7/2/2025

CAMBRENSIS

PERCEPTION, HUMAN ERROR, AND SAFETY?

- a constructed reality. | David Slater

PERCEPTION, HUMAN ERROR, AND SAFETY —A CONSTRUCTED REALITY

David Slater – dslater@cambrensis.org

ABSTRACT

Perception is not an objective recording of the world but an active construction, shaped by the brain's sensory gating, reticular activation, and predictive coding. These mechanisms filter, prioritize, and interpret sensory input, transforming fragmented data into a coherent experience. However, because this process is individualized, shaped by cognitive biases, neurobiology, and past experiences, perception of error is also subjective. What one person detects as a critical mistake may be overlooked by another, highlighting the variability in how individuals process discrepancies between expectation and reality.

This subjectivity has profound implications for human error and safety. Errors are not absolute but perceptual mismatches, influenced by an individual's sensory thresholds, attentional biases, and predictive assumptions. In high-risk environments, failure to recognize the variability in error perception can lead to communication breakdowns, inconsistent risk assessments, and ineffective safety interventions. Human factors engineering must accommodate perceptual diversity, ensuring that systems are designed with redundancy, adaptability, and cognitive diversity in mind. Safety strategies must move beyond rigid protocols and instead embrace flexible, user-centered approaches that account for differences in attention, expectation, and sensory processing.

Understanding perception as a constructed reality rather than a fixed truth allows us to reframe human error—not as failure, but as a natural consequence of subjective information processing. By designing systems that align with the way humans actually perceive, predict, and correct for mismatches, we can create safer, more resilient working environments that reduce the impact of perceptual variability and enhance collective problem-solving, decision-making, and risk management.

OVERVIEW

The world we experience is not an objective reality but a computed picture, carefully assembled by the brain from sensory fragments, past experiences, and predictive models. What we see, hear, and feel is not a direct representation of the external world but a structured interpretation, dynamically constructed moment by moment through an intricate interplay between sensory gating, reticular activation, and predictive coding. These three systems work together as a unified mechanism, transforming raw sensory input into the stable, coherent, and meaningful world we perceive.

At its foundation, perception begins with raw sensory input, the continuous flood of signals entering the nervous system through the eyes, ears, skin, and other sensory receptors. However, the brain does not absorb these signals passively. Instead, sensory gating acts as the first layer of filtration, determining which inputs are relevant and which are discarded. Without this filtering, perception would be chaotic—every sound, flicker of light, and tactile sensation would compete for attention, making it impossible to focus on anything meaningful. Sensory gating ensures that only a fraction of incoming information is allowed to reach higher processing

centres, selecting signals that are strong enough, novel enough, or behaviourally significant enough to warrant further analysis.

But even this gated stream of sensory data does not yet form a picture of reality. Before sensory information can be interpreted as meaningful perception, it must first be prioritized and modulated by the Reticular Activating System (RAS). The RAS acts as the brain's attentional amplifier, enhancing signals that are important for survival, learning, or goal-directed behavior, while suppressing distractions. It functions as an early warning system, directing awareness toward sudden changes in the environment, potential threats, or opportunities for action. When you snap to attention at an unexpected sound or instinctively turn toward movement in your peripheral vision, it is the RAS ensuring that your perception remains adaptive, responsive, and behaviourally optimized.

Yet, even as sensory data are filtered and prioritized, they are still nothing more than isolated sensory fragments—patches of colour, pulses of sound, fluctuations in temperature. It is predictive coding that transforms these fragments into a unified, intelligible experience. Rather than waiting for sensory input to fully arrive before constructing perception, the brain operates proactively, generating internal predictions about what it expects to perceive and cross-referencing these predictions with incoming sensory information. This means that we do not experience reality as it is but as the brain anticipates it will be, filling in gaps, smoothing out inconsistencies, and suppressing unnecessary details.

Reticular Activation: The Brain's First Line of Sensory Selection and Arousal Regulation

Perception does not begin in the higher cortical areas where thoughts and conscious awareness emerge. Instead, it starts much earlier, deep within the brainstem, in a system that determines what sensory input is even worthy of being processed further. This system—the Reticular Activating System (RAS)—serves as the brain's primary sensory gatekeeper and arousal regulator, ensuring that attention is directed toward behaviourally significant stimuli while background noise and irrelevant input are filtered out.

The RAS is the earliest control point in sensory processing, acting as a global filter that determines which information is passed to the thalamus and cortex and which is suppressed before it ever reaches conscious awareness. It functions as an early warning system, monitoring sensory input for intensity, novelty, and biological relevance, while also regulating alertness, attention, and cognitive engagement. When a stimulus is deemed important—whether due to its suddenness, emotional significance, or survival relevance—the RAS amplifies its signal, increasing cortical activation and preparing the brain to respond. Conversely, when a stimulus is repetitive, weak, or irrelevant, the RAS actively inhibits its transmission, preventing cognitive overload and conserving attentional resources.

The mechanisms governing reticular activation are both automatic and adaptive, ensuring that perception remains responsive yet efficient. At the lowest level, the RAS detects changes in sensory input, prioritizing unexpected or biologically urgent stimuli over familiar background noise. This process is what allows us to remain vigilant in dynamic environments, while filtering out distractions that would otherwise overwhelm cognitive processing.

Functionally, the RAS is not only involved in sensory filtering but also in regulating levels of consciousness, wakefulness, and focus. It plays a critical role in the sleep-wake cycle, modulating cortical activity to transition between deep sleep, drowsiness, and full alertness. The system is also deeply interconnected with emotion and motivation, linking perception to

the limbic system and prefrontal cortex, which assess the behavioural significance of sensory input. This ensures that the brain not only detects sensory events but also responds to them in a way that aligns with goals, emotions, and survival needs.

Without the RAS's regulatory influence, perception would be chaotic, as the brain would be bombarded with sensory data without an effective filtering mechanism. Instead, by dynamically amplifying or suppressing input based on priority and context, the RAS ensures that only the most relevant information is allowed to shape conscious awareness, forming the foundation upon which all higher-level cognitive processing is built.

Sensory Gating: The Brain's Selective Filter for Managing Perceptual Overload

While the Reticular Activating System (RAS) determines whether sensory input is worth considering at all, it is sensory gating that refines this selection, ensuring that only the most relevant signals progress through the neural hierarchy to influence perception. Acting as a dynamic filter, sensory gating prevents the brain from being overwhelmed by the sheer volume of incoming data, suppressing redundant, predictable, or irrelevant stimuli while allowing critical information to reach higher-order processing centres.

Sensory gating functions across multiple levels of neural processing, from the brainstem and thalamus to the sensory cortices and prefrontal regions. Its role is to modulate the intensity and flow of sensory input, prioritizing information that aligns with behavioural goals and attentional demands. Without this process, perception would be cluttered with excessive detail, making it impossible to focus on any one thing while ignoring distractions.

At its most basic level, sensory gating operates through inhibitory neural circuits that suppress weak, repetitive, or background stimuli. This explains why we can tune out the constant hum of an air conditioner or the pressure of clothing against our skin, yet immediately register an unexpected sound or touch. The thalamus plays a critical role in this process, serving as a relay station that actively filters and routes sensory signals to their appropriate cortical destinations. Meanwhile, top-down control from the prefrontal cortex and limbic system modulates sensory gating in response to cognitive and emotional context, ensuring that perception remains adaptable rather than rigid.

Neurochemically, sensory gating is regulated by inhibitory GABAergic circuits, alongside cholinergic, dopaminergic, and serotonergic pathways, which fine-tune the balance between sensory suppression and amplification. Deficits in these systems are linked to sensory processing abnormalities in neurodivergent conditions, particularly autism, ADHD, and schizophrenia. In autism, weakened sensory gating results in heightened sensitivity to environmental stimuli, leading to sensory overload and difficulty ignoring background noise. In ADHD, excessive suppression of sensory input may contribute to inattention and hyperactivity, as the brain seeks out additional stimulation to maintain engagement. In schizophrenia, failures in sensory inhibition can lead to sensory flooding and perceptual disorganization, contributing to symptoms such as hallucinations and distractibility.

Sensory gating is not a passive mechanism but an active, context-dependent process that continuously adjusts to situational demands, attentional priorities, and learned experience. By allowing the brain to filter out the noise while enhancing meaningful signals, it provides the foundation for stable, efficient perception, ensuring that we can focus on what matters without being overwhelmed by the ever-changing sensory world.

Predictive Coding: The Brain's Internal Model of Perception

While reticular activation and sensory gating regulate the flow of sensory data into the brain, predictive coding is the mechanism that transforms these signals into a structured, meaningful perception of reality. Rather than passively processing incoming stimuli, the brain operates as an anticipatory system, using past experiences to generate expectations about what it is likely to perceive. This allows it to construct a stable, efficient, and coherent model of the world, filtering out expected input while focusing cognitive resources on the unexpected mismatches that require attention.

At its core, predictive coding functions as a predictor-corrector mechanism, continuously comparing top-down expectations with bottom-up sensory input. When sensory information aligns with predictions, perception remains stable, requiring little additional processing. However, when a prediction error occurs—when sensory input deviates from expectation—the brain must update its internal model or suppress the discrepancy to maintain perceptual continuity. This process underlies perception, learning, decision-making, and attention, ensuring that the brain remains adaptive while avoiding unnecessary cognitive load.

The hierarchical structure of predictive coding ensures that higher brain regions send predictions downward, while lower sensory areas report deviations upward. This allows for efficient error correction, prioritizing significant mismatches over minor variations. Importantly, not all prediction errors are treated equally—high-precision errors, such as unexpected movement or sudden changes in the environment, demand immediate updates, while low-precision errors, such as minor deviations in familiar stimuli, may be ignored to maintain stability.

Predictive coding is what allows perception to feel seamless and effortless. When reading, for example, the brain predicts words based on context, minimizing the need for letter-by-letter analysis. When navigating familiar environments, it suppresses predictable background details, allowing attention to focus on unexpected changes. Even motor actions rely on predictive adjustments, as the brain anticipates the sensory consequences of movement and modifies commands in real time.

This mechanism is not independent of sensory gating or reticular activation but works in concert with them to regulate perception. The RAS determines whether a stimulus is even worth processing, sensory gating filters and refines what enters awareness, and predictive coding structures the remaining data into an internally coherent model. Together, these systems ensure that perception is efficient, stable, and responsive, allowing the brain to construct a functional version of reality that balances accuracy with cognitive efficiency.

The function of predictive coding is to minimize uncertainty and optimize cognitive efficiency. If an incoming sensory signal matches what the brain predicted, no further processing is needed—the experience is simply confirmed as expected. But when a prediction error occurs—when reality does not align with expectation—the brain must correct its model, either by updating its understanding of the world or suppressing the error if it is deemed unimportant. This predictor-corrector cycle is what allows perception to remain fluid and stable, rather than being disrupted by every minor inconsistency in sensory input.

The world we see, then, is not a raw sensory feed but a simulation computed by the brain, where only the most relevant and reliable data contribute to the final perceptual image. The trees you pass while walking do not flicker in and out of awareness because the brain predicts their continued presence and only updates their position when new sensory information suggests movement. Speech perception is not a matter of processing each phoneme in real time

but an act of anticipation, where the brain predicts what will be said next based on context and prior knowledge. Even vision itself is not a camera-like recording of the external world but an interpreted model, where the brain fills in gaps and corrects distortions to maintain a coherent representation of space and motion.

This unified system of sensory gating, reticular activation, and predictive coding is what allows perception to feel seamless, effortless, and immersive. The brain constructs reality by first filtering sensory input to prevent overload, amplifying what is important, and then structuring it into a stable, meaningful representation. Each of these mechanisms ensures that perception remains selective rather than overwhelming, adaptive rather than chaotic, and continuous rather than fragmented.

But this process is not identical in every individual. Differences in sensory gating thresholds, reticular activation bias, and predictive coding precision shape the variability of human perception, contributing to different cognitive styles, attentional patterns, and sensory experiences. In some individuals, sensory gating may be too weak, leading to heightened sensitivity and sensory overload, while in others, it may be too aggressive, causing attention to shift rapidly in search of new stimuli. Differences in predictive coding can make some people hyper-reliant on past experience, perceiving the world rigidly through learned assumptions, while others may be constantly updating their predictions, making perception more fluid but less stable.

This is why neurodivergence—particularly in autism, ADHD, and schizophrenia—is often linked to differences in sensory perception and predictive processing. In autism, weakened sensory gating and altered predictive models may result in hypersensitivity to environmental stimuli, difficulty filtering social cues, and a world that feels overwhelmingly unpredictable. In ADHD, excessive sensory suppression combined with overly flexible predictive coding may lead to rapid attentional shifts, difficulty maintaining focus, and an increased need for sensory input to sustain engagement. In schizophrenia, a failure to properly suppress prediction errors may contribute to hallucinations and perceptual distortions, as the brain assigns too much weight to unexpected sensory mismatches.

Understanding this unified system of perception challenges the traditional idea that we "see" the world as it truly is. Instead, perception is an active computational process, a continuous interplay between what we expect, what we actually sense, and how the brain corrects for mismatches. Every moment of perception is an act of data interpretation, error correction, and model refinement, allowing the brain to construct the most stable, coherent, and useful version of reality possible.

This means that the world we experience is not simply “out there” waiting to be perceived—it is actively built from within, shaped by what the brain allows in, what it prioritizes, and what it expects to find. In this sense, reality is not a passively received truth but a cognitive hypothesis, an ever-evolving best guess about the world, continually refined by the systems that filter, amplify, and predict what matters most.

Perception as a Personal Reality: The Individualized Nature of the Unified System

The world we experience is thus not an objective, fixed reality but a personalized construction—a dynamically generated model shaped by the interplay of reticular activation, sensory gating, and predictive coding. This unified system is what enables each individual to filter, prioritize, and interpret sensory input, forming a perceptual reality that is uniquely their

own. No two people perceive the world in exactly the same way because the balance of sensory filtering, attentional modulation, and predictive refinement varies across individuals, influenced by genetics, learning, environment, and neurodevelopmental differences.

Just as there is a natural spectrum of physical skills—some people excelling in athleticism, others in fine motor precision—so too is there a spectrum of perceptual abilities. Some individuals may have a highly sensitive sensory gating system, allowing them to detect subtle environmental details, while others may filter aggressively, focusing only on broad patterns. Some may rely heavily on predictive coding, forming strong expectations and structured perceptions, while others may remain more flexible and reactive to raw sensory data. These differences are neither deficits nor malfunctions but customizations of the brain's perceptual model, tuned to different ways of engaging with and navigating the world.

Understanding perception as an individualized construct rather than a universal reality helps reframe neurodiversity—not as a deviation from a singular "normal" but as a natural variation in the way human cognition processes sensory information. Just as people differ in cognitive styles, problem-solving approaches, and talents, so too do they differ in how they filter, predict, and experience reality.

Accepting this intrinsic variability is crucial, not only in recognizing the diversity of human perception but also in moving beyond rigid assumptions about what is "normal" or "expected." Whether someone is more attuned to sensory detail, prone to distraction, highly adaptive to change, or reliant on rigid predictive structures, these are simply different expressions of the same fundamental system—a system that, in every case, serves the ultimate purpose of constructing a coherent and functional experience of reality. The challenge is not to enforce a singular model of perception but to understand, respect, and accommodate the rich spectrum of perceptual experiences that make human cognition as diverse as any other aspect of human capability.

HUMAN ERROR OR REALITY MISMATCH?

The idea that perception is subjective has profound implications for how we understand the concept of error. If perception is an individual's constructed reality, then the perception of error—essentially, the recognition of a mismatch between expectation and reality—must also be subjective. This subjectivity stems from the unique cognitive frameworks that each individual constructs, shaped by their experiences, environment, and neurobiological mechanisms.

At the core of this subjectivity is the brain's reliance on predictive models. These models are deeply personal, built over time through exposure to the world and informed by past successes, failures, and learned patterns. What one person considers a glaring error—an unexpected shift in a pattern, a deviation from routine, or a perceived flaw in an argument—may seem inconsequential or even invisible to another whose internal model does not assign it the same significance. This is because the brain evaluates mismatches between sensory input and predictions not in absolute terms, but through the lens of individual expectations and priorities.

Emotion and cognition also colour the perception of error. Expectations shaped by optimism, pessimism, or past trauma can either amplify or dampen the recognition of mismatches. A person primed to expect failure may perceive errors where others see none, while a more optimistic individual might overlook genuine inconsistencies, dismissing them as irrelevant.

These biases underscore the deeply personal nature of error perception—it is not just a mechanical process but one interwoven with beliefs, feelings, and learned behaviors.

Neurodivergence further illustrates the subjectivity of error perception. In autism, for instance, weakened predictive models can lead to an increased sensitivity to mismatches, making even small deviations from routine or expectation feel overwhelming. The world may appear unpredictable and chaotic, with each unexpected event magnified as a significant error. On the other hand, individuals with ADHD often have overly flexible predictive models, leading to frequent error detection and rapid correction. This can result in a fragmented experience of reality, where attention shifts constantly to address perceived mismatches, even if they are minor or inconsequential. Such variations are not deficits but different ways in which the brain processes and prioritizes the world.

HUMAN FACTORS?

The recognition that perception is subjective—and that the experience of error varies from one individual to another—offers a profound opportunity to rethink how we design human factors solutions for safer working environments. If each person perceives reality through their own cognitive framework, shaped by their sensory input, predictive models, and personal experiences, then safety strategies must embrace this diversity. Instead of imposing rigid, one-size-fits-all solutions, we must design systems that adapt to the variability of human perception and capitalize on individual strengths while mitigating potential risks.

Yet, the subjectivity of error perception is also adaptive. It allows individuals to prioritize errors based on their unique goals, contexts, and environments. This flexibility ensures that cognitive resources are allocated efficiently, and that perception remains tuned to what matters most to the individual. However, it also highlights the importance of empathy and open communication in collaborative settings, where differing error perceptions can lead to misunderstanding or conflict.

Designing effective safety systems should begin by supporting the natural variability in how individuals perceive and process sensory input. This means creating redundancy in how critical information is presented, ensuring that it reaches workers through multiple sensory channels such as visual alerts, auditory signals, and tactile feedback. Customization is equally important, allowing individuals to adjust the way they interact with systems to match their unique cognitive and sensory preferences. Clarity and simplicity should guide these designs, reducing cognitive load and ensuring that safety-critical information is accessible and unambiguous to everyone.

Since the perception of error is inherently subjective, it is essential to acknowledge that what one person identifies as a problem might not even register as significant to another. To address this, workplaces should foster shared mental models through training and collaboration, aligning team members' expectations about what constitutes an error or risk. Open reporting cultures are also critical, encouraging workers to report discrepancies without fear of judgment or reprisal, even when they are unsure of their significance. Additionally, technology can play a role in standardizing error detection, offering objective support to complement the subjective perceptions of individuals.

The subjectivity of error perception also has the potential to enhance resilience. When teams are composed of individuals with varied cognitive styles and perceptual thresholds, they are better equipped to identify a broader range of risks and solutions. Encouraging collaboration and cross-checking among team members can help catch errors that might go unnoticed by a single individual. Combining human insights with automated systems further strengthens this

approach, ensuring a comprehensive view of safety performance that accounts for both subjective and objective factors.

Conclusion

Ultimately, this perception of error reflects the dynamic and individualized nature of human cognition. It is a process not just of identifying mismatches but of interpreting them through the filters of personal experience, sensory processing, and emotional state. Recognizing this subjectivity encourages a more nuanced understanding of how we interpret and respond to the world—and to each other. In acknowledging the diversity of perceptual realities, we can begin to appreciate that there is no single, objective experience of error but rather a rich spectrum of interpretations that reflect the individuality of the human mind.

By embracing the subjectivity of perception and the diversity of human cognition, we can move toward safety strategies that are flexible, inclusive, and adaptive. Safer working environments emerge not from assuming uniformity but from recognizing and leveraging the natural variability in how individuals perceive and respond to the world. This approach fosters not only greater safety but also a culture of collaboration, innovation, and resilience, equipping workplaces to navigate the complexities of modern challenges effectively.

References

- Arnal, L. H., & Giraud, A. L. (2012). Cortical oscillations and sensory predictions. *Trends in Cognitive Sciences, 16*(7), 390-398. https://doi.org/10.1016/j.tics.2012.05.003
- Bastos, A. M., Usrey, W. M., Adams, R. A., Mangun, G. R., Fries, P., & Friston, K. J. (2012). Canonical microcircuits for predictive coding. *Neuron, 76*(4), 695-711. https://doi.org/10.1016/j.neuron.2012.10.038
- Broadbent, D. E. (1958). *Perception and communication.* Pergamon Press.
- Brown, H., Adams, R. A., Parees, I., Edwards, M., & Friston, K. (2013). Active inference, sensory attenuation, and illusions. *Cognitive Processing, 14*(4), 411-427. https://doi.org/10.1007/s10339-013-0571-3
- Courchesne, E., Redcay, E., & Kennedy, D. P. (2004). The autistic brain: Birth through adulthood. *Current Opinion in Neurology, 17*(4), 489-496. https://doi.org/10.1097/01.wco.0000137530.14636.15
- Dekker, S. (2017). The Field Guide to Understanding 'Human Error' (3rd ed.). *CRC Press*.
- Figueiredo, V. L., Bastos, F., Wolf, D., Sato, J. R., & Bressan, R. A. (2011). Sensory gating mechanisms in autism spectrum disorder and its relation to executive functions. *Autism Research, 4*(6), 475-479. https://doi.org/10.1002/aur.214
- Friston, K. (2010). The free-energy principle: A unified brain theory? *Nature Reviews Neuroscience, 11*(2), 127-138. https://doi.org/10.1038/nrn2787

- Friston, K. J., FitzGerald, T., Rigoli, F., Schwartenbeck, P., O'Doherty, J., & Pezzulo, G. (2017). Active inference: A process theory. *Neuron, 94*(4), 734-747. https://doi.org/10.1016/j.neuron.2017.03.022
- Garrido, M. I., Kilner, J. M., Stephan, K. E., & Friston, K. J. (2009). The mismatch negativity: A review of underlying mechanisms. *Clinical Neurophysiology, 120*(3), 453-463. https://doi.org/10.1016/j.clinph.2008.11.029
- Green, S. A., Rudie, J. D., Colich, N. L., Wood, J. J., Shirinyan, D., Hernandez, L., & Dapretto, M. (2013). Overreactive brain responses to sensory stimuli in youth with autism spectrum disorders. *Journal of the American Academy of Child & Adolescent Psychiatry, 52*(11), 1158-1172. https://doi.org/10.1016/j.jaac.2013.08.004
- Hernandez, L. M., Rudie, J. D., Green, S. A., Bookheimer, S., Dapretto, M., & Geschwind, D. H. (2020). Thalamocortical connectivity in autism spectrum disorder: A functional imaging study. *Nature Neuroscience, 23*(4), 520-529. https://doi.org/10.1038/s41593-020-0594-x
- Hollnagel, E. (1993). Human Reliability Analysis: Context and Control. *Academic Press*.
- Hollnagel, E. (2014). Safety-I and Safety-II: The Past and Future of Safety Management. *Ashgate Publishing*.
- Karalunas, S. L., Geurts, H. M., Konrad, K., Bender, S., & Nigg, J. T. (2014). Annual research review: Reaction time variability in ADHD and autism spectrum disorders: Measurement and mechanisms of a proposed trans-diagnostic phenotype. *Journal of Child Psychology and Psychiatry, 55*(6), 685-710. https://doi.org/10.1111/jcpp.12217
- Kirwan, B. (1994). A Guide to Practical Human Reliability Assessment. *Taylor & Francis*.
- Lawson, R. P., Rees, G., & Friston, K. J. (2014). An aberrant precision account of autism. *Frontiers in Human Neuroscience, 8*, 302. https://doi.org/10.3389/fnhum.2014.00302
- Orekhova, E. V., Stroganova, T. A., & Posikera, I. N. (2008). Sensory gating in infants at risk for autism: A longitudinal study. *Brain Research, 1235*, 186-194. https://doi.org/10.1016/j.brainres.2008.07.027
- Pellicano, E., & Burr, D. (2012). When the world becomes 'too real': A Bayesian explanation of autistic perception. *Trends in Cognitive Sciences, 16*(10), 504-510. https://doi.org/10.1016/j.tics.2012.08.009
- Reason, J. (1997). Managing the risks of organizational accidents. *Ashgate Publishing*.
- Reason, J., & Hobbs, A. (2003). Managing Maintenance Error: A Practical Guide. *Ashgate Publishing*.
- Schallmo, M. P., Sponheim, S. R., & Olman, C. A. (2015). Reduced contextual effects on visual contrast perception in schizophrenia and bipolar affective disorder. *Psychological Medicine, 45*(16), 3527-3537. https://doi.org/10.1017/S0033291715001418
- Schultz, R. T., & Anderson, J. S. (2020). Sensory gating and predictive coding in autism spectrum disorder. *Neuroscience & Biobehavioural Reviews, 118*, 589-603. https://doi.org/10.1016/j.neubiorev.2020.08.005

- Senders, J. W., & Moray, N. (1991). Human Error: Cause, Prediction, and Reduction. *Lawrence Erlbaum Associates*.

- Shappell, S. A., & Wiegmann, D. A. (2001). Applying Reason's model of human error: The Human Factors Analysis and Classification System (HFACS). *Human Factors, 43*(4), 355-376. https://doi.org/10.1518/001872001775870439

- Van de Cruys, S., de-Wit, L., Evers, K., Boets, B., Wagemans, J., & van der Hallen, R. (2014). Precise minds in uncertain worlds: Predictive coding in autism. *Neuroscience & Biobehavioural Reviews, 47*, 378-395. https://doi.org/10.1016/j.neubiorev.2014.10.015

- Woods, D. D., & Cook, R. I. (1999). Perspectives on human error: Hindsight biases and local rationality. In J. J. Persensky, B. Hallbert, & H. Blackman (Eds.), *Human Performance in Complex Systems: Current Trends*. IEEE.