



Cognitive Bias in Incident Investigations

“I know exactly what happened.” If you’ve ever heard or said this after first finding out about an incident, this article is for you.

One of the pitfalls in the incident investigation process is related to cognitive biases. They can affect any part of the investigation, from initial data collection through the analysis and conclusions, and therefore the effectiveness of solutions is dependent on combating them where possible. There are many cognitive biases that might affect an incident investigation, and they can be compounded by each other.

Some common cognitive biases that might affect incident investigations:

- Confirmation bias: tendency to process information by looking for or interpreting information that is consistent with existing beliefs.
- Fundamental attribution error: tendency to attribute another’s actions to their character or personality while ignoring / under-emphasizing situational and environmental factors.



- Past-experience bias: making judgments based predominantly on previous experience.
- Anchoring bias: tendency to give disproportionate weight to the first data received.
- Hindsight bias: tendency to perceive past events as having been more predictable than they were.
- Conservatism in belief revision: tendency to revise one’s belief insufficiently when presented with new evidence.
- Overconfidence: tendency to wrongly overestimate knowledge or ability.
- Stereotyping: application of an over-generalized belief.
- Choice-supportive bias: tendency to retroactively ascribe positive attributes to an option one has selected.
- Bandwagon effect: tendency to adopt certain beliefs, behaviors, styles, or attitudes because others have them.
- Blind-spot bias: the tendency to see oneself as less biased than others or to be able to identify

more cognitive biases in others than in oneself.

- Linear causality bias: assuming that there is a direct, one-way chain of causes and effects between elements in a system.

Just knowing that cognitive biases exist and can negatively affect the effectiveness of an incident investigation isn’t enough, but it is helpful in reducing their effects. Therefore, training investigators in different cognitive biases, especially those most relevant to investigations, is beneficial. The use of diverse investigative teams is another way to contend with biases. Another technique is to formalize the causal hypothesis process at the beginning of the investigation by writing down the hypothesis, noting reasons it might be wrong, and directing the investigation to allow for alternatives to the hypothesis. This should include considering a broad range of causal factors: human, process, technical, equipment, and environmental at a minimum.

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Enhance your safety and leadership skills!



Our next Safety Leadership Workshop is scheduled for May 21-22, 2024 in Houston, TX. Contact us to book your seat now!

Combining Business with Pleasure

Traveling for work brings wonderful opportunities for side visits.

Our Sustainability Director, Sue Staley, had never been to Saudi Arabia and a business trip in March 2023 gave her a chance to explore the region. She visited Jordan before the business meeting and then visited the world heritage site of Hegra in Al Ula, Saudi Arabia after the meeting. These two locations share an ancient past: the Nabatean people. The Nabateans became wealthy traders linking east and west trade routes around 300 BC. Petra in Jordan and Hegra in Saudi Arabia have ancient carved tombs that demonstrate the master craftsmanship of the Nabatean people.



The trip to Jordan also included an overnight stay in the Wadi Rum desert, a camel ride at sunrise in the Wadi Rum, and a luxurious stay at a resort on the Dead Sea. Sue especially enjoyed visiting the purported site of Jesus' baptism at the Jordan River in Bethany.

The people of Jordan and Saudi Arabia were welcoming, curious, and helpful. The hospitality of the region was felt. The food was delicious.

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At the Podium

vPSI consultants are frequently called on to present at risk and safety conferences. The following are upcoming opportunities to catch one of our compelling speakers:

- April 19, at the ASSP Gulf Coast Professional Development Conference at the Norris Conference Center in Houston, TX, Angel Simmons will be presenting on "Fitness for Duty and Incident Investigations," vPSI's latest conference topic offering.
- May 16th in Fort Worth, Texas, Norman Ritchie will once again be presenting his SPE Distinguished Lecturer topic, "New Methods for Learning from Incidents Involving Human & Organizational Performance."
- September 10-12, at the SPE International Health, Safety, Environment, and Sustainability Conference and Exhibition at the Abu Dhabi Energy Center in Abu Dhabi, United Arab Emirates, Norman will be presenting both his Distinguished Lecturer topic and a new paper on Riskwashing, and Tom Knode will be presenting on, "A New Safety Culture Assessment Model: Understanding Employee Engagement in a Company's Safety Program."
- September 23-25, at the ASSP Region III PDC at the Hurst Conference Center in Hurst, Texas, Norman Ritchie will be presenting his SPE Distinguished Lecturer topic. Angel Simmons will also be presenting again on "Fitness for Duty and Incident Investigations."
- September 23-25, at the SPE ATCE in New Orleans, Louisiana, Tom Knode will be moderating a panel on Safety Leadership.

Out and About

There are multiple opportunities to catch up with vPSI consultants over the coming months, here are a few:

- April 19th, Norman Ritchie, Tom Knode, and Angel Simmons will be exhibiting at the ASSP Gulf Coast Professional Development Conference in Houston, TX at the Norris Conference Center.
- April 29-May 2, Norman Ritchie and Rick Theriau will be exhibiting at the Energy Safety Conference hosted by Energy Safety Canada at the Fairmont Banff Springs Hotel in Banff, Alberta, Canada.
- September 23-25, Norman and Angel will be at the Region III ASSP Professional Development Conference at the Hurst Conference Center in Hurst, Texas.

Combining Business with Pleasure

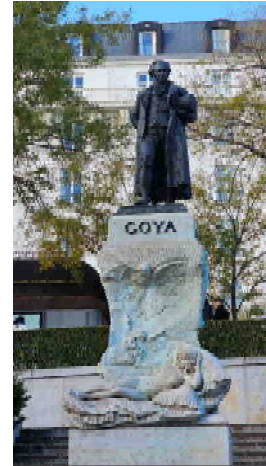
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Norman Ritchie, vPSI Co-founder and Principal, recently toured Europe presenting his SPE Distinguished Lecturer topic, “New Methods for Learning from Incidents Involving Human & Organizational Performance.” While there wasn’t much opportunity to combine business with pleasure on this whirlwind tour, he did manage to capture some amazing pictures.



The Prado Museum, Museo Nacional del Prado, in Madrid, Spain

Inside the Prado Museum (“Museo Nacional del Prado”): Spain’s pre-eminent art museum is located in downtown Madrid. Being a big fan of public transit, Norman very much enjoyed riding around the city’s Metro system. The museum hosts masterpieces by, amongst others, Bosch, Dürer, Raphael, Titian, Rubens, Rembrandt, and Goya (see his statue on the right).



Statue of Goya in Madrid

While December might not seem the ideal time to visit northern Italy, it does present the opportunity to enjoy Christmas markets. In perhaps Milan’s most spectacular location, this market (below left) wrapped around the Duomo di Milano cathedral, adjacent to the world famous fashion mecca of the Galleria Vittorio Emanuele II, Italy’s oldest active shopping gallery and a major landmark of Milan.



Christmas Market in Milan, Italy

Kavala, Greece boasts this spectacular aqueduct, locally called the “Kamares“, or arches. It is 280m long (920’), maximum height of 25m (82’). The original aqueduct was built by the Romans (two thousand years ago!) Over the centuries the structure has undergone many modifications, repairs and improvements, with some dating to the Byzantine Empire and the time of Suleiman the Magnificent. It supplied drinking water to the city up until the early 20th century.



Aqueduct in Kavala, Greece

Lisbon, Portugal takes sardines extremely seriously. So seriously, in fact, that the airport has a shop entirely devoted to their sale.

Sardines are a staple of Portuguese cuisine. In the summer months, the Portuguese people grill their sardines over charcoal, with the aroma attracting locals, tourists, and cats.



Sardine Shop in Lisbon, Portugal



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When conducting interviews, consider not just the people at the scene but also those involved in the design, construction, maintenance, and operations of relevant equipment / processes. Context drives behaviors, and organizational trust impacts openness.

During data gathering and interviews, avoid leading questions. Keep questions varied and broad, even if the investigator thinks they know the answer

(s). Cross-check respondents' replies with each other and with other available data. Separate out supervisors / managers during the interview process so their perceived authority does not color other respondents' answers. During analysis, cross-check the hypothesis with the identified alternative(s) and any other alternatives that come up throughout the course of the investigation.



There are also ways to combat cognitive bias in the general work environment, outside of incident investigations. Individuals can be encouraged to increase awareness of the consequences of unplanned events, adopt proactive attitudes towards risk, use contingency checklists and procedures, and improve their knowledge base through continued and diverse education. What if questions and critique of self as well as seeking critiques from others are also useful. Combating a group's cognitive biases might include structural factors, accessing outside sources of information, setting up effective decision-making procedures, counteracting pressures on uniformity, inviting constructive dissent / arguments, appointing a devil's advocate to counter arguments, minimizing supervisory input during the beginning / design phase of a new process, and establishing standards for critical evaluation. Discuss bias with employees to help them understand the impact.

Humans are an inevitable part of the work process, and usually that's a good thing. However, knowing where foreseeable human failures are most likely to affect the effectiveness of a procedure or task is a step towards minimizing the probability of those failures.

vPSI's Latest Line of Business

vPSI and its technology partner, Veris Global, with the technical guidance of Bruce Pettengill have teamed up to create the latest vPSI offering: mock OSHA inspections.

vPSI consultants will visit client facilities and let them know where vulnerabilities are without having to suffer the potential citations and fines that OSHA would assess. This could potentially reduce incidents and save clients thousands of dollars! Contact us if you're ready to have your facility evaluated.



The answer is yes; now what's your question?