



# THE PRACTICE

EXPLORE SKILLS, IDEAS AND THEORIES

**T**he 2010 explosion on the Deepwater Horizon drilling platform, which killed 11 men and caused a catastrophic oil leak, was the result of numerous human errors in cutting corners that could have prevented the explosion. Underpinning these errors was a series of cognitive biases, including confirmation bias. This led to engineers performing a well integrity test to look for evidence confirming that the well had been sealed, rather than objectively checking whether it had been.

David Robson, a science writer who has explored the role of cognitive biases in the Deepwater Horizon and other disasters in his book *The Intelligence Trap*, defines confirmation bias as ‘when you are only looking >



## Side-step the confirmation bias trap

Confirmation bias can lead to accidents and safety failings. Yet everyone is susceptible to it, even experts. So what measures can organisations and OSH professionals put in place to help navigate the pitfalls?

for the evidence that's going to back up a previous belief that you're holding – and, crucially, you're not looking for any evidence that might contradict what you already believe to be true'.

Everyone is susceptible to confirmation bias. It's not an ethical problem – people don't deliberately seek out evidence that confirms their view – but a cognitive one. Dr Paige Williams, a positive psychology researcher at the University of Melbourne, says that the human brain looks to process information as easily as possible, and that biases provide a shortcut. She adds: 'If you're a human, and you've got a brain, you have bias.'

Like other cognitive biases, it arises from what psychologist Daniel Kahneman calls 'system 1' thinking (our automatic, intuitive reactions), in contrast with 'system 2' thinking, which is slow and considered, and which we use to think through a situation logically (Kahneman, 2011). System 1 thinking is an essential part of daily life, but it causes difficulty when we rely on it to solve a complicated problem.

#### Expertise does not protect us

As well as being a handy shortcut, confirmation bias is the brain's way of dealing with cognitive dissonance – the process of holding two conflicting values or beliefs at the same time. Because that's uncomfortable, says Dr Joshua Ramirez, CEO of the Institute for Neuro and Behavioral Project Management, we cope by 'minimising' or 'rejecting' new information that conflicts with our existing beliefs.

The universality of confirmation bias can be hard to accept. It's easy to assume that our particular expertise and experience make us immune to it. In fact, says David, not only does expertise not protect against confirmation bias, it can exacerbate it. 'More intelligent people are often better able to find the evidence that supports their point of view, and they're also better able to rationalise any evidence that doesn't match their existing point of view.' Similarly, people with higher IQs tend to have a 'bigger

bias blind spot,' says David – in other words, they wrongly believe that others are more susceptible to cognitive bias than they are.

Even being aware that we are susceptible to confirmation bias isn't enough to protect us. As Dr Carla MacLean, a faculty member in the psychology department at Kwantlen Polytechnic University, Canada, explains, the problem is that 'people self-generate a theory about whether something has biased them and what direction they're biased in'. We don't, however, have the insight into our own cognitive processes to identify correctly when we are being biased.

Confirmation bias overlaps with other cognitive biases. These include memory bias (a tendency over time to forget elements of an event and exaggerate others), groupthink

(when people within a group prioritise consensus over reasoning) and outcome bias (an assumption that because a near miss didn't lead to disaster, there is nothing to worry about). In fact, confirmation bias can act as an 'amplifier of any existing biases that we might already have', explains Paige.

In the workplace, confirmation bias causes problems in multiple ways. In a meeting, for example, or when interviewing, we are 'more likely to pay attention to information that confirms what we already believe,' Paige says. 'Particularly for leaders, the questions they ask, the way they put together agendas for their team, and the way they put together progress markers and goals for their team can be inherently biased in what they believe "good" looks like in terms of outcome.'

Confirmation bias also plays a role in safety failings, in every industry from

aviation to waste management. In medicine, an over-reliance on past experience can lead doctors to ignore important symptoms mentioned by the patient. One study found that 6% of people who attend US emergency rooms are misdiagnosed (Kounang, 2022). 'Once doctors come to a particular diagnosis, they don't really interrogate that and look for disconfirming pieces of information that might change their mind,' David suggests.

#### Leaders need to admit their errors

If everyone is susceptible to confirmation bias, how can organisations reduce the risk of people falling prey to it? It requires an organisational culture where dissent and whistleblowing are encouraged, says David. Leaders need to model this approach so that

they 'show the intellectual humility where they can admit their own errors and they can embrace situations in which someone else has pointed out the errors in their thinking'.

For OSH professionals, objectivity is crucial – particularly when it comes to workplace investigations. In its workbook *Investigating accidents and incidents*, the GB Health and Safety Executive (HSE) states that any investigation 'should be thorough and structured to avoid bias and leaping to conclusions' (HSE, 2004).

Yet OSH professionals are as susceptible to bias as anyone else. A study by Carla and Itiel Dror demonstrates the influence of confirmation bias. Safety inspectors were provided with a company's previous safety history before being shown a picture of the work site and asked to identify safety violations. Inspectors who believed the

company had an unsafe history identified a greater number of hazards in the worksite photo than those who believed the company had a safe history (MacLean and Dror, 2021).

Carla says that inspectors often have a 'lot of familiarity with the investigative environment that they're walking into', particularly if the investigation is internal. 'You might even know the employees on the floor. You've got history with these people, with the people who are doing the work, and what can happen is that this familiarity can spring to mind an initial theory because you say, "I've seen this before."'

#### The problem of human error bias

One of the most common biases in investigations is human error bias: a tendency to attribute blame to human error rather than to other factors. Like any other cognitive bias, it is amplified by confirmation bias. Another study by Carla and Itiel asked professional investigators and undergraduates to read a summary of a workplace event and determine the cause. The summary was crafted to be objectively balanced in its implication of cause equally between two factors: a worker and a tyre. Both the professionals and the undergraduates displayed a human error bias (MacLean and Dror, 2023).

So what can we do to tackle confirmation bias? It's not something we can simply choose to avoid, says Itiel, a cognitive neuroscientist and principal consultant at Cognitive Consultants International. 'We have no way to control it by mere willpower – we have to take certain actions to control it.'

Workplace diversity, both demographically and in terms of occupational background, can help. 'Every time you've got diversity, as long as it's not causing conflict, the diversity does help because it forces more of an open mindset,' says Joshua. 'A more open mindset allows more information to come in and to be accepted.'

Carla cites one investigation team she works with that always includes someone from a policing background, with a 'deep understanding of the investigative process', >

**OSH PROFESSIONALS ARE AS SUSCEPTIBLE TO BIAS AS ANYONE ELSE**

as well as someone from industry who has ‘a lot of knowledge about how things operate in the workplace’.

### How to engage system 2 thinking

How can OSH professionals make sure that they engage system 2 thinking – the slow, considered, analytical type of thinking that helps us reach rational conclusions – and guard against confirmation bias in themselves and others?

‘Measure number one is not exposing people to irrelevant contextual information,’ says Itiel. This would include, for example, a company’s previous safety history.

Itiel recommends using the linear sequential unmasking technique, which prioritises and sequences the order in which information is examined (Dror and Kukucka, 2021). This is because the initial information in a sequence can create a first impression and expectation that then influences an individual’s perception and evaluation of subsequent information. When a forensic scientist investigates a crime, for example, they should examine the evidence from the crime scene first, such as bloodstain patterns, before they receive contextual information, such as the police theory of what happened.

Paige suggests that OSH professionals can monitor their own biases by using the ladder technique, which entails checking that each decision point in the process was ‘clean’ and ‘there wasn’t anything being inferred’. She explains: ‘This goes back to asking yourself: At what point did I infer information rather than actually having it in front of me? At what point did I make an assumption? Did I jump to a conclusion? Did I infer that, rather than having evidence to support it?’

Another technique is to ‘consider the opposite’: once you’ve arrived at a judgement, ask yourself what you would have seen if the opposite was true. ‘If I’m taking this piece of evidence and assuming it supports my point of view, how would I feel about the same piece of evidence if it had supported the opposite point of view? Would I have seen the same value in it?’

## CLEAR THINKING

# How to counter your own confirmation bias

- Read books that explain psychological biases, such as Daniel Kahneman’s *Thinking, Fast and Slow*.
- Use Edward de Bono’s Six Thinking Hats process to separate different parts of the thinking process. The red hat, for example, signifies feelings and hunches, while the black hat identifies problems and risks (De Bono Group, 2023).
- When carrying out an investigation, use the linear sequential unmasking technique, which prioritises the examination of objective and relevant information before considering contextual information.

Increasingly, OSH recognises the need for a more analytical approach. Ray Duffy, director of facilities and environment health and safety at Enara Bio, argues that the tendency towards human error bias, for example, was ‘a lot more common in the 1990s and early 2000s than it is now, because I think more and more in the UK, organisations have moved to a safety culture type of an approach’.

Historically, he says, there was a tendency for investigators to check whether the company had the correct safety procedures and policies and whether the employee had received training. If that was the case, and the employee still made a safety error, the conclusion was usually that the employee was to blame.

Now, he says, there is a greater willingness to investigate why an employee didn’t follow the rules – perhaps the procedures were too long or complex, or the employee was experiencing personal stress. Ray gives

the example of a labourer he observed on a capital infrastructure project who was working in a very unsafe way. He discovered during the investigation that the labourer was under huge pressure to finish the job quickly. Rather than punish the individual, the supervisor was held accountable (and formally warned) on the basis that deadlines were put before personal safety. Both the labourer and supervisor were provided with additional health and safety education and training as a countermeasure, with performance monitoring for several weeks afterwards.

Underpinning the more analytical approach, says David, is intellectual humility: being willing to learn from your own mistakes. If something doesn’t go right, then you need the curiosity to dig deep and find out what happened. In the case of Deepwater Horizon, a willingness to investigate near misses – and a willingness by management to take the problems seriously – would have prevented the disaster. ‘It’s true in any organisation, whatever your field, that having that curiosity to really dig deep into any unexpected events can be important to reduce the risk of disaster in the future.’ ●

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For references, see [ioshmagazine.com/confirmation-bias](https://www.ioshmagazine.com/confirmation-bias)