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Science and Pseudoscience in Psychology

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Science encompasses various disciplines such as astronomy, biology, chemistry, and even psychology. While each field studies distinct subjects, their unity lies not in their content or tools but in their shared approach to understanding the natural world. Psychology fits into this scientific framework by examining human behavior through systematic observation and analysis (Breakwell et al., 2006; Price et al., 2017).

According to Stanovich (2010), the scientific method comprises three key principles. Firstly, there's systematic empiricism, emphasizing learning through meticulous and recorded observations. While logic and creativity are essential, scientists primarily rely on thorough observations to test their hypotheses about the world.

Secondly, science is concerned with empirical questions - queries that can be answered by observing the actual state of the world. For example, determining whether women talk more than men is an empirical question that can be tested through systematic observation. However, science doesn't address questions related to values or how things should be. Lastly, science generates public knowledge. Scientists share their findings in professional journals, outlining their methodologies, results, and conclusions. Publication encourages collaboration among researchers, building upon existing knowledge. Equally vital, it enables the scientific community to identify and correct errors, ensuring that scientific knowledge increasingly aligns with reality over time. This scientific method provides a universal framework, transcending specific subjects and offering a cohesive approach to explore and comprehend the natural world (Price et al., 2017; Stanovich, 2010).

Pseudoscience encompasses beliefs and practices presented as scientific but lacking scientific support. Identifying pseudoscience involves factors like the absence of systematic empirical evidence. Numerous scholars argue that science serves as a structured defense mechanism against confirmation bias - our inclination to seek evidence that aligns with our theories while disregarding contradictory information (Hart et al., 2009; Lilienfeld, 2010). This perspective is encapsulated in Nobel laureate physicist Feynman's (1985) statement that the core essence of science involves "bending over backwards to prove ourselves wrong." Skinner (1953) similarly concluded that science necessitates a "readiness to acknowledge facts even when they oppose our desires" (p. 12). These perspectives emphasize the importance of subjecting our most cherished hypotheses to the risk of falsification.

Another hallmark of pseudoscience is the inability to address empirical questions effectively. Popper (2002) emphasized this aspect, suggesting scientific claims must allow for observations countering them. For instance, the falsifiability criterion is met by claims like the assertion that women talk more than men, as it permits observations that either support or contradict it. In contrast, beliefs like extrasensory perception often escape falsifiability; proponents claim powers vanish under close observation, rendering any test results consistent regardless of outcomes. Ultimately, the essence of pseudoscience lies in its guise of scientific credibility while evading critical scientific scrutiny and lacking the fundamental elements necessary for empirical validation.

Understanding how humans form beliefs delves into the empirical nature of inquiries, a subject extensively

investigated by psychologists (Gilovich, 1991). Crafting accurate beliefs demands cognitive processes like observation, memory, and analysis that surpass our innate abilities. Hence, we often resort to mental shortcuts, or heuristics, leaning on widely embraced beliefs backed by "experts" that seem intuitively logical. This tendency, coupled with confirmation bias, leads us to highlight instances that support our beliefs while disregarding contradictory evidence (Breakwell et al., 2006; Price et al., 2017). Additionally, our inclination toward certain beliefs is often influenced by our desires for them to be true.

Psychologists, acknowledging their susceptibility to flawed intuitive beliefs, adopt a stance of skepticism - a practice not of mistrust but of questioning and seeking empirical validation. When confronted with assertions like the notion that giving children a weekly allowance fosters financial responsibility, a skeptical approach involves exploring alternative explanations and critically assessing the evidence provided. Scientists, cognizant of the challenges in evaluating beliefs, embrace uncertainty, recognizing the vast unknowns. While this uncertainty poses practical challenges, it ignites scientific curiosity, offering opportunities to explore and experiment with intriguing questions (Breakwell et al., 2006; Price et al., 2017).

This uncertainty can present dilemmas in everyday decision-making, such as determining if giving an allowance genuinely shapes children's financial behaviors. However, from a scientific perspective, these uncertainties spark excitement and drive exploration, opening doors to uncover new insights.

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