

# Researchers are starting to uncover its scientific basis of hypnosis

April 21 2017, by Devin Terhune And Steven Jay Lynn

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ou will no longer feel pain. Credit: wavebreakmedia/Shutterstock

Some argue that hypnosis is just a trick. Others, however, see it as bordering on the paranormal – mysteriously transforming people into mindless robots. Now our recent [review of a number of research studies](#)

on the topic reveals it is actually neither. Hypnosis may just be an aspect of normal human behaviour.

Hypnosis refers to a set of procedures involving an induction – which could be fixating on an object, relaxing or actively imagining something – followed by one or more suggestions, such as "You will be completely unable to feel your left arm". The purpose of the induction is to induce a mental state in which participants are focused on instructions from the experimenter or therapist, and are not distracted by everyday concerns. One reason why hypnosis is of interest to scientists is that participants often report that their responses feel automatic or [outside their control](#).

Most inductions produce equivalent effects. But inductions [aren't actually that important](#). Surprisingly, the success of hypnosis doesn't rely on special abilities of the hypnotist either – although building rapport with them will certainly be valuable in a therapeutic context.

Rather, the main driver for successful hypnosis is one's level of "hypnotic suggestibility". This is a term which describes how responsive we are to suggestions. We know that hypnotic suggestibility [doesn't change over time](#) and is [heritable](#). Scientists have even found that people with certain gene variants [are more suggestible](#).

Most people are moderately responsive to hypnosis. This means they can have vivid changes in behaviour and experience in response to hypnotic suggestions. By contrast, a small percentage (around 10-15%) of people are mostly non-responsive. But [most research on hypnosis](#) is focused on another small group (10-15%) who are highly responsive.

In this group, suggestions can be used to [disrupt pain](#), or to produce [hallucinations](#) and [amnesia](#). Considerable evidence from brain imaging reveals that these individuals [are not just faking or imagining these responses](#). Indeed, the brain acts differently when people respond to

hypnotic suggestions than when they imagine or voluntarily produce the same responses.

Preliminary research has shown that highly suggestible individuals may have unusual [functioning](#) and [connectivity](#) in the prefrontal cortex. This is a brain region that plays a critical role in a range of psychological functions including planning and the monitoring of one's [mental states](#).

There is also some evidence that highly suggestible individuals perform more poorly on cognitive tasks known to depend on the [prefrontal cortex](#), such as working memory. However, these results are complicated by the possibility that there might be different [subtypes of highly suggestible individuals](#). These neurocognitive differences may lend insights into how highly suggestible individuals respond to suggestions: they may be more responsive because [they're less aware of the intentions](#) underlying their responses.

For example, when given a suggestion to not experience pain, they may suppress the pain but not be aware of their [intention to do so](#). This may also explain why they often report that their experience occurred outside their control. Neuroimaging studies have not as yet verified this hypothesis but hypnosis does seem to involve changes in brain regions involved in monitoring of mental states, [self-awareness](#) and [related functions](#).

Although the effects of hypnosis may seem unbelievable, it's now well accepted that beliefs and expectations can dramatically impact human perception. It's actually [quite similar to the placebo response](#), in which an ineffective drug or therapeutic treatment is beneficial purely because we believe it will work. In this light, perhaps hypnosis isn't so bizarre after all. Seemingly sensational responses to hypnosis may just be striking instances of the powers of [suggestion](#) and beliefs to shape our perception and behaviour. What we think will happen morphs seamlessly

into what we ultimately experience.

Hypnosis requires the consent of the participant or patient. You cannot be hypnotised against your will and, despite [popular misconceptions](#), there is no evidence that hypnosis could be used to make you commit [immoral acts against your will](#).

## **Hypnosis as medical treatment**

Meta-analyses, studies that integrate data from many studies on a specific topic, have shown that hypnosis works quite well when it comes to treating certain conditions. These include [irritable bowel syndrome](#) and [chronic pain](#). But for other conditions, however, such as [smoking](#), [anxiety](#), or [post-traumatic stress disorder](#), the evidence is less clear cut – often because there is a lack of reliable research.

But although hypnosis can be valuable for certain conditions and symptoms, it's not a panacea. Anyone considering seeking hypnotherapy should do so only in consultation with a trained professional.

Unfortunately, in some countries, including the UK, anyone can legally present themselves as a hypnotherapist and [start treating clients](#).

However, anyone using hypnosis in a clinical or therapeutic context needs to have conventional training in a relevant discipline, such as clinical psychology, medicine, or dentistry to ensure that they are sufficiently expert in that specific area.

We believe that [hypnosis](#) probably arises through a complex interaction of neurophysiological and psychological factors – some described here and others unknown. It also seems that these [vary across individuals](#).

But as researchers gradually learn more, it has become clear that this captivating phenomenon has the potential to reveal unique insights into how the human mind works. This includes fundamental aspects of

human nature, such as how our beliefs affect our perception of the world and how we come to experience control over our actions.

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