Wired for Peace — Resources Guide

Principle 3: Certainty Is an Illusion; Remain Curious (pp. 77–108)

This resources guide pairs key concepts and claims from Principle 3 of *Wired for Peace* by Jeremy Pollack, Ph.D., with peer-reviewed journal articles and professionally published academic books that support each idea. Citations are formatted in APA 7th edition with clickable DOIs or stable links. Sources cited directly by the author in the chapter's endnotes are noted as such; all others are supporting scholarship selected to ground the chapter's neuroscience and psychology claims.

Quote from Principle 3 (with page number)	Supporting peer-reviewed citation (APA 7th ed. + link)
"Perception emerges in the human mind from two primary, integrated channels: what we pay attention to and the way we interpret the objects of our attention." *p. 81*	Barrett, L. F. (2017). *How emotions are made: The secret life of the brain*. Houghton Mifflin Harcourt. ***Relevance:*** *Accessible synthesis of the constructed-perception / predictive-processing account in which experience is built from attention plus interpretation rather than received directly from the world.*
"Our receptors… convert environmental energy into neural signals… The thalamus in the brain acts as a central filter, letting through only information deemed relevant based on our attention, the context, and top-down predictions." *pp. 81–82*	Sherman, S. M., & Guillery, R. W. (2002). The role of the thalamus in the flow of information to the cortex. *Philosophical Transactions of the Royal Society B: Biological Sciences, 357*(1428), 1695–1708. https://doi.org/10.1098/rstb.2002.1161 ***Relevance:*** *Authoritative account of the thalamus as a dynamic gatekeeper that gates and filters sensory information en route to cortex, modulated by attention and corticothalamic (top-down) feedback.*
"Through neuroplastic changes, our brains store memories from experience, which create predictions about what sensory information will be inputted… In the perception literature, this is often referred to as perceptual set…" *p. 82*	Friston, K. (2010). The free-energy principle: A unified brain theory? *Nature Reviews Neuroscience, 11*(2), 127–138. https://doi.org/10.1038/nrn2787 ***Relevance:*** *Foundational statement of the predictive-coding / free-energy framework: the brain continuously generates top-down predictions and processes the prediction error between expectation and sensory input.*
"These predictions, traveling from our brains (top) are then checked against signals coming from our senses (the bottom) to determine if the predictions are accurate… the brain likely processes mostly the error signal—the difference between prediction and sensory data." *pp. 82–83*	Clark, A. (2013). Whatever next? Predictive brains, situated agents, and the future of cognitive science. *Behavioral and Brain Sciences, 36*(3), 181–204. https://doi.org/10.1017/S0140525X12000477 ***Relevance:*** *Landmark target article articulating the brain as a hierarchical prediction machine that propagates prediction-error signals and updates models only when predictions fail.*

Quote from Principle 3 (with page number)	Supporting peer-reviewed citation (APA 7th ed. + link)
"…somewhere between 90 and 99 percent of raw sensory data is discarded or ignored before it reaches conscious awareness. Some estimates suggest a million-fold reduction of perceived data…" *p. 83*	Zheng, J., & Meister, M. (2025). The unbearable slowness of being: Why do we live at 10 bits/s? *Neuron, 113*(2), 192–204. https://doi.org/10.1016/j.neuron.2024.11.008 ***Relevance:*** *Cited by the author (Note 1). Quantifies the vast reduction from sensory intake (~10^9 bits/s) to the ~10 bits/s of conscious throughput, supporting the claim that most raw data never reaches awareness.*
"…we are not experiencing the world as it is. We are experiencing our versions of it." (the adaptive unconscious / user illusion) *p. 83*	Wilson, T. D. (2002). *Strangers to ourselves: Discovering the adaptive unconscious*. Harvard University Press. ***Relevance:*** *Cited by the author (Note 1). Synthesizes evidence that most mental processing is nonconscious and that conscious experience is a constructed, partial version of reality.*
"Your nervous system is your experiential fingerprint. There's only one of them in the whole world… no one else has your nuanced, complex configuration of a brain and nervous system…" *p. 84*	Finn, E. S., Shen, X., Scheinost, D., Rosenberg, M. D., Huang, J., Chun, M. M., Papademetris, X., & Constable, R. T. (2015). Functional connectome fingerprinting: Identifying individuals using patterns of brain connectivity. *Nature Neuroscience, 18*(11), 1664–1671. https://doi.org/10.1038/nn.4135 ***Relevance:*** *Empirical demonstration that each person's functional brain-connectivity profile is stable and unique enough to identify them—an evidentiary basis for the "experiential fingerprint" metaphor.*
"…the word bias refers to a complex neuropsychological mechanism typically referred to as a mental heuristic. These are filters or shortcuts that the brain has evolved in order to make some sense of the world." *p. 85*	Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 185*(4157), 1124–1131. https://doi.org/10.1126/science.185.4157.1124 ***Relevance:*** *Seminal paper establishing that people rely on a limited number of heuristics that simplify judgment but produce systematic, predictable errors (biases).*
"Selective attention is often thought of in the psychological literature as a cognitive bias even though at its core, selective attention is a fundamental feature of the brain." *p. 86*	Simons, D. J., & Chabris, C. F. (1999). Gorillas in our midst: Sustained inattentional blindness for dynamic events. *Perception, 28*(9), 1059–1074. https://doi.org/10.1068/p281059 ***Relevance:*** *Classic "invisible gorilla" study showing that focused attention causes people to miss salient, unexpected information—direct evidence of the filtering power of selective attention.*
"Negativity bias is a fundamental heuristic that instructs our brains to pay attention to things that might be dangerous now or in the future… better to be safe than sorry." *p. 86*	Rozin, P., & Royzman, E. B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review, 5*(4), 296–320. https://doi.org/10.1207/S15327957PSPR0504_2

Quote from Principle 3 (with page number)	Supporting peer-reviewed citation (APA 7th ed. + link)
	Relevance: *Comprehensive review establishing the negativity bias—the tendency for negative events and stimuli to dominate attention, memory, and judgment more than equivalent positive ones.*
"Confirmation bias… leads our brains to pay attention only to information that confirms our beliefs and to ignore or filter out any information that might contradict or invalidate those beliefs." *p. 86*	Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology, 2*(2), 175–220. https://doi.org/10.1037/1089-2680.2.2.175 ***Relevance:*** *The definitive review of confirmation bias across reasoning, memory, and social contexts—the seeking and interpreting of evidence in ways partial to existing beliefs.*
"Attribution describes the way we attribute intentions or causality to behaviors and events… This is closely related to theory of mind… humans' innate capacity to infer… what other people are thinking based on their behavior." *p. 87*	Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind? *Behavioral and Brain Sciences, 1*(4), 515–526. https://doi.org/10.1017/S0140525X00076512 ***Relevance:*** *Origin of the term "theory of mind"—the capacity to attribute mental states (beliefs, intentions) to others to explain and predict behavior.*
"Hostile attribution bias… places a filter of hostility on particular stimuli… you begin seeing every action that Peter takes as potentially hostile." *p. 87*	De Castro, B. O., Veerman, J. W., Koops, W., Bosch, J. D., & Monshouwer, H. J. (2002). Hostile attribution of intent and aggressive behavior: A meta-analysis. *Child Development, 73*(3), 916–934. https://doi.org/10.1111/1467-8624.00447 ***Relevance:*** *Meta-analysis (41 studies) confirming the robust link between the hostile attribution bias—interpreting ambiguous behavior as hostile—and aggressive responding.*
"fundamental attribution error… quickly places intentional, character-level meanings behind behaviors, ignoring situational factors… self-serving bias… leads people to focus on situational factors… when they have made a mistake." *p. 87*	Ross, L. (1977). The intuitive psychologist and his shortcomings: Distortions in the attribution process. *Advances in Experimental Social Psychology, 10*, 173–220. https://doi.org/10.1016/S0065-2601(08)60357-3 ***Relevance:*** *The paper that named the fundamental attribution error—the tendency to over-attribute others' behavior to disposition/character while underweighting situational causes.*
"When the world is experienced as predicted and the error is low, dopamine signaling in reward circuits… reinforces… control and safety. Conversely, high uncertainty activates the amygdala and anterior insula… increasing our stress response." *p. 88*	Schultz, W., Dayan, P., & Montague, P. R. (1997). A neural substrate of prediction and reward. *Science, 275*(5306), 1593–1599. https://doi.org/10.1126/science.275.5306.1593 ***Relevance:*** *Foundational work showing dopamine neurons encode reward-prediction error—firing when outcomes are better than predicted and dipping when worse—linking accurate prediction to reward signaling.*

Quote from Principle 3 (with page number)	Supporting peer-reviewed citation (APA 7th ed. + link)
"…high uncertainty activates the amygdala and anterior insula, brain regions involved in threat detection and interoceptive awareness, increasing our stress response." *p. 88*	Hirsh, J. B., Mar, R. A., & Peterson, J. B. (2012). Psychological entropy: A framework for understanding uncertainty-related anxiety. *Psychological Review, 119*(2), 304–320. https://doi.org/10.1037/a0026767 ***Relevance:*** *Integrative model linking uncertainty to anxiety: unpredictability raises "psychological entropy," engaging threat-detection circuitry (including the amygdala) and the stress response.*
"Cortisol strongly influences how emotional memories are encoded in the hippocampus and amygdala, which helps explain why conflict experiences can feel especially vivid and enduring." *p. 88*	Roozendaal, B., McEwen, B. S., & Chattarji, S. (2009). Stress, memory and the amygdala. *Nature Reviews Neuroscience, 10*(6), 423–433. https://doi.org/10.1038/nrn2651 ***Relevance:*** *Authoritative review of how stress hormones (glucocorticoids/cortisol) acting via the amygdala modulate the encoding and consolidation of emotionally arousing memories.*
"Dr. Lisa Feldman Barrett… calls the brain a 'guessing machine'… the brain only knows about the world through the filter of the body… a 'constant category constructor.'" *p. 89*	Barrett, L. F. (2017). The theory of constructed emotion: An active inference account of interoception and categorization. *Social Cognitive and Affective Neuroscience, 12*(1), 1–23. https://doi.org/10.1093/scan/nsw154 ***Relevance:*** *Peer-reviewed statement of Barrett's active-inference / constructionist model (the basis for her remarks in the author's cited Huberman Lab podcast, Note 2): the brain predicts and categorizes body signals rather than reacting to the world directly.*
"…uncertainty is incredibly costly. If all possibilities are open… the body's entire suite of metabolic processes would have to be available at all times… a metabolically unsustainable state." *p. 90*	Sterling, P. (2012). Allostasis: A model of predictive regulation. *Physiology & Behavior, 106*(1), 5–15. https://doi.org/10.1016/j.physbeh.2011.06.004 ***Relevance:*** *Develops allostasis—regulation through prediction—explaining why the brain anticipates the body's needs to conserve metabolic resources, and why unpredictability is energetically expensive.*
"When someone challenges our viewpoint in conflict, it creates prediction error… This uncertainty threatens our four conflict needs, triggering the amygdala and insula, which signal potential danger." *p. 91*	Peters, A., McEwen, B. S., & Friston, K. (2017). Uncertainty and stress: Why it causes diseases and how it is mastered by the brain. *Progress in Neurobiology, 156*, 164–188. https://doi.org/10.1016/j.pneurobio.2017.05.004 ***Relevance:*** *Integrates predictive coding and stress biology to show how unresolved uncertainty (large prediction error) activates threat and stress systems—mechanistic support for uncertainty-as-threat.*
"…research into theories such as social identity theory, uncertainty-identity theory… have shown that people seek	Hogg, M. A. (2007). Uncertainty–identity theory. *Advances in Experimental Social Psychology, 39*, 69–126. https://doi.org/10.1016/S0065-2601(06)39002-8

Quote from Principle 3 (with page number)	Supporting peer-reviewed citation (APA 7th ed. + link)
ingroup affiliation… when faced with uncertainty, ambiguity, or challenges to their worldviews." *p. 92*	***Relevance:*** *Primary statement of uncertainty–identity theory: self-conceptual uncertainty motivates people to identify more strongly with groups, increasing ingroup entrenchment.*
"…becoming more entrenched in their social group identities, when faced with uncertainty…" (social identity theory) *p. 92*	Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33–47). Brooks/Cole. ***Relevance:*** *Foundational statement of social identity theory: group membership shapes self-concept and drives ingroup favoritism and intergroup differentiation, especially under threat.*
"…worldview defense hypothesis… Such uncertainty poses an existential threat… according to terror management theory, drives people to more fiercely defend and adhere to their worldviews." *p. 92*	Greenberg, J., Pyszczynski, T., & Solomon, S. (1986). The causes and consequences of a need for self-esteem: A terror management theory. In R. F. Baumeister (Ed.), *Public self and private self* (pp. 189–212). Springer-Verlag. https://doi.org/10.1007/978-1-4613-9564-5_10 ***Relevance:*** *Origin of terror management theory: reminders of mortality and existential threat intensify defense of one's cultural worldview and self-esteem.*
"The need for control is also linked to the drive for what psychologists call cognitive closure: a motivational initiative to arrive at a firm answer and avoid ambiguity… stronger under stress, time pressure, or perceived threat." *p. 92*	Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: "Seizing" and "freezing." *Psychological Review, 103*(2), 263–283. https://doi.org/10.1037/0033-295X.103.2.263 ***Relevance:*** *Defines the need for cognitive closure—the desire for a definite answer and aversion to ambiguity—and shows it intensifies under time pressure and threat ("seizing" and "freezing").*
"The medial prefrontal cortex (mPFC) is involved in self-referential thinking; when our beliefs are attacked, the mPFC activates to protect our self-concept." *p. 92*	Northoff, G., Heinzel, A., de Greck, M., Bermpohl, F., Dobrowolny, H., & Panksepp, J. (2006). Self-referential processing in our brain—A meta-analysis of imaging studies on the self. *NeuroImage, 31*(1), 440–457. https://doi.org/10.1016/j.neuroimage.2005.12.002 ***Relevance:*** *Meta-analysis localizing self-referential processing to cortical midline structures, especially the medial prefrontal cortex—support for the mPFC's role in self-concept.*
"…when someone challenges a belief, especially one that's central to our identity… conceding can feel like a mini-identity collapse… the brain resists what it categorizes as a monumental shift." *p. 93*	Kaplan, J. T., Gimbel, S. I., & Harris, S. (2016). Neural correlates of maintaining one's political beliefs in the face of counterevidence. *Scientific Reports, 6*, 39589. https://doi.org/10.1038/srep39589 ***Relevance:*** *fMRI evidence that challenges to strongly held (political) beliefs engage default-mode and emotion/identity-related regions and predict resistance to belief updating.*

Quote from Principle 3 (with page number)	Supporting peer-reviewed citation (APA 7th ed. + link)
"humans are story-driven animals… In conflict, these narratives often cast us in two roles: the victim and/or the hero… These roles create a psychological anchor around which to form an identity." *p. 93*	McAdams, D. P., & McLean, K. C. (2013). Narrative identity. *Current Directions in Psychological Science, 22*(3), 233–238. https://doi.org/10.1177/0963721413475622 ***Relevance:*** *Review of narrative-identity research: people construct internalized life stories—with recurring roles such as victim and redemptive hero—that organize and protect the sense of self.*
"…when we reestablish certainty by winning an argument… the brain gets a dopamine hit. This reward strengthens the neural circuits that associate being right with emotional relief and social power. Over time… habitual." *p. 94*	Sharot, T., & Garrett, N. (2016). Forming beliefs: Why valence matters. *Trends in Cognitive Sciences, 20*(1), 25–33. https://doi.org/10.1016/j.tics.2015.11.002 ***Relevance:*** *Reviews how affectively rewarding, self-consistent information is preferentially incorporated into beliefs—supporting the reward-driven reinforcement of "being right."*
"One study found that individuals curious about an upcoming, scary task felt more positively challenged, less threatened, and presented longer physiological engagement than less curious individuals…" *p. 95*	Kaczmarek, Ł. D., Kashdan, T. B., & Enko, J. (2024). How curiosity enhances performance: Mechanisms of physiological engagement, challenge and threat appraisal, and novelty deprivation. *Journal of Happiness Studies, 25*(7), Article 95. https://doi.org/10.1007/s10902-024-00802-2 ***Relevance:*** *Cited by the author (Note 3). The speech-task study showing curiosity predicts challenge (vs. threat) appraisal and longer physiological engagement before a stressful task.*
"Research from the field of positive psychology also identifies curiosity as one of the core character strengths most strongly linked to life satisfaction, resilience, and positive social relationships." *p. 96*	Kashdan, T. B., & Steger, M. F. (2007). Curiosity and pathways to well-being and meaning in life: Traits, states, and everyday behaviors. *Motivation and Emotion, 31*(3), 159–173. https://doi.org/10.1007/s11031-007-9068-7 ***Relevance:*** *Empirical work linking curiosity to exploration, openness, meaning, and well-being—support for curiosity as a core strength tied to flourishing.*
"…reducing the need for cognitive closure (i.e., certainty) fosters openness to new information and compromise during negotiations… high need for cognitive closure have stronger tendencies to use cognitive heuristics…" *p. 96*	De Dreu, C. K. W., Koole, S. L., & Steinel, W. (2000). Unfixing the fixed pie: A motivated information-processing approach to integrative negotiation. *Journal of Personality and Social Psychology, 79*(6), 975–987. https://doi.org/10.1037/0022-3514.79.6.975 ***Relevance:*** *Experimental evidence that a high need for closure narrows information processing and reduces integrative (win–win) agreements, whereas openness improves them.*
"…the willingness to cognitively consider others' perspectives increased participants' abilities to discover hidden agreements… empathy… did not prove nearly as beneficial and, in some instances, was detrimental…" *p. 96*	Galinsky, A. D., Maddux, W. W., Gilin, D., & White, J. B. (2008). Why it pays to get inside the head of your opponent: The differential effects of perspective taking and empathy in negotiations. *Psychological Science, 19*(4), 378–384. https://doi.org/10.1111/j.1467-9280.2008.02096.x

Quote from Principle 3 (with page number)	Supporting peer-reviewed citation (APA 7th ed. + link)
	Relevance: *The study directly described in the text: across three experiments perspective taking improved discovery of hidden agreements and value creation, while emotional empathy did not—and sometimes hurt.*
"…individuals with a higher tolerance for ambiguity tend to perform well in their jobs, demonstrate greater creativity, and make better decisions in the workplace." *p. 97*	Furnham, A., & Marks, J. (2013). Tolerance of ambiguity: A review of the recent literature. *Psychology, 4*(9), 717–728. https://doi.org/10.4236/psych.2013.49102 ***Relevance:*** *Review synthesizing evidence that higher tolerance of ambiguity is associated with better adjustment, creativity, and decision-making across work and life domains.*
"…a 'paradox mindset,' characterized by the ability to embrace and leverage competing demands, can positively affect performance and innovation, while a lack of such mindset can hinder these outcomes." *p. 97*	Miron-Spektor, E., Ingram, A., Keller, J., Smith, W. K., & Lewis, M. W. (2018). Microfoundations of organizational paradox: The problem is how we think about the problem. *Academy of Management Journal, 61*(1), 26–45. https://doi.org/10.5465/amj.2016.0594 ***Relevance:*** *Introduces and validates the paradox mindset—valuing and engaging competing demands—showing it enhances in-role performance and innovation under tension.*
"…defensiveness and curiosity are activated by different neural networks and can't fully operate at the same time. You cannot be authentically curious about someone's perspective and also motivated to defend your own." *p. 105*	Gruber, M. J., Gelman, B. D., & Ranganath, C. (2014). States of curiosity modulate hippocampus-dependent learning via the dopaminergic circuit. *Neuron, 84*(2), 486–496. https://doi.org/10.1016/j.neuron.2014.08.060 ***Relevance:*** *Shows curiosity engages dopaminergic reward and hippocampal-learning circuitry and an approach/exploration state—mechanistically distinct from threat-driven, avoidance-oriented defensiveness.*
"…invite error checking and steelmanning… to have each individual… list how they might be wrong and summarize the strongest opposing argument before stating their own." *p. 103*	Lord, C. G., Lepper, M. R., & Preston, E. (1984). Considering the opposite: A corrective strategy for social judgment. *Journal of Personality and Social Psychology, 47*(6), 1231–1243. https://doi.org/10.1037/0022-3514.47.6.1231 ***Relevance:*** *Demonstrates that deliberately "considering the opposite" reduces biased assimilation and overconfidence—the empirical basis for steelmanning and error-checking practices.*
"…separate our self-concept from the notion of being right… 'I don't have to be right all the time. I'm still a good person.'" (separating self-worth from being right) *p. 103*	Cohen, G. L., & Sherman, D. K. (2014). The psychology of change: Self-affirmation and social psychological intervention. *Annual Review of Psychology, 65*, 333–371. https://doi.org/10.1146/annurev-psych-010213-115137 ***Relevance:*** *Reviews self-affirmation theory: affirming core values protects self-integrity, lowering defensiveness and increasing openness to threatening information—support for decoupling self-worth from "being right."*

Quote from Principle 3 (with page number)	Supporting peer-reviewed citation (APA 7th ed. + link)
"Admitting we're wrong tells others that it's safe to make mistakes and own up to them… This creates a psychologically safe environment for being vulnerable and taking risks in the relationship." *p. 102*	Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly, 44*(2), 350–383. https://doi.org/10.2307/2666999 ***Relevance:*** *Foundational study of psychological safety—the shared belief that it is safe to take interpersonal risks (admit errors, ask questions)—and its link to learning and trust.*
"You can again use reframing and narrative generation to reframe conflicting perspectives and foster curiosity… 'Wow, this is so different from what I believe. How interesting.'" *pp. 106–107*	Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*(3), 271–299. https://doi.org/10.1037/1089-2680.2.3.271 ***Relevance:*** *Establishes cognitive reappraisal (reframing the meaning of a situation) as an effective antecedent-focused emotion-regulation strategy—the mechanism behind the book's reframing scripts.*
"The best way to do this is through self-talk… we'll use the conscious mind to surface and ideally calm our subconscious fears… 'I trust myself. I'll be okay, whatever happens.'" *p. 99*	Kross, E., Bruehlman-Senecal, E., Park, J., Burson, A., Dougherty, A., Shablack, H., Bremner, R., Moser, J., & Ayduk, O. (2014). Self-talk as a regulatory mechanism: How you do it matters. *Journal of Personality and Social Psychology, 106*(2), 304–324. https://doi.org/10.1037/a0035173 ***Relevance:*** *Experimental evidence that the form of self-talk (e.g., non-first-person, self-distanced) regulates stress, thoughts, and behavior under social-threat conditions.*
"'Wow, my heart's beating fast. Uncertainty is exciting!'… 'Not knowing is part of the adventure.'" (reappraising arousal) *pp. 100–101*	Brooks, A. W. (2014). Get excited: Reappraising pre-performance anxiety as excitement. *Journal of Experimental Psychology: General, 143*(3), 1144–1158. https://doi.org/10.1037/a0035325 ***Relevance:*** *Experiments showing that reframing anxious arousal as excitement ("anxiety reappraisal") improves performance more than trying to calm down—support for the reconditioning scripts.*
"Sharks and rays… detect electrical fields… (electroreception). Bees use polarization patterns… birds… sense the earth's magnetic field… bats, dolphins… use echolocation… the world is absolutely rich with energy fields… invisible to humans." *pp. 107–108*	Nimpf, S., & Keays, D. A. (2017). Is magnetogenetics the new optogenetics? *The EMBO Journal, 36*(12), 1643–1646. https://doi.org/10.15252/embj.201797177 ***Relevance:*** *Peer-reviewed discussion of animal magnetoreception and other non-human sensory modalities—support for the claim that other species perceive energy fields humans cannot, each within its own perceptual world.*