

Tap into your mind's hidden depths and you'll be amazed what you can achieve, finds Emma Young



CULTIVATE YOUR UNCONSCIOUS

HOW do you feel about your unconscious? Do you see it as a sort of black box full of fears and desires working to undermine you? If so, you are not alone: such notions still have a strong grip on the popular imagination a century after Sigmund Freud first advanced them. But modern neuroscience and psychology tell a different story. Far from being a malign adjunct to the conscious mind, the unconscious is responsible for all sorts of important stuff. It is smart and it is often running the show.

Still, that doesn't mean we should just leave it alone. "The vast majority of thoughts circling in our brains happen below the radar of conscious awareness," says neuroscientist Michael Shadlen at Columbia University, New York. That's too much to miss out on. Forget Freudian psychoanalysis, digging up dark thoughts, instead what about consciously tapping into your unconscious and using it to your advantage? It is early days, but already our growing understanding of the human mind means we can begin to hack our unconscious powers of inspiration, pain relief, emotional control, memory and more. Here's how...

Be inspired

Everyone is familiar with "aha" moments, when the solution to a problem suddenly pops into conscious awareness as if from nowhere. Wouldn't it be wonderful if those moments of creative insight came a little more easily, a little more often? It turns out there are ways

you can help your unconscious do its work.

Last year, research by Shadlen revealed that aha moments occur when enough relevant information has accumulated in the unconscious to trigger conscious awareness of a decision. The point at which this critical threshold is reached will vary depending on the task. However, some people seem better at achieving it than others. What's their secret? There are a couple of contenders. Studies suggest variously that creative insight is driven by one of two very different states of mind: concentrated focus and daydreaming. Intrigued by the contradiction here, Jonathan Schooler at the University of California, Santa Barbara, decided to test them head to head. He found that focused thinking actually undermines inspiration unless you are using an overtly analytical approach to solve a problem. By contrast, letting your mind wander, after taking in information, cultivates creative insight.

If you want more aha moments, you must first scour some relevant material to give your unconscious something to work on. Then, Schooler recommends finding time for unfocused thinking. This is best done while you are engaging in an activity that's not too mentally taxing, such as walking, gardening or household chores. "Try to disengage from spontaneous thoughts that are mundane, like thoughts about current concerns or plans for upcoming tasks, or thoughts merely replaying familiar scenes," he says. People who experience more creative insight tend to report more bizarre imagery

while mind wandering, so try to emulate them. "Engage with thoughts that are a bit more unusual or fantastical," says Schooler. "Follow those thoughts through to the end, or extend them by asking playful, imaginative questions, such as 'what if x was different?' or 'what if x was reversed?'"

Another way to tap unconscious inspiration is to modify your emotional state. There is some evidence that listening to "positive" background music, such as Vivaldi's *Spring*, helps people come up with more creative ideas. Researchers suggest this may be because it triggers the release of dopamine, which is associated with creative thinking. Christina Fong at Carnegie Mellon University, Pennsylvania, has found that simultaneously experiencing two emotions that aren't typically felt together – such as frustration and excitement – encourages creative insights too. That might be, she says, because it signals that you are in an unusual environment, making you alert to the possibility of other unusual relationships. If so, then life will be more inspiring if you embrace change and novelty.

Then there is "flow". It is a slippery concept, a sort of deep immersion characterised by automaticity – a sense, for example, that the novel you are working on is writing itself. Research suggests that flow comes when you "turn off" conscious thought. Distractions will disrupt this process, and they are not conducive to daydreaming either. So, whether you are seeking flow, or trying to let your mind wander in the hope you will solve a problem, make sure you *continued on page 38* ➤

◀ put your phone on silent and turn off email and social media alerts.

A word of caution, though. Creative insight doesn't hold the answer to all your problems. You may have come across research suggesting that if you have to make a complicated decision with lots of variables, it is better to go with your gut than to "overthink" it. That was the conclusion of early research in this field, but subsequent studies have failed to replicate the finding. Psychologist Magda Osman at Queen Mary University of London looked at the evidence and found that when it comes to making choices to achieve a goal, conscious thinking works best.

Conquer your fears

Fear is good – it plays an important role in our survival. But too much fear is a problem. Freud used psychoanalysis to unearth deep-seated fears so that patients could address them head-on. These days, the treatment for a phobia – such as an irrational fear of spiders or dogs – is more likely to involve gradually increasing an individual's exposure to the feared object, while they learn techniques to reduce their anxiety.

But in the future, psychologists may directly tap into the unconscious mind to treat phobias without traumatising people. That at least is the hope of a team of researchers in Japan and the US. They identified a distinctive pattern of brain activity associated with a fear they had induced in volunteers, and found that it could be reduced simply by rewarding them when their brains displayed it – and all the while the subjects were not conscious of this brain activity.

What about modulating our own irrational fears and anxieties? Whether it is triggered by a tiger or a spider, fear, like any emotion, is underpinned by physical signals in the body. These include a stronger and more rapid heartbeat as well as changes in patterns of blood flow. Such bodily signals are critical to the experience of fear, even though they are usually registered unconsciously.

Lowering their intensity will reduce the intensity of the emotion. When you are stressed, you can do this by slowing your breathing rate. This sends a powerful signal that you are not feeling anxious to part of your brain involved in processing emotion, which then helps regulate your heart rate.

A wolf in pet's clothing? Feeling the right amount of fear can be crucial for your survival

For the best results, breathe in for a count of four and out for eight, and within 5 minutes you should notice a significant reduction in anxiety. Music can have a similar effect, although there's no one type that works for everyone. "Generally, slower music, of moderate volume, can help to slow down respiration and help us to relax," says Maria Sanchez-Vives at the Cortical Networks and Virtual Environments in Neuroscience Research Lab in Barcelona, Spain.

Other techniques can help you control the kind of fear and anxiety that comes before an interview or speaking in public. Although it is a contentious topic, there is evidence that "power poses" – such as standing with your hands on your hips and your feet spaced well apart – can make people feel more confident. But faking it until you make it doesn't always work. A classic study found that people who fake-smiled by holding a pen between their teeth or lips became happier and more relaxed. Unfortunately, however, that result has not stood up to scrutiny.

"Swearing can reduce the pain you are feeling, as long as you don't usually swear a lot"

Finally, remember that your unconscious mind can trick you into feeling afraid when you have nothing to fear. In a phenomenon called emotion contagion, we unconsciously "catch" emotions via other people's non-verbal signals, such as their tone of voice, posture and even body odour. Empathy

specialist Christian Keysers at the University of Amsterdam, the Netherlands, thinks that when we detect the signals of an emotion like fear in others, our bodies reproduce the relevant physical signals, which our brains interpret as our own. Some people tend to do this more than others. And it is hard to consciously safeguard against, except by avoiding people who are fearful – whether that's face-to-face, on social media or even reading about them. The flip side of this, however, is that you can cultivate positive emotions simply by spending more time in the company of happy people.

Take control of pain

You might think that the amount of pain you feel is beyond your conscious control. Not so. Although you can't influence your physiological pain responses to things like an injury or illness, there are ways to reduce the amount of pain you perceive.

When Pavel Goldstein's wife was giving birth to their first child, she opted not to take any painkilling drugs. "We had a really long delivery – around 32 hours," he says, "and she asked me to hold her hand." Goldstein, a psychologist and neuroscientist at the University of Colorado, Boulder, noticed that this seemed to help his wife cope with the pain. This led him to conduct a series of studies in his lab. After he inflicted pain by heating volunteers' forearms, they reported that being touched by a stranger did nothing to reduce their discomfort, whereas being touched by their romantic partner did. And the more empathic the partner, the bigger



ROLAND PLAINPICTURE

the effect. “We already know that touch can communicate different emotions, for example, sadness and happiness. Perhaps we can also transfer our empathy through touch, resulting in analgesia,” says Goldstein.

Pain is particularly susceptible to influence because it’s not always helpful to feel it, says sensory neuroscientist Giandomenico Iannetti at University College London. As a result, we have ways to modulate pain, such as by the release of the body’s own painkillers. “Generally, you feel what it is useful to feel,” he says. But it is also possible to trick the brain into feeling less.

Another way to do this was discovered by Sanchez-Vives and her colleagues. Their studies show that if people can take “ownership” of a virtual reality arm – feeling that it is their own – their ability to tolerate painful stimuli applied to their real arm improves. “VR can be highly immersive, interactive and engaging,” she says.

In fact, VR simulations of natural environments and other scenes are currently used in some hospitals to reduce pain, or doses of painkilling medication, when treating burns patients or even during surgery. If you don’t have a VR arm available, you can create a similar effect simply by moving your body into unfamiliar positions. Iannetti’s team found that getting volunteers to cross one arm over the other was enough to reduce the pain caused by a laser heating the back of one hand. This seems to work by confusing the brain, which normally maps signals from your right hand to the right side of your world and vice versa.

There are other pain-busting strategies that you can try at home, too. Distraction is effective, as anyone who has ever watched a TV mounted above a dentist’s chair knows. Pleasant smells seem to reduce the intensity of a painful stimulus – although it’s not entirely clear why – as does looking at pictures you find beautiful. Swearing can also work, perhaps by triggering a hormonal response that reduces pain, as long as you don’t usually swear a lot.

Boost your memory

We tend to think of learning as hard work, requiring a lot of conscious effort. However, much of the process goes on behind the scenes. If you could improve the unconscious processing and retrieval of memories, you could game the system. And it turns out that you can – often with very little effort.

If you are learning facts such as foreign

phrases or historical dates, giving your study a boost could be as simple as taking a break. Lila Davachi at New York University has found that breaks help to consolidate new memories, improving recall later. However, for a time out to work, different brain cells need to be activated to those you used during the learning period. So, try not to think about what you have just been working on.

Better yet, sleep on it. It is well established that the brain processes memories during sleep, but it will do this more effectively if you leave the optimum time between learning and sleeping. Christoph Nissen at the University of Bern, Switzerland, found that a group of 16 and 17-year-olds performed best on tests of factual memory if they studied the material mid-afternoon, but they acquired skills involving movements faster if they practised in the evening. He suspects that the “critical window” between learning and sleep is shorter for movement-related learning than for other types of memory. Whether adults can benefit as much as teenagers from these windows isn’t clear. “There is evidence that adolescents have a higher capacity to learn – and they sleep better,” says Nissen. It is also worth noting that after about age 60, adults generally learn better in the morning.

Björn Rasch at the University of Fribourg, Switzerland, is investigating another way to boost learning during sleep. He has led a series of studies showing that adult language learners remember more when played recordings of foreign vocab while sleeping. “The literature on targeted memory

Take a break: Time out improves your unconscious processing of information

reactivation is growing rapidly,” he says. “Most findings are positive.” However, it is important that the words are played during non-REM, slow wave sleep, when factual memories are consolidated. Also, the volume of the recordings should not be so loud that it disrupts sleep. Alternatively, you could try using scents to cue learning in your sleeping brain. Rasch has found a boost to memory in people who smelled roses while learning a task and then again during slow wave sleep.

As well as laying down memories, your unconscious mind is responsible for retrieving them on demand. This process seems all too fallible, as those regular tip-of-the-tongue moments attest. However, an intriguing study suggests a way to improve things. Volunteers who had to answer multiple-choice questions on a computer did significantly better if told that the correct answer would be flashed up subliminally just before each question. In fact, they weren’t given the answers at all – their improved performance was all down to the placebo effect. The researchers think it worked by reducing performance anxiety and priming people for success.

If you have an exam, or even a pub quiz, coming up, that’s worth bearing in mind. Unlocking the knowledge stored in your unconscious mind could be as simple as believing that you can do it. ■

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