- Phobias



COME OUT OF YOUR SHELL

Social anxiety is more than just being shy. It's a phobia born out of our evolutionary past. But that raises a puzzling question: why do so many of us fear human interaction when we're supposed to be the most sociable species on the planet?

by DR DEAN BURNETT

Many people are afraid of many things. For good reason. But many people are afraid of things without good reason. Phobias – irrational fears such as a fear of spiders or enclosed spaces – are commonplace and familiar. They're deemed irrational because the average person in the modern world has little or nothing to fear from such things.

Unfortunately, the instincts and subconscious processes that influence and guide our thinking and behaviour run on much older programming. We instinctively fear certain things because we evolved in environments where they were a threat. So much so that ancient fear instincts, expressed in modern, rational contexts, can disrupt mental functioning and wellbeing. Hence phobias are anxiety disorders.

But while familiar, arachnophobia and claustrophobia aren't the most common phobias. Public speaking, talking on the phone, meeting new people, asking someone out… So many people are irrationally terrified of these objectively harmless actions that social anxiety isn't just the most common class of phobia, it's one of the most common mental disorders.

But why? Humans are arguably the most sociable species ever. So if we're so friendly and keen on interaction, why do so many of us fear this exact thing? To answer, we need to understand why humans are so social in the first place.

Humans aren't the most impressive species. We're not the strongest or fastest. We can't fly, we don't have armour or weapons, or even camouflage. And yet we've managed to completely dominate the planet anyway. How?

> "THE HUMAN TENDENCY TO FORM TRIBES IS WHAT HAS MADE US SO SUCCESSFUL"

THE SECRET TO OUR SUCCESS

It's because we're social, cooperative. A wolf or sabre-toothed tiger could easily dispatch a single human. But five people, all working together? No chance. The human tendency to form harmonious, cooperative tribes is what has made us so successful.

And if your species' success is due to cooperation and cohesion, then that affects how you evolve. The ability to interact with others, to understand, anticipate and coordinate with them, to please and reassure them, even to manipulate them via deceit (it's not all positive), these qualities led to success in primitive human societies. And the most successful individuals get to reproduce more, so these qualities became widespread.

The thing is, you need much more brain power to interact with others in such complex ways, than to be fast or strong. So, human brains →

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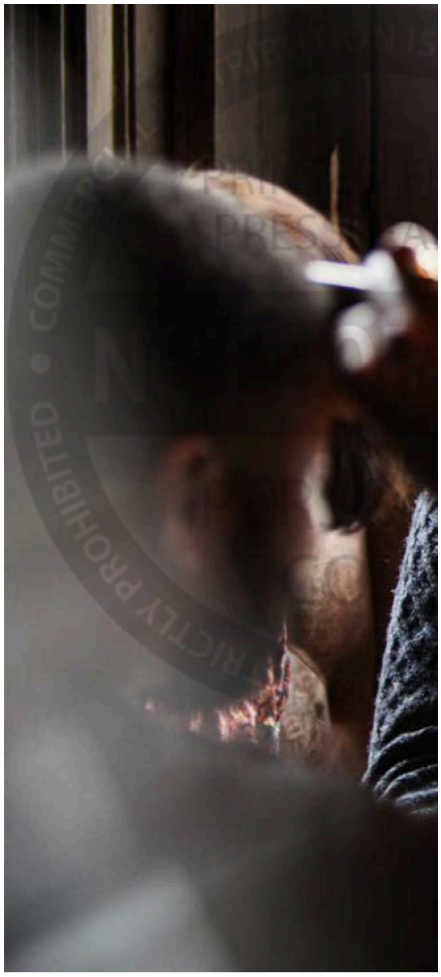

→ kept getting bigger and more powerful. And here we are today.

This is the 'ecological dominance-social competition model' of the evolution of human intelligence. While it's not the only theory about why we became as smart as we are, few would argue that sociability, communication and interaction with our fellow humans hasn't been a significant factor in our development. The evidence is present throughout our brains.

Take language, for example. It's a complex cognitive ability that's supported by dedicated brain regions. But what is language for, if not to communicate and to share complex information with others? In fact, some argue that, never mind sharing important info, we developed language primarily as a means of gossiping and reassuring others. So, the interaction was the point.

Then there's empathy – the ability to detect and share someone else's emotions. This is achieved via frighteningly complex neurological networks, where the brain's system for observing and mimicking the actions of others (so we can learn by observing, rather than trial and error) was connected by evolution to our emotional processing regions.

This gifts us the ability to read and recognise the emotions of others via the cues they give off with their bodies and faces, which can trigger the same emotions in us. Ergo, empathy. Facial expressions are a vital part of this process, hence we have dedicated regions of the visual cortex for processing faces.

"SOME ARGUE THAT, NEVER MIND SHARING IMPORTANT INFO, WE DEVELOPED LANGUAGE PRIMARILY AS A MEANS OF GOSSIPING AND REASSURING OTHERS"

Speaking of emotions and sociability, some emotions can only happen if others are involved. Guilt and embarrassment are extremely powerful feelings that can affect us deeply, but they

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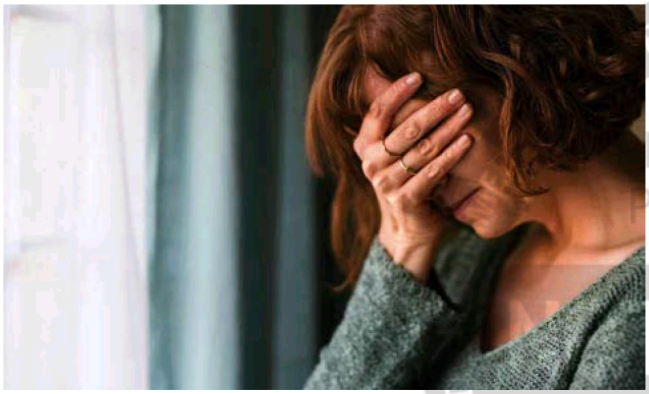
LEFT AND FAR LEFT Humans are Earth's most social species. But for people with social anxiety, that can feel like a paradox



ABOVE Navigating social interactions can leave a person feeling emotionally overwhelmed and physically exhausted

only occur when the perspectives of others are factored in.

We even have systems in the striatum, right in the very centre of the brain, that cause us to experience pleasure and feel rewarded when we have a positive social interaction and gain the approval of others.

All this reveals our brains are so heavily geared towards interaction and socialisation at the most fundamental levels. Why, then, are so many of us scared of it?

RISK VERSUS REWARD

Social interactions are very important, for all of us. We depend on them in many ways. But when you depend on something to such an extent, the possibility of not getting it, or losing it, is something to be feared.

Remember, humans' success was heavily dependent on our evolving in communal and cooperative tribes. When we lived in the wild, belonging to and being accepted by a social group was literally a matter of life or death. This meant that rejection by your tribe was genuinely dangerous, something to be avoided at all costs.

That may not be the case these days, but that's the context in which our brains evolved their social tendencies, so an aversion to social rejection and criticism from others is practically embedded in our DNA.

Whoever said, "Sticks and stones may break my bones, but words will never hurt me" couldn't have been more wrong. True, criticisms and insults don't cause physical damage, but physical trauma isn't the only type of injury that counts.

Studies reveal that, while a positive social experience leads to a neurological feeling →

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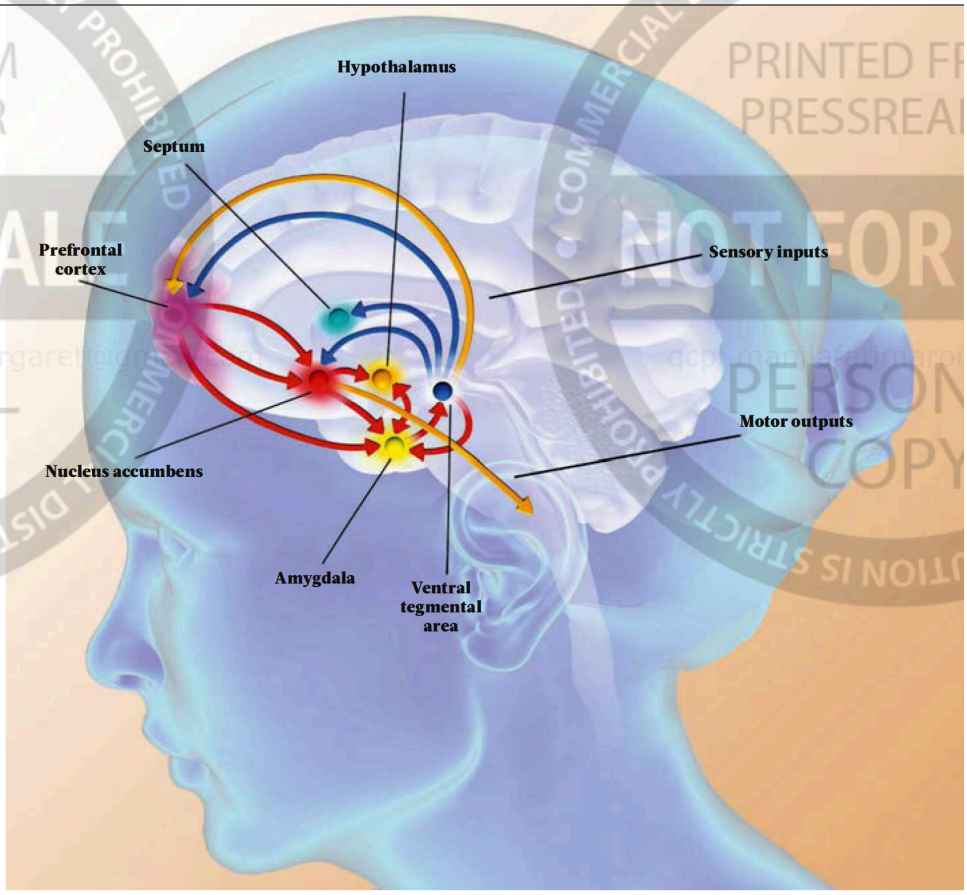

ABOVE The prefrontal cortex typically balances the fear response from the amygdala, but is slower and weaker in the socially anxious brain

→ of reward, experiencing social rejection leads to activity in the brain that's similar to physical pain. Being rejected hurts, even when it makes no sense.

One study that simulated rejection found that African American volunteers experienced the pain of being rejected even when told that those rejecting them were members of the Ku Klux Klan. Logically, those volunteers should actively want to be rejected by such individuals. But the deeper brain regions, the parts preoccupied with being social, don't see the bigger picture that way.

A CONSTANT THREAT

So, as far as the underlying processes of the human brain are concerned, social rejection genuinely hurts and is something to be avoided at all costs. However, the complexity of the modern world and the modern brain means we encounter the risk of rejection all the time.

Whereas we rarely encounter spiders or enclosed spaces, human interaction is a constant for the average person. So, in terms of raw numbers, social rejection – and thus, social anxiety – is more likely to happen.

As well as that, even a rudimentary human interaction is a cognitively complex affair that can be a minefield of risk. Even if it's just an idle chat about the weather, it still requires you to monitor and process the conversation in real-time, and come up with instant responses that are relevant and unlikely to offend. All of which means you have to factor in every bit of information you're getting from the other person – their words, but also their expression, posture, tone, inflection and so on.

This is a lot for the brain to deal with at the best of times, even if you have a clean bill of mental health. If you don't, it can be even harder to deal with.

In any given situation, the level of anxiety we experience is usually determined by interactions between the amygdala and the prefrontal cortex. In a nutshell, the amygdala generates all the emotions (mostly fear) that cause an anxiety response, and the prefrontal cortex, home of logic, analysis and self-control, counteracts it.

We need both to function normally and in most people, there's a sort of quasi-stable balance between the two. But in someone with an anxiety disorder, the balance has typically shifted towards the amygdala. Maybe the amygdala has become too powerful, maybe the prefrontal cortex's influence has weakened, but whatever the cause, the result is too much fear being produced, for no real reason.

Imaging studies have shown that, in socially anxious brains, the prefrontal cortex is much slower and weaker when it →

"THE LEVEL OF ANXIETY WE EXPERIENCE IS USUALLY DETERMINED BY INTERACTIONS BETWEEN THE AMYGDALA AND THE PREFRONTAL CORTEX"

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SOCIAL ANXIETY – COPING STRATEGIES

While severe social anxiety is best dealt with by trained professionals, if you find you're struggling with it on a daily basis, there are a few reliable methods to help you cope with it better

GRADUAL EXPOSURE

The problem with serious anxiety disorders and phobias is that they trigger such a strong fear response in the brain that it fails to learn that they're harmless. The fear response itself provides the negative consequences. A typical route to avoiding this fear response is to engage with the source (social interactions, in this case) in small, incremental doses. Say hello to a stranger, or give a brief thank you to a shop assistant, and build from there, giving your brain time to adjust without setting off alarm bells.

SCREEN INTERACTIONS

While there will be some negatives to doing so, social anxiety can be mitigated by communicating via screens and online messaging. It's not as rewarding as face-to-face interaction as far as our brains are concerned, but it comes with fewer risks, more control and much less uncertainty. Interacting through screens removes a lot of the pressure. Studies even suggest it's the preferred method of interaction for many neurodivergent people, who have a tougher time than most with socialisation.

VIRTUAL REALITY

Despite being a more advanced and 'work in progress' approach that won't be accessible to many yet, recent studies suggest that virtual reality therapy shows a lot of promise in this area. After all, given the previous points, it's a way for your brain to experience social situations without any of the actual risks involved. Over time, your brain may learn to deal with the real thing better.

REAPPRAISAL

A more recent approach involves essentially reframing the nerves and anxiety of social interactions and public speaking as something positive. Modern research suggests much of the emotion we experience is the result of our brains figuring out what the initial activity caused by an experience means, given the context, and producing the relevant emotion. But this means there's some flexibility and interpretation to emotional reactions. This is used to help people take what's usually felt as anxiety and instead perceive it as excitement, or eagerness, changing the whole experience. It's something successful performers have been doing for centuries.

AVOID ALCOHOL

There are many options to help you 'cope' with social situations, but many of them will be counterproductive and make the problem worse. The most obvious is alcohol. While alcohol does suppress internal doubts and provide 'liquid courage', it's a short-term solution at best. Besides the health and mental downsides of regular alcohol consumption, alcohol has these effects because it suppresses the prefrontal cortex, which may already be underpowered in socially anxious people.

ESTABLISH BOUNDARIES

If social anxiety is an issue for you, you could become guarded and not give anything of yourself away at all – to avoid all risk of rejection. But a totally closed-off approach gives you an impenetrable boundary. Those who share things with you and get nothing in return will learn not to do so in the future, so you've not really fixed the issue. On the other hand, you could embrace the 'face your fear' approach and force yourself to be as outgoing as possible. But sharing everything with someone, even if it's only to get over your anxiety, won't automatically be reciprocated or appreciated. Other people's boundaries matter as much as yours. It's a tricky balance to maintain, which again shows why anxiety around social situations occurs so often.



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ABOVE It's natural to want to be accepted, so if anything threatens this, our brains may respond with stress and anxiety

ABOVE RIGHT We develop an understanding of social status and group dynamics from a young age and carry it through to our adult lives

→ comes to responding to, and suppressing, fear activity in the amygdala.

THE EFFORT OF ENTERTAINING

Social anxiety is not all about rejection, though. There's also the workload. If we know we're going to be in a social situation with people we aren't already good friends with, we're going to spend a lot of time thinking about how we're going to come across. Our brains put a surprising amount of effort into making ourselves seem as positive as possible to others.

Likewise, after the social situation has ended, we'll spend a lot of time analysing it, thinking about what happened and how we came across.

It's a considerable cognitive workload. The fact that we do it so readily and so often reveals just how powerful and social our brains are. But it's both a blessing and a curse of powerful intelligence: the ability to speculate, simulate, predict and ask 'what if...?'

Our brains are constantly trying to predict what's going to happen and running simulations of events to try and figure it out. It's how we learn to avoid dangers and hazards before we encounter them. Unfortunately, the possibility of a threat can easily trigger the same stress and anxiety as a tangible one, hence people get regularly stressed about things that never actually happen, such as losing a job or failing an exam.

Because social interaction – and the approval that can come from it – is so important to us, our brains regularly come up with situations where we could mess it up. Anyone reading this will be familiar with the blushes that could be caused by returning to a party from the toilet with your flies undone or your dress tucked into your underwear, or the creeping dread of saying the wrong thing in a discussion.

"OUR BRAINS ARE CONSTANTLY TRYING TO PREDICT WHAT'S GOING TO HAPPEN AND RUNNING SIMULATIONS OF EVENTS TO FIGURE IT OUT"

Also, other people are complex and unpredictable. Our brains glean much information from other people just by observing them, but we can never really know what's going on internally. We can only speculate. And that means we could be wrong. Our brains already spend a lot of time on what's called 'counterfactual thinking', which

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is the tendency to analyse and speculate about alternative outcomes for events that have already happened. For example, say you narrowly avoid being hit by a car while crossing the road, you'll spend a long time afterwards thinking: "What if it had hit me?" Even though it didn't.

When it's something as important, but also complex and unclear, as social approval, our brains spend even more time on the 'what ifs'. What if they didn't like me? They were laughing, but was it with me or at me? They sounded friendly, but they could be mocking me now that I've gone. And so on.

All in all, even if there's zero rejection involved, social gatherings can still be exhausting for many. And over time, your brain will pick up on this pattern.

KNOW YOUR PLACE

We're social creatures, but this means we're often very focused on social status. From popular cliques in school, to 'keeping up with the Joneses' as adults, we don't just want to be accepted and liked by others, we want to be respected, admired even. To this end, our brains have complex neurological mechanisms for tracking social status and status change.

Indeed, so concerned are we about our social status, that becoming low status can lead to depression and anxiety. People don't just want approval because they're vain, or shallow... Well, not always.

Ultimately, our brains are very invested in, and reliant on, social interactions, relationships, and status. But this means that anything that risks harming or losing them is, again, perceived as a genuine danger, a threat. And when we perceive something as a threat, our brain responds with stress and anxiety.

So, every social interaction is ultimately a balancing act, between the potential for reward and the risk of rejection. And either way, it involves a lot of mental energy. Which, again, helps explain why social anxiety is so common. And while many label them as phobias, the workings of our brain would probably argue that they aren't irrational at all. **SF**

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Neuroscientist Dean explores the nature of dreaming in his latest book Emotional Ignorance *(£14.99, Guardian Faber).*