Commentary

Epistemic Humility vs. Credentialism: The Educational Paradox in Modern Healthcare

Milan Toma[1]

1. College of Osteopathic Medicine, New York Institute of Technology, United States

This commentary examines the phenomenon of credentialism, i.e., the overemphasis on or misuse of credentials, and its role in the decline of epistemic humility, particularly within anti-vaccine movements. Drawing on recent research by Cosgrove and Murphy (2023) and relevant case studies, this commentary explores how credentialism, when combined with narcissistic traits, can undermine critical thinking and scientific literacy. This overconfidence often leads individuals to assume that expertise in one field equates to competence in other domains. However, intelligence and education alone do not ensure sound scientific judgment or rational decision-making. Personality traits such as intellectual arrogance or hyper-confidence can significantly hinder the effective application of knowledge. Research indicates that individuals with higher intelligence are frequently more adept at rationalizing pre-existing beliefs and constructing sophisticated justifications for incorrect conclusions. When combined with traits like narcissism or excessive self-assurance, this can result in a paradoxical effect: greater intelligence and education may lead to worse outcomes, as individuals become resistant to correction, dismissive of contrary evidence, and prone to overestimating their understanding of complex issues. This dynamic can lead to the misuse of credentials, where individuals leverage their academic or professional authority to lend credibility to pseudoscientific claims, particularly in fields outside their area of expertise. This misuse of credentials, termed "credentialed arrogance," amplifies susceptibility to conspiracy theories, even among those with advanced education. This study highlights the complex interplay between credentialism, personality traits, and critical thinking, underscoring the need for educational systems to prioritize epistemic humility and media literacy alongside traditional academic knowledge.

 doi.org/10.32388/MRUCLX

1. Introduction

The spread of vaccine hesitancy among highly educated individuals presents a complex and paradoxical challenge to public health. While higher education is traditionally associated with greater scientific literacy and trust in evidence-based practices, recent studies suggest that this relationship is far more nuanced[1]. For instance, some research highlights that education alone does not always inoculate individuals against misinformation[2]; in fact, highly educated individuals may use their cognitive abilities to reinforce pre-existing biases, a phenomenon sometimes referred to as the "educational paradox"[3]. This paradox underscores how advanced education, when combined with factors such as cognitive biases, personality traits, and ideological alignment, can amplify susceptibility to pseudoscientific beliefs in certain populations. At the intersection of credentialism and critical thinking, this issue reveals vulnerabilities in how modern societies engage with and interpret complex scientific discourse, challenging conventional wisdom about the protective effects of education.

Central to this issue is the pervasive assumption that formal education inherently cultivates critical thinking. Yet, as evidenced by anti-vaccine movements, the mere possession of academic credentials does not guarantee resistance to misinformation. The 2023 study by Cosgrove and Murphy demonstrates that while higher education generally reduces conspiracy theory endorsement, it inversely correlates with heightened susceptibility in individuals exhibiting narcissistic traits[3]. These findings illuminate a dangerous synergy between credentialism, the overvaluation of academic or professional titles, and psychological predispositions that distort information processing. Narcissistic individuals, particularly those with domain-specific expertise, frequently conflate their specialized knowledge with universal competence, fostering a form of "credentialed arrogance." This cognitive bias enables the weaponization of academic authority, as seen in influencers who leverage unrelated credentials to validate anti-vaccine pseudoscience while dismissing empirical evidence.

The ramifications extend beyond individual decision-making. Historical parallels, such as medieval merchants peddling mercury tonics as plague remedies, underscore how credentialism has long been exploited to legitimize false claims. Modern iterations of this dynamic thrive in the digital age, where social media platforms transform academic titles into viral symbols of authority. Case studies examined in this article – from an Australian professor misinterpreting Vaccine Adverse Event Reporting System (VAERS) data to a Montana physician testifying against mRNA vaccines – illustrate

how ostensibly educated individuals misuse their credentials to endorse scientifically baseless arguments. Such cases reveal systemic flaws in educational frameworks that prioritize memorization over epistemological rigor, leaving even professionals ill-equipped to evaluate claims outside their discipline.

2. Mechanisms of the Educational Paradox

The Figure 1 illustrates the dynamics of the "educational paradox" within anti-vaccine communities, as identified by Cosgrove and Murphy[3]. It depicts how influencers with unrelated credentials weaponize their academic authority to frame pseudoscience as "skeptical inquiry," while simultaneously dismissing empirical evidence. The figure highlights the interplay between educated individuals with narcissistic traits and the misuse of "skeptical inquiry" rhetoric, which leads to the adoption of pseudoscientific beliefs. It also draws a historical parallel to medieval merchants selling mercury tonics for the plague, emphasizing how the misuse of unrelated expertise has long been a tool for lending credibility to false claims. The figure underscores the role of credentialism in amplifying susceptibility to misinformation, particularly when individuals conflate domain-specific knowledge with universal competence.

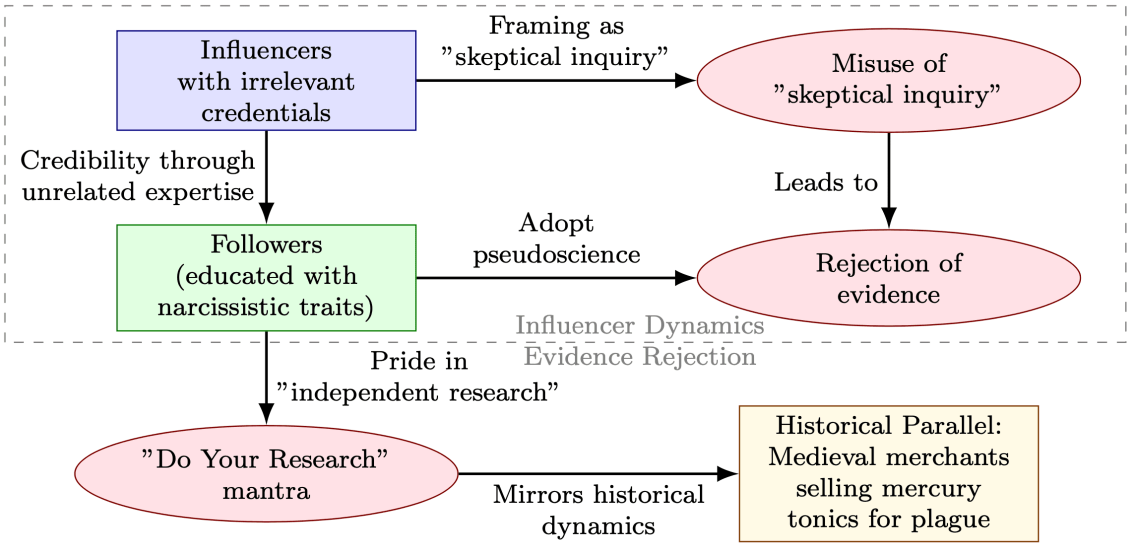

Figure 1. The "educational paradox" in anti-vaccine communities, identified by Cosgrove and Murphy (2023)[3], where influencers with unrelated expertise weaponize academic authority to frame pseudoscience as "skeptical inquiry" while dismissing empirical evidence.

2.1. Credentialed Arrogance

Narcissistic individuals often conflate domain-specific knowledge with universal competence. This overconfidence leads them to believe that expertise in one area translates to competence across other domains. However, intelligence alone, even when coupled with extensive education, does not guarantee sound scientific judgment or rational decision-making. In fact, certain personality traits, such as intellectual arrogance or hyper-confidence, can severely limit one's ability to effectively use their intelligence and education[4]. A prime example is intellectual arrogance, where individuals become so convinced of their own intellectual superiority that they dismiss contrary evidence or expertise outside their field. This cognitive trap is particularly dangerous because higher intelligence can actually amplify these limitations; i.e., smart people are often better at rationalizing their pre-existing beliefs and constructing elaborate justifications for incorrect conclusions[5]. When intelligence combines with traits like narcissism or excessive self-confidence, it can paradoxically lead to worse outcomes as individuals become resistant to correction, immune to contrary evidence, and dismissive of legitimate expertise outside their immediate domain. As a result, they may misuse their credentials to lend credibility to pseudoscientific claims, particularly in fields outside their area of expertise.

2.2. Selective Literacy and Tribal Identity

The harmful interaction between selective literacy and tribal identity is a key driver of how credentialism fuels anti-scientific movements. Modern education systems, especially those that focus on memorization rather than critical thinking, often produce individuals who mistake technical skills for critical judgment. These individuals may excel at mastering facts within their field but struggle to evaluate claims outside their expertise or to handle conflicting evidence. In conspiratorial circles, this limited literacy takes the form of a distorted intellectualism – academic qualifications are used as social currency, turning unsupported ideas into "forbidden knowledge" and mainstream science into "dogma."

Tribal dynamics make this problem worse. Similar to historical kinship groups uniting against outside threats, modern anti-science movements build their identity by opposing mainstream expertise. For example, vaccine-hesitant groups often see public health guidance not just as wrong but as a threat to their autonomy and values. Tribal belonging increasingly depends on rejecting evidence-based norms,

with academic credentials serving as tools for two purposes: to raise status within the group and to present dissent as "expert rebellion" to outsiders.

Digital platforms intensify these tribal behaviors by creating echo chambers[6]. In the past, tribes formed based on geography, but today's tribes gather in algorithm-driven online spaces. These platforms turn contrarian attitudes into what seems like virtuous skepticism. Studies show similarities between historical tribal warfare and modern misinformation campaigns—both depend on us-versus-them mentalities, reward emotional arguments over evidence, and rely on charismatic figures to validate their beliefs. For instance, vaccine opponents misuse VAERS data in a way similar to how ancient foretellers interpreted omens: they focus on ambiguous signals and reinterpret them through tribal narratives to confirm their biases.

This tribal mindset affects more than individual beliefs. Tribal loyalty often overrides expertise, leading to scenarios where family doctors are trusted over virologists on vaccines, or engineers over epidemiologists on pandemics. This decline in trust for experts is similar to historical shifts where warrior-kings replaced priestly leaders – except today, the "coup" happens through viral posts, not swords. Importantly, these individuals aren't uneducated – they are mis-educated. They have just enough knowledge to misuse resources like PubMed but lack the humility to recognize their limits in interpretation.

3. Case Studies

The following case studies illustrate the complex interplay between credentialism, misinformation, and tribal identity in fueling anti-scientific movements. By examining specific examples, it can be better understood how individuals misuse academic or professional credentials to lend credibility to pseudoscientific claims, often exacerbating public mistrust in evidence-based science. These cases highlight the dangers of conflating domain-specific expertise with universal competence and underscore the urgent need for critical thinking, media literacy, and epistemic humility in combating misinformation.

3.1. Australian Professor

This example highlights the educational paradox surrounding a well-known Australian influencer, often referred to as a professor due to his unrelated expertise far removed from virology or immunology. He has misused data from the VAERS to propagate fears about vaccines. By leveraging

unverified reports as supposed conclusive evidence of vaccine risks, he gained popularity within the anti-vaccine community. His numerous assertions about vaccines have drawn significant criticism and have been thoroughly debunked. Notably, he has cited VAERS data to support his claims regarding vaccine-related fatalities.

VAERS, co-managed by the CDC and FDA, is designed as an early warning system for potential vaccine safety issues[7]. It allows reports from healthcare providers, patients, and manufacturers, reflecting a commitment to transparency. However, its open nature makes it vulnerable to exploitation, especially by anti-vaccine actors who misuse unverified data to sow distrust. VAERS data is often incomplete and prone to misinterpretation. For instance, deaths or adverse events coinciding with vaccination are frequently reported without evidence of causation. Anti-vaccine actors exploit this by selectively highlighting such reports as "proof" of vaccine dangers, despite VAERS explicitly stating it cannot establish causation. This influencer's misuse of VAERS data aligns with the "educational paradox," where higher education, instead of enhancing critical thinking, can amplify susceptibility to misinformation among individuals with narcissistic traits. Such individuals often conflate domain-specific knowledge with universal competence, leading them to misuse their credentials to promote pseudoscientific claims.

The situation illustrates how individuals can leverage unrelated credentials to lend credibility to pseudoscientific claims, emphasizing the danger of conflating domain-specific expertise with universal competence in public health matters. The vulnerability of VAERS underscores the broader challenges of public health communication in the age of misinformation[8]. It highlights the need for educational systems to prioritize critical thinking and epistemic humility, as well as the importance of media literacy in evaluating claims on social media.

3.2. Montana Family Physician

In 2025, a family physician in Montana, serving as a volunteer board member of the Montana Medical Freedom Alliance, testified during a hearing on a bill proposing to ban mRNA vaccines. Despite lacking expertise in vaccinology or immunology, the physician made unfounded claims about the safety and efficacy of mRNA vaccines, stating, "Gene-based vaccines, or mRNA vaccines, are the most destructive and lethal medical products that have ever been used in human history". During Montana's 2025 legislative debate, proponents of the mRNA vaccine ban propagated two central pseudoscientific claims: first, that short-term vaccine harms outweigh epidemiologically established

benefits, and second, that the technology carries unique long-term risks including the biologically implausible notion of "shedding" – the absurd concept that vaccinated individuals transmit vaccine components through physical proximity.

The testifying physician's lack of epistemic humility proved particularly consequential. Their family medicine background far removed formal training in molecular biology or infectious disease epidemiology, yet they confidently asserted sweeping claims contradicting both basic virological principles and global pharmacovigilance data. The testimony strategically deployed medical credentials to validate concepts rejected by medical organizations, culminating in the inflammatory appeal: "I am asking you to support this bill banning gene-based vaccines so we can halt continued harm, disability, and death of our citizens."

This exemplary case demonstrates how credentialism interacts with anti-scientific advocacy through three distinct mechanisms. These three interconnected dynamics amplified this misinformation campaign. Medical licensure became misrepresented as conferring authority across all biomedical domains, a misconception frequently exploited by pseudoscientific advocates. Simultaneously, proponents reframed evidence-based vaccinology as "dogmatic" while positioning their own claims as courageous skepticism - a rhetorical inversion that bypassed conventional scientific accountability. Finally, organizational affiliation with the Montana Medical Freedom Alliance manufactured an illusion of professional consensus, despite the group lacking recognition from mainstream medical associations.

This episode reveals the paradox's tangible consequences: the physician's testimony directly swayed legislative negotiations despite their expertise residing in an unrelated clinical domain. Unlike historical charlatans who peddled mercury tonics through overt deception, modern vaccine opponents exploit subtler mechanisms of credential misappropriation. Where medieval fraud relied on public ignorance, contemporary campaigns leverage academic titles as viral signifiers of authority - a shift that demands reevaluation of professional accountability frameworks. This case further illustrates how individuals can misuse their medical credentials to promote pseudoscientific claims, demonstrating the educational paradox in action within the context of public policy and health legislation.

3.3. Ophthalmologist turned Politician

A licensed ophthalmologist and U.S. Senator, recently claimed during a 2025 public hearing that "no healthy children died of COVID," urging people to "look it up." This assertion starkly contradicts the 2024 Pediatrics study analyzing 183 COVID-19-related deaths in children aged 1–17 reviewed by child death review teams from 2020–2022. The study found 32% of these pediatric fatalities occurred in children with no pre-existing comorbidities. Additionally, the article states that COVID-19 became the seventh leading cause of death for children aged 1–17 during this period, citing an estimated 1,086 pediatric deaths from the virus[9]. A comprehensive epidemiological study conducted in Brazil analyzed approximately 2.8 million pediatric cases of laboratory-confirmed symptomatic SARS-CoV-2 infections from February 2020 to February 2023[10]. This study reported 4,740 pediatric deaths, with a significant proportion of deaths occurring in children without pre-existing conditions. Specifically, 34.5% of the children who died had no underlying medical conditions. These findings collectively emphasize that COVID-19 posed a significant risk to children, including those without pre-existing conditions, and challenge claims that "no healthy children died of COVID."

Despite lacking expertise in epidemiology, virology, or public health, the Senator leveraged his medical credentials to amplify his easily debunked claim, which rapidly circulated in anti-vaccine circles as "proof" of pandemic overreach masked as a call for medical freedom. His statements exemplify the "educational paradox" and "credentialed arrogance" described by Cosgrove and Murphy (2023). As an ophthalmologist, his domain-specific expertise in eye surgery and vision care does not extend to infectious disease epidemiology. Yet, his medical degree and political stature lent superficial credibility to his claims, which misrepresented population-level data. The senator's dismissal of CDC mortality statistics and peer-reviewed findings reflects the hyper-confidence and intellectual arrogance critiqued in the Montana physician case study. His rhetoric also mirrors the selective literacy patterns observed in anti-vaccine movements, where complex data (e.g., distinguishing correlation from causation in mortality reports) is oversimplified to fit preconceived narratives.

This case underscores the dangers of credentialism in public health discourse. The Senator's medical background lent his claims disproportionate media traction, despite their misalignment with pediatric mortality data. The Pediatrics study's findings – that nearly one-third of child COVID-19 deaths involved no comorbidities – directly refute his assertion, yet tribal allegiances often override such evidence among vaccine-hesitant audiences.

4. Discussion

The findings from Cosgrove and Murphy's study, coupled with these case studies, underscore the complex relationship between education, narcissistic traits, and susceptibility to misinformation. While higher education generally correlates with reduced endorsement of conspiracy theories, narcissistic traits can reverse this effect, leading to increased susceptibility[3].

The study revealed that cognitive reflection, or the ability to engage in critical, analytical thinking, consistently mitigates the influence of narcissism on conspiracy beliefs[3]. This suggests that education alone is insufficient; it must be coupled with the development of critical thinking skills and epistemic humility to be effective in combating misinformation. The Australian professor and Montana physician cases illustrate this perfectly: despite having the intelligence and education to obtain a medical degree, their hyper-confidence in their own understanding led them to make scientifically unsound claims about mRNA vaccines, dismissing the expertise of immunologists and virologists. This demonstrates how personality traits like intellectual humility are often more important than raw intelligence for maintaining scientific rigor.

4.1. Implications for Education and Public Health

The above cases underscores necessary systemic reforms. First, mandated continuing education should address science communication ethics for licensed professionals. Second, legislative testimony protocols must require explicit expertise disclaimers when witnesses opine beyond their credentialed domains. Third, public health initiatives should implement media literacy programs that distinguish between general medical credentials and specialized topical expertise. The educational paradox has significant implications for both education systems and public health initiatives:

1. **Curriculum Design**: Educational institutions should prioritize the development of critical thinking skills alongside domain-specific knowledge.
2. **Interdisciplinary Approaches**: Encouraging interdisciplinary studies may help students understand the limitations of their expertise and foster epistemic humility.
3. **Media Literacy**: Incorporating media literacy and scientific methodology into curricula can help individuals better evaluate claims, especially those circulating on algorithm-driven social media platforms.

4. **Public Health Communication**: Health authorities should be aware of the educational paradox when designing communication strategies, recognizing that appeals to credentials alone may not be sufficient to counter misinformation.

5. Conclusion

As demonstrated by the case studies above, academic credentials, when divorced from domain-specific expertise, can weaponize authority to legitimize pseudoscientific claims. These cases exemplify the "educational paradox," wherein advanced education, when coupled with narcissistic traits, amplifies susceptibility to misinformation rather than mitigating it. Intelligence and technical literacy alone prove insufficient safeguards; without intellectual humility, such traits enable individuals to rationalize pre-existing biases, dismiss empirical evidence, and conflate specialized knowledge with universal competence.

Modern education systems risk producing professionals equipped with credentials but devoid of the metacognitive skills necessary to navigate interdisciplinary challenges. This deficiency is exploited in digital ecosystems where tribal identities thrive, framing contrarian rhetoric as "skeptical inquiry" and elevating credentialism as a tool for social validation. Addressing this crisis demands systemic reforms. Educational curricula must prioritize interdisciplinary learning, media literacy, and explicit training in epistemic humility to dismantle the illusion of universal competence. Public health communication strategies should emphasize transparency while countering credentialist rhetoric with clear distinctions between domain-specific expertise and generalized authority. Legislative bodies, meanwhile, must adopt protocols to verify the relevance of expert testimony, ensuring that policymaking is informed by empirically grounded specialists rather than misappropriated credentials.

References

1. ^*Markus Schäfer, Birgit Stark, Antonia M. Werner, Lina M. Mülder, Sebastian Heller, et al. (2022). Deter minants of university students' COVID-19 vaccination intentions and behavior. Scientific Reports. 12(1). doi:10.1038/s41598-022-23044-9*
2. ^*Oluwatosin Goje, Aanchal Kapoor. (2024). Meeting the challenge of vaccine hesitancy. Cleveland Clini c Journal of Medicine. 91(9 suppl 1):S50–S56. doi:10.3949/ccjm.91.s1.08*

3. a, b, c, d, e, f *Cosgrove TJ, Murphy CP (2023 Jul). Narcissistic susceptibility to conspiracy beliefs exaggerated by education, reduced by cognitive reflection. Front Psychol. 14. Available from: http://dx.doi.org/10.3389/fpsyg.2023.1164725*
4. ^ *Shane Littrell, Jonathan A. Fugelsang, Evan F. Risko. (2024). The metacognitive abilities of narcissists: Individual differences between grandiose and vulnerable subtypes. Personality and Individual Differences. 221:112570. doi:10.1016/j.paid.2024.112570*
5. ^ *Keith E. Stanovich, Richard F. West, Maggie E. Toplak. (2013). Myside bias, rational thinking, and intelligence. Current Directions in Psychological Science. 22(4):259–264. doi:10.1177/0963721413480174*
6. ^ *Theofilos Gkinopoulos, Christian Truelsen Elbæk, Panagiotis Mitkidis. (2022). Morality in the echo chamber: The relationship between belief in COVID-19 conspiracy theories and public health support and the mediating role of moral identity and morality-as-cooperation across 67 countries. Peter Karl Jonas oneditor. PLOS ONE. 17(9):e0273172. doi:10.1371/journal.pone.0273172*
7. ^ *J. Singleton. (1999). An overview of the vaccine adverse event reporting system (VAERS) as a surveillance system. Vaccine. 17(22):2908–2917. doi:10.1016/s0264-410x(99)00132-2*
8. ^ *Milan Toma. (2025). From medieval scapegoating to modern conspiracy theories in healthcare. Qeios. doi:10.32388/052hwm.2*
9. ^ *Heather K. Dykstra, Diane Pilkey, Jordan Tautges, Patricia G. Schnitzer, Abigael Collier, et al. (2024). Characteristics of children ages 1–17 who died of COVID-19 in 2020–2022 in the united states. Pediatrics. 154(Supplement 3). doi:10.1542/peds.2024-067043k*
10. ^ *Eduardo A. Oliveira, Maria Christina L. Oliveira, Ana Cristina Simões e Silva, Cristiane S. Dias, Lilian M. Diniz, et al. (2025). A population-based epidemiologic study of symptomatic SARS-CoV-2 infections and fatalities in brazilian children over 3 years. The Journal of Pediatrics. 276:114267. doi:10.1016/j.jpeds.2024.114267*

Declarations

Funding: No specific funding was received for this work.

Potential competing interests: No potential competing interests to declare.