confusion to their new life.

An overwhelming environment

The most immediate change in a prisoner's mood comes from being placed in an unfamiliar, and extremely limited, new home. Generally, people like to fill rooms in their homes with objects, colours and gadgets that make them happy. Simply choosing the layout of our living rooms, bedrooms and other areas of our houses can have a positive impact on our mental health and quality of life. Psychologists have found that creating a clean, spacious and uncluttered living area increases our brain's ability to process information. Meanwhile, spending extended periods of time in messy and crowded rooms increases the volume of the stress hormone, cortisol, that is released into our bodies. Outside of prison, we are able to change the conditions of our rooms quickly, but confined to a cell, prisoners can't adapt their surroundings to suit their mental health. Just like animals in the wild, humans have evolved to be relatively territorial. We need a space to call our own, and this is something that prisoners are deprived of.

Solitary confinement heightens the psychological detriment of imprisonment to extreme levels. This form of punishment is used to completely isolate a prisoner in a small cell, with no contact with the rest of the prison. When minimal contact with others is replaced by zero contact, the impact on the brain accelerates. Studies show that chronic isolation of this form can actually cause the hippocampus to shrink. This is the area of the brain responsible for memory, learning and spatial awareness. At the same time that the brain is losing its ability to carry out these roles effectively, the amygdala becomes overactive. Located at the back of the brain, the amygdala attaches emotions to memories. When this becomes overactive, fear and anxiety can become constant. For those in solitary confinement, with nobody to talk to about these feelings, and no form of interaction to rebuild the brain's ability to function, the situation can become incredibly overwhelming.

Losing liberties

How do you prepare for months, years or even a lifetime of being locked up? Generally, we are so used to being able to go wherever we want, whenever we want. One of the biggest changes to lifestyles while in prison is the lack of choice and control, and being trapped in a cell is just the first of a long list of withdrawn rights. Masha Bennett is a psychotherapist, who has spent time working in prison and observing the psychological effects of life inside. "Most prisoners struggle with their mental health in one shape or the other," she says. "It's not normal for people to be locked in a cell and not have any control over their being. When you have to ask for toilet paper, it's not okay for most human beings."

The majority of the prisoners that Masha worked with also had prior trauma in their lives before prison. Pre-existing mental health issues are a primary cause of their crime being committed in the first place. Those who have had a particularly traumatic experience in their past are some of the most vulnerable in prison, and Masha thinks that the limitations that come with serving time only exacerbate this trauma.

"Things like bullying, a lack of fresh air and boredom have a detrimental effect," according to Masha. "All the things [prisoners] need as human beings; a sense of connection, a sense of being useful somehow, a sense of being in control and some of the basic things we need to feel safe. They are the sort of things that are taken away from you."

One of the reasons that people are placed into prison in the first place is to keep the general public safe from those committing crimes. In some prisons, an extremely diverse mix of offenders interact with each other in one area. It can seem that while safety outside prisons is given high priority, the physical and mental wellbeing of prisoners is less monitored.

The strain on staff

Adding to the prison population, prison guards and other workers are expected to keep an element of control in the vicinity. As well as mental health issues being prevalent in those being punished by prison, daily work in this environment can adversely affect the staff.

> "ONE OF THE BIGGEST CHANGES IS THE LACK OF CONTROL"

"There's no doubt that the staff suffer trauma," Masha explains. "They suffer direct trauma by being attacked by the prisoners, for example, or witnessing self-harm or suicide attempts. They directly witness really horrible things happening. Also, there are staff that do talk to prisoners, and they are caring and they do try to help. Those who are empathic are very susceptible to vicarious traumatisation."

Vicarious trauma is essentially second-hand trauma. Without having to experience the hardship themselves, those who work closely with troubled prisoners can adopt some of their trauma. As they hear horrific tales of past events, or even witness them taking place in cells and busy wings, prison employees sometimes feel as though they are living through the lives of »

inmates. To truly understand the feelings of another human being involves delving deep into every emotion and exploring disturbing events in great detail. This is enough to cause trauma in the listener.

The turnover rate for prison officers can be high, depending on the conditions of each prison. In prisons housing more dangerous individuals, the chaos that erupts when the cell doors are unlocked can instil fear in officers. Younger and less-experienced employees can find it difficult to adjust to working in these environments. For a prison officer to last long-term in these jobs, they need to be respected by the prisoners early on in their role. Those who enter the job as teenagers often find it difficult to establish an air of authority.

> "SOME PRISONERS FINISH THEIR TIME AS DIFFERENT PEOPLE TO THOSE WHO WERE CONVICTED"

There are a range of prison jobs available and, in terms of psychological impact, each comes with a different level of susceptibility. Those who work as risk assessors are responsible for spotting signs of mental distress. For this crucial role in keeping prisoners safe, prison officers need to work extremely closely with the most distressed individuals. The pressure that many feel to intercept a prisoner before they do something to endanger their lives can add immense psychological strain. The number of prison officers in the UK is on the decline, as people step away from their roles. In the space of one year, between 2019 and 2020, the number of prison officers in the UK fell by 700. This marked a 3% decline from the previous year. This ongoing trend in recent years is only adding to the pressure that prison officers face on a daily basis.

In essence, prison officers choose to spend large proportions of their time in a place the majority of people avoid. However, some who work there for extended periods can also find themselves becoming too comfortable inside these walls. Unlike the experiences of the inmates, officers are able to go home and return to normal life in between shifts. By constantly alternating between two contrasting environments, workers need to change the way they interact with others. When at work, they are carrying out a role of power over other humans' lives and privileges. Research shows that experiencing power can reduce activity in a person's prefrontal cortex. This part of the brain helps you to consider other people's feelings. For some prison officers, their position of power makes them less empathetic, impacting relationships at home.

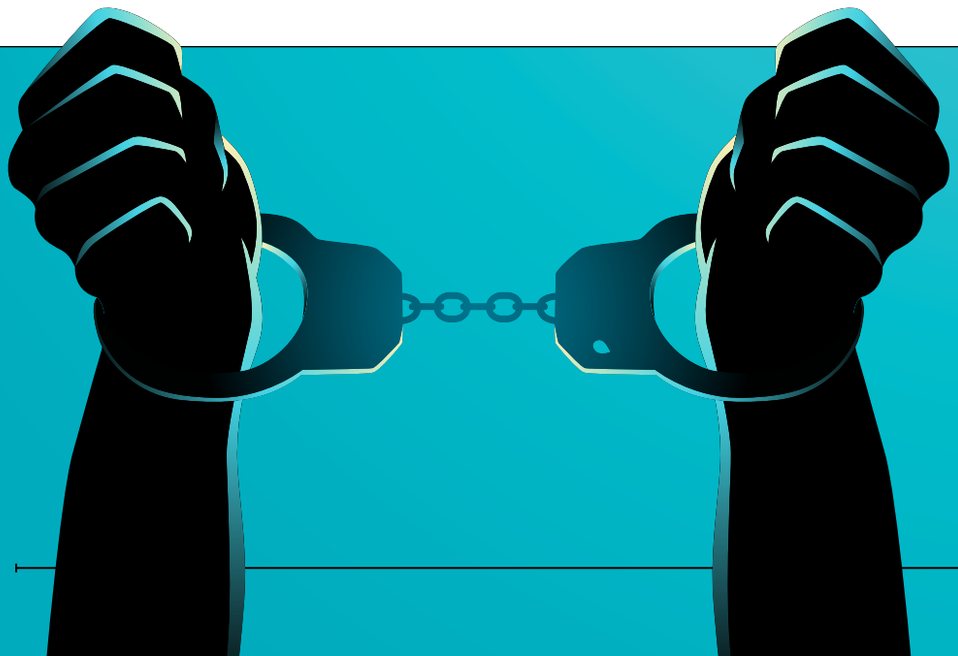
Suppressed personalities

When dismissed after many years of isolation, prisoners will be aware of changes in politics, trends and technology. But they may be less aware of how different they themselves have become. Sometimes, a person leaving prison will have adopted a new personality. When a prisoner fights their surroundings constantly, changing how they react to their environment, they train their brain into always using the same responses. Five of the biggest causes of personality changes in prison are reduced choice, dealing with stigma on a daily basis, living without any privacy, following rigid rules incessantly, and actively hiding any elements of vulnerability, such as strong emotions. Prisoners feel safer hiding any emotions, in order to blend in with those around them and not draw any attention to themselves that might make them a target.

For those who are considered weak by fellow inmates, the trauma of prison bullying can lead to a lifetime of post-traumatic stress. During their time in prison, victims of bullying can suffer from high anxiety, low self-

HOW ARE PRISONERS PERCEIVED?

You might think that the punishment that comes with prison ends when an inmate has served their time. But when returning to their previous lives, many find that they can't simply slot back into the roles they held and the friendships they had formed. The stigma surrounding incarceration often means that former prisoners are treated differently, lose touch with loved ones and have more limited employment prospects. These constant reminders of an individual's links to prison can leave people feeling defined by their past. Some will become used to receiving unfair treatment and actually start to believe that they deserve this treatment. For others, meeting new people comes with increased anxiety. Will their name be googled, ruining their new relationship? Should they reveal their crime from the start? This fear makes some ex-prisoners keep their distance from others, continuing to isolate themselves. Families of prisoners can also be impacted by this stigma, as people judge them for the actions of their relatives.



esteem and chronic insomnia. It's common for cases to go unreported, largely due to shame and fear of worsening the bullying. Commonly, there is an 'inmate code', which includes generally accepted rules among prisoners. Telling an officer about another prisoner breaking the prison rules goes against this code. Instead of stopping any abuse, seeking help can result in an inmate's popularity declining further. The high prisoner-to-officer ratio means that violent bullying can easily go unnoticed, and the victims' toleration of it is driven by their fear.

Becoming institutionalised

It's hard to imagine what it's like to live stripped of freedom. But what might seem even harder to fathom is choosing to be put in this environment. Some prisoners – mainly those who have carried out long sentences in the past – start to find life easier when serving time. As their mindset is forced to adapt to their restricted lives, and they become used to the rules and company surrounding them, it's possible for people to become reliant on the guidance provided by the strict protocol. How do you go about actively finding a job when you're used to having your chores dictated? Why deal with the stigma from those who haven't experienced your lifestyle, when you could go back to living with people in similar situations?

Part of what makes the adjustment so difficult after being released from prison is the fact that the brain has physically changed. As its structure adapts to help the body react to the surroundings, it can remain in this state for long periods, or permanently, after being released. You could argue that some prisoners finish their time as different people to those who were convicted. Cognitive adaptations observed in former prisoners include an increase in impulsivity and decrease in the ability to maintain concentration. This, in turn, lowers people's drive and ambition. It's likely that this is due to the brain not being exposed to cognitive challenges. As their minds become less challenged, they begin to lose the ability to function in the same way.

One of the main goals for prisons is to assist in reform, and one of the best ways to achieve this is to improve the mental impacts of time behind bars. For a person to become properly integrated back into society, ready to live life without committing any more crimes, they need to be in a better mental state than before they went in. Across the world's prisons, awareness of incarceration's impact on mental health is increasing. More employees are being trained to spot signs of psychological distress in these unique facilities and to work with prisoners on a one-to-one basis. By better balancing the physical and mental control of inmates, prisons will be able to carry out their roles more effectively, and the human beings at the heart of them can gain back control over their minds and lives.

Q&A

DAVID BREAKSPEAR

David has spent his life in and out of prison since he was 15 years old. Now 51, he describes himself as a 'former prisoner', who has managed to turn his life around. Looking back on the 15 years he spent detained, he has learned how detrimental prison can be to mental health.

What led you to prison?

I'm not proud of what I've done in my past and in a way I'm not that ashamed of it. The majority of my crimes have been violence. As a youngster, I'd say that they were typical teenage crimes – along the lines of stealing cars and criminal damage. Then a little step more with theft and commercial burglaries. As I got older, with the life that I'd become involved with, violence became second nature really. The majority of my prison sentence, I would suggest, were indications of my mental health more than they were of my stupidity.

How did you react to prison during your first sentence?

I actually liked it when I was younger. I was there for three months, but after three weeks I got used to it. The discipline side, and the structure, was something that I didn't have »

in my life. So, I became institutionalised from a very young age.

How did you get to a point where you were more comfortable in prison?
In society I lost absolutely everything. I was on the streets. I was addicted to drugs and in the wrong crowd. I'm not blaming other people – I take responsibility for my own actions, but I found myself at rock bottom. I attempted to get help in the community, but I couldn't access the help that I required. Prison was the only place I knew, so I committed a crime that would take me back to prison for a long enough period of time where I could finally fix myself.

How did you cope with the confinement of prison?
You might see the walls as keeping people in, but I see it as keeping people out. It's not a feeling I have now, but when I was in prison, it fitted my personality and my disorders for me to be away from society. One of my tag lines is 'freedom is a state of mind', and it is. If you do prison in your head, the likelihood is, it's going to grab you and it's going to suck you in and suck you down and the only way that you can deal with that is becoming institutionalised and riding with it. Or, you fight against it and you find that a five-year sentence turns into 15, into 20. Even metaphorically, if not physically. A five-year sentence in your mind, because you're fighting every day, turns into double. The other option is to think, 'Okay, this is where I am. What do I need to do to turn my life around?' Unfortunately when people do that, the prison system isn't really set up for it, and you have to do it yourself. You have to have been an experienced prisoner to know what it is you need to do in order to turn your life around to stop going back to prison.

Why do you think so many people in prison turn to drugs?
Most people wouldn't want to do drugs, but it's like having a night out. Prison's not a nice place, it's a constant stress. Prison keeps you on your guard at all times that [cell] door's open. Even if it's not and you're in a two-man cell, four-man cell or dormitory, it doesn't take much for something to go wrong. You can say the wrong thing and you've got a landing kicking off, so that's quite a stressful place to be. If you've got the opportunity to take a night out, people do, regardless of the consequences.

Do you think society's views of prison impact prisoners' mental health?
One guy I used to speak to was serving seven or eight weeks and it was his first time in prison for non-payment of council tax. He was released on tag and the day he got out he threw himself in front of a train, because he couldn't handle the shame of prison – even in that short period of time. That's the kind of effect it can have on you. It's immediate. You could go in there with the strongest mind possible, and within months, depending on what goes on in your wing, you can be sitting in the corner dribbling – it's that quick.

Is there any help in prison for those struggling mentally?
I trained for the 'Listener scheme', to listen to other prisoners' problems and try to help. It's about providing an opportunity for individuals in prison to speak to someone that, hopefully, they have respect for. I saw how important it is being able to have a one-to-one with somebody who isn't going to judge you and understands the position that you're coming from. It can be an incredible privilege to be able to help and it makes you a better person as well. It gives you more tolerance, empathy and understanding. It makes you judge less and gives you an understanding that until you've walked in someone's shoes, you can't really understand the life it is that they lead and the reasons they do what they do.

> "WITHIN MONTHS, YOU CAN BE SITTING IN THE CORNER DRIBBLING"

One of the biggest things in prison is frustration, and frustration can be released by different individuals in different ways. In a way I used [the training] to listen to myself, apart from one night in January 2009. That was the one time that I just couldn't do it anymore. I attempted to take my own life. There had been a lot going on, I had lost my job, two guys who I was working with as a Listener had killed themselves and I had a break-up in a relationship. It was over Christmas and New Year so it was quite a stressful period anyway. I just snapped and felt as if everyone would be better off without me, I was useless and a waste of space. Ironically, my neighbour was the one who was concerned because I hadn't spoken to him all night, and had rung his bell. If he didn't have the Listener training, would he have done that? Would he have had that compassion to have got on the bell? Probably not.

How did you get the help you needed and remove yourself from prison?
During my sentence I decided to get help with my mental health. I decided to knock the medication on the head and I found other ways of coping with my own inner feelings and thoughts. I embarked on a course with the Prison Phoenix Trust in yoga and meditation and I also looked at something called neuro-linguistic programming, which makes you take an outside view of things. I did that, combined with help from some fantastic workers from the mental health team at Norwich Prison – I say 'workers', not 'members of staff' because, with mental health in prison, it really does come down to the care of the person that you're seeing. This is the longest I've been out [of prison], and I've got a lot going for myself. I'm in the position now where I can actually let people down.

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FUTURE

LET THE TREES Treat You

From boosting mood to immunity, forest bathing is fantastic for improving our wellbeing. Grab your coat, get outside and enjoy the wonders of woodland

WORDS SARA NIVEN

We know fresh air is good for us and natural surroundings are an obvious choice for getting that, but while the coast can be calming, it is a well-established fact that wooded areas and forests are the most powerful places when it comes to restorative effects.

The idea of forest bathing, or Shinrin-yoku as it is known in Japan, where the idea first originated in the 1980s, has become increasingly popular and is supported by professionals in both medical and psychological fields.

"With over half the world's population now living in urban areas, we have become more removed from nature, but numerous studies show the mental health benefits of reconnecting, specifically by immersing yourself in a forest or woodland atmosphere," confirms Professor Stephen Palmer, founder director of both the International Centre for Ecopsychology and also the Centre for Stress Management. "Overall, forest bathing induces relaxation and enhances wellbeing while research has found specific reductions in levels of anxiety, depression, stress and even selfishness."

Come to your senses

To get the most from an experience and truly 'bathe', Professor Palmer explains that you should use all your senses – sight, smell, touch, hearing and, if safe to do so, taste. (The latter should only ever be undertaken with expert, professional guidance if tasting plants.)

To prevent distractions if walking with your friends and family, he advises staying a safe distance apart and avoiding conversation. Give each other plenty of space and it is best to turn your mobile phone off too. Then try these suggestions:

Walk slowly through the forest or wood, avoiding rushing. Listen to the sound of your footsteps. Take the opportunity to stop and look all around you. If you go at different times of the day, you will notice changes in the light. Your experience will also vary depending on the seasons.

On your next forest bathing session, when you stop, listen to the birdsong. Focus on a particular bird. Look up at the tree canopy.

On your following trip, you may wish to take a rug with you for this exercise. In the forest, assuming that it is safe to do so, find a flat area where you can lay down and gaze upwards. Look at the leaves. Notice the different shades of green. You may notice that you have started to relax. If so, slowly breathe in and out and taste the freshness of the air. Become aware of the natural wood fragrance found in forests.

On another occasion, softly touch a tree with your fingers, then with the palm of your hand. Reflect on what you notice. Smell the bark of the tree. Appreciate the time it has taken the tree to grow.

Forest bathing benefits

Forest bathing can boost your mood. It's been shown to help reduce negative emotions such as anger and fear, while increasing feelings of happiness and general wellbeing. Inje University in Seoul, South Korea, carried out a study of patients with major depressive disorder, treating some in a forest environment and others in hospital. Results showed that the four-week forest programme improved the patients' depressive symptoms and generated remission in patients taking medication for at least three months.

Incredibly, the physical benefits of forest bathing don't stop there. It can also improve your immune system and reduce levels of stress-related hormones such as cortisol and adrenaline. Western studies have tended to focus on the visual and, to a secondary extent, the auditory impact of forest environments. However, Shinrin-yoku also places an emphasis on smell. Dr Qing Li, a leading forest bathing expert, immunologist and author of *Into The Forest: How Trees Can Help You Find Health And Happiness*, reports that when people walk through a forest, they inhale organic compounds called phytoncides. These compounds actively boost our immune system and have even been studied for anti-cancer properties.

Forest bathing has also been known to make us kinder to ourselves, and others. Recent research by Yasuhiro Kotera and Dean Fido reported an increase in self-compassion, common humanity and mindfulness in students who participated in a three-day Shinrin-yoku retreat in Fukushima.

Other field studies have confirmed that time spent in nature improves our connection with others. Research by the University of Illinois revealed that residents in city public housing who were surrounded by greenery felt a stronger bond with neighbours than tenants in buildings without trees, and they also felt safer and better adjusted to their environment. There was a reduced risk of street crime and lower levels of aggression between domestic partners. The residents with trees reported using "more constructive, less violent ways of dealing with conflicts."

So what are you waiting for? Head for the forest! Your body and mind will thank you.

BRING THE OUTDOORS IN

Even when indoors, you can still experience some of the benefits that forest bathing and nature provide. A study in the *Journal of Physiological Anthropology* shows that simply touching and smelling indoor plants can lower stress levels, while a US study of patients recovering after surgery found that those staying in rooms overlooking trees were able to leave hospital sooner than those with views of a brick wall.

Berlin-based artist Libby Page specialises in large-scale paintings of trees, including forest scenes and canopies, and says clients often tell her they notice their mood improves after hanging her art.

"I choose to paint trees and woodland scenes because I personally find them very relaxing and am aware of research showing that even looking at pictures of them can be beneficial," she says. "I like to think my pictures bring some of the benefits of forest bathing into people's homes."

"FOREST BATHING INDUCES RELAXATION AND ENHANCES WELLBEING"

REVENGE SWEET OR SOUR?

Revenge is one of the deepest and oldest human emotions. Researchers are beginning to understand its pull

WORDS EDOARDO ALBERT

Revenge, they say, is sweet. It is also a dish best served cold. The metaphors that underlie our personal and cultural understanding of revenge are basic and intrinsic: everyone knows the sudden thrilled delight of sweetness upon the tongue, and the desire and the act of revenge are just as visceral. Anyone who's had to monitor a playground of six-year-old children will have seen – and tried to stop! – the human desire for revenge. "He hit me first!" "She was mean to me!" Revenge is the theme and driver of many of the most enduring stories we tell ourselves, from *The Iliad* to *Gladiator*, and its justification or restraint lies near the centre of many of the most profound religious and ethical systems. Revenge is humanity's message to itself. But what is it telling us?

What is revenge?

According to the dictionaries, revenge is the desire and act of harming someone who has harmed you, whether directly – by hitting you, for instance – or indirectly by harming someone you care for. So revenge is both a feeling and an action, or, to put it in more psychological terms, it is an emotion and a behaviour. This distinguishes it from its close relatives, anger and aggression, since the first is an emotion that may be expressed in behaviour and the latter is behaviour that might be caused by emotion. Revenge is both. Nor is revenge the same as punishment, as the hurt dealt out in punishment seeks to change the punished, to make them act better in future, while revenge seeks to hurt the other person as its final end. The hurt done is payback for the hurt received. Some researchers would go further and argue that genuine revenge requires the revenger to be willing to accept risk or even harm to themselves in order to gain their revenge. The classic example of this in literature is the play *Medea* by Euripides, in which the spurned Queen Medea plots dreadful revenge upon her unfaithful husband, Jason, first poisoning his new bride and then murdering the children she had born to him, sacrificing them upon her rage for revenge. Unusually, in ancient Greek drama, Medea is not punished for these acts but escapes to Athens, leaving Jason to contemplate the ruin of his hopes and the destruction of his ambitions. Within the structure of the play, Medea's actions are sanctioned, for she makes her exit riding upon the chariot of the sun god, Helios, indicating that divine favour remains upon her. Indeed, she is all but divine herself. Revenge, Euripides seems to be saying, is sanctioned by the gods.

The gods will not be mocked

Nothing is so fundamental as a culture's religion. Indeed, it is religions that give birth to civilisations rather than the other way round. The reason for this, according to Donella Meadows, who first identified the 12 leverage points for system and societal change, is that only religion has the power to transcend and change the paradigms of a whole culture, thus transforming everything else within it. In ancient, polytheistic cultures, revenge was often practised by the gods – indeed, classical antiquity is full of tales of slighted gods exacting revenge upon unfortunate mortals. Pity Actaeon, the poor hunter who accidentally saw Artemis bathing in a spring. In revenge for her shame at having been seen naked by a mortal man, the virgin huntress turned Actaeon into a stag, and his hunting dogs – no longer recognising their master – tore him apart.

Ancient Greece was a shame-based culture. That is, one where the main method of social control was the cultivation of feelings of shame with the consequent threat of social ostracism. In a shame-based society, everyone knows where they fit in, and self-respect is cultivated and maintained by doing what is expected according to societal norms. Almost all ancient cultures and most non-Western cultures

today use shame as their main driver of social conformity. The exceptions are those cultures based upon or deriving from Judaism and Christianity. These are guilt-based societies, where social control is mainly maintained by inculcating feelings of guilt in individuals if they go against their internally validated conscience. True guilt-based societies rely upon the transgressor themself of wrongdoing, irrespective of whether anyone else knows. In a thoroughgoing shame-based society, if no one knows what has happened, then no shame has occurred and there is no problem.

Both types of societies derive their systems from their religions. With respect to the psychology of revenge, numerous cross-cultural studies have shown that different emotions and incidents drive feelings and acts of revenge in these societies, based upon whether individuals react with shame or guilt. In Western, more individualistic societies, the typical emotional driver for revenge is anger: the person feels that they have been injured in some way and wants restitution. But in more collectivist, shame-based societies, such as in the Middle and Far East, it is feelings of shame that spur someone to take revenge. What is more, while in guilt-based societies the injury requiring vengeance has to affect the person directly, in shame-based societies an action that shames other members of the group – typically the extended family – can produce feelings of shame sufficient to trigger acts of revenge. Therefore, it is important when considering the psychology of revenge to relate it to the wider society in which it takes place.

The social function of revenge

In the Torah of the Bible, in the Book of Leviticus, God states, 'Anyone who injures their neighbour is to be injured in the same manner: fracture for fracture, eye for eye, tooth for tooth. The one who has inflicted the injury must suffer the same injury'. It reads as the very definition of revenge. But we must remember the context in which this law was promulgated: the Jews lived in an unstable world of capricious kings and warlords where there »

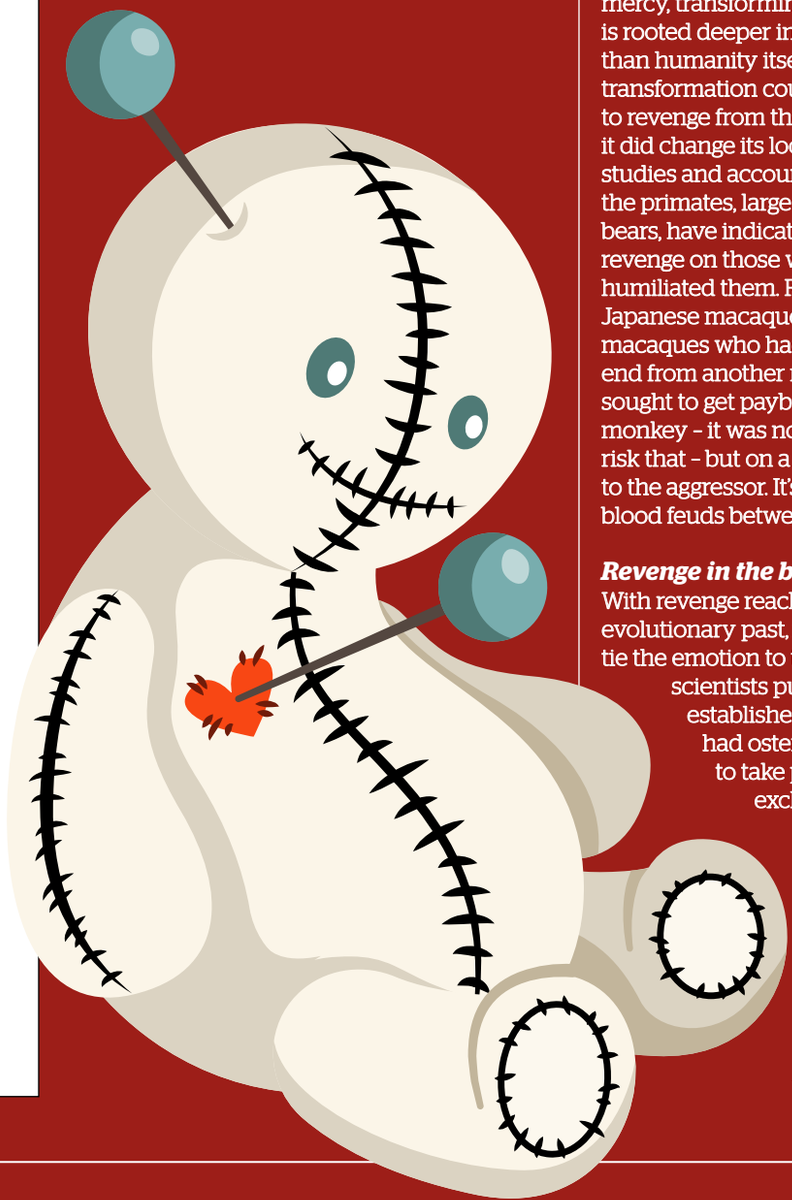
> "DIFFERENT EMOTIONS DRIVE ACTS OF REVENGE BASED UPON WHETHER INDIVIDUALS REACT WITH SHAME OR GUILT"

> "REVENGE IS ROOTED DEEPER IN THE HUMAN CONDITION THAN HUMANITY ITSELF"

REVENGE FOR THE GANDER, NOT THE GOOSE

There appears to be a sex difference in revenge. In an experiment reported in *Nature*, the researchers studied the brain responses of male and female subjects to vengeance visited upon fair and unfair players in one of the economic games beloved of social psychologists. Using functional magnetic resonance, they scanned the brains of the subjects when their opponents, who were actually experimental stooges, were subjected to punishments for having lost the game. Both men and women showed activity in the empathic centres of the brain when opponents who had played fairly and lost were punished. But when players who had cheated were punished, while the women's brains continued to light up in the empathic areas, this reaction reduced significantly among the men. It appears that men are more emotionally willing to see punishment visited upon people they regard as cheats than women.

was no rule of law and the strong put down the weak. In such a world, the development of tight-knit clans and groups who were willing – and known – to strike back against anyone harming one of their own was pretty well a necessity to ensure some level of protection from human predators. The same remains true today in cultures, such as gangs and the Mafia, that function outside the law: a Mafia capo would not last long if he was known to turn the other cheek when rivals impinged upon his turf. In a lawless society, or one where institutions are weak and corrupt, having the reputation for wreaking revenge may help to ensure that one is left alone, whereas people who are seen as weak will be targeted. With the development of settled societies, humanity began to live in larger and larger towns and cities. Having a group of people – normally blood kin but they could be the members of organisations ranging from gangs and craft fellowships to religious congregations and the military – meant that anyone attacking you would know that they were attacking everyone associated with you too. The blood feuds notorious in such societies nevertheless served the function of diminishing overall levels of violence.



The deep roots of revenge

"You have heard that it was said, 'An eye for an eye and a tooth for a tooth'. But I say to you, do not resist an evildoer. But if anyone strikes you on the right cheek, turn the other also." In a world where retribution and revenge were one's shields, these words detonated like a slow-motion avalanche. The world of antiquity despised weakness: the defeated were enslaved, the weakling baby left exposed to die by the roadside. The words of a Jewish carpenter slowly percolated through this world without mercy, transforming the culture. But revenge is rooted deeper in the human condition than humanity itself. Even civilisational transformation could not remove the impulse to revenge from the human heart, although it did change its locus and its drivers. Many studies and accounts of animals, including the primates, large felines, elephants and bears, have indicated that animals exact revenge on those who have harmed or humiliated them. For instance, in a study of Japanese macaques, researchers found that macaques who had been on the receiving end from another member of the troupe sought to get payback not on the original monkey – it was normally too high status to risk that – but on a macaque closely related to the aggressor. It's not that far from this to blood feuds between rival human families.

Revenge in the brain

With revenge reaching so far back into our evolutionary past, researchers set out to tie the emotion to the brain. In 2004, Swiss scientists published a paper that established just that. The subjects had ostensibly been recruited to take part in an economic exchange game, only to find that some of the participants had cheated and kept the whole pot for themselves. Some of the subjects were then told that they would be able to punish these cheaters and, for a minute, while they contemplated the

idea of revenge and what it should consist of, the researchers scanned their brains. Unknown to the experimental subjects, this was the true point of the experiment. In those participants who were told they could have their revenge, the brain scans revealed a rush of activity in a region called the caudate nucleus, a deep and very ancient part of the brain that becomes active when receiving or contemplating rewards (the caudate nucleus gets very excited in smokers and addicts when they are about to light up or sniff a line of cocaine). So, the old saw that revenge is sweet is borne out by the biochemistry of the brain: contemplating the retribution to be visited on malefactors gives as much of a rush as an addict setting up his next hit. It is a natural brain drug.

So it would seem that the old idea – that revenge is cathartic – has been borne out by the research. According to that notion, the festering emotional wound caused by dwelling on the injury that one has received from another will be relieved once vengeance has been visited upon the person who hurt you. Vengeance, by rebalancing the scales of fairness and justice, allows for the cathartic release of all the rage and frustration caused by the original act. Payback. Or is it? Further research has shown that the expected catharsis of revenge may prove more illusory than real.

The revenge illusion

People expect to feel better if they have the chance to have their revenge on someone who has hurt them. The brains of the subjects in the Swiss experiment lit up with pleasure as they contemplated payback. But what happens when people actually do get the chance to act out their ideas of revenge? It's a challenge to test this experimentally while getting the experimental design past an ethics' committee, but social psychologist Kevin Carlsmith devised an experiment that could do just this. Gathering a group of subjects, Carlsmith told them that they were working on an investment project where they would all profit by investing equally but, if somebody in the group did not invest – which he or she could do in secret – then that person would profit disproportionately at the expense of the rest of the group. Carlsmith had placed an incognito experimenter within each group who convinced everyone to invest, but then the plant – Carlsmith called them the 'free riders' – pulled their own investment, earning $5.59 on average while the honest investors received $2.51. Note that the other investors still received a return on their investment, but they naturally all felt that they had been tricked and been made fools of by the free riders. Then Carlsmith offered some of the groups the chance to »

JUSTICE MUST BE SEEN TO BE DONE

In 1923, a Mr McCarthy, riding a motorcycle, collided with a motorcycle and sidecar ridden by a Mr Whitworth and his wife. Mr and Mrs Whitworth were injured in the crash and the police brought charges of dangerous driving against Mr McCarthy, while Mr Whitworth also engaged a firm of solicitors to pursue a civil claim for damages against McCarthy. The police case came to court and McCarthy was found guilty, but unknown to McCarthy and his solicitor was the fact that the clerk to the court was part of the firm of solicitors pursuing the civil case against McCarthy. Learning of this, McCarthy's solicitor moved that the conviction be quashed. The case was heard by the Lord Chief Justice, Gordon Hewart, who accepted in his judgement that the clerk to the court had made no attempt to influence the judgement and that the magistrates had reached their judgement without influence and impartially. However, in a judgement that follows from principles of natural justice and has had ramifications in law ever since, the Lord Chief Justice quashed the verdict, saying, "A long line of cases shows that it is not merely of some importance but is of fundamental importance that justice should not only be done, but should manifestly and undoubtedly be seen to be done."

> "REVENGE DOES NOT ACTUALLY BRING THE CLOSURE THAT PEOPLE EXPECT"

get payback: by paying a small fee they could reduce the free riders' profits, while the other groups were simply told what had happened but with no possibility of revenge or restitution. Such was the annoyance at what had happened that all the groups that were given the chance to get back at the free riders took the opportunity. Once all that was done, Carlsmith surveyed the feelings of both groups, the punishers and the non-punishers. He also asked the punishers to state what they thought their feelings would have been if they had not had the chance to exact revenge, and he asked the non-punishers what they predicted their feelings would have been if they had had the chance to get back at the free riders. The result was that the punishers felt significantly worse than the non-punishers, even though they had had the chance to get back at the free riders. But when the punishers were asked to predict how they would have felt without the chance for revenge, they predicted they would have felt even worse than they did, while the non-punishers, when asked to predict their feelings if they had had the chance for revenge, thought they would have then felt better. So the punishers felt worse than the non-punishers and thought they would have felt even worse without the chance for revenge, while the non-punishers actually felt better than the punishers but thought they would have felt better if they had had the chance for revenge, although the experiment showed clearly that this was not the case.

The results were fascinating. So while contemplating revenge produces pleasure in the brain, the act of revenge actually leaves people feeling worse than if they had no possibility of getting back at the person who hurt them – even though people expect that the opposite will occur. Why should this be so? The answer lies in an essay, *Of Revenge*, published by the English philosopher Francis Bacon in 1597, in which he wrote, "This is certain, that a man that studieth revenge, keeps his own wounds green, which otherwise would heal, and do well." Kevin Carlsmith, in the conclusion to his experiment, wrote that even having had their revenge, the punishers continued to think about the injury they had suffered, while those in the non-punishing groups were able to minimise the hurt done to them and move on.

Vengeance must be seen and understood

So while revenge does not actually bring the closure that people expect, they still pursue it. Social psychologist Mario Gollwitzer set out to study it further, conducting an elegant series of experiments to test his hypothesis that revenge will work, emotionally, if the person getting revenge sees that the person who hurt them knows and understands why this is all happening; having the culprit simply suffer without knowing or understanding why they are suffering does not produce emotional satisfaction for the person carrying out the revenge. To study this, Gollwitzer assigned people into pairs to solve anagrams, with each correct solution earning a raffle ticket for a $25 gift voucher. Unbeknown to the subjects, the other half of their pair, who was in another room, was actually part of the experiment. Having solved as many anagrams as possible in the time, the subjects were asked to split the earned raffle tickets between themselves and their unseen partner. Most people chose to split the tickets equally. But then they learned that their unseen partners had assigned almost all the tickets to themselves. The subjects were then given the chance to adjust the number of tickets for their partner. The majority, 60%, chose to reduce the number of tickets given to their partner as much as possible so that he wound up with many fewer tickets than the original equal share. The subjects had taken revenge for their partners' cheating. So far, so standard. But then Gollwitzer allowed his subjects to write a short note to their partner to explain the reason for their action. Most of those who wrote a note made reference to their partners' cheating and explained that they were reaping what they had sown. Finally, Gollwitzer had one of two responding notes given to the avenger. One said that the cheating partner understood now what they had done and accepted that they deserved it, while the other expressed incomprehension and indignation as to why they had been singled out in this way. Finally, Gollwitzer tested the participants to see how satisfied they were with the outcome. Those who had received a note saying that the cheater accepted that they had done wrong and the justice of the revenge were far more satisfied than those who received a note saying that the cheater did not accept any wrongdoing – even though the outcome, in terms of the punishment, was the same in both cases. For revenge to be emotionally satisfying and cathartic, it

seems that the avenger must see that the offender has accepted and repented from his wrongdoing. Revenge is a message as well as an action and, for the avenger, the message is as important as the action. It's clear that this is a principle that sits deep in the human heart. It has also been accepted into law, in the 1923 judgement of Lord Hewart that "It is not merely of some importance but is of fundamental importance that justice should not only be done, but should manifestly and undoubtedly be seen to be done," a maxim that has been shortened to the more common form, "Not only must justice be done, it must also be seen to be done."

Justice and revenge

The deep desire for justice lies under our justifications for revenge. The problem is that people's idea of justice varies – and tends to favour one's own view of justice and justification. When researchers led by Arlene Stillwell interviewed people who had both acted out their own revenge and been the victims of revengeful actions themselves, they invariably rated their own revenge as fair and proportionate whereas the revenge actions of other people upon them was characterised as being excessive and disproportionate. Such perceptions are the roots of the murderous spirals of action and retaliation that have disfigured so much human history, from the Punic Wars to World War I and II. Revenge is the deep human desire for true justice, but as human beings we are unable to dispense that justice. It is one of the great mysteries of our existence, but nevertheless all the research suggests that it is the truth: revenge, harboured and taken, is visited upon the avenger as much as upon the offender. The cycle must be broken and there appears to be only one way of truly doing this. To quote the Bible once more: "You have heard that it was said, 'Love your neighbour' and 'Hate your enemy.' But I tell you, love your enemies."

THE TIGER'S REVENGE

In 1997, Vladimir Markov, a Russian living in the thinly populated Primorye Territory in the far east of Russia, tracked a Siberian tiger in the sights of his gun. Markov was poor and one of the few ways of earning good money was killing a tiger. Even though Siberian tigers were protected by law, there was a huge market for tiger body parts in China, just over the border. But when he squeezed the trigger, the bullet missed its intended mark, wounding the tiger but not killing it. The animal bounded away from its kill, disappearing into the endless forest. But Markov was so poor that, having missed the tiger, he took his knife out and butchered some cuts of meat from the tiger's kill; at least he would have meat to eat during the long winter. The tiger, however, was waiting, watching, deep in the forest. As Markov made his way back to his cabin, the tiger followed, tracking him until Markov disappeared into his log cabin. In the summer, Markov harvested honey from his beehives but in the winter the bees slept, safe from the Siberian winter. Outside, the tiger waited for hours. It moved around Markov's cabin, searching out anything with Markov's scent on it and destroying it. Then, when Markov finally re-emerged from his cabin, the tiger exploded from its hiding place. It caught Markov. It killed him. It dragged him away and ate him, only leaving behind an arm and Markov's head. Markov had hurt the tiger and stolen its kill. The tiger had waited, stalked its man, and then taken its bloody revenge.

THAT SMELLS Familiar

Why do certain scents take you straight back to the past?

WORDS LAURA MEARS

The nose can pick up thousands of different chemical signals, enabling us to detect millions of different smells. Some of those scents trigger powerful memories, and it's all down to the wiring in our brains.

Incoming signals from the nose arrive at the olfactory bulbs before travelling on to the pyriform cortex. This part of the brain acts as a gateway, making connections to several other brain regions. There's the orbitofrontal cortex, involved in decision-making; the amygdala, the brain's emotional centre; the hypothalamus, which links the nervous and hormonal systems together; the insula, involved in consciousness; the entorhinal cortex, involved in memory and navigation; and the hippocampus, the master of long-term memory storage.

These connections help us to learn where smells come from and what they mean. Then, if we encounter the same smell again, we'll instantly know how to respond. For example, the brain's threat detection centre, the amygdala, lights up when we smell something that is unpleasant.

Smells can also trigger long-forgotten memories, often in vivid and emotional detail. These reach back into early childhood, and studies in rats suggest that they form during early development. Strong odour-linked memories may help animals to survive before their other senses are fully developed – as their eyes and ears improve, the need to remember smells becomes less important. Sensing the same scents again in adulthood can bring forgotten memories flooding back.

From nose to brain

Our sense of smell is wired into the memory and emotion centres of the brain:

Pyriform cortex
The pyriform cortex send signals out into parts of the brain involved in emotion and memory.

Amygdala
This part of the brain handles fear and emotion.

Cilia
Hair-like structures on the inside of the nose detect different chemical signals.

Receptor cell
When signals hit the cells they trigger nerve impulses that travel towards the olfactory bulb.

Olfactory bulb
Signals from different smells converge here before moving on to the pyriform cortex.

Hippocampus
This part of the brain sets up long-term memory storage.

> "SMELLS CAN TRIGGER LONG-FORGOTTEN MEMORIES, OFTEN IN VIVID AND EMOTIONAL DETAIL"

MEMORY BOOST

The link between smell and memory has got scientists wondering whether we can use scents to improve our capacity to remember. Researchers at Northumbria University conducted studies to find out what happens to our brains when we sense powerful smells. In one study, they asked 180 volunteers to drink chamomile tea, peppermint tea or plain hot water. Then they tested their mood and brain function. Compared to water, chamomile tea made volunteers less attentive, while peppermint tea improved their alertness.

In a separate study, 150 volunteers went into rooms that smelled of rosemary, lavender or nothing, and they were asked to complete a task at a particular time. Rosemary improved memory, but lavender made it worse, although the volunteers did feel calmer.

HOW Optical ILLUSIONS WORK

Why do our eyes play tricks on our brain?

WORDS AILSA HARVEY

Some people say that seeing is believing. We expect what we see to exist. When we look at what's in front of our eyes, each scene comes with masses of information. What do the shapes mean and how do they connect? To make sense of the world around us, we rely on our eyes to provide our brains with accurate visual information – but sometimes our eyes can deceive us.

Optical illusions make you see things that aren't physically there, give motion to shapes that are static and can even make something impossible seem real. Split into three main categories – literal, physiological and cognitive – each has a distinctive way of producing these mystical marvels. Not merely entertaining out-of-the-ordinary spectacles, visual illusions provide insight into the vital science behind eye-brain interactions.

For many of these visual wonders, you need to approach them with some existing knowledge. Take the title of this article as an example. You would have known immediately that you were reading about optical illusions. But how? Illusions can be incorporated into text as well as images. To someone unfamiliar with the shape of letters or the English alphabet, these blocks and shapes would hold no other meaning. For your brain to receive the information, it analysed the shapes and compared them to the knowledge stored in your memory, reading the shapes as letters. Focusing your attention solely on the blocks themselves would leave you with a meaningless pattern. The following illusions will put your eyes and brain to the test. What will your brain be able to comprehend and how will your eyes throw it off track?

> "VISUAL ILLUSIONS PROVIDE INSIGHT INTO THE VITAL SCIENCE BEHIND EYE-BRAIN INTERACTIONS"

LITERAL OPTICAL ILLUSIONS

These creations have more than one reality

How your brain is tricked

When you look at this work of art, you will notice a person. But what does that person look like? Entitled 'My Wife and my Mother-in-Law', this drawing by American cartoonist William Ely Hill captures both the characters in its title at once. Depending on which section your eyes examine first, you will either be drawn to the young or old woman.

Some psychologists have concluded that if you are younger you are more likely to notice the young woman first, while if you are older you will notice the old, possibly due to people spending more time around others close in age. When your brain is trying to quickly make sense of what you are viewing, it will create familiar shapes and objects, and the woman in that category will be seen first.

If you are still struggling to work out where the other woman is, the old woman's mouth doubles up as the young woman's necklace, while the young woman's chin and jawline make up the old woman's large, pointy nose.

Common lines and shapes found in their characteristics are used to link the two characters

© William Ely Hill

A face can be seen in the centre of this tree's trunk

Hidden faces

Deception isn't always carefully planned. Sometimes nature and the everyday muddle your brain too. Nature's unique shapes and forms can cause you to find new and unusual variations around every unexplored corner. Within the bark of this tree, the growths and dents reveal an imposter. Immediately, your eyes are drawn to the shape of a face at the centre, highlighted by the light covering of moss. Your brain is familiar with the form of a human face, as you are likely to see many of them as you go about each day. When presented with this tree, while it is only a tree and not literally a face, your brain recognises both, and it will struggle not to see this familiar fat-lipped figure every time you glance back. »

THE PROCESS

OBSERVE IMAGE

When presented with the image, your eyes will quickly scan it, relaying the visual information to the brain.

ANALYSE SECTIONS

The brain then chooses which section and shapes to focus on. This choice will determine how you perceive the image.

PROCESS SHAPE

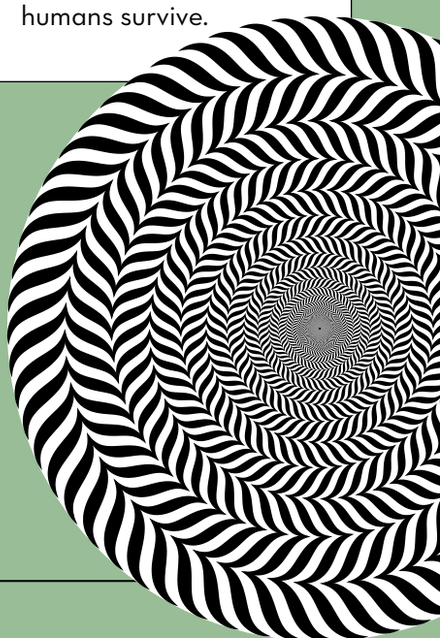
Your memory stores shapes the brain has encountered. It compares these with the shapes analysed to find objects in the image.

PRODUCE PICTURE

Objects and shapes are pieced together to create your initial version of the double image.

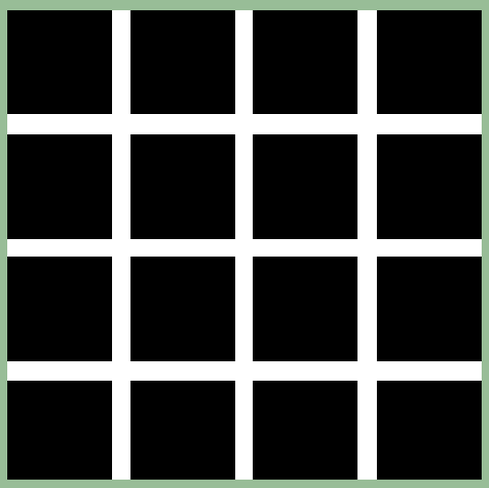
QUICK RESULT

We are quick to make our first judgement of the illusion, as fast interpretation of visual information helps humans survive.



PHYSIOLOGICAL OPTICAL ILLUSIONS

Images that perform physical transformations



Disappearing dots

A Hermann grid is a famous optical illusion leaving the observer playing an impossible game of chase the dots. Scan your eyes over these black squares and take notice of the areas where the white lines cross. Can you see grey dots in your peripheral vision? Though they are scattered across the intersecting lines, as you focus on a single dot you will witness it disappearing. These dots were never really there, but made up by your eyes.

Contrast

The circles you see appearing and disappearing between the squares are due to the difference in lightness between the black and white areas. These dots are grey in colour, a combination of the contrasting tones.

Focus

When looking directly at one, the dot disappears. This is because the photoreceptors in the centre of your eye are sharp and clear. Darker squares are less able to inhibit the bright centre.

Peripheral issues

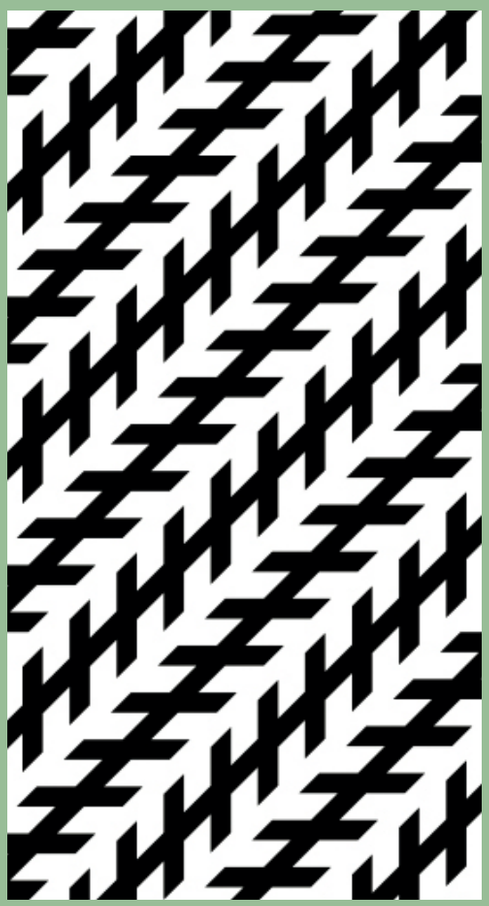
When parts of the image enter your peripheral vision, they become less accurate. The brain is filling in the gaps left by our eyes' limited field of view. It perceives the white intersections with protruding black corners as grey.

Solid block

No matter where your eyes rest on the grid, the black squares are always interpreted by your eyes as black since these areas have no surrounding exposure to light.

Leaning lines

Do you think that the long black lines in this image are parallel to one another? Do they all travel in the same direction or are they tilting different ways? This illusion is all down to the multiple short lines intersecting the long ones. While the long diagonal lines appear to tilt in different directions, they actually all cross the picture at exactly the same angle. How can the addition of these smaller lines distort the picture so drastically? The science behind this illusion is all about how the brain processes an angle. One theory is that our brains tend to perceive small acute angles as being smaller than they really are, while we also overestimate the size of larger obtuse angles. In distorting the angle created between the long and short lines, the edges of the longer lines become warped in our heads. Each long line appears to tilt in the direction of the smaller angle. These angles are more likely to be misinterpreted when viewed on lines that are neither horizontal nor vertical, which is why they are positioned diagonally.



THE PROCESS

OBSERVE IMAGE

When presented with the image, your eyes relay visual information to the brain. You see the colour, brightness and position of the image's components.

FIX TARGET

Some physiological illusions require you to fixate on one target for a long period, while in others this is simply the area you first happen to glance at.

RECEPTOR REACTION

Cells at the back of the eye absorb the light photons from the image. Light at the centre of vision, as well as the colour white and bright light, provide the highest stimulation.

CHANGING GAZE

As you move your eyes to target a new area, these illusions begin. Different photoreceptors are being stimulated as new light and shapes are exposed to the eyes.

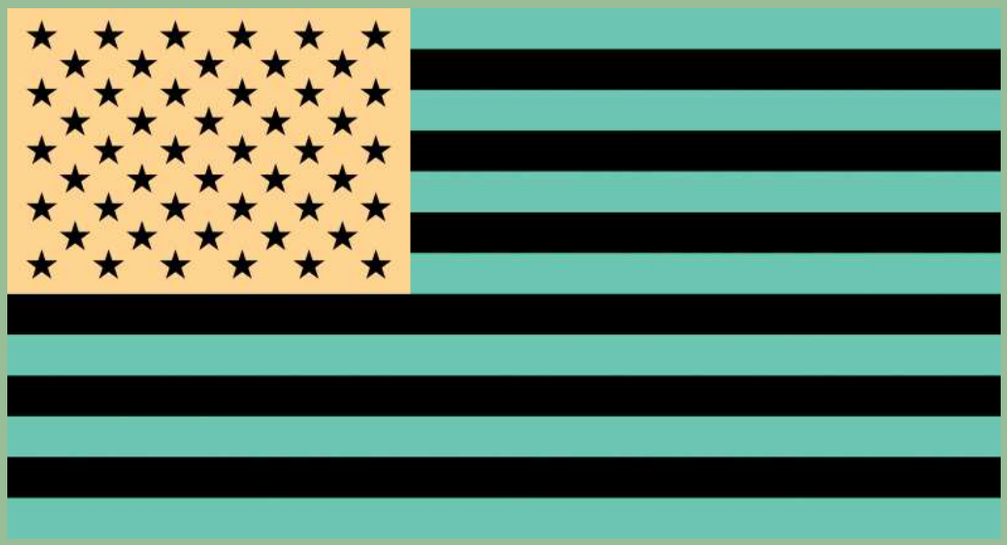
ALTERED IMAGE

Physiological illusions create a change in brightness, movement, colour or tilt. As you take in new elements of the images, previously clear sections can become confused in position or tone.

Colour correction

This version of the American flag has the right patterns and shapes, but wildly wrong colours. Green, orange and black have been used in place of red, blue and white. These may seem like randomly selected colours, but what if you were able to see the true-coloured flag through this image?

To make sure you're able to find the image's hidden flag you will need to first scan the code with any smart device to view it on a bright screen. When you have your flag ready, begin by focusing on the bottom-right corner of the rectangle of stars. Stare at this section for at least 30 seconds without averting your gaze, then look away from the image and look at a plain surface such as the wall or a piece of paper. Can you see an after image? Blinking may help you find the flag.



COLOUR SELECTION

Green and orange appear to have no link with the design of the flag. When observing a colour wheel, however, you'll see the tones have been carefully selected. On the wheel, the 'true' colours of the flag are opposite the illusion's.

STARE OUT

When you look at something, specific colour receptors in your eyes are stimulated based on the tones of the object. As you stare at the colours in this picture, the receptors recognising green and orange become fatigued and less responsive to that colour of light.

FRESH VISION

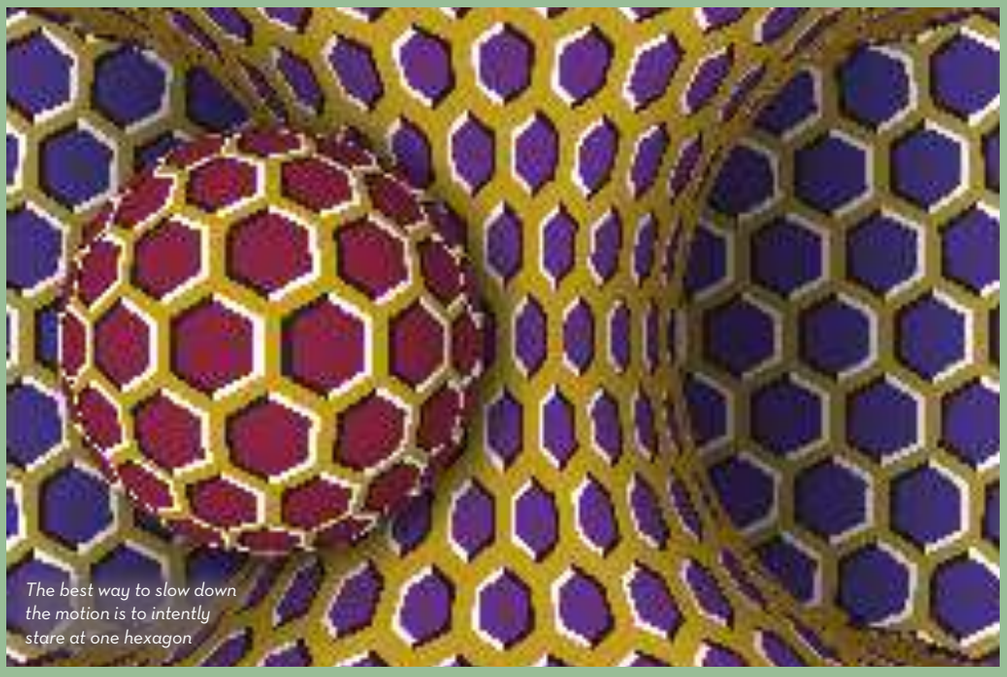
As your eyes look away, these visual receptors are able to rest, stimulating the unused receptors. The opposite colours are produced briefly as a result, which in this case are blue and red, showing the true flag.

BACKGROUND SELECTION

The plain background helps you to see the afterimage. The image remains in your eyes for a while due to the overstimulation that's caused by staring for so long at the bright inverted image.

FADE AWAY

This afterimage illusion will remain for around 30 seconds before your eyes' photoreceptors readjust to normal stimulation.



The best way to slow down the motion is to intently stare at one hexagon

Dancing imagery

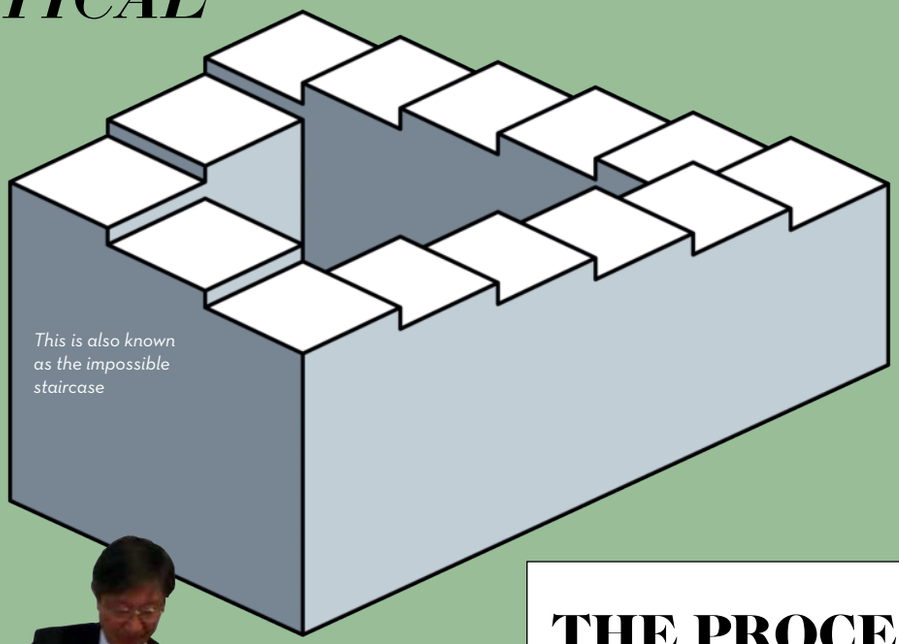
To most people looking at this image, the sphere filled with burgundy-coloured hexagons appears to continuously roll to the right around a purple-hexagon pillar. Created by Yurii Perepadia, a graphic designer and illustrator from Ukraine, the image is a perfect example of illusory motion.

One thing you will notice about this type of physiological optical illusion is that they normally have sections of white incorporated into the pattern. In this case the hexagons that seem to move to the right have white sections lining their right-hand side, while those appearing to move to the left have white lining their left.

Scientists believe that as the lightest shade, white turns our eyes' receptors 'on'. With these light edges positioned next to the contrasting dark edges, photoreceptors bounce between the two in a flickering sensation, which the brain interprets as motion. »

COGNITIVE OPTICAL ILLUSIONS

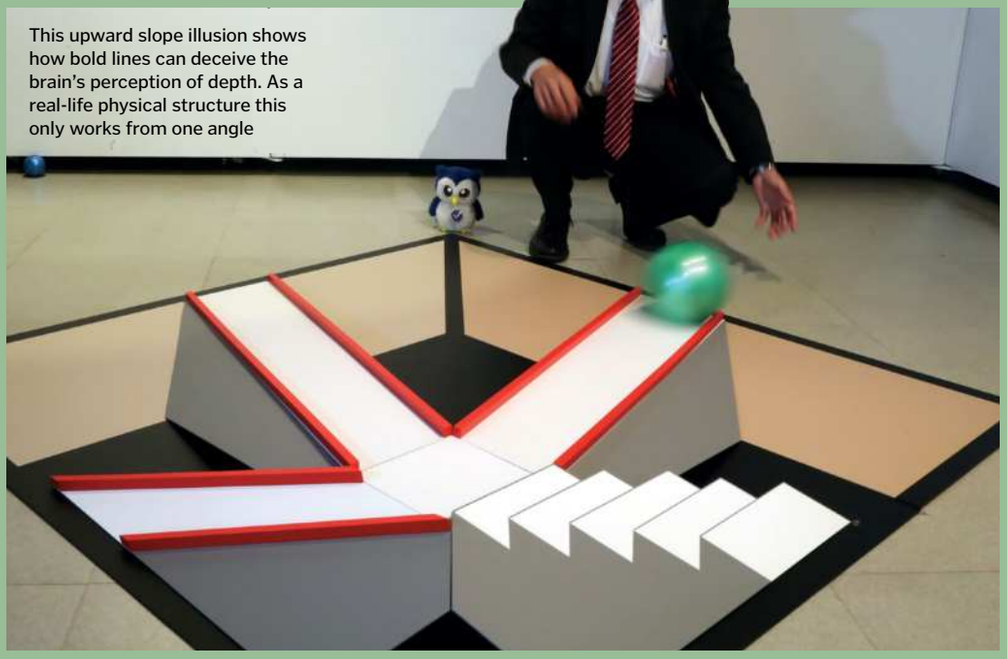
How are these sights even possible?



This is also known as the impossible staircase

The never-ending climb

For those who find walking up stairs a chore, this image might be your worst nightmare. Where do these stairs stop? This illusion, known as the Penrose stairs, is designed to hold no start or end point. If you were to try and climb these stairs in real life you would be climbing forever and never reach a higher point. When taking in this image, your general knowledge of the way stairs and elevation work tells you that stairs cannot operate like this, in a continuous loop. Paradox illusions are designed to show the impossible. While this illusion proves possible on paper, it will only work in its two-dimensional form, with carefully positioned lines to trick the brain.



This upward slope illusion shows how bold lines can deceive the brain's perception of depth. As a real-life physical structure this only works from one angle

Cartoon café

Some illusions have the ability to change your perception of what you see and require your brain to switch between interpretations. This café in St Petersburg, challenges your brain's sense of depth. The black-and-white furniture makes the room look as if it were a 2D sketch. It is the presence of the customers that forces the brain to process the true 3D. Your eyes use shadows and lighting to help see dimensions, but this café is purposely brightly lit to remove these depth giveaways. ***The BWCafe was designed by artist Anfisa Toshina.***

THE PROCESS

BUILT KNOWLEDGE

Through our experiences, our brains become familiar with the physical world.

OBSERVE IMAGE

When looking at a cognitive illusion, our eyes provide our brains with the visual information to piece together physical objects.

CONFLICTING FACTS

These illusions are designed to create a scenario that is physically impossible. As your brain processes it, you become amazed at seeing something happening that you know cannot.

ACCEPTANCE

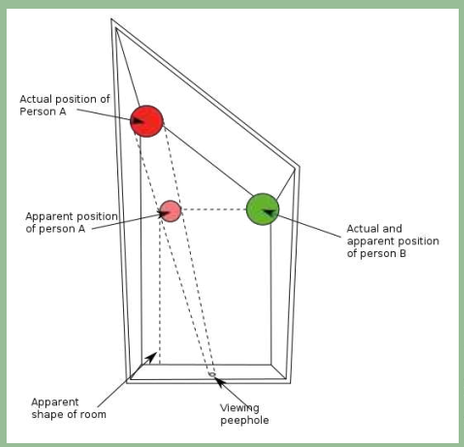
There is nothing else the brain can do but accept this conflicting information and be mesmerised by the illusion.

Tiled flooring is specifically chosen to make the two people appear level

Extreme size

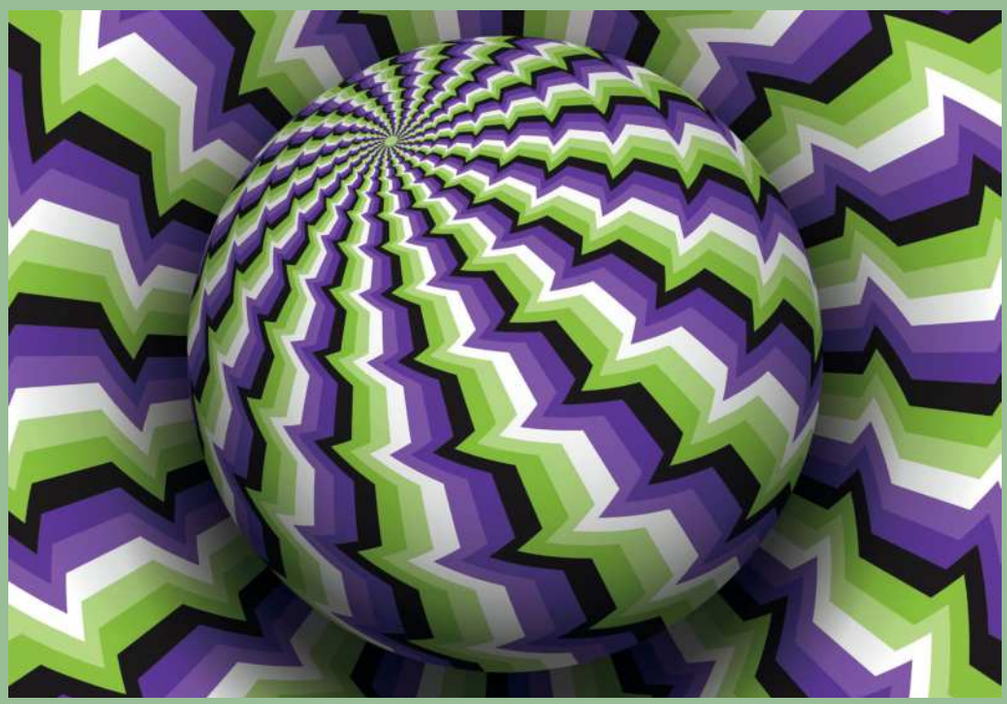
This is an Ames room, a room where you can appear to tower over your taller friends or shrink to the size of a baby. As an example of a distorting illusion, this room is all about hiding the true shapes and positions from your eyes and brain. When viewed from a specific angle, the room's true dimensions are hidden. Careful detail and artwork is added to make the room appear a regular square shape.

When two individuals stand in the far corners, they appear to be standing in line with each other, with one giant person looming over a miniature version of the other. But the floor is not level. The corner where the smaller person stands is at an incline, putting them lower down. Your eyes and brain, used to seeing rectangular rooms, don't notice the slanted walls.



© Alex Valavanis

From the viewing area, it doesn't look like the smaller person is further away from you



3D STREET ART

Art is often considered very impressive when the paint on the canvas looks like it could be a photograph. This skill in realistic art allows vivid images to be transferred onto a surface in whichever medium the artist excels in. When hanging up in a gallery this art has a photo-like quality, but when incorporated onto the streets the combination of realistic art and the real world's features have the potential to present optical illusions in the most unexpected locations. This adds interesting images to an otherwise regular street and allows people to engage with the art.

WALKING OVER A WARZONE

At Meiji University in Tokyo, Amnesty International used this optical illusion to bring the devastation of war in Syria onto the campus. Walking past this scene, which appeared to lie beneath the concrete floor, made students think about what was happening at an alternative location. By initially confusing the brain into seeing a hidden depth that wasn't really there, it reminded passers-by that although only an illusion to them, to those in Syria this devastation is reality.

CYCLING WITH A CROCODILE

Once a year in Almere, Netherlands, artists in the city are allowed to take to the streets and express their talent and quirks. This one, from 2015, uses the angle of lines on the floor to make you see a bike standing up by itself as you approach it. No person has been drawn riding the bike, giving those who are amazed by the illusion the opportunity to take to the saddle for a perfect photo.

© Getty Images

THE WANDERING Mind

Discover how daydreaming can in fact be good for you

WORDS AGATA BLASZCZAK-BOXE

Daydreaming sometimes gets a bad reputation: students who don't pay attention in class end up having trouble completing coursework, and workers who spend meetings thinking about winning the lottery are probably not the most productive. But research has shown that not all daydreaming is bad.

"Daydreaming motivates people to work toward accomplishing their goals," says Dr Matthew Lorber, acting director of child and adolescent psychiatry at Lenox Hill Hospital in New York City. "For example, if a high school student daydreams about getting into a good college, such daydreaming may motivate him or her to actually study more during high school in order to get into a good college," he adds.

Here are a few other surprising facts about daydreaming.

> "RESEARCH HAS SUGGESTED THAT PEOPLE ZONE OUT ON PURPOSE"

1 WE DAYDREAM ON PURPOSE

Though people may think of daydreaming as something they do unintentionally, research has suggested that people sometimes zone out on purpose. Moreover, the circumstances in which such intentional mind-wandering occurs may be different from those in which people unintentionally daydream, according to findings published in March 2016 in the journal *Psychological Science*.

In the study, researchers asked people to complete an easy cognitive task, and found that the participants tended to let their minds wander on purpose and not pay much attention to what they were doing. But when the participants were asked to complete a task that was more challenging and required more focus, the people reported more unintentional mind-wandering, compared with intentional mind-wandering.

The researchers said they think that people intentionally let their minds wander during easy tasks because they know they can get away with not paying attention to what they are doing – it won't hurt their performance. But when they complete a difficult task, they know they need to focus to complete it well, and therefore are less likely to zone out on purpose. »

2 BLINKING AND THINKING

Mind-wandering may go hand in hand with more frequent eye blinking, research suggests. In a study published in 2010 in the journal *Psychological Science*, researchers asked people to read a passage from a book and tracked their eye movements as they read. The researchers also tracked whether the people's minds wandered at random intervals throughout the experiment, or whether they remained focused. For this part of the study, the researchers asked the people from time to time whether they were paying attention or letting their minds wander from the task.

On completing the research, they found that people in the study tended to blink more during the moments when their minds wandered, compared with the moments in which they were more focused on the task.

3 DAYDREAMING CAN HELP WITH PROBLEM-SOLVING

If you are stuck on a problem, letting your mind wander for a bit may help you get unstuck. Research published in 2009 in the journal *Proceedings of the National Academy of Sciences* (*PNAS*) suggested that the brain areas that allow people to solve complex problems become more active during daydreaming. "Mind-wandering is typically associated with negative things like laziness or inattentiveness," lead study author Kalina Christoff, a psychologist at the University of British Columbia, said in a statement. "But this study shows our brains are very active when we daydream – much more active than when we focus on routine tasks."

The findings suggest that daydreaming may serve to distract our attention from immediate tasks to solve other, more important problems, the researchers said.

© Getty Images / Angelina Bambina

4 DAYDREAMING AMNESIA

For some people, letting their mind wander makes it tough to remember what they were doing right before their mind drifted. Research has suggested that such 'daydreaming amnesia' is exacerbated if your mind drifts further from your current moment. For example, it's more common when your mind drifts to memories of an overseas trip rather than a staycation, or to a memory of an event that occurred five years ago as opposed to two days ago.

In the study, researchers asked people to look at lists of words. They then asked some of the people to think about their own homes and where they had been that morning, whereas they asked other people to think about their parents' homes, which they had not visited in several weeks. The researchers then asked all the people in the study to recall as many words from the lists as possible.

The participants who were asked to think about their own homes were able to recall more words, on average, than those in the other group, according to the findings, published in 2010 in the journal *Psychological Science*.

5 YOU CAN BE ZAPPED INTO A DAYDREAM

Zapping a certain brain area may actually increase how often people daydream, according to a study published in 2015 in the journal *Proceedings of the National Academy of Sciences* (*PNAS*). In the study, researchers found that when they stimulated people's frontal lobes with a mild electrical current, the people reported experiencing more daydreams than usual. The frontal lobe is the part of the brain that regulates our self-control, planning and logical thinking.

"Our results go beyond what was achieved in earlier studies," study co-author Moshe Bar, a neuroscientist at the Multidisciplinary Brain Research Center at Bar-Ilan University in Israel, said in a statement. "They demonstrate that the frontal lobes play a causal role in the production of mind-wandering behaviour."

HAVE YOU READ THIS *Before?*

Discover the science of déjà vu and the technique used to trigger it

WORDS SCOTT DUTFIELD

Around 70% of us experience it, in particular those of us aged 15-25, and it can be one of the most jarring feelings: déjà vu. French for 'already seen', it has previously been linked to the theory of false memories; the idea that we can view something once and when exposed to a scene or situation that is similar, our brain will respond by creating a memory that didn't really happen. However, an experiment led by psychology researcher Akira O'Connor in 2016 revealed that this might not be the case. Rather than false memory, the brain is memory checking and sending an error message, signalling what we have actually experienced versus what we think we have experienced. Around 70% of us experience... wait a minute...

O'CONNOR'S EXPERIMENT

How did scientists artificially trigger déjà vu in the study's volunteers?

STEP 1

Participants were given a list of words to remember including bed, pillow, dream and doze – all words that are connected, in this case, to the word 'sleep'.

STEP 2

They were then asked if any of the words in the list began with the letter 'S'. Each person correctly said no.

STEP 3

Later on, the volunteers were asked if the word 'sleep' was included in the previous list of words. This prompted a feeling of déjà vu.

STEP 4

Those experiencing the chilling phenomenon were scanned using functional magnetic resonance imaging (fMRI) to identify the active parts of their brain.

STEP 5

Scans revealed that the memory centre of the brain, the hippocampus, was unexpectedly not active, but the frontal areas that handle decision-making were active instead.

COULD Colour BE THE CURE?

Discover how immersing yourself in the right tones can work wonders for your wellbeing

WORDS FAYE M. SMITH

Do you often have more confidence when wearing a certain shade, or feel more positive after walking in green spaces? It could be that colour is having a much bigger effect on your wellbeing then you realise.

"Colour is a quintessential part of life," says colour specialist Mark Wentworth (**colourforlife.com**). "Each colour creates a different physical and emotional response and, as we have evolved as a species, so has our understanding of the depths and intricacies of human emotion and behaviour."

But how we respond to the effects of certain hues, whether positively or negatively, can be very personal – there isn't a one-colour-fits-all when it comes to colour therapy. "On one level, colour is instinctual, and on another it connects us to our own personal memories and experiences," explains Wentworth. "Most people love something, such as sky blue, as it has an overall calming effect, maybe it reminds us of summer holidays and times of carefree daydreaming, and yet for some it's depressing, cold and detached." Hertfordshire University fashion psychologist Professor Karen Pine, working with Comfort UK, agrees: "We may love or hate the colour of our old school uniform, for example, depending on whether we have strong positive or negative memories of school."

With such personal responses to colour, there might be some trial and error when finding what's right for you, before you reap the benefits. "Be brave, experiment," says Wentworth. "Learn to understand your own colour language and how it reflects the highs and lows of your life story. Love your colours and watch your life transform." Here's how...

A wardrobe of personality

Whether you're dedicated to fashion or not, the colour of your clothing can have a significant impact on your mental health. You don't have to go head to toe – just a pop of colour will work, which is good news, as 34%[1] of women are scared to change the way they look. "Dressing for how you feel promotes an overall confidence and authenticity, which creates a positive approach from other people," »

> "DRESSING FOR HOW YOU FEEL PROMOTES CONFIDENCE"

says Wentworth. "If you have a goal, you can booby-trap your wardrobe with colour to attract what you want." He suggests the following...

YELLOW
is sunshine, brightness and fun. There'll never be a dull moment when you're wearing yellow.

PURPLE
says 'I am my own person and I'll stand out from the crowd'. Wearing it inspires creativity and commands respect.

BLUE
conveys trust and openness. We'd probably sit down and share our hopes and dreams with someone wearing blue, as blue overall tends to make us feel safe, whatever the shade.

GREEN
brings freshness and the impression that everything will happen in its own good time. When we wear green, we offer a level-headed approach to life.

BLACK
is sophistication and elegance – it adds style and class due to its ability to highlight everything else around it. It makes other colours appear bolder and stronger, and it conveys mystery.

Love a PATTERN?
You'll still benefit from the colours, but mixing them can dilute the effects, as intricate or repetitive detailing can pull focus.

Worried about wearing red?

Although a lot of people talk about feeling brave when wearing red, it can have negative connotations. "According to a study, men thought women were more interested in sex if they wore a red rather than a white T-shirt," says Professor Pine. "Evolutionary psychologists have shown that men ask women more intimate questions if they are wearing red. Women rate men who wear red as being more attractive."

Blondes really do have more fun

Feel more positive after a trip to the salon? You're not alone. A study by Nottingham Trent University and Clairol found that women who dyed their hair blonde had increased levels of confidence. It's thought that a strong and bold hair colour is similar to what we had as children, and therefore exudes a feeling of youthfulness. "Colouring your hair may seem like an art to most people, but there is actually a lot of science behind it," says Dr Mark Sergeant, who led

DID YOU KNOW?

Many banks use the colour blue in their logos, as do Facebook, LinkedIn and Twitter, because it helps companies seem trustworthy.

64% of Brits believe how they dress can make them feel better about themselves and boost their mood, says a study by Comfort UK.
Comfort UK's white paper, Long Live Clothes

A shade of pink called Baker-Miller has been used to reduce violence in hostile environments, due to the colour's calming properties.

“ALTHOUGH A LOT OF PEOPLE TALK ABOUT FEELING BRAVE WHEN WEARING RED, IT CAN HAVE NEGATIVE CONNOTATIONS”

the research. “Not only were their confidence and mood levels elevated, but many reported feeling more attractive and sexually exciting.”

Colour in the home

When it comes to the walls or decorations at home, following the trends can be a bad idea. “We should be wary of doing so when painting in our homes,” says Professor Pine. “Our environment is an expression of our individuality – it needs to resonate with our emotions and provide a haven to return to. We will feel more at home in a colour scheme that chimes with our personality than one dictated by a trend.” Don’t have the same taste as your partner? “Choosing colours can be a minefield for couples so agree at the start that you may need to compromise,” says expert Georgina Burnett, from **homeimprovementmonth.co.uk**. “If you like orange and he/she isn’t keen, maybe this needs to be an accent colour in the room, against something more neutral like grey.”

Boost your sex life

The colour of your bedroom walls and bedding could make a difference in how much sex you have each week, found a survey by **littlewoods.com**...

Purple – 3.49 times

Red – 3.18 times

Sky blue – 3.14 times

Pink – 3.02 times

Black – 2.99 times

Grey – 1.8 times

Green, beige and white are best avoided. “Dark green is a stop sign,” says Georgina.

Kitchen overhaul

Had the same set of crockery for years? The colour of your plates could affect how you eat...

If you’re caring for someone with health issues, avoid serving food on white plates. “They are the worst colour for hospitals,” says professor of experimental psychology Dr Charles Spence. “With dementia or visual problems, there may not be enough of a contrast between the food and the white plate, so you want the food to stand out against a coloured plate.”

Don’t want to add extra spice? University of Valencia scientists found that those who ate from a white plate found food 13% more flavourful.

Researchers from the University of Oxford have discovered that if you eat from a red plate, you will eat less. “What you serve food on turns out to have more of an impact on our taste and flavour perception than any of us realise,” says Dr Spence. “You end up eating a little bit less because red on a plate seems to trigger some sort of avoidance signal.”

Flower power

The right colourful bouquet of blooms can help give a much-needed boost. “It’s no accident that we buy people flowers to cheer them up or to express our love,” says Professor Pine. “The attractive and fragrant colours produced by nature have an uplifting effect on our emotions.” Not sure what to pick? “Yellow chrysanthemums are perfect for someone facing a new challenge,” says floral designer Lara Sanjar, working with **funnyhowflowersdothat.co.uk**. “While purple anemones can help to keep you inspired for creative projects.”

Immerse yourself outside

During the summer months, it’s worth swapping the treadmill for walking outdoors in fields or woodlands. Experts at the University of Essex found that doing any exercise outside can boost your mood in just five minutes. “People have been soaking up the healing power of nature for centuries, but it is only in recent years that scientists have produced peer-reviewed evidence that there are measurable benefits to our bodies when we spend time among the trees,” explains Beth Kempton, author of *Wabi Sabi: Japanese Wisdom for a Perfectly Imperfect Life* (Piatkus, £12.99). “These include increased mental wellness; boosted immune systems; and reduced stress levels, heart rate and blood pressure, which has led to the concept of ‘shinrin-yoku’ (forest bathing) being recognised as a kind of therapy.”

*1. Mark Wentworth is working with Valspar’s Love Your Colour Guarantee. It lets you change your mind about paint colour – if you don’t love your first choice, Valspar will swap it completely free of charge.

SPIRIT IN THE psychology

Parapsychologist Dr Ciarán O'Keeffe tells us how the mind can affect ghost encounters and a weird experience that even he can't explain

WORDS JOANNA ELPHICK

With more than 30 years of experience in the field of parapsychology, Dr O'Keeffe is a leading expert in investigating the paranormal. Now the associate head of school for human and social sciences at Bucks New University, Dr O'Keeffe has authored several books on the topic of paranormal investigation and has appeared on TV's *Most Haunted*.

How would you define parapsychology?
Parapsychology is very broad, but the definition would be the scientific research into paranormal phenomena. The problem with that definition is it sounds like it encompasses all paranormal phenomena, so everything from the Loch Ness Monster to alien abduction and ghosts. This is not strictly the case.

Parapsychology is fundamentally interested in studying extrasensory perception (ESP), which covers three areas: telepathy, clairvoyance and precognition; psychokinesis, which is the action of the mind on an object – the classic example is Uri Geller and his spoon bending; and then the third area is after-death communication or survival after death.

This is my area of expertise, and in the world today I would estimate that there's around 100 or so actual parapsychologists qualified to doctorate level, and out of that number you've then got a smaller group, maybe about 10-20%, specifically interested in after-death communication and hauntings.

How would you explain some of the common experiences people have during a ghost investigation, such as a drop in temperature or feeling the presence of a ghost?
When you think about ghost hunting or ghostly experiences, ghost hunting is a whole different kettle of fish to be honest. But actual, spontaneous ghostly experiences when you visit a location... there are a number of different experiences you can have. They are all sensory.

The most common one is the sense of presence. You walk into a room and you think there's somebody else there with you. The explanations for that could be psychological or environmental. The psychological explanation for that could be down to suggestion. This is an explanation that holds ground for many ghostly experiences. If you walk into a room and we're specifically told that the room is haunted or that the location is haunted, then suggestion kicks in. It's kind of a cultural norm for people to think if there is a ghost, they are either going to see it, which is so rare, or they're going to feel a presence in some way.

There's an interplay that happens between psychology and the environment, too. Imagine you walk into the same room and there is a temperature drop, which suddenly feels very, very calm. Now, that could be down to simple suggestion again, without anything happening, and the temperature remains consistent.

Being told a place is haunted can give you the experience of feeling as though the temperature is dropping. That can be down to the simple 'fight or flight' response. A fearful response to anything can affect your physiology in a particular way. The fearful action to the fact that there might be a ghost in the room is that you want to run. Then, of course, we know physiologically what happens is the blood is redirected into your legs and your body gets ready to run. By doing that, your physiology is changing.

DR O'KEEFFE
Dr O'Keeffe is the associate head of school for human and social sciences at Bucks New University.

> "OFTEN IT DOESN'T HAVE TO BE ACCURATE, IT'S DOWN TO PEOPLE'S BELIEF SYSTEM"

The upper part of the body is giving you the perception that your temperature is reduced.

But it can be even simpler than that. You could walk into a room and feel a draft or a drop in temperature, and immediately associate that with a ghost because you've been told the room or the location is haunted. Imagine walking into an office and you felt the temperature go down, or a draft – you'd immediately be looking for the window or the air conditioning. You wouldn't be thinking there's a ghost. The drop in temperature could simply be a door or window that's open, but suggestion leads to a misinterpretation of environmental changes.

There are a couple of examples of people having the sense that they are being touched. That could be down to a number of different reasons, such as suggestion, but also electromagnetic fields. Electromagnetic fields can have observable physical effects, producing sound and problems with electronic kits, but it's actually both natural and man-made. Particular levels can produce the hallucination of a sense of presence, or a tactile sensation.

Infrasound too can play an exacerbating role. Particular levels of infrasound can cause an eye-oscillation effect. It can actually oscillate the eyeball to an extent where you get smearing in the corner of the eye. When you turn around to try and find out what that dark smearing is in your peripheral vision, you look and it's gone.

Why do you think people are so willing to accept these experiences as paranormal?

The most immediate explanation is hope – hope that there is something in the afterlife. If they are having a ghostly experience, then there's evidence of that. I have to say, while that might be the case for some people, I don't think it's the best explanation for why people have these experiences and believe it's a ghost. I think it's a combination of not being aware of natural explanations. The hairs going up on the back of your neck, for example, could be a number of different environmental and psychological reasons. If you've got no knowledge of that, a simple explanation would be ghosts. It's a lot easier to process what has happened to you with one simple answer, especially if you believe in that sort of thing.

There's another aspect to this. Across the country, there are hundreds if not thousands of people going out ghost hunting, it's an incredibly popular pastime. I question whether all of those people are interpreting their experiences as a ghost presence in the hope of an afterlife, or actually if it's some sort of fairground pastime. It's an exciting, adrenaline-fuelled experience – to be in a haunted castle or a haunted prison and think you could potentially have a ghost experience and could meet a ghost tonight.

What would you say are natural explanations for mediums who claim to have contacted spirits?

If you take a single scenario where a medium walks into a haunted location and starts to talk about a name, date and details associated with a person that is historically accurate, there's a number of different things going on. The medium may have fraudulently conducted previous research and regurgitated the facts as if it's coming to them paranormally.

The other explanation is they may not be aware that they've picked up on that information naturally, as opposed to through prior research. If the location is a National Trust property or English Heritage, for example, where there's information around the location, they may have processed that information but not be fully aware that they've done it. It's almost a form of cryptomnesia, where it's gone into their consciousness but they're not fully aware of it, and they have no memory of how they got the information, passing it off as being paranormal.

Another explanation, depending on their accuracy, could be the result of using simple psychological techniques that we know of that are used by pseudo-psychics. Almost like a detective exercise on the medium's part, they start to narrow down the information. Simple statements, such as "I'm getting a gentleman here in the corner, not sure if he's old" – it sounds like a statement but actually had a rising point at the end. It's encouraging anybody within that room who actually knows the information. Then they'll extrapolate more: "This is a father or grandfather and I'm getting a name, quite a simple name," looking at the reaction of people in the room and so on.

People are not concerned about the historical accuracy of it. I've been in investigations where mediums have gone, "I'm getting a very aggressive evil man here called Dave in the corner who used to work here as a cleaner, but then something bad happened with the owner of the location." And that's it, nothing historically accurate, and then suddenly you walk into another room and there's people sitting around a Ouija board trying to contact Dave. That's what I mean – often it doesn't have to be accurate, it's down to people's belief system.

Has there ever been a situation where you've thought, 'Actually, I'm not quite sure how to explain that'?

There have been a couple of what I call head-scratching moments. There's an example in a nightclub in Birkenhead. The staff and owners of the nightclub reported that the fire exit doors would open of their own accord. Looking at the video footage and having investigated it, you could see that it appears there's no way you can push those doors open from the other side. We even had a chair wedged into the fire exit door so it couldn't open up on its own, but the doors tried to open to the extent that they almost pushed out the chair that was wedged.

At the same location, a group of staff members had been involved in a seance several years prior – a seance they felt kicked off all the phenomena that started in the nightclub, which I'm very sceptical of. But they happened to be at the nightclub the night of our investigation, spontaneously arriving after they heard we were there. Myself and the other investigator said, "While you're here, would you be interested in replicating that seance just so we can see where people were sat at the table, where the table was, etc.?" I thought that now we had a perfect opportunity to try and replicate circumstances after which this phenomena happened. We can't replicate the environment, such as humidity levels, air pressure and temperature, but still, in terms of the physical seating at least in a sense of what's going on [we could replicate it].

I was observing the seance using a thermal imager, which is a way of assessing relative temperature. I have it set to black and white because a drop in temperature goes green, so it's very easy and quick to see a change. After about 20 to 30 minutes, the staff doing the seance said it didn't feel as though anything's happening. What I didn't tell them was that out of the corners of the room was like a green fog – the temperature was dropping and coming slowly into the room. Over time they began saying that the energy was very strong around them, and during a period of around 20 to 30 minutes this drop in temperature appeared to surround the seance table.

Then one of the ladies said it felt as though the energy was going away. As she said that it appeared as though the green fog, this drop in temperature, was actually just dissipating. It's just kind of going away from a central point in the room and then just dissipating out of the room. That's an odd thing to happen, a head-scratching moment. ■

LEARN TO LOVE Change

The only constant in life is that nothing stays the same. Here's how to make changes work for you

ANDREA GARDNER

Andrea is the author of *Change Your Words, Change Your World*. She helps people reshape their inner dialogues.

EMILIA OHRTMANN

Emilia is a blogger, entrepreneur and co-host of the *Mums in Biz* podcast. She is also the author of *It's Your Life: How to Choose Confidence*.

WORDS FAITH HILL

There is immense value in stepping out of your comfort zone and making a change to your life that you truly want to happen. This not only creates new experiences, but it also increases your confidence and nurtures personal growth. In many cases, it can help to end undesirable situations and signal the beginning of a new life chapter. Making that decision and taking the first step may be difficult to begin with. Many of us are resistant to change because we fear the unknown, or feel a lack of competence. But once you get started and reap the benefits that shaking things up brings, it will naturally become easier.

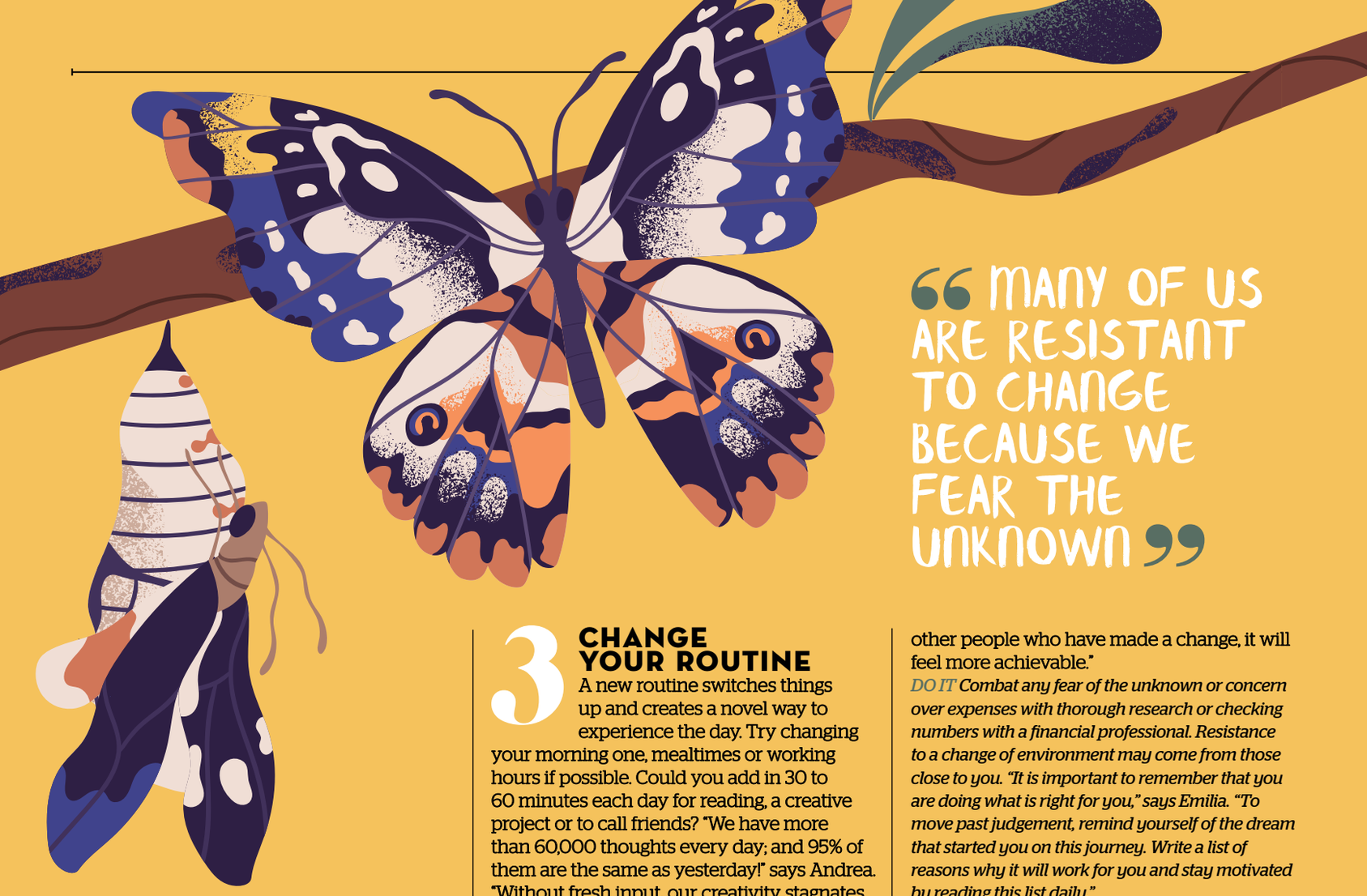
1 CHANGE YOUR WORDS

Your words – whether spoken or thought – influence your own experience and that of those around you. Putting effort and intention into keeping your language positive – whether you're communicating how you feel, or expressing your opinion, will improve your thought patterns and relationships with others. It will also reduce negative interpretations.

"By taking just a couple of breaths before speaking, we can first open our hearts, and feel the connection and appreciation for ourselves and whoever we're communicating with or about," explains Andrea Gardner.

"This conscious action will transform the words we use and their effect."

DO IT Andrea suggests monitoring your own conversations to spot resistance and patterns in the type of words you might be choosing. "Either record your next interaction on your phone, or ask a friend to listen carefully and feed back the negative words you use regularly. Change any 'shoulds' to 'coulds' and weed out words that shame or blame yourself or others. Slowing down your speech to half its usual speed will inspire trust in your listener."



> "MANY OF US ARE RESISTANT TO CHANGE BECAUSE WE FEAR THE UNKNOWN"

2 CHANGE YOUR FOOD

You will quickly notice a beneficial effect on your mind as well as your body when you make healthier diet choices, such as eating fewer sugary treats, cutting down on alcohol, or following a plant-based food plan. Who doesn't want to look, feel and think better? Resistance to dietary changes may mask not knowing where to start. "You might realise you need to change your diet or eating habits, but you feel like you don't know how," says Emilia Ohrtmann. "The key is to take action instead of waiting for something to happen, or for someone to show you how to do it."

DO IT To help yourself maintain a new eating plan, try writing down what you eat. One study[1] showed that taking a photo of each meal may work even better. Importantly, start with one action. "It could be having a glass of warm water with freshly squeezed lemon in the morning before having food," suggests Emilia. "It's good for your digestive system and sets your intention. Once you make a start, you will attract the next steps – it's the law of attraction. If you encounter resistance or a challenge, go back to the previous step, as this will remind your brain of exactly what you can achieve. Then move onwards with more confidence to incorporate your next new change."

3 CHANGE YOUR ROUTINE

A new routine switches things up and creates a novel way to experience the day. Try changing your morning one, mealtimes or working hours if possible. Could you add in 30 to 60 minutes each day for reading, a creative project or to call friends? "We have more than 60,000 thoughts every day; and 95% of them are the same as yesterday!" says Andrea. "Without fresh input, our creativity stagnates and our world becomes steadily smaller."

DO IT Resistance may strike first thing in the morning if a voice in your head says, 'let's start tomorrow'. Andrea suggests a simple way to combat this and to find a fresh perspective. "Begin your morning with a rehearsal; snooze your alarm for five minutes and spend that time running through your day in reverse," she says. "Start by seeing yourself at bedtime, satisfied with how your day has gone. Then look back at the events and people who helped make that happen. When you reach the morning you'll be ready to spring out of bed. Later that evening, review how the day actually went and decide what you want to change."

4 CHANGE YOUR ENVIRONMENT

New surroundings can revive your senses, resulting in fresh thoughts, emotions and actions. Neuroaesthetics, the study of how the mind responds to design, shows that simply redecorating, changing the colours, lighting and textures in your home, or moving the furniture around, can reduce stress. If you are considering a bigger change, Emilia, who has lived in four different countries and moved house many times, says, "Before you do it, it seems impossible. First comes the dream, then once you start looking into it and talking to other people who have made a change, it will feel more achievable."

DO IT Combat any fear of the unknown or concern over expenses with thorough research or checking numbers with a financial professional. Resistance to a change of environment may come from those close to you. "It is important to remember that you are doing what is right for you," says Emilia. "To move past judgement, remind yourself of the dream that started you on this journey. Write a list of reasons why it will work for you and stay motivated by reading this list daily."

5 CHANGE YOUR WORK

How would you most like to earn money? "Most of us believe our ideal job is out there somewhere," says Andrea. "But nine times out of ten, we'll stop ourselves from getting it because our inner conversation tells us we need more qualifications, skills, charisma, youth, energy, experience, opportunities... the list goes on. Even if we dare to believe it's possible, we can trip ourselves up by concentrating on what we don't have, rather than visualising the dream we are hoping to attract." This form of mental resistance could hold you back from getting what you want.

DO IT If you have similar fears holding you back, respond to each one with clear, constructive advice, as if you were advising a friend. If it is true that you need a new qualification, which one? Where can you obtain it and is there a cost? Taking action and staying motivated are key to changing your job. To keep your motivation going, notice what's good about the job you're in and envisage your future reality as if you're already in it. Commit to at least one action a day to keep up momentum, and keep an updated list of all the good things a job change will bring you. "Passion doesn't exist in the job, it lives within us, and it's up to us to ignite that flame," Andrea reminds us. ■

1. Zepeda and Deal, International J/C 2008

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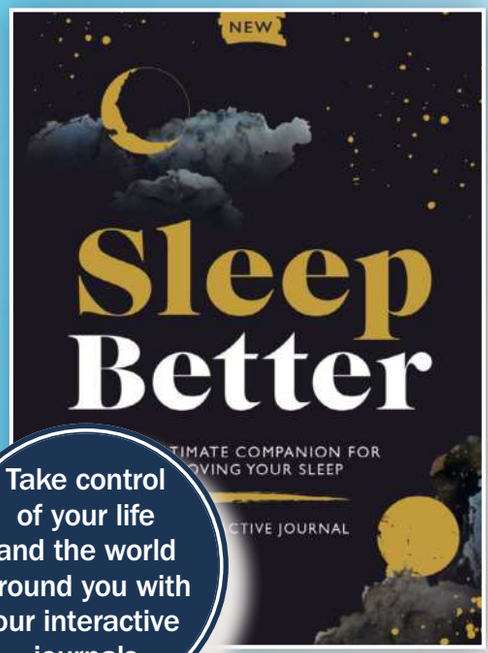

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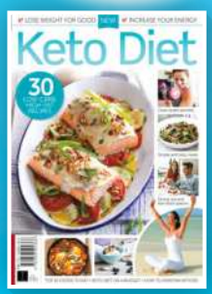

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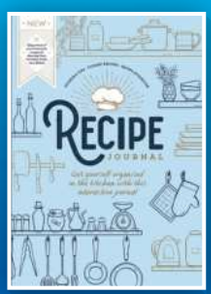

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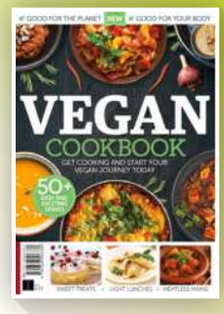

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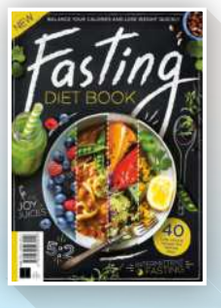

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