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EDITORIAL

RESEARCH ARTICLES

COMMENTARY

CORRESPONDENCE

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EDITORIAL

Niche Journals as Pivotal Incubators of Maverick Ideas

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Economic analyses, historical studies, and sociological reviews paint on a consistent picture: the recent surge in academic journals is propelled by the rapid expansion of international scientific players—most notably China—alongside increasing disciplinary specialization, commercial incentives such as open-access models, and the low barriers to launching new titles (Goel & Faria, 2007; Jacobs, 2014; National Science Board, National Science Foundation, 2024). That expansion has widened outlets for interdisciplinary and niche work but has also fragmented literatures, increased the effort required to locate relevant research, strained peer-review capacity, and intensified incentives—such as "publish or perish" pressures—that can individually or collectively erode editorial standards and research quality (see e.g., Goel & Faria, 2007; Hanson et al., 2024; Horton, 2015; Ioannidis, 2005; Jacobs, 2014; Smith, 2003). Meta-analytic surveys of scientific misconduct and questionable research practices further show how perverse incentives can distort the integrity of scholarly outputs (Fanelli, 2009).

In the face of these challenges, the entire academic publishing landscape is and will undergo massive change. For example, even the centuries-old Cambridge University Press, one of the larger publishers of peer-reviewed scientific and scholarly articles, recently proposed an agenda for "radical change," endorsing the reformation of academic incentives, the reduction of pre-publication peer review, and the prioritization of quality over quantity in publication (i.e., fewer articles and journals). The growing adoption of artificial intelligence (AI) agents in scientific research will reduce the direct human readership of peer-reviewed articles, further reducing the need for the genre of "research article" to persist at current levels. Already, AI-generated submissions are straining peer-review systems (Kusumegi et al., 2025), and the recent publication in *Nature* of the first fully AI-generated paper to pass rigorous human peer review marks a concrete inflection point in this transformation (Lu et al., 2026).

Within this reconfigured ecosystem, niche journals devoted to frontier science—work that extends beyond established knowledge into uncertain, exploratory, or not yet well-validated terrain—such as the *Journal of Scientific Exploration (JSE)*, *Explore*, *Medical Hypotheses*, *Limina: Journal of UAP Studies*, *Mind and Matter*, *World Futures*, and *Journal of Anomalistics* play a vital yet often underrecognized role. In particular, they serve as irreplaceable incubators where high-risk, high-reward ideas can be proposed, critiqued, and iteratively improved before they face the stringent demands of mainstream, high-impact venues. Niche journals are not sidelines; they arguably are the experimental engine room that primes bold ideas for broader dissemination, where validation in cross-disciplinary, preeminent journals can catalyze the paradigm shifts in method or theory that reshape whole fields.

History testifies that major scientific advancements have often originated from ideas initially dismissed by the mainstream: familiar examples include Galileo's heliocentric theory, Semmelweis's handwashing hypothesis, and Wegener's continental drift theory Kuhn (1962). These precedents underscore the need for intellectual space where nascent ideas can mature without premature dismissal. Simonton (2004) likewise noted that breakthrough discoveries frequently arise at the intersection of risk-taking and intellectual freedom, and niche journals function as the modern institutional equivalent—akin to Bell Labs or Alphabet's X—where disruptive concepts receive early critique and iterative refinement (Gertner, 2012). These historical and industrial analogies illustrate why a deliberate, staged incubator pathway is necessary to move promising maverick ideas from initial insight to mainstream validation. Such maverick journals also help to counter a major consequence of the scientific literature's meteoric expansion. As Chu and Evans (2021, p.1) observed, "canons crystallize as fields grow large," leaving mainstream science increasingly resistant to novel ideas. Quantitative evidence reinforces this point. Analyzing 45 million papers and 3.9 million patents across six decades, Park et al. (2023) found that scientific and technological work has become progressively less likely to push fields in new directions—a pattern that holds across disciplines.

AN INCUBATOR MODEL: FIVE STAGES TO GUIDE MAVERICK IDEAS TO MAINSTREAM VALIDATION

Discovery often begins with a contrarian observation or a theoretical fracture in accepted assumptions; an individual or small team suggests an unconventional hypothesis or a novel measurement approach intended to reveal phenomena that standard methods might miss (Kuhn, 1962). These early proposals are frequently speculative and modest in evidence, but they are important for expanding the conceptual search space and articulating new research questions.

Before formal submission, scholars can refine nascent proposals through what might be called the "underground"—a loose array of platforms and settings outside the peer-reviewed literature where ideas are informally shared, tested, and debated. Social scientists might characterize such spaces as a form of "third place:" casual environments distinct from home ("first place") and work ("second place") where individuals gather to socialize and cultivate a sense of belonging (Oldenburg, 1989). This notion resonates with the older concept of the "invisible college"—the informal networks of scholars who, long before the age of journals, exchanged letters, circulated manuscripts, and met in coffeehouses to argue ideas across disciplinary boundaries (Crane, 1972; Price, 1963). Thornton (1995) observed that when a culture lacks public recognition and is embraced only by a small circle, it tends to coalesce into a relatively closed community—an underground culture. Most researchers have inhabited one of these underground places—conference corridors, moderated online groups, workshops, private correspondence, or campus cafés where interdisciplinary dialogue naturally unfolds.

In these third places, the invisible college does its quiet work: rapid feedback, pointed counterarguments, and early iteration transform raw intuition or preliminary findings into a defensible proof of concept, a pilot design, or an early-stage manuscript ready for peer review. Scholarly networking platforms such as ResearchGate and Academia.edu extend this function into the digital realm, offering normalization, moral support, intellectual stimulation, and a sympathetic arena for airing new, speculative, or controversial ideas. Together, these environments help scholars to identify methodological pitfalls, locate relevant literatures, and discover potential collaborators. Yet promising ideas cannot remain buried in the underground indefinitely. The invisible college, for all its generative power, is not an end in itself. Ideas must eventually ascend from informal circulation to transparent, peer-reviewed forums—where iterative critique and structured refinement can prepare them for the scrutiny, and ultimately the validation, of the wider scholarly community.

Mainstream journals typically prioritize rigor, replication, and adherence to established paradigms, which, while critical for maintaining scientific standards, can inadvertently discourage the publication of ideas that challenge orthodoxy. Niche journals, on the other hand, are designed to accommodate unconventional research that may lack immediate empirical support but is grounded in logical reasoning and theoretical plausibility. For instance, *Medical Hypotheses* explicitly invites speculative articles, recognizing that breakthroughs in medicine often begin as untested ideas (Hughes, 2021). Similarly, all niche journals can be repositories for early-stage thinking and research, reducing the risk of intellectual stagnation. This parallels technology firms that have "peripheral zones" for experimenting with unconventional ideas (Chesbrough, 2006) or "blue-sky" projects to foster disruptive thinking without immediate concern for profitability (Chesbrough, 2003). Indeed, Ioannidis (2005) showed how dominant

paradigms in mainstream science can create a file-drawer effect, where novel or controversial ideas struggle to find publication outlets. In contrast, empirical studies show that lower-prestige, niche, and maverick journals publish a higher proportion of null or non-confirmatory results than mainstream venues (Fanelli, 2012; Franco et al., 2014; van Assen et al., 2015).

Authors are strongly encouraged therefore to submit preliminary data, theoretical essays, or methodological notes, and null results to specialized outlets that champion exploratory lines of work. Niche journals provide three vital resources in this context: first, they offer a receptive readership that understands the domain's conceptual stakes, second, their peer reviewers have both domain-appropriate expertise and sympathetic minds, and lastly, they provide a public record that establishes intellectual priority and invites broader scrutiny. By offering early peer scrutiny and intellectual credit, these journals enable ideas to evolve responsibly. In particular, constructive peer critique in the niche venue should prioritize sharpening conceptual claims and rendering methods increasingly testable. Reviewers and editors should push authors to specify boundary conditions, state uncertainty clearly, and propose concrete follow-up studies. Recommended actions often include pilot replications, standardizing measures, or developing cross-laboratory protocols so that exploratory findings can advance toward confirmatory phases.

When methods or hypotheses have been refined in this way, the most promising research lines should naturally progress to confirmatory pipelines—that is, preregistration, adequately powered replication studies, multi-site collaborations, or cross-disciplinary syntheses that allow mainstream journals with broader audiences to evaluate and as warranted, disseminate validated results. Preregistration and open data are central to these confirmatory pipelines, improving transparency and reproducibility (Nosek et al., 2015). The Registered Reports format operationalizes this most fully: by subjecting methods and analysis plans to peer review *before* data collection, it eliminates selective reporting and publication bias while still permitting exploratory analyses to be reported transparently alongside confirmatory findings (Chambers, 2013). Moreover, large-scale replication initiatives document why multi-site confirmation is necessary to separate robust effects from various artifacts (Open Science Collaboration, 2015). Mainstream, high-impact journals are the ideal venues for such work because, when supported by rigorous confirmation, their broad readership and disciplinary reach are where paradigm-shifting ideas gain the critical scrutiny, integration, and visibility necessary to transform established frameworks (Kuhn, 1962).

Readers should make no mistake, many influential journals have published papers on a wide range of frontier science topics (Houran & Bauer, 2022)—including Scott and Rines' (1975) famous feature article in *Nature* advocating for the existence of the Loch Ness Monster (though not peer-reviewed), Bem and Honorton's (1994) meta-analysis suggestive of putative psi phenomena that appeared in *Psychological Bulletin*, Sykes et al.'s (2014) genetic study of hair samples attributed to unidentified primates like the sasquatch or yeti—published in the prestigious *Proceedings of the Royal Society B*—which found that all samples matched known species, and Szydagis et al.'s (2025) study in *Progress in Aerospace Sciences* detailing the deployment of camera and radiation sensor arrays to investigate unidentified aerial phenomena (UAPs) during a field expedition off Catalina Island.

This proposed five-stage pathway outlines a strategic progression for advancing frontier research from initial spark to mainstream validation: (1) *Formulate and articulate a maverick idea* (cf. Wardle & Rossi, 2016, p. 8)—develop an unconventional hypothesis or innovative method that challenges prevailing assumptions and opens new conceptual terrain; (2) *Circulate the idea for early critique and calibration* (cf. Martin-Gomez & Muñoz de Luna, 2024)—test its resonance in your third places and within the hallways of the invisible college, from workshop conversations to trusted professional networks, to refine the core argument and gather preliminary evidence; (3) *Publish in a niche journal* (cf. Flier, 2019)—submit a preliminary study, methodological note, or conceptual paper to attract domain-specific critique and establish intellectual priority; (4) *Engage in peer critique and iterative refinement* (cf. Alberts et al., 2008)—leverage structured reviews to sharpen claims, clarify boundary conditions, and design concrete follow-up or replication strategies; and (5) *Transition to mainstream confirmation* (cf. van Dalen & Henkens, 2005)—advance the most promising lines of inquiry into preregistered, adequately powered, multi-site or cross-disciplinary studies suitable for high-impact journals. This final stage preserves early creativity while ensuring that claims intended for policy, clinical practice, or public uptake meet rigorous evidentiary standards (Ioannidis, 2005).

BALANCING RISK AND RIGOR

Niche journals wrestle with the key challenge of maintaining a careful equilibrium between openness to

unconventional ideas and adherence to scientific rigor. Frontier scientists routinely advance bold, speculative hypotheses on sparse empirical grounds, and the credibility such claims acquire depends heavily on disciplinary cultures and gatekeepers; peer review therefore functions not only as a methodological filter but as cultural boundary work that helps to decide what counts as legitimate knowledge (Gieryn, 1998; Ioannidis, 2005). Both failure modes are well documented: overly restrictive gatekeeping can dismiss sound but unconventional work as pseudoscience—Wegener's continental drift being the paradigm case—while overly permissive gatekeeping can delay legitimate consensus by keeping unwarranted alternatives in circulation (Hauswald, 2026). Without rigorous editorial standards, niche outlets risk lapsing into repositories for allegedly unsound or even potentially harmful claims, as the *Medical Hypotheses* controversy demonstrated in the early 2010s, prompting corrective editorial reform (Enserink, 2010). That episode underscores the necessity of peer review that is both exacting and fair, so that published ideas remain speculative yet plausibly grounded. Longstanding critiques of peer review highlight structural flaws that make deliberate editorial redesigns both necessary and practicable (Smith, 2006).

These cultural and structural pressures are amplified by today's fast-moving communication ecosystem, where preprints, social media, and rapid news cycles can propel tentative findings into public view before replication and critique have had time to operate. When preliminary claims are amplified prematurely, they can misdirect funding, shape policy without corroboration, and erode public trust; consequently, the peer review system becomes implicated in societal risk management as well as epistemic judgment (Ioannidis, 2005). Because reviewers operate within local norms, peer review can either reproduce conservative biases that stifle novel work or tolerate rhetorical boldness that outstrips the evidence; both distortions undermine the long-term epistemic health of a field (Fanelli, 2012; Nosek et al., 2015).

These challenges call for proactive editorial architectures that anticipate error rather than merely react to it—structures that refine speculation into disciplined experimentation. To manage those risks while preserving intellectual freedom, niche journals can adopt risk-management lessons from innovation practice and embed them in editorial workflows. Structured, iterative processes—analogous to corporate frameworks such as Amazon's "Working Backwards," which emphasize clarity of objectives, iterative feedback, and staged validation (cf. Hess & Ludwig, 2017)—can help journals to refine speculative ideas without sacrificing credibility. Practically, this means publishing transparent review criteria, requiring clear statements of uncertainty and planned follow-up from authors, and insisting on plausible mechanism building or boundary conditions even in exploratory reports; such measures enable constructive critique rather than reflexive dismissal.

Finally, a proportionate, tiered review architecture aligns evaluative intensity with potential downstream impact. *Low-impact* exploratory reports can receive light-touch, transparent review with explicit caveats and replication plans. *Moderate-impact* claims that could shape applied research or practice should undergo multidisciplinary scrutiny and meet standard data-sharing requirements. *High-impact* assertions with implications for health, safety, or policy merit coordinated, intensive review, preregistration of confirmatory studies, and conditional publication tied to staged confirmation.

Transparent and innovative peer-review models offer practical tools to align review intensity with manuscript risk and public impact (Ross-Hellauer, 2017). Coupled with post-publication monitoring of replication trajectories, media uptake, and policy citations, these reforms reframe peer review as calibrated epistemic governance—preserving the creative edge of frontier science while limiting the societal harms of premature or overstated claims (Ioannidis, 2005; Open Science Collaboration, 2015). Conceptual balance alone is insufficient; to realize this vision, frontier journals must embed rigor into their workflows in practical, transparent ways. The next step is to consider how editorial design can translate these principles into daily practice.

EVOLVING EDITORIAL PRACTICES TO OPERATIONALIZE AN INCUBATOR MODEL

Translating philosophy into policy demands a reimagining of submission categories, reviewer expectations, and feedback systems—ensuring that exploratory and confirmatory research progress along a unified developmental pathway. To bring this aspirational incubator model to life, journals must adopt concrete editorial practices and governance structures that support its implementation. *First*, journals could adopt and clearly advertise tiered submission tracks—Exploratory, Confirmatory, and Synthesis—with distinct review rubrics so authors and reviewers share expectations. *Second*, reviewer guidance must be structured: for exploratory submissions reviewers should

assess conceptual coherence, feasibility of follow-up validation, transparency about limitations, and whether the manuscript supplies actionable pathways toward confirmation. *Third*, publication formats should be diversified to reflect iterative development: pilot briefs, method notes, registered exploratory reports, and living reviews allow ideas to appear in progressively stronger forms without forcing premature definitive claims.

Fourth, reviewer training and recognition matter. Short primers or workshops on evaluating speculative methods, and formal acknowledgement of exemplary reviewers, raise the quality and reward of the service that peer review constitutes. Peer review is a public good; everyone who benefits from a healthy literature should strive to serve when they can. Recent cross-disciplinary analyses of peer-review innovation provide templates and case studies for implementing reviewer training and tiered tracks (Tennant et al., 2017). *Fifth*, for higher-risk claims, editors might require preregistration of confirmatory protocols, mandatory data sharing, and, where necessary, convened multidisciplinary validation panels before mainstream amplification. *Sixth*, post-publication monitoring—tracking replications, media exposure, and policy uptake—creates feedback loops that allow journals to calibrate editorial standards and learn from outcomes (Ioannidis, 2005). Systematic monitoring and metadata-driven approaches are already being piloted in scholarly communication studies and can inform journal-level feedback loops (Kaltenbrunner et al., 2022).

IN SERVICE OF MAINSTREAM EXPOSURE AND INTEGRATION

The incubator approach implies that niche journals should prioritize publishing early-stage ideas and research, while guiding frontier scientists to submit their most advanced studies to high-impact journals. In fact, the ultimate success of niche journals like *JSE* arguably lies in their ability to transition promising hypotheses into mainstream venues. Journals should therefore proactively foster interdisciplinary dialogue—through special issues and collaborative networks—that can attract attention from broader audiences. They could also incentivize empirical follow-up by prioritizing submissions that present feasible validation plans and by facilitating cross-lab collaborations that supply the statistical power and methodological breadth mainstream journals require.

Historical examples show this pathway in action: topics initially aired in specialized outlets, such as placebo research, later matured into robust mainstream literatures because exploratory work was followed by rigorous replication and synthesis (Benedetti, 2014). Systematic reviews of translational pathways emphasize that staged validation, inclusive networks, and synthesis are common features of topics that move from niche to mainstream (West et al., 2014).

Niche journals—and particularly those devoted to maverick concepts—are not marginal curiosities but essential engines of scientific renewal. Like corporate "innovation labs," they provide structured, lower-risk spaces where boundary-pushing ideas can be proposed, tested, and improved. By embracing a tiered incubator model—socializing fresh perspectives, offering early peer scrutiny, enforcing fair but rigorous standards, and actively shepherding validated findings toward mainstream venues—these journals can preserve the adventurous spirit of frontier science while safeguarding credibility and societal trust. Peer review is a crucial scholarly service in this enterprise; those who rely on the scientific record should also accept the responsibility to sustain it.

Anomalistics-oriented journals will ideally function as deliberate bridges, creating clear, resourced pathways that move validated, high-quality frontier work into mainstream, high-impact venues for broad scrutiny and transformative uptake. The aim of this is not to force paradigm shifts per se, but to recognize which paradigms are ripe for revision or reinvention—guiding where rigorous confirmation and cross-disciplinary attention will yield the greatest scientific and social payoff. Although *JSE* and similar periodicals have not yet adopted the full incubator system outlined here, we urged frontier scientists to treat niche journals as disciplined waystations rather than final havens. This shift in mindset and action can collectively chart a more transparent, testable, and ultimately transformative course in the advancement of non-obedient science.

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RESEARCH ARTICLE

Conspirituality: Predicting COVID-19 Conspiracy Beliefs Using, Spirituality, Purity, and Political Orientation

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ABSTRACT

Conspirituality refers to the link between spirituality and the belief in conspiracy theories. This has been linked to the new age and wellness movement, and specifically, COVID-19 conspiracy theories surrounding the vaccine. This study aimed to be one of the first to conduct an empirical study exploring the validity of the term conspirituality and some other variables that might explain this relationship. In this case, moral purity and political orientation. An online survey recruited 240 participants via social media. COVID-19 and general conspiracy theories, political orientation, and spirituality were measured using individual scales; moral purity was measured via a subscale of the Moral Foundations Questionnaire. A multiple regression found that spirituality, purity, and political orientation (right-wing) significantly predicted COVID-19 conspiracy theory belief. Further investigation found that moral purity and political orientation mediated the relationship between COVID-19 conspiracy and general conspiracy theory beliefs, except for political orientation, which was not a mediator between spirituality and general conspiracy beliefs. The network analysis confirmed that political orientation and purity are at the model's centre. In conclusion, conspirituality is a valid term and potentially contributes to anti-vaccination sentiments. However, this study shows that moral purity and political orientation are key variables when explaining the relationship between spirituality and conspiracy belief.

KEYWORDS

conspirituality, spirituality, political orientation, purity, COVID-19, conspiracy, moral foundations, mediation, network analysis.

INTRODUCTION

Conspirituality refers to the hypothesised link between spirituality, and belief in conspiracy theories or a conspiratorial mindset (Ward & Voas, 2011). The term has come into sharper focus with the advent of the pandemic, which led to a proliferation of COVID-19 and anti-vaccination conspiracy theories and has been embedded in the new age wellness movement (Sandlin & Gómez, 2023). The term conspirituality was first coined by Ward and Voas (2011), but the link between spirituality and conspiracy theories has been acknowledged for many years (Asprem & Dyrendal, 2015). It has also been used in a religious context (Maurer, 2024) and more recently it has been used to describe people who think that social media posts are 'meant' for them to see and referred to as 'algorithmic conspirituality' (Cotter et al., 2024; Kanthawala et al., 2023). Also, there is a popular podcast called Conspirituality that examines 'Dismantling

New Age cults, wellness grifters, and conspiracy-mad yogis.' (*Conspirituality*, n.d.). A conspiracy is defined via the legal terms of two or more people conspiring to commit a criminal act. The term conspiracy theory has been defined as 'Explanations for important events that involve secret plots by powerful and malevolent groups' (Douglas et al., 2017). However, there has been some debate over whether 'true' conspiracies (conspiracy theories that have since been proven, e.g., Watergate or MK Ultra) can still be identified as conspiracy theories and the role played by a conspiracy mindset (Sutton & Douglas, 2020).

The spirituality aspect has generally been referred to as 'new age' when talking about it in terms of conspiracy theories (Asprem & Dyrendal, 2015). Defining spirituality is notoriously difficult and has been described as 'fuzzy' (Zinnbauer et al., 1997), but one definition states that it is subjective and based on the individual experience rather than being institutional or traditional (Voas & Crockett, 2005). While being 'spiritual' has often been associated with higher well-being (Gomez & Fisher, 2003), belief in conspiracy theories has been seen to be the opposite and is either a consequence or leads to lower well-being (Van Prooijen et al., 2023). However, other bodies of research have examined the 'darker' side of spirituality (Köteles et al., 2016), indicating that the link between conspiracy belief and spirituality may not be as counterintuitive as previously thought. Ward and Voas (2011), when first positing conspirituality made the following observations: It is a hybrid system of belief that is growing online that reflects people's dissatisfaction with the political system. It has two main components: that a secret group is trying to control world events, and that humanity is experiencing a major shift in consciousness. It does beg the question, is this new form of conspiracy theory a new religion? Given the popularity of the wellness market and its various proponents in the public eye, such as David Icke, Russell Brand, and Joe Rogan, it would seem so. Furthermore, anti-vax conspiracy theories have focused on purity, the logic being that vaccinations pollute our bodies, go against nature and therefore cause various medical conditions or deaths. Most papers that identified conspirituality directly were opinion pieces, and an empirical study has yet to be carried out, although several studies have examined the link between spirituality and belief in conspiracy theories. Therefore, this study will examine conspiracy beliefs and their link to spirituality. Based on the theoretical underpinnings of conspirituality, it will also examine the role political orientation and purity play in this relationship.

Two studies have directly examined spirituality and conspiracy beliefs. One was qualitative, using thematic analysis, and showed an overlap between narratives in QAnon and new age wellness on an alternative health influencer's Facebook page (Demuru, 2022). They did refer to conspirituality in the paper. The other found that holistic spirituality positively correlated with conspiracy mentality (Jedinger & Siegers, 2024). While there is a shortage of studies looking at spirituality and conspiracy belief directly, other studies have examined religiosity (e.g. Frenken et al., 2023), paranormality (e.g. van Prooijen et al., 2022), and conspiracy theories. While there is a connection between religious, spiritual and paranormal beliefs (Schofield et al., 2018) the nature of that relationship is debatable, with spirituality often being framed as a rejection of traditional religiosity. One aspect of conspirituality is dissatisfaction with the political system, therefore, political orientation may play a role in the relationship between conspiracy belief and spirituality.

Studies looking at political orientation have generally found that the more right-wing a person is, the more they subscribe to conspiracy theories. For example, Santirocchi et al. (2023) found that right-wing thinking was linked to vaccine hesitancy. And more specifically Akyol and Atli (2023) found that right-wing thinking was associated with belief in COVID-19 conspiracy theories. However, other studies found that extreme left and right political orientations correlated with conspiracy beliefs (Imhoff et al., 2022), but Alper and Imhoff (2023) found that it depends on the type of conspiracy theory on whether extreme in right or left-wing political orientation is related to conspiracy theory beliefs. Alternatively, one study found no association between authoritarianism and conspiracy thinking (Smallpage et al., 2023), and Jolley and Douglas's (2014) study found that belief in conspiracy theories reduced people's wish to engage in political activity. More related, two studies found that there was a relationship between political orientation and conspiracy belief and found that religiosity played a role (Frenken et al., 2023; Jabkowski et al., 2023). The findings are clearly mixed regarding a direct relationship between political orientation and conspiracy belief, and this could indicate other variables being at play, in particular relating to moral foundations.

Moral Foundation Theory (Graham et al., 2011) consists of two key elements, the first concerns how the individual fits in with group norms (authority/respect, in-group/loyalty, and purity/sanctity) known as binding.

The second is to do with the individual and how their rights are protected (harm/care and fairness/reciprocity) and referred to as individualising. For this study, the moral concept of purity will be examined. Previous research has supported the link between moral foundations and political orientation (Kivikangas et al., 2017), with Leone et al. (2019) finding that binding moral foundations, the group norms aspect (that includes purity), positively correlate with general conspiracy theory belief. With potential relation to spirituality, one study looked at an Italian sample and found that binding was positively correlated with political orientation and religiosity (Di Battista et al., 2018). However, further studies looked at moral foundations in relation to how people behaved regarding health mandates during the pandemic, such as social distancing. Coelho et al. (2024) looked at political orientation and moral foundations in relation to the introduction of a vaccine passport and found that the more left-wing you are and the lower the binding foundations, the more you were in favour of a vaccine passport. Tarry et al. (2022) found that if you were left-wing and had more individual moral foundations, then you were more likely to engage in social distancing. Bringing in conspiracy theories, Gkinopoulos et al. (2022) found that believing in conspiracy theories reduced the likelihood of engaging in COVID-19 health mandates, but this was moderated by moral identity and morality as cooperation. While not looking at purity specifically, this study highlights both individual and group moral foundations, but this study looks at behaviour rather than belief. However, Vaal et al. (2022) found a correlation between COVID-19 conspiracy theory belief and willingness to engage in COVID-19 health mandates. While some of these studies have looked at religiosity, none have focused on spirituality directly, and given the nature of the above findings, focusing on purity/sanctity in relation to the other variables in the first instance, should be followed by a wider, more exploratory analysis of the further elements of moral foundations.

The following is hypothesised:

H1: Spirituality, purity, and political orientation (right-wing) will positively predict COVID-19 conspiracy beliefs.

H2: Purity, and political orientation (right-wing) will act as mediators between spirituality and COVID-19 conspiracy beliefs and general conspiracy beliefs.

H3: Is an exploratory analysis of the network of the variables of the subscales of the MFQ, spirituality, political orientation, COVID-19 conspiracy beliefs and general conspiracy beliefs.

METHOD

Design

The study employed a cross-sectional, correlational design. The predictor variables were spirituality, purity, and political orientation. The outcome variable was COVID-19 conspiracy beliefs. Ethical approval was provided by the University of Derby, College of Health, Psychology and Social Care Research Ethics Committee: ETH2223-4193.

Participants

The study sample consisted of an opportunity sample collected through the University of Derby Research Participation Scheme, word of mouth, and social media. Participants were entered into a £50 prize draw. Exclusion criteria were that participants must be over 18, and live in the UK to participate in the study. G*Power (Faul et al., 2009) calculated the appropriate number of participants for this study to be 77 for a medium-effect size. Three hundred and eighty-nine participants started the study, and 240 participants completed the whole study (61.7%). However, 10 did not complete the POS scale, so the N = 250 for all other variables. Participants' age and gender were recorded (range between 18 and 78 years old, mean = 38.64, SD 15.76); 71 male (28.4%), 167 female (66.8%), 6 non-binary (2.4%), 5 preferred not to say (2%), and 1 preferred to self-describe (0.4%).

Materials

The online survey was hosted using Qualtrics, and the following scales were used:

Intrinsic Spirituality Scale (ISS)

Spirituality was measured using the Intrinsic Spirituality Scale (ISS) (Hodge, 2003), which features six items rated on an eleven-point Likert scale. The items present incomplete statements such as, "When I am faced with an important decision, my spirituality," followed by a scale from 0 to 10, where 0 might indicate "plays absolutely no role" and 10 might indicate "is always the overriding consideration." The ISS has high internal consistency (Cronbach's α = 0.960)

and is considered a reliable measure of spirituality (average reliability coefficient of 0.80).

COVID-19 Conspiracy Beliefs (CovCB)

The CovCB questionnaire (Vaal et al., 2022) was utilised to assess beliefs in COVID-19 conspiracies. This 10-item questionnaire employs a 5-point Likert scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree"), allowing participants to express their agreement with statements like "COVID-19 was created artificially" and "COVID-19 is a hoax". Scores range from 10 to 50, with higher scores reflecting stronger belief in COVID-19 conspiracies. The scale demonstrated good internal reliability ($\alpha = 0.87$).

Moral Foundations Questionnaire (MFQ)

The Moral Foundations Questionnaire (MFQ) (Graham et al., 2011) was used to assess levels of moral purity. This 32-item questionnaire employs a 6-point Likert scale and includes subscales that measure endorsement of the five moral foundations proposed by Moral Foundations Theory (MFT): Harm/Care (MFQHC), Fairness/Reciprocity (MFQFR), Ingroup/Loyalty (MFQIL), Authority/Respect (MFQAR), and Purity/Sanctity (MFQPS). The subscales show reasonable internal consistency, with an average Cronbach's α of .73, ranging from .64 to .84.

Beliefs About the World (BatW)

General conspiracy belief was measured using the Beliefs about the World (BatW) scale (Brotherton et al., 2013). The BatW scale is a 15 item, 6-point Likert scale that measures general conspiracist ideation, which includes five subscales measuring belief in governmental malfeasance (GM), extraterrestrial cover-up (ET), malevolent global conspiracy (MG), infringements on personal wellbeing, health and liberty (PW), and control of information (CI). Participants rated statements such as "secret organisations communicate with extraterrestrials but keep this fact from the public" on a scale from 1 ("definitely not true") to 5 ("definitely true"). Overall scores range from 15 to 75, with higher scores indicating higher belief in general conspiracy theories. The internal reliability of the scale is extremely high ($\alpha = 0.95$).

Political Orientation Scale

The Political Orientation Scale (POS) (Krieger et al., 2019) was used to assess political orientation. This single-item, 10-point Likert scale measures political ideology, with participants rating their political stance from 1 (left-wing) to 10 (right-wing). Higher scores indicate a stronger right-wing orientation, while lower scores indicate a stronger left-wing orientation.

Procedure

Once participants were recruited, they were given a study link in Qualtrics, after reading an information section which provided details of the study. The survey began with participants being presented with basic demographic questions before being allowed to proceed to the next stage, which consisted of the presentation of CovCB, MFQ, BatW, ISS, and POS which were randomised to provide counterbalancing. Upon scale completion, participants received a debriefing, which included additional study information.

Transparency and Openness

We report how we determined our sample size (using G*Power), all data exclusions, all manipulations, and all measures in the study. Data are available on request. Data were analysed using SPSS version 29 and JASP Version 0.19.3. This study's design and its analysis were not pre-registered.

RESULTS

Descriptive Statistics

Table 1 shows the descriptive statistics for the measures of spirituality, COVID-19 conspiracy beliefs, general conspiracy beliefs, political orientations, and the subscales of the Moral Foundations Questionnaire (harm/care, fairness/reciprocity, in-group/loyalty, authority/respect, and purity/sanctity).

Z scores were mostly within range, with the subscales of the MFQ Harm/care (−3.97) and Fairness/reciprocity (−3.39) showing possible outliers. However, all Cook's distances were <1, indicating no outliers being present. VIF (highest 2.67), showing an acceptable amount of multicollinearity, and Durbin-Watson (1.97), showing no correlation between the residuals. Due to missing data on the POS scale, all analyses were carried out using the pairwise method.

Main Analyses

Multiple Regression

Multiple regression using the enter method was used to examine if spirituality, political orientation, and purity/

Table 1. Table showing correlations between key variables.

	CovCB N = 250	BatW N = 250	ISS N = 250	POS N = 240	MFQHC N = 250	MFQFR N = 250	MFQIL N = 250	MFQAR N = 250
CovCB	—							
BatW	0.761***	—						
ISS	0.341***	0.368***	—					
POS	0.399***	0.283***	0.276***	—				
MFQHC	−0.03	0.165**	0.15*	−0.185**	—			
MFQFR	−0.038	0.16*	0.04	−0.219***	0.674***	—		
MFQIL	0.181**	0.214***	0.244***	0.337***	0.21***	0.158*	—	
MFQAR	0.202**	0.211***	0.278***	0.408 ***	0.188**	0.105	0.658***	—
MFQPS	0.367 ***	0.397***	0.439***	0.381***	0.29***	0.198**	0.65***	0.665***
Mean	26.644	43.68	21.564	3.104	27.972	27.836	19.388	21.364
SD	9.833	14.783	18.416	1.564	5.034	4.672	5.602	5.881

CovCB = COVID-19 conspiracy beliefs, BatW = General conspiracy beliefs, ISS = Spirituality, POS = Political orientation (higher score indicates more right-wing), MFQHC = Harm/care, MFQFR = Fairness/reciprocity, MFQIL = In-group/loyalty, MFQAR = Authority/respect, MFQPS = Purity/sanctity.
*$p < .05$, ** $p < .01$, *** $p < .001$.

Table 2. Table showing beta values and significance levels.

	β	*t*	*p*
ISS	0.156	2.442	0.015
POS	0.28	4.512	<.001
MFQPS	0.199	2.987	0.003

ISS = Spirituality, POS = Political orientation (higher score indicates more right-wing), MFQPS = Purity/sanctity.

sanctity predict COVID-19 conspiracy beliefs. The model was significant, explaining 63% (r^2 = .63) of the variance, indicating a large effect size (Gignac & Szodorai, 2016), (F (8,231) = 49.23, $p < .001$. Spirituality, political orientation, and purity/sanctity were significant predictors of COVID-19 conspiracy beliefs. For beta values and significance levels, see Table 2.

Mediation Analysis

Mediation analysis (see Figure 1) showed a significant indirect effect of spirituality on COVID-19 conspiracy beliefs (β = 0.042 95% BCa CI [0.011, 0.074]) and general conspiracy beliefs (β = 0.088 95% BCa CI [0.038, 0.138]) through moral purity/sanctity. Also, spirituality had a significant indirect effect on COVID-19 conspiracy beliefs through political orientation (β = 0.042 95% BCa CI [0.016, 0.067]). Still, there was no indirect effect of spirituality and general conspiracy beliefs (β = 0.029 95% BCa CI [<−.001, 0.059]) through political orientation. These effects showed partial mediation in all significant cases.

Network Analysis

For details of the network analysis, see Figure 2. Purple lines indicate a positive relationship, while orange lines indicate a negative one. The thicker the line, the stronger the relationship.

DISCUSSION

The initial analysis found that spirituality, political orientation, and purity positively (in the case of political orientation, toward the right-wing) predicted belief in COVID-19 conspiracy theories, supporting the first hypothesis. The second analysis found that both political orientation and purity acted as mediators between spirituality and both COVID-19 conspiracy beliefs and general conspiracy beliefs. The significant relationships were all positive. However, political orientation was not a mediator between spirituality and general conspiracy beliefs. Therefore, hypothesis two was partially supported. Finally, the exploratory network analysis demonstrated that purity and political orientation are, indeed, at the centre of the network; it also demonstrated that while the binding and individualisation aspects of moral foundations clustered together, it was only purity out of all the subscales that directly linked to spirituality and conspiracy beliefs. However, the binding subscales positively correlated with political orientation (more right-wing thinking), whereas individualisation negatively correlated.

Although the link between spirituality and conspiracy theories, in terms on the concept of conspirituality is

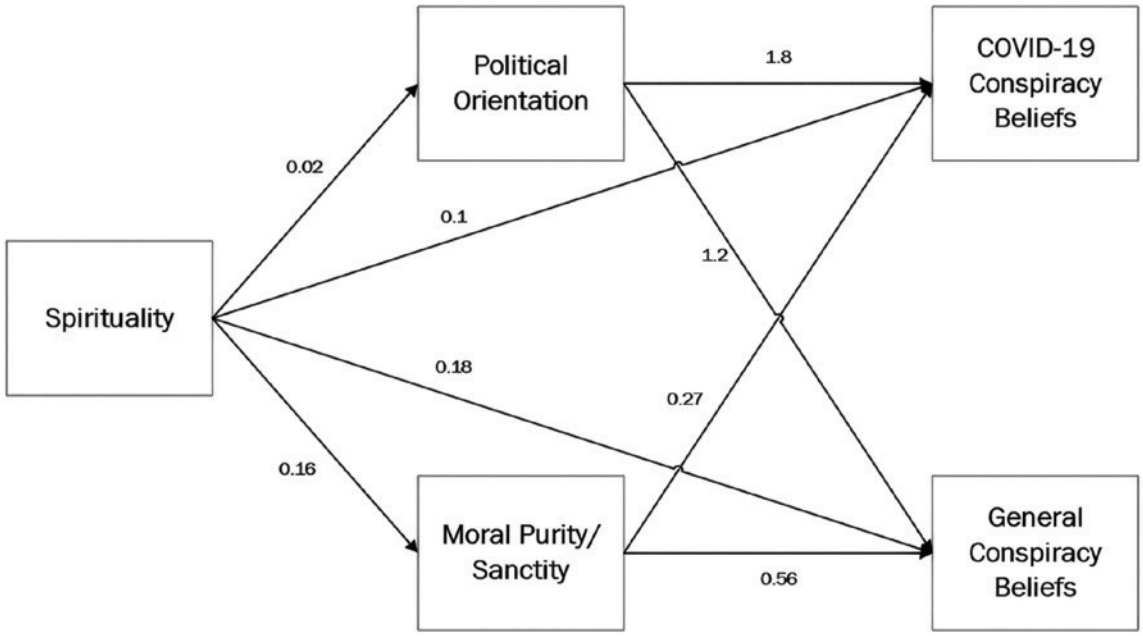

Figure 1. Mediation model showing path coefficients between spirituality, purity, and political orientation, COVID-19 conspiracy beliefs and general conspiracy beliefs.

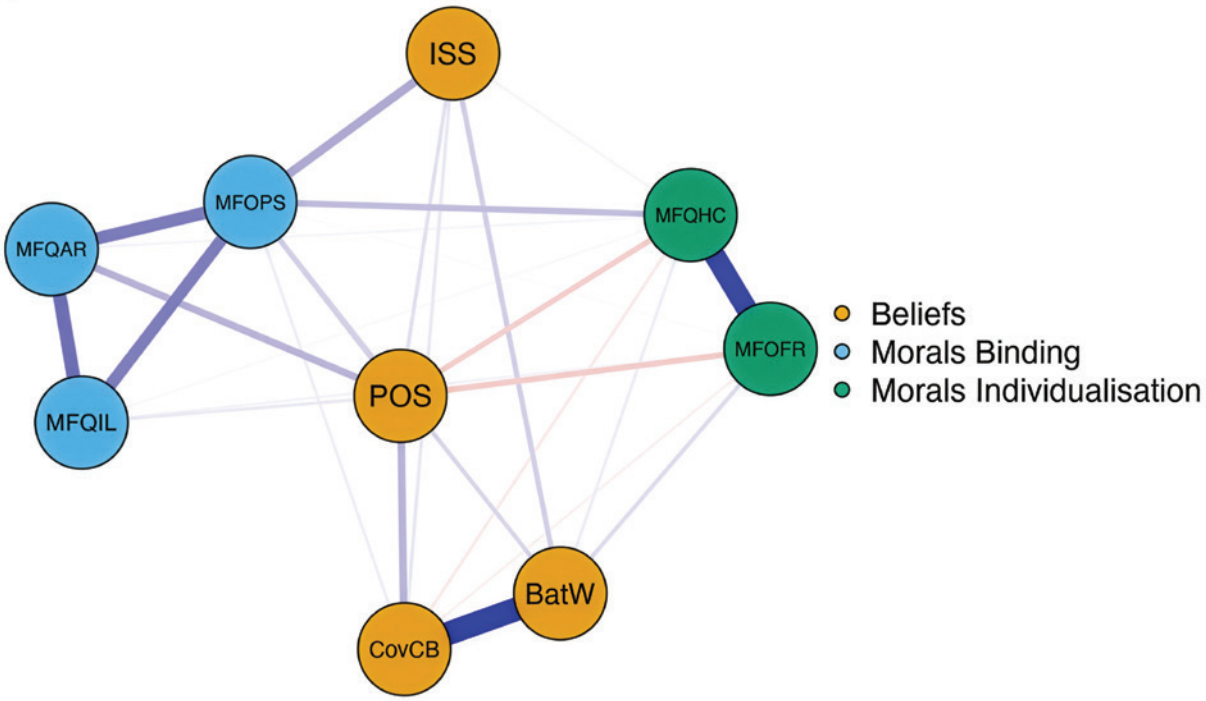

Figure 2. Network model of CovCB = COVID-19 conspiracy beliefs, BatW = General conspiracy beliefs, ISS = Spirituality, POS = Political orientation (higher score indicates more right-wing), MFQHC = Harm/care, MFQFR = Fairness/reciprocity, MFQIL = In-group/loyalty, MFQAR = Authority/respect, MFQPS = Purity/sanctity.

largely exploratory in this study, it does align with previous research (Smith, 2004). This would appear to support Ward and Voas (2011), and their theory of conspirituality. Furthermore, this study supports previous research that found right-wing thinking to be a key part of conspirituality (Akyol & Atli, 2023; Santirocchi et al., 2023). However, this only shows in the direction of right-wing thinking, whereas some previous research has indicated that it is the

extremes of both left and right that are linked to conspiratorial thinking (Alper & Imhoff, 2023). Finally, purity was also significant, supporting limited previous research that looked at binding, rather than purity directly (Kivikangas et al., 2017; Leone et al., 2019).

The initial analysis supported the mediation, which, again, was in line with the previous research in terms of variable relationships. But the mediating aspect of the study was largely new. The interesting finding was that the only pathway that was not significant was political orientation and general conspiracy beliefs. This indicates that while political orientation does explain the relationship between spirituality and COVID-19, it does not explain it for general conspiracy theories. This could be due to the recency of COVID-19 conspiracy theories and the greater number of political conspiracy theories being related to COVID-19. However, purity was a mediator for both types of conspiracy theory, which could indicate that it is not the vaccine element of COVID-19 conspiracy theories that is salient here, and that purity is playing another role in conspiracy theory belief, and could be acting on it in a different way; for example, group loyalty and binding, possibly via political orientation, as demonstrated by previous research (Coelho et al., 2024).

This importance of binding can be seen in the exploratory network analysis. This, again, is in line with previous research that links the binding element (Kivikangas et al., 2017; Leone et al., 2019), and they are clearly groups in the network and have stronger positive edge connections, while the two individualisation elements of the moral foundations are, again, clustered and have negative relationships. However, the only pathway from spirituality is through purity, the network analysis supports the mediation analysis in that purity and political orientation should be the focus. The network analysis also supported the mediation regarding the role of political orientation and that there is a direct line between spirituality and general conspiracy theories but not COVID-19 conspiracy theories. Furthermore, the network analysis suggests that purity is not a direct mediator between spirituality and conspiracy theory belief. Instead, it is a mediator between spirituality and political orientation. Rather than being parallel mediators, purity and political orientation are working in a 'chain', with a heightened sense of purity causing right-wing thinking and then leading to conspiracy belief. Caution should be taken when examining mediation results, just as one would not infer causation from a simple correlation. It should be noted that the mediations were all partial, which is also supported by the network analysis.

The main problem with this study is that it is cross-sectional in nature. While it indicates relationships between variables, causation can be difficult to infer, and the self-report nature of the scales may limit generalisability. Furthermore, while the mediation analysis lends a bit more weight to how the variables interact, caution should be taken; just because the model is significant, it does not mean that that is the best model, and as the network analysis shows, other models could be more robust. Also, spirituality is complex to measure, along with conspiracy theories. Our scales may therefore have only measured belief in conspiracies, not conspiratorial mindset. Finally, the sample could have been wider in demographics to represent a broader cross section of the population. Future studies should use an experimental design with priming paradigms, perhaps looking at emotions, to establish causation.

The results of this study support Ward and Voas (2011) and their term Conspirituality. This is one of the first empirical studies that validates the concept and links spirituality and belief in conspiracy theories. Furthermore, it acknowledges the role of political orientation and the theoretical concept of purity. If you are spiritual, right-wing in thinking, and believe in moral purity, then you are more likely to believe in COVID-19 conspiracy theories. However, right-wing thinking and purity are the mediators potentially working in serial in this relationship. Spirituality leads to purity, leading to right-wing thinking, resulting in conspiracy beliefs. The results of this study shed further light on the variables at play when people believe in conspiracy theories, and future research should try to establish whether purity and political orientation are involved in the formation of these beliefs. Experimental research can potentially find out how we can stop people from forming or continuing to believe conspiracy theories based on misinformation and disinformation that could potentially damage the well-being of the individual and society.

DECLARATION OF INTERESTS

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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RESEARCH ARTICLE

Semantic Correspondence Between Trance-Channeled ET Messages and Ufological Records

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ABSTRACT

This study examined thematic correspondence between two independently sourced corpora: trance-channeled communications attributed to extraterrestrial intelligences (ETIs) and a large-scale archival ufological dataset (UFODex). A curated sample of 52 channeled submissions was collected and processed into a structured dataset, while UFODex, an evolving corpus of books, periodicals, and archival documents, served as a comprehensive map of UFO-related material. Ten matched questions covering topics such as disclosure, communication, time perception, and technology were posed to both datasets. Semantic similarity was quantified using three transformer-based language models (MiniLM, MPNet, and QA MPNet), allowing for a model-agnostic comparison of conceptual overlap. Average similarity scores ranged from 0.66 to 0.88 across questions, with disclosure, psychic abilities, and time perception showing the highest alignment. Qualitative synthesis revealed convergent themes across both sources, including phased disclosure processes, latent human psi capacities, and nonlinear conceptions of time, while highlighting epistemic divergence. Channeled content emphasized vibrational readiness, ethical co-creation, and consciousness-based contact models, whereas UFODex emphasized secrecy, technological engineering, and geopolitical framing. These findings highlight the value of semantic analysis for mapping conceptual structures across heterogeneous sources and lay the groundwork for future, more controlled comparisons across channeling modalities and related cultural domains.

KEYWORDS

Trance channeling, extraterrestrial intelligence, semantic similarity, ufology, nonhuman intelligence, transformer models, anomalous communication, consciousness studies, large language models, disclosure.

INTRODUCTION

Despite decades of anecdotal reports and localized investigations, the systematic study of purported communications from nonhuman intelligences (NHIs), particularly extraterrestrial intelligences (ETIs), remains markedly underdeveloped in scholarly literature. Trance channeling, a phenomenon in which individuals enter altered states of consciousness to convey information believed to originate from nonphysical entities, constitutes a substantial yet underexplored domain within

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this broader inquiry. While trance channeling is documented across diverse cultural and historical contexts, from Brazilian spiritist traditions (Moreira-Almeida et al., 2024) to British spiritualist circles (Roxburgh & Roe, 2011) and Himalayan oracles (Crook, 1997), there exists no comprehensive framework to rigorously collect, archive, and analyze trance-channeled material attributed explicitly to ETIs.

Recent empirical investigations have sought to systematically document sources of channeled communications. Wahbeh et al. (2018) conducted a mixed-methods phenomenological study involving 21 self-identified channelers, exploring their lived experiences and perceptions of communicant origin. Participants described receiving communications from a broad spectrum of entities, including archangels, ascended masters, various collective or group intelligences, and representatives from at least seven extraterrestrial civilizations (such as Telos, Pleiades, Arcturus, Sirius, Orion, Cygnus, and Lyra), as well as deva kingdoms and earthbound spirits. Building on these findings, Wahbeh & Butzer (2020) administered an online survey to 83 trance channelers and quantified the prevalence of reported communicant types. Results indicated that most respondents identified the "higher self" (65%) and group beings (61%) as primary sources, with over half referencing deceased humans (56%). Approximately 36% reported communications attributed to extraterrestrial intelligences. Despite providing extensive quantitative data, the survey did not preserve the full textual content of channeled messages, limiting the feasibility of subsequent in-depth thematic or linguistic analysis.

Together, these studies underscore both the remarkable diversity of perceived sources in channeling and the prominence of ETI-related communications as a distinct subset. However, they also highlight critical gaps, most notably, the absence of systematic archives that allow researchers to assess the coherence, variability, or potential cross-cultural and cross-modal patterns in these communications. At the same time, the field of ufology has generated a vast body of documentary material, including declassified government files, witness testimony, investigative journalism, and scholarly analysis, much of which has been challenging to analyze systematically until recently. Advances in artificial intelligence and semantic modeling now make it possible to process these large archival datasets in new ways, enabling the identification of thematic structures, conceptual motifs, and discursive patterns across sources.

This study brings these two domains into direct conversation. Drawing on a curated corpus of trance-channeled communications attributed to ETIs and a parallel corpus of over 750,000 pages of historical UFO-related literature (UFODex), we use a large language model and semantic similarity to explore patterns of convergence and divergence across matched thematic questions. By comparing how these distinct sources conceptualize disclosure, contact, time, communication, psychic abilities, and related topics, we aim to contribute to a more integrative understanding of contact claims and their epistemological implications.

Study Objectives

This study aims to systematically collect, organize, and analyze trance-channeled content believed to originate from extraterrestrial intelligences, and to compare this material to a large-scale archival dataset of ufological literature processed through a custom AI system (UFODex). Rather than comparing factual content or empirical evidence, this study examines semantic correspondence between two independently sourced discourses, trance-channeled communications attributed to extraterrestrial intelligences and the broader UFO knowledge ecosystem represented in UFODex. The study examines whether consistent conceptual and linguistic patterns emerge across these independently sourced datasets, focusing on their semantic correspondence rather than on the factual accuracy of their claims.

This work aims to lay the groundwork for future hypothesis generation, contribute to the empirical study of nonordinary information sources, and support interdisciplinary discourse on consciousness, communication, and purported contact with nonhuman intelligences. The resulting data archive will be accessible for ongoing queries, facilitating future research. While this study does not claim to establish the ontological reality of nonhuman communicants, examining the coherence of information across multiple channelers and sources may provide preliminary insights that warrant further investigation.

METHODS

Participants

Eligible participants were adults aged 18 years or older who could read, write, and understand English, provide informed consent, and successfully upload materials to the study website. Submissions were accepted without restriction on quantity to support the long-term development of a comprehensive data archive.

Submitted content had to be produced through trance channeling to be included in the study. Trance channeling is defined as a state of consciousness in which the channeler enters a trance state at will (the depth of the trance may vary) to allow an apparent disincarnate entity/spirit to communicate directly through the channeler's voice, body movements, or other expressive faculties. This is distinct from mental or intuitive modalities in which the individual receives information and then relays what has been received.

Only content attributed to extraterrestrial intelligence (ETI) was eligible for this study. ETI is defined here as any form of intelligent life that originates outside of Earth. This encompasses a wide range of beings or species that may possess advanced cognitive abilities, technology, and a distinct societal structure. Examples often cited by experiencers include the Grays, Pleiadians, and Arcturians, among others. Submissions were included if they met these criteria and were either publicly available or submitted with the channeler's explicit permission. Materials were excluded if they were not produced via trance channeling (e.g., intuitive writing, mental mediumship, or mediumship involving deceased humans), attributed to non-ETI sources (e.g., angelic or interdimensional beings), or lacked sufficient documentation regarding either the channeling method or the source identity.

Participant recruitment employed a multi-pronged strategy to ensure a diverse and representative sample of trance channelers. Individuals were recruited globally through outreach to members of the Institute of Noetic Sciences (approximately 100,000 members), affiliated social media and professional networks, and through personal contacts and referrals. In addition to these active recruitment efforts, the study team also conducted targeted searches for publicly available channeled material (e.g., on platforms like YouTube) that met the study's inclusion and exclusion criteria.

Procedures

Individuals expressing interest in contributing to the study first completed an informed consent form. Following consent, participants responded to a series of screening questions to confirm eligibility, including verification that the submitted material was received via trance channeling and attributed to an extraterrestrial source. Participants were also asked whether the material was publicly available; if not, they were required to confirm that they had obtained explicit permission from the original channeler to share the content. Individuals who did not meet the eligibility criteria were not permitted to proceed further in the submission process.

Eligible participants were then asked to provide additional contextual information, including the channeler's identity, the name or description of the perceived extraterrestrial source, the approximate date(s) of the channeling session(s), and a brief summary of the material being submitted. Participants could then upload their files through a secure interface hosted on the SurveyMonkey platform or email them to the study team. The study team manually reviewed all materials to ensure their alignment with the inclusion/exclusion criteria.

Channeled Content Data Processing

After the screened channeled content was received, the collected data was ingested in a four-stage pipeline designed to ensure security, standardization, and compatibility with downstream OCR processing. All textual documents (DOCX and PDF formats) were processed through a containerized environment to mitigate security risks associated with macro execution and malicious content. Documents were transmitted to the isolated container for plain text extraction and returned as sanitized text outputs. Multi-modal content, including audio files, video files, and YouTube downloads, was processed using OpenAI's Whisper Large v3 Turbo model. All audio content was transcribed to text format using the model's automatic speech recognition capabilities, which provided high-accuracy transcription across multiple languages and varying audio quality conditions.

Extracted textual content from both document processing and transcription stages was transformed into a structured JSON format. Each JSON object contained standardized metadata fields, including document ID, filename, file type, original path, extraction timestamp, content classification descriptors, and the full extracted text content. The structured JSON files were then transformed into an OCR-processed PDF file. UFODex AI document ingestion is currently limited to text and not image formats. Each PDF contained a standardized two-section layout mirroring the text file: a header section displaying the metadata fields (ID, filename, file type, original path, extraction timestamp, and content descriptors) and a body section containing the full transcript text. PDF files were named using a consistent convention incorporating the document ID, content descriptor, and original filename to facilitate systematic processing. The PDFs were then sent to Ryan S. Wood for

ingestion into the UFODex AI platform as a separate dataset from the ufology materials.

Query Questions

To determine the final set of 10 queries used in this project, we began with a larger pool of over 40 questions sourced from internal brainstorming with the IONS science team and from trusted external advisors familiar with the field, including Ryan S. Wood (ufologist and researcher) and Sean Esbjörn-Hargens (founder of The Institute of Exo Studies). From this initial set, we selected 10 questions that were not only thematically representative but also feasible to apply across both datasets—channeled content and UFODex. The 10 questions were:

1. Disclosure plans. What are the current plans, if any, for the public disclosure of extraterrestrial intelligence to all Earthlings? What specific criteria or conditions must be met for this disclosure to occur? How can humanity actively prepare for or accelerate the process of disclosure? What percentage of humanity is currently considered "awake" (i.e., aware of or receptive to the possibility of extraterrestrial intelligence and broader shifts in consciousness)?
2. Purpose of visits. What is the primary purpose or interest of extraterrestrial visits to or interactions with Earth? Are there specific goals or objectives that guide these interactions?
3. Relationship with humans. What is the nature of the relationship between extraterrestrial beings and humans? Do extraterrestrial entities cooperate directly with human governments, and if so, can you describe the nature of these collaborations?
4. Perception of human abilities. What are the perceived capacities of humans for extrasensory perception (ESP) or psi abilities? What factors are believed to block or inhibit human psi abilities, and how can humanity fully manifest its psi potential?
5. Communication methods. How do extraterrestrial species communicate within their own kind? Are there specific technologies or methods used for communication that differ from human practices? Do extraterrestrial species communicate with other species, and if so, please describe how they communicate with other species.
6. Space travel. What methods do extraterrestrial beings use for local travel through space? Do they engage in interstellar travel, and if so, can you describe the technologies or processes involved in such journeys?
7. Perception of time. How do extraterrestrial civilizations perceive and measure time? Do they possess any technology that allows for time travel, and if so, can you provide details on how it functions?
8. Belief systems. Do extraterrestrial beings hold a belief in a creator, god, divinity, or ultimate source? If so, how is this belief conceptualized within their culture? How would you describe its nature, and how does it manifest in your reality?
9. Galactic Federations. Are there any larger interstellar confederations or alliances that extraterrestrial civilizations are part of? If so, can you describe these organizations and the criteria or qualities required for humans to be accepted into such confederations?
10. Technology: free energy development. What is required for humanity to develop and apply technologies related to free energy, electricity, or gravity control? Are there specific scientific breakthroughs or societal changes needed to achieve this?

General prompts to the AI were provided prior to asking the system the 10 individual questions, guiding it on the context for the query. The prompts are available in the Supplemental Data 10.6084/m9.figshare.29912237.

Semantic Similarity Computation

To quantitatively assess the thematic correspondence between the UFODex and channeling datasets, we employed a semantic embedding-based similarity analysis using transformer models. This method captures conceptual similarity beyond surface-level lexical overlap, enabling a scalable and objective comparison of long-form textual responses.

Embedding Models

We used three models from the sentence-transformers library (Reimers & Gurevych, 2019), each with different capacities and training objectives:

1. all-MiniLM-L6-v2. A compact, general-purpose model (256-token limit)
2. all-mpnet-base-v2. A higher-capacity model (384-token limit), optimized for long inputs
3. multi-qa-mpnet-base-dot-v1. A model trained for semantic search and question–answer relevance (512-token limit, optimized for dot product scoring)

All models map input text to fixed-length dense vector embeddings (typically 384–768 dimensions), which encode semantic content in a high-dimensional space.

Preprocessing

Responses were matched by question and stripped of extraneous content (e.g., citations, URLs, reference lists) to ensure semantic focus. Inputs were passed to each model using default tokenization settings.

Similarity Computation

For each matched question–response pair, we embedded the two full responses (one from each dataset) independently using one of the selected models. Semantic similarity between the two embeddings was then computed. For the MiniLM and MPNet models, we used cosine similarity, which measures the angle between the two embedding vectors. This is calculated by taking the dot product of the two vectors and dividing by the product of their Euclidean lengths. The result is a value between –1 and 1, where values closer to 1 indicate higher semantic similarity. The multi-qa-mpnet-base-dot-v1 model was originally trained to use the dot product for semantic relevance scoring in question-answering tasks. To ensure consistency with the other models, we normalized its output by converting the dot product to cosine similarity. This normalization step also involved dividing the dot product by the product of the vectors' lengths, effectively applying the same cosine similarity formula across all models. All computations were implemented using the cosine similarity function from PyTorch's torch.nn.functional module. Analyses were implemented in Python using the sentence-transformers and torch libraries, and executed in a cloud-based Google Colab environment. Cosine similarity scores were computed for each question–response pair and interpreted as measures of thematic alignment.

Model Comparison and Robustness Check

To assess the robustness of our results, we compared similarity scores across the three embedding models. This allowed us to evaluate the influence of input length truncation and model architecture. While absolute similarity values varied due to differences in model training and token capacity, all models consistently identified moderate to high correspondence between datasets, confirming the reliability of the observed thematic convergence. To interpret the semantic similarity scores, we applied heuristic thresholds derived from prior sentence embedding research (Reimers & Gurevych, 2019). Scores above 0.85 were considered "very high," 0.75–0.85 as "high," 0.60–0.75 as "moderate," and 0.45–0.60 as "low" similarity. This framework enabled a standardized comparison of conceptual overlap across datasets.

RESULTS

Participants

A total of 274 entries were submitted. Of these, 224 were excluded for not meeting inclusion criteria, which included submissions from non-extraterrestrial sources, content not received via trance channeling, incomplete submissions (e.g., missing files), lack of response to follow-up requests, or participant withdrawal. A total of 52 entries were included in the study. Of these, 29 records were entered by study staff using publicly available information from the internet.

Demographics

Thirty-six participants identified as female, 14 identified as male, and one preferred not to answer. Twenty-seven participants provided additional demographic information on age and race. The average age was 48.2 years (SD = 15.8), and the average years of formal education was 16.4 (SD = 3.5). For racial identification, four participants declined to answer, four identified as Asian, three as African, three as Middle Eastern, two as Latinx, and 19 as of European descent. Participants could mark more than one race. Out of 52 total entries, 48 included location information. Approximately 80% of channelers (37 entries) were based in the United States. A smaller number of participants reported being located in other countries, including the United Kingdom (3), Canada (2), France (1), Switzerland (1), Italy (1), Hong Kong (1, listed jointly with the United States), New Zealand (1), the Netherlands (1), Australia (1), and one entry listed as various or not specified.

Channeling Training and Background

For trance channeling modality, 49 participants selected "speaking in voice," 19 selected "automatic writing," and 10 selected "other." Most channelers reported having no formal training in channeling, with many describing themselves as self-taught or guided intuitively. A subset developed their abilities spontaneously, often during spiritual practices such as meditation and hypnosis, or during experiences like Quantum Healing Hypnosis Technique. Some participants reported training in related domains, including trance mediumship and spiritualist practices (e.g., mentorships with recognized mediums, mediumship circles), energy healing modalities (e.g., Usui Reiki, Kundalini,

Integrated Energy Therapy), shamanic and esoteric studies (e.g., Brazilian shamanic healing, alchemical traditions), and other spiritual disciplines (e.g., Sufism, Taoist yoga, remote viewing, light language, sacred circles). A few channelers also mentioned participating in structured experimental groups or receiving guidance from higher-dimensional entities. Overall, training experiences varied widely, from informal, experiential learning to advanced certifications and mentorships across diverse spiritual traditions.

Channelers were asked to rate the level of consciousness during the channeling session on a scale from 0 to 100, anchored by 0 = *Fully conscious* to 100 = *Fully unconscious* (noting that the level of trance during channeling could vary by session and by channeler). A total of 26 participants submitted answers, averaging 74.0 (*SD* = 31.2). When asked, "How the channeler would rate the level of perceived incorporation during the channeling session, meaning how embodied the ETI was in the channeler's body (0 = *No incorporation, my body is not being directly used at all* to 100 = *Full incorporation, my whole body is being directly used*)," participants reported *M* = 60.2 (*SD* = 37.1).

Datasets

UFODex

UFODex is a specialized artificial intelligence platform developed by Ryan S. Wood, distinguished ufologist and researcher, for the structured processing and retrieval of large-scale ufological archives. The UFODex system is built on a comprehensive corpus of UFO-related materials, including more than 750 books on ufology, a substantial collection of periodicals, conference proceedings, declassified government documents (e.g., FBI files), newspaper and magazine clippings, and national archive materials obtained through field visits. It also integrates personal archives on UFOs, parapsychology, and anomalous phenomena curated over several decades by Dr. Bob Wood and Ryan S. Wood, as well as selected web-based and digital materials relevant to the broader UFO/UAP research domain. At the time this analysis was conducted, the UFODex corpus comprised approximately 683,000 pages of material. Since then, the dataset has expanded to over 750,000 pages through the ongoing ingestion of additional historical and research sources. A detailed overview of UFODex data sources is publicly available at https://www.ufodex.com/dataset-sources/. The complete itemized bibliography, currently exceeding 3,500 entries, is available to researchers upon reasonable request to Ryan S. Wood.

To ensure high data fidelity and mitigate the impact of low-quality or speculative sources, the dataset was extensively curated, with minimal reliance on web-sourced material. Inclusion of materials within UFODex is guided by data quality, provenance, and thematic relevance, reflecting over three decades of archival curation in the field of ufology. Sources are included if they meet one or more of the following criteria: (1) published works or peer-recognized conference proceedings; (2) archival documents from reputable researchers, government sources, or declassified materials; and (3) digitally readable (OCR-processed) content thematically relevant to UFO/UAP research, contact phenomena, or associated scientific topics such as propulsion and physics anomalies. While UFODex continues to expand and refine its corpus, its design prioritizes methodological transparency and scholarly traceability within a historically decentralized research domain. The UFODex corpus intentionally encompasses a diverse range of subdomains within UFO-related literature, including investigative reports, archival documents, experiential accounts, and interpretive frameworks. These materials collectively represent the semantic landscape of the UFO/UAP discourse rather than a curated subset of "verified" or "high-quality" sources. Accordingly, the comparison to trance-channeled content conducted here reflects linguistic and thematic correspondence across distinct yet related modalities of discourse, rather than factual agreement.

We evaluated whether UFODex contained any material that could be considered trance channeled, using the study's operational definition. Material that could plausibly constitute ETI *trance* channeling represents ~1% of the UFODex corpus after excluding general channeling overview sources (e.g., Klimo, 1987; Wahbeh, 2021; Wahbeh et al., 2023). Thus, UFODex is overwhelmingly non-trance and serves as a semantic comparator to the ETI trance-channeling dataset.

Source documents were converted from PDF format and processed through an AI pipeline operating on a dedicated NVIDIA GPU system. This pipeline produced page-level semantic summaries encoded in JSON format. These summaries were subsequently indexed into a Retrieval-Augmented Generation (RAG) framework employing a variety of information retrieval methods, including dense vector similarity, fuzzy matching, and additional algorithmic approaches implemented by the system's technical architect.

For each query, UFODex generates a reference list for the content generated. These reference lists represent

the most salient and frequently cited sources identified in response to each query rather than exhaustive bibliographies of all consulted materials. UFODex retrieves many candidate passages and then provides a salience-filtered reference list. For example, for "Disclosure plans," the generated answer cited 11 works while the underlying retrieval integrated 297 snippets (123 unique page-level references).

Channeled Content

The channeled content resulted in 6,067 documents comprising 1,766 DOCX and PDF files, 12 audio files, 16 video files, and 4,273 YouTube downloads, resulting in 6,008 standardized JSON metadata records and corresponding OCR-optimized PDF files.

Timeframe

The majority of channeling sessions occurred between 2015 and 2025, with a significant concentration of activity from 2022 to 2025. Several participants reported channeling weekly or daily during this recent period. A smaller number indicated earlier channeling experiences dating back to the 1980s, 1990s, and early 2000s, often noting intermittent or lifelong contact. A few provided specific session dates from 2024 and early 2025, while others described ongoing practices without clear start or end points. Overall, the dataset reflects both recent and long-term channeling activity, with increasing frequency and consistency in the past few years.

Perceived Source

A wide range of perceived sources was identified across the dataset. The most frequently mentioned were Pleiadians (at least 12 entries), Arcturians (approximately 10 entries), and the Galactic Federation or Galactic Council (mentioned in at least 6 entries). Other specific sources included the Yahyel, Zeta Reticuli beings, Andromedans, Sirians, and the Council of Nine. Several participants referred to collective intelligences (e.g., "The Nine," "Higgins," "The Collective of Three") or group consciousnesses from various star systems, in addition to listing multiple beings.

Semantic Similarity

The semantic similarity scores for each matched question across three transformer-based models are displayed in Table 1. Across the 10 matched questions, average similarity values ranged from 0.66 to 0.88 (M = 0.76, SD = 0.08). High-scoring questions (e.g., Q1, Q4, Q7) showed strong thematic convergence across the UFODex and Channeling datasets, while lower-scoring items (e.g., Q2, Q6, Q10) reflected more divergence in content or conceptual framing. MiniLM scores were very highly correlated with MPNet scores (Pearson's r = 0.93), MPNet scores were approaching moderate-to-high correlation with QA MPNet scores (Pearson's r = 0.49), and MiniLM scores were moderately to highly correlated with QA MPNet scores (Pearson's r = 0.60). These moderate to high correlations indicate a robust and convergent pattern in similarity measurements across models.

It is important to note that high semantic similarity scores indicate shared conceptual motifs across datasets but do not imply identical narratives. For example, both datasets describe disclosure as a staged process and characterize psi abilities as latent human capacities. Qualitative synthesis, however, demonstrates clear divergences in how these motifs are articulated, such as disclosure framed as vibrational readiness in one dataset and governmental secrecy in another. On the other hand, lower similarity scores may still occur even when themes appear broadly aligned, because embedding models are sensitive to linguistic and contextual variation. For this reason, we present both quantitative similarity values and qualitative

Table 1. Semantic Similarity Agreement by Question.

Q#	Topic	MiniLM score	MPNet score	QA MPNet (norm)	Mean (*SD*) similarity
1	Disclosure plans	0.83	0.91	0.91	0.88 (0.05)
2	Purpose of visits	0.56	0.69	0.82	0.69 (0.13)
3	Relationship with humans	0.65	0.78	0.73	0.72 (0.07)
4	Human ESP	0.77	0.85	0.91	0.84 (0.07)
5	Communication methods	0.82	0.83	0.84	0.83 (0.01)
6	Space travel	0.52	0.70	0.74	0.65 (0.12)
7	Perception of time	0.85	0.88	0.87	0.87 (0.02)
8	Belief systems	0.74	0.85	0.84	0.81 (0.06)
9	Interstellar federations	0.79	0.80	0.84	0.81 (0.03)
10	Technology development	0.52	0.61	0.85	0.66 (0.17)

Note: MiniLM Score = all-MiniLM-L6-v2; MPNet Score = all-mpnet-base-v2; QA MPNet (norm) Score = multi-qa-mpnet-base-dot-v1. QA MPNet uses dot product by default, but the values shown are normalized cosine similarity. All scores range from 0 (no similarity) to 1 (maximum alignment). Based on a targeted screen using the study's operational definition, content plausibly involving ETI trance channeling constitutes ~1% of the UFODex corpus; the dataset is therefore considered overwhelmingly non-trance for this comparison.

thematic analysis to capture the full spectrum of convergence and divergence.

Ten Question Answer Summaries

Brief summaries of each dataset's responses to the ten guiding questions are presented below. Full-length answers, including source citations, are available in the Supplemental Data 10.6084/m9.figshare.29912237.

Question 1: Disclosure Plans

Channeled content describes disclosure as a consciousness-driven, multi-phase process that unfolds as humanity reaches greater vibrational readiness, facilitated through dream contact, CE-5 experiences, and collective coherence. Disclosure is initiated not by governments but by shifts in individual and collective frequency, with contact increasing as fear diminishes and curiosity grows. In contrast, the UFODex dataset presents disclosure as a managed process primarily led by governments, featuring phased information release, contingency planning (e.g., MJ-12 protocols), and civilian-led efforts such as whistleblower testimony and advocacy campaigns. It emphasizes media acclimation, international coordination, and the importance of political, technological, and psychological readiness. Both datasets describe disclosure as gradual and dependent on public preparedness, but unique emphases include inner transformation and resonance in the channeled content and government secrecy, control, and strategic planning in UFODex.

Question 2: Purpose of Visits

Channeled sources describe extraterrestrial motives as service-oriented and benevolent, emphasizing planetary healing, human consciousness expansion, DNA activation, and support for Earth's evolutionary transition as part of a broader galactic transformation. ETs are depicted as assisting humanity's spiritual growth and vibrational ascension. In contrast, the UFODex dataset presents a broader spectrum of ET agendas, including scientific observation, surveillance of nuclear technology, genetic experimentation (e.g., hybridization programs), and potential sociopolitical manipulation. While both datasets connect ET presence to human and planetary development, channeled content highlights spiritual stewardship and collaborative evolution, whereas UFODex emphasizes oversight, technological intervention, and complex interspecies motives.

Question 3: Relationship with Humans

Channeled content portrays extraterrestrials as benevolent mentors, energetic kin, and consciousness guides, with relationships based on vibrational resonance, soul-level agreements, and principles of non-interference. ETs are seen as assisting humanity's spiritual evolution through subtle, multidimensional contact. In contrast, the UFODex dataset describes a more covert and transactional relationship, including alleged treaties between ETs and governments, shared operations in underground facilities, and technological exchanges, often accompanied by ethical concerns such as abductions and secrecy. Both sources depict long-standing and multifaceted relationships between ETs and humans, but channeled content emphasizes spiritual alignment and mentorship, while UFODex highlights clandestine collaboration and ethical ambiguity.

Question 4: Human Psi Abilities

Channeled content frames psychic and telepathic abilities as innate aspects of human potential, naturally reactivated through vibrational alignment, spiritual intention, and consciousness development. These capacities are presented as essential to humanity's evolutionary trajectory and multidimensional awareness. UFODex also acknowledges the existence of latent psi abilities but focuses on how they have been studied, monitored, and often suppressed by institutional forces, including military programs, intelligence agencies, and cultural conditioning. Both datasets recognize widespread but underutilized human potential. However, channeled sources highlight inner awakening and vibrational attunement, whereas UFODex emphasizes external suppression and scientific exploitation.

Question 5: Communication Methods

Channeled content describes extraterrestrial communication as primarily telepathic, transmitted through light codes, emotional resonance, and multidimensional symbolism. Messages are often received as intuitive downloads or energetic impressions, with heart-centered coherence playing a central role in the exchange. UFODex also identifies telepathy as the primary mode of contact, but includes references to technological augmentation, such as implants, symbolic and mathematical languages, and shared consciousness fields used by advanced species. Both datasets highlight nonverbal, experiential, and multi-sensory forms of communication. Channeled sources

emphasize intuitive, vibrational alignment, while UFODex focuses on structured, often technologically enhanced, cognitive interfacing.

Question 6: Space Travel Technologies

Channeled content depicts space travel as a consciousness-driven process involving frequency resonance, vibrational portals, and co-navigation with sentient or semi-sentient craft. Movement through space is described as non-linear and multidimensional, often facilitated by shifts in perception or vibrational state rather than mechanical propulsion. In contrast, UFODex emphasizes advanced physical technologies, including electrogravitic propulsion, plasma drives, inertial dampening, wormholes, and quantum teleportation. These are grounded in speculative extensions of known physics, including Tesla-inspired theories and unified field concepts. Both datasets describe travel that transcends conventional scientific paradigms. However, channeled sources emphasize inner alignment and co-creative mechanisms, while UFODex highlights gravity manipulation and experimental propulsion systems.

Question 7: Perception of Time and Time Travel

Channeled content portrays time as a simultaneous, non-linear construct that can be consciously navigated through vibrational alignment and intention. ET contact often involves experiences of timeline shifts, altered states, or symbolic representations of time distortion. Time travel is described as a function of consciousness rather than technology. In contrast, UFODex discusses time manipulation through engineered mechanisms, such as temporal bubbles, time dilation, and retrocausal loops, often in connection with abduction phenomena and advanced ET technologies. Both datasets characterize time as flexible and subject to intentional navigation. However, channeled sources emphasize vibrational causality and experiential fluidity, while UFODex emphasizes technological intervention and physical manipulation of temporal dynamics.

Question 8: Extraterrestrial Belief Systems

Channeled content emphasizes spiritual unity, describing ET belief systems as grounded in connection to Source, universal love, and service to others. These systems promote conscious co-creation, ascension, and non-duality, often framing spirituality as inseparable from cosmic evolution. UFODex also references spiritual and ethical frameworks, including reverence for a universal life force and service-oriented values. However, it notes significant variation across species, with belief systems often integrated into technological, social, and diplomatic practices. Both datasets highlight spiritual unity and service to others as central values. Channeled sources emphasize experiential consciousness and vibrational alignment, while UFODex underscores interspecies diversity and structural integration of spirituality into contact dynamics.

Question 9: Interstellar Federations

Channeled content frequently references organized bodies such as the Galactic Federation and Councils of Light, portraying them as collaborative alliances of advanced civilizations dedicated to planetary stewardship and spiritual evolution. Membership is described as contingent upon vibrational maturity, ethical alignment, and collective readiness. UFODex similarly cites interstellar federations operating under principles of non-interference and ethical conduct, often emphasizing their structured governance, diplomatic protocols, and exclusion of Earth due to perceived immaturity. Both datasets present these federations as structured, ethically guided organizations. Channeled sources highlight vibrational thresholds and consciousness-based criteria for membership, while UFODex emphasizes geopolitical dynamics, formalized codes of contact, and species cooperation.

Question 10: Free Energy and Gravity Control

Channeled content presents free energy as a consciousness-integrated technology, accessible through vibrational alignment, ethical readiness, and frequency harmonics. Its manifestation is seen as contingent on planetary consciousness and collective intent, rather than purely scientific progress. UFODex, by contrast, emphasizes the need for breakthroughs in unified field theory, gravity manipulation, and zero-point energy, while citing government suppression and corporate interests as major obstacles to progress. Both datasets view these technologies as transformative and ethically consequential. Channeled sources stress the integration of consciousness and energy systems, while UFODex focuses on scientific frameworks and policy challenges.

DISCUSSION

This study represents one of the first systematic efforts to examine thematic patterns across independently

sourced trance-channeled communications attributed to extraterrestrial intelligences (ETIs) and a large corpus of historical ufological records. Using a structured 10-question analytic framework applied to both corpora, we systematically compared themes related to disclosure, purpose of contact, psi capacities, communication methods, space travel, time perception, belief systems, interstellar federations, and technological development. This scaffold enabled a grounded comparison of convergence and divergence across matched domains, supporting both quantitative similarity analysis and qualitative thematic interpretation.

Thematic Convergence

Despite substantial differences in provenance and orientation, this analysis identified moderate to high degrees of thematic convergence. Transformer-based semantic similarity modeling revealed notable alignment in both corpora around multi-stage disclosure narratives, motifs of latent psychic or telepathic abilities, and descriptions of nonlinear time. These findings reflect conceptual parallels reported in empirical research on channeling phenomena (Wahbeh et al., 2018; Wahbeh & Butzer, 2020; Wahbeh, 2021), contemporary analyses of UAP disclosure and epistemic secrecy (Eghigian, 2017, 2024; Pasulka, 2019, 2023; SALT, 2023), and advances in semantic analysis techniques (Reimers & Gurevych, 2019). Themes with cosine similarity scores above 0.75 were classified as high convergence, consistent with thresholds commonly used in semantic similarity research. Notably, the disclosure, psi, and time domains consistently scored in this range, suggesting substantive thematic overlap.

For example, both corpora frame the concept of disclosure as a phased, collective process. In the channeled dataset, disclosure is portrayed as an unfolding of human consciousness, an emergent process dependent on vibrational readiness, emotional maturity, and the reduction of fear. Contact is described as occurring through subtle modalities such as dreams, CE-5 encounters, and energetic resonance. In contrast, the UFODex corpus frames disclosure as a strategic, often delayed revelation shaped by governmental secrecy, media conditioning, and geopolitical constraints. Accounts reference contingency plans (e.g., MJ-12), whistleblower narratives, and institutional gatekeeping. While these discourses emerge from distinct epistemic lineages, both converge on the idea of disclosure as a non-instantaneous, staged process. External sources further echo this: in channeled and new age literature, disclosure is often described as aligned with planetary evolution and collective transformation (Marciniak, 1992; Royal & Priest, 1992), while contemporary ufological scholarship and recent media analysis detail protracted institutional concealment and the politics of managed or staged release, now increasingly discussed in the context of recent governmental task forces, whistleblower claims, and evolving international public policy (Dolan, 2009; Eghigian, 2017). The recurring theme of staged revelation across diverse accounts may reflect common symbolic structures or sociocognitive framing mechanisms. While this does not resolve ontological questions, these parallels highlight the salience of disclosure-as-process as a motif across experiential and historical perspectives.

The second axis concerns psychic abilities such as telepathy, extrasensory perception (ESP), and altered states of consciousness, which are presented not only as features of purported ETI contact but also as perceived prerequisites for communication. This theme is well-documented in foundational studies on channeling (Klimo, 1987; Wahbeh, 2021). Anthropological and contemporary religious research suggests that claims involving psychic abilities and contact experiences appear across both institutionalized religions and emergent spiritual movements, where they may serve symbolic or cultural functions (Bourguignon, 1973; Maraldi, 2021). Survey and psychological studies have shown that individuals reporting contact experiences tend to score higher on measures of paranormal belief and self-reported psychic ability (French et al., 2008; Hernandez et al., 2018).

A shared underlying theme, particularly evident in the channeled corpus, is that humans possess innate capacities for transdimensional communication, which are described as dormant but reactivatable through altered states or vibrational alignment. This view frames contact not solely as an external event but as an emergent human potential. The term "psionics," originating in mid-20th-century science fiction and subsequently absorbed into parapsychological discourse, has been used to describe the technological or systematic enhancement of such capacities ("Psionics," 2024). This framework bridges mystical and technocultural approaches to communication with nonhuman intelligences. It is noteworthy that the channeled corpus emphasizes embodied modes of communication, including heart-centered coherence, emotional resonance, and somatic attunement. This suggests a model of contact rooted in relational and embodied awareness rather than purely cognitive transmission.

A third axis of thematic alignment concerns time perception, which is portrayed in both datasets as nonlinear, multidimensional, and pliable. In the channeled texts, time is accessed through vibrational or consciousness-based alignment; in the UFODex corpus, time is manipulated through physical technologies such as temporal bubbles and includes themes of retrocausality and time loops. Despite ontological divergence, both descriptions depart from linear temporal frameworks grounded in conventional physics. These motifs echo findings in transpersonal psychology and anomalous experience research, where altered time perception is central to transformative or liminal events (Blom et al., 2021; Cardeña, 2018; Kripal, 2024) and resonate with theoretical work on retrocausality in anomalous cognition (Wargo, 2018). These recurring temporal motifs may reflect underlying dynamics of contact itself or serve as narrative architectures through which experiencers attempt to make sense of unfamiliar phenomena.

Thematic Divergence

Despite convergence in several domains, clear divergences persist between the two datasets. The channeled corpus is grounded in vibrational, ascension-based, and consciousness-centric models. Disclosure is framed as contingent on internal human transformation rather than institutional release. Technology is often described in symbolic or spiritual terms, as consciousness-amplifying rather than materially engineered. This feature is most clearly seen in Pasulka's (2019, 2023) work and is resonant with broader research on channeling and the metaphysical framing of anomalous experience (Hanegraaff, 1998; Klimo, 1987; Kripal, 2024).

In contrast, the UFODex corpus emphasizes secrecy, surveillance, reverse engineering, and national security. Technology and contact are treated as empirical anomalies to be explained or controlled. This is consistent with longstanding scholarly critiques of institutional epistemology and the Cold War framing of unidentified aerial phenomena (Eghigian, 2017, 2024; Hynek, 1972; Vallee, 1969; Wendt & Duvall, 2008).

Themes of interstellar governance and technology further illustrate these contrasts. While the channeled corpus situates federations within spiritual hierarchies, with inclusion dependent on vibrational alignment and ethical development, the UFODex corpus frames federations in political or geopolitical terms, governed by treaties or strategic interests. Similarly, technology in the channeled corpus is co-creative and ethically conditioned, whereas in the UFODex dataset, it is material, reverse-engineered, and tightly coupled to secrecy.

Methodological Innovation

This study contributes a methodological innovation to anomalistic research by applying transformer-based natural language processing, specifically semantic embeddings (Reimers & Gurevych, 2019; Vaswani et al., 2017), to large, independently curated textual datasets. This enables a replicable, quantitative comparison of conceptual patterns across disparate narrative forms.

Rather than implying definitive ontological claims, our findings are best interpreted as thematic alignments that may reflect underlying features of the phenomenon itself or arise from cultural, cognitive, or symbolic structures shared across experiencers and historical narratives. This approach invites further interdisciplinary investigation and contributes to epistemological models, such as participatory epistemologies, which propose that knowledge may emerge through relational or experiential engagement rather than solely detached observation (Barad, 2007; Ferrer, 2011). Future work might explore how such thematic architectures inform subjective and collective meaning-making in the context of reported contact experiences.

Limitations

This study represents an initial effort to systematically gather and analyze channeled material attributed to extraterrestrial intelligences, yet several important limitations must be acknowledged.

First, there was a substantial disparity in dataset size, with the trance-channeled dataset comprising approximately 61,700 pages across over 6,000 files, compared to UFODex's 683,000 pages, representing roughly a tenfold difference in volume. This may have introduced bias in semantic similarity estimates, as differences in corpus scale can affect embedding-based comparisons.

All attributions of nonhuman origin are based on participant self-report and cannot be independently verified. This unverifiable ontology limits the ability to make objective claims about the source of the material. Additionally, the nature of trance channeling is inherently subjective. Channelers' content may reflect personal belief systems, psychological dispositions, and cultural narratives as much as any external communication. We also did not assess the degree to which participating channelers may have

been exposed to UFO- or ETI-related themes in literature, media, or online communities. Such exposure could influence the content of channeled material, making it difficult to disentangle independent communications from culturally available narratives. Future studies should incorporate structured background assessments to address this issue. We also did not compute within-dataset similarity baselines because channeler submissions varied widely in length and topical coverage, and many addressed only a subset of the ten questions. Non-overlap would conflate missing content with true semantic dissimilarity. In an ongoing prospective study, we have standardized prompts so each channeler addresses all questions under uniform instructions, enabling interpretable within-dataset similarity baselines and more direct comparisons across sources.

Recruitment methods introduced accessibility constraints. All outreach was conducted in English and required access to internet platforms such as email and SurveyMonkey. This may have excluded individuals without digital access, non-English speakers, or those operating outside mainstream online and Western spiritual communities. The geographic distribution of current participants suggests that while channeling attributed to extraterrestrial sources is primarily reported in the U.S., it also spans multiple continents, reflecting a globally distributed phenomenon. As a result, the dataset may underrepresent alternative channeling modalities or voices from non-Western or Indigenous traditions. Furthermore, although best efforts were made, the study team's search was likely not exhaustive, and there may be existing and eligible English material that the study did not include.

Moreover, the archival nature of much of the source material, particularly in the UFODex corpus, raises the possibility of historical and cultural bias. Some narratives may reflect the assumptions, tropes, or stigmas prevalent at the time of their recording. While semantic similarity models enable scalable comparison between datasets, transformer-based embedding techniques may overlook deeper symbolic meanings, metaphoric nuances, or context-sensitive language that falls outside of their computational scope. Although UFODex employs structured inclusion criteria and ongoing curation to ensure data quality, it does not yet meet classical reproducibility standards due to the evolving nature of its corpus and the historical decentralization of source materials in ufology. Also, a very small fraction (~1%) of UFODex may reference or contain ETI trance-channeled content under a strict definition. However, prevalence is low and unlikely to materially affect the reported cross-corpus semantic correspondence.

Another limitation is the absence of control datasets, such as channeled material attributed to non-ETI sources (e.g., religious entities or deceased humans) or alternative textual corpora such as science fiction literature.

Future Directions

Future directions could aim to improve upon the limitations of this work and continue to explore this line of research. For example, future research should include such comparisons to assess whether observed thematic overlaps are unique to ETI channeling and ufological archives or reflect broader cultural motifs. Future research would also benefit from qualitative interviews or ethnographic approaches that explore the lived experience of trance channelers who identify their source as nonhuman or extraterrestrial intelligences. Understanding how these individuals interpret their relationship with nonhuman intelligence, navigate altered states, and integrate these practices into their lives could deepen insight into the phenomenon beyond transmitted content alone. Deeper textual and narrative analyses, both human-coded and computational, could build on current semantic similarity analyses to shed light on symbolic patterns, narrative arcs, and recurring archetypes within and across sources. These methods could identify stylistic coherence or shifts over time and potentially differentiate between channelers or purported intelligences.

Cross-cultural comparative work remains a vital next step. Channeling attributed to ETIs may intersect with other traditions of spirit communication or possession, and comparing these expressions across cultural contexts may reveal both universal and culturally-specific dimensions of nonordinary communication.

Future iterations of UFODex will incorporate structured source-type tagging (e.g., investigative, contactee, theoretical, related-domain) and a source-based quality index to enable stratified analyses and improved interpretability of semantic coherence across subdomains.

Finally, longitudinal studies could track how channelers' relationships with sources, content themes, or experiential depth evolve over time. Such research could explore questions of psychological integration, developmental trajectories, or potential well-being impacts related to sustained channeling practice. Together, these future directions

point toward the value of interdisciplinary, multi-method approaches capable of honoring both scientific rigor and the ontological complexity inherent in this emergent field.

CONCLUSION

This study presents a novel, comparative analysis of trance-channeled ETI communications and non-trance channeled material, revealing both thematic convergence and divergence across ten conceptual domains. Using semantic similarity modeling and qualitative synthesis, we identified consistent overlap in themes such as disclosure, psychic abilities, and time perception, alongside notable differences in worldview, ontology, and epistemic framing. These findings support the feasibility of cross-source analysis in anomalous communication research and offer a foundation for further interdisciplinary exploration of contact-related phenomena.

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CONFLICTS OF INTEREST STATEMENT

We have no conflicts of interest to declare.

AI USE DISCLOSURE

Portions of this manuscript were prepared with the assistance of OpenAI's ChatGPT, which was used to support drafting, summarization, and editorial refinement of text throughout the project. The authors guided all content generation and are solely responsible for the final versions of all analyses and interpretations. In addition, the UFODex AI system, developed by co-author Ryan S. Wood, was used to generate responses to the study's 10 core questions. All UFODex responses were reviewed and curated by the research team prior to analysis. ChatGPT was also used to assist with the implementation and interpretation of the transformer-based semantic similarity analysis, including code development in Python.

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RESEARCH ARTICLE

Psychic Hacking: Using Remote Viewing to Steal Computer Data

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ABSTRACT

This article presents exploratory experimental results suggesting that some individuals with remote viewing abilities may be able to describe details of data present in computers located miles away. Building on past U.S. Government psi research, an Internet-hosted experiment allowed participants to try using their psychic powers to describe picture, video, ATM PIN, and passphrase targets stored on laptop computers in Los Angeles. The laptops were standalone with networking capabilities disabled, configured to deploy new targets nightly without human intervention, and covered with sleeves to prevent peeking. A total of 146 remote participants generated 584 free-response rounds. Each round was scored by three independent judges chosen randomly from a pool of six. Judging employed rank-order scoring, and counting the number of target details matched. Many participants successfully described targets to a degree sufficient to reject the null hypothesis. Statistically significant results ($\alpha = 0.05$) were observed for both picture ($p = 0.000597$, $h = 1.075$) and video targets ($p = 0.000911$, $h = 1.131$). ATM PIN results were significant for 3 digits in any order ($p = 4.118 \times 10^{-6}$, $h = 0.788$) and 2 digits in any order ($p = 7.84 \times 10^{-6}$, $h = 0.763$). Security and privacy implications of "psychic hacking" may be far-reaching, since physical distance, attenuating structures, visual shielding, network air gaps, data obfuscation, strict file permissions, and file monitoring failed to detect or prevent data theft.

KEYWORDS

Remote Viewing, Star Gate, Clairvoyance, Psi, Psychic, Esp, Cybersecurity, Hacking, Data, Privacy, Secrets, National Security, Top Secret, Special Access Program, Espionage.

INTRODUCTION

I have always been fascinated by secrets. As a kid, I experimented with clairvoyance, hoping to spy on clandestine events far away. I was also obsessed with Stephen King's novel *The Dead Zone* (1979) in which the protagonist discovers he can psychically perceive the secrets of evildoers. So, it is no surprise I opted for a career in secrets, working for the past 30 years in cybersecurity to help protect the data and privacy of Fortune 500 companies and billions of users.

Given my interests, you can imagine how excited I was when the U.S. Central Intelligence Agency declassified thousands of documents related to its clandestine remote viewing (RV) research program, known as Star Gate (among other names). This program, which ran for over two decades starting in the 1970s, produced an extensive body of experiments (May et al., 1989; Newman, 2017; Warshaw, 2002). Across thousands of trials, researchers reported statistically significant evidence that remote viewing is a real, verifiable, and repeatable phenomenon (Utts, 1995).

In the program's early experiments, it was common for a remote viewer to describe a randomly chosen distant place where a researcher was standing. The researcher served as a "beacon" to help remote viewers zero in psychically (U.S. Army Materiel, 1979). Remarkably, remote viewers often described not only the visible features of the target site, but also details at the site that the beacon researcher could not immediately perceive. This suggested that remote viewing was not simply a form of telepathy (Puthoff & Targ, 1976).

Because remote viewers drew their impressions from deep within their minds (Jung, 1969), psychic descriptions were often abstract. In one Stanford Research Institute experiment, for example, a remote viewer described a pedestrian overpass target as a "trough up in the air," sketching a tunnel-like shape with concentric angles that echoed the overpass's chainlink design (Stanford Research Institute [SRI], 1986) as shown in Figure 1. Over the years, remote viewers proved capable of describing far more complex targets, including foreign military sites, missile silos, hostage locations, and even previously undiscovered planetary features (Stoner, 1979; Targ, 2012).

These successes were fascinating, but as someone obsessed with secrets, the burning question for me was whether computer data had ever been used as targets in Star Gate experiments. Could a remote viewer use psychic powers to describe data in a computer, bypassing its security defenses like a ghost?

The implications could be immense. A person's digital communications and data might be at risk, but so might a nation's deepest secrets: lists of people in witness protection, military plans, weapons designs, and perhaps even nuclear launch codes. Given that remote viewers

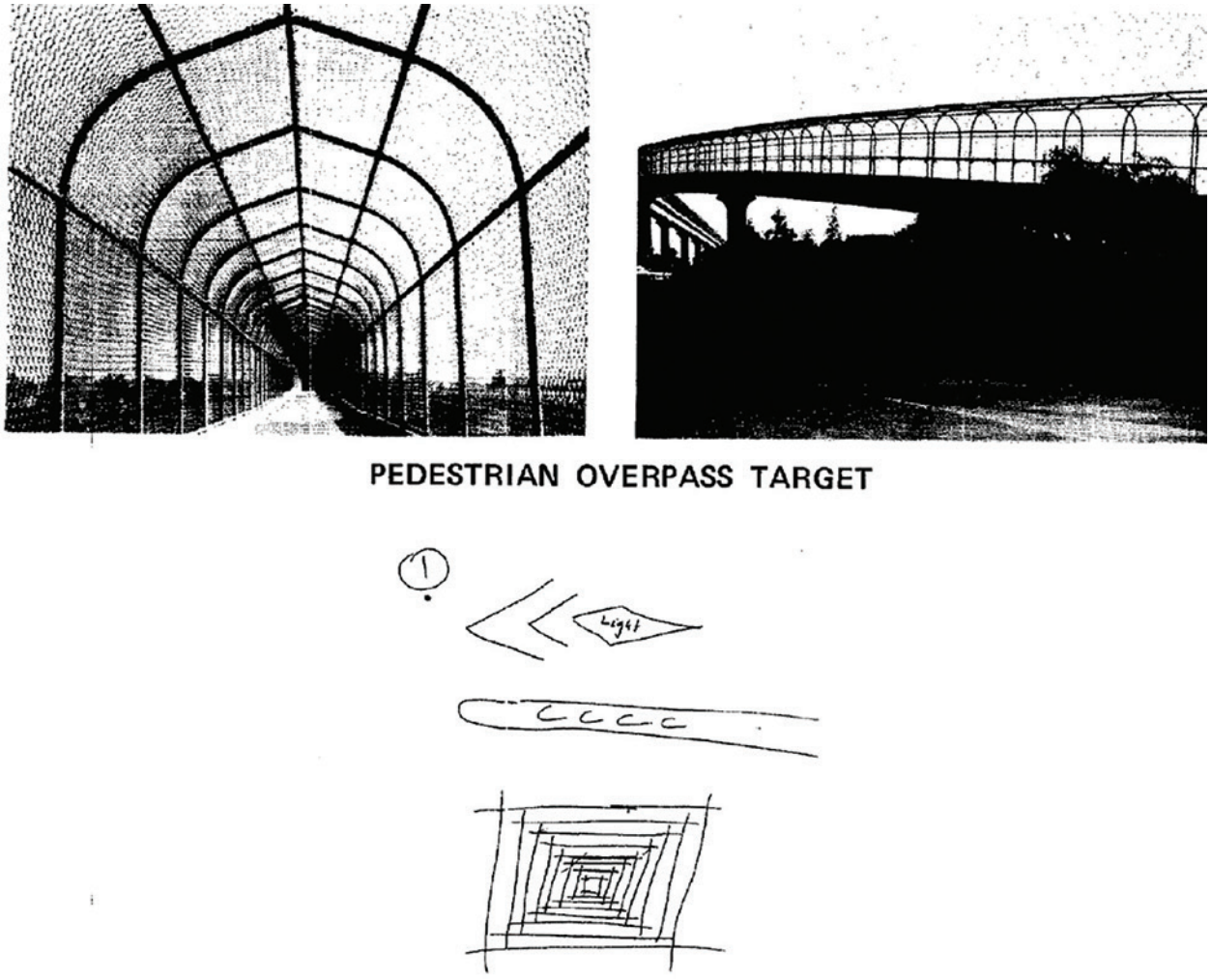

Figure 1. Early remote viewing experiment with pedestrian overpass target.
Note. In a government-funded experiment at the Stanford Research Institute (SRI), a remote viewer described a pedestrian overpass target one kilometer away as a "trough up in the air" and drew an image suggestive of a tunnel made of repeating angles similar to the overpass's chainlink structure (Puthoff & Targ, 1976, pp. xi, 35–36).

can apparently pass through any medium (Puthoff & Targ, 1976), barbed wire, underground bunkers, Faraday cages, and firewalls might prove useless against a talented clairvoyant. Even a person's own *thoughts* might be vulnerable, now that brain-computer interfaces allow machines to jack into human brains (Ienca & Haselager, 2016). If a psychic hacker can access a brain-computer, a person's mind might be compromised as well.

Seeking to extend Star Gate research by exploring whether psychic hacking was possible, I launched an exploratory, self-funded experiment on the Internet where I invited the public to use psychic powers to describe picture, video, ATM PIN, and passphrase targets stored on laptop computers hidden in Los Angeles. Targets were displayed on laptops' screens, but the screens were dimmed to black and slipped into cardboard sleeves so psychics would need to fetch target data by accessing machines' electronics or storage psychically, rather than simply "reading" it from screens psychically.

Each night, new targets were randomly selected and deployed to the laptops through automated scripts, ensuring that the experiment remained double-blind. In this context, double-blind meant that neither participants nor I knew which targets had been assigned. This minimized the risk of inadvertently revealing a target's identity and prevented participants from accessing such information telepathically from my mind (Hardy et al., 1973). A total of 146 people participated, submitting freeform text and drawings to describe their impressions of the targets. Independent judges then evaluated all submissions, attempting to match each psychic's description against five possible targets—the actual target plus four carefully chosen decoys. The results were analyzed using standard statistical methods, with further details about the experimental design provided below.

Terminology

For the purposes of this article, *psychic hacking* refers to attempts to perceive information contained within a computer located at a distant site.

Star Gate is used here as an umbrella term for the U.S. government's remote viewing research program, which operated from the early 1970s until 1995 under a variety of names, including *Sun Streak*, *Grill Flame*, and *Center Lane*. In the literature, these designations appear in multiple forms—for example, in uppercase (*STARGATE*), as a single word (*Stargate*), or with varied spacing (Federation of American Scientists, 2005).

In my experiment, participants were asked to provide their psychic impressions of randomly assigned targets. Each submission could include written descriptions, and if the participant wished, accompanying drawings. Throughout this article, the term *submission* refers to the complete set of materials—text and images—contributed by a participant.

Finally, for simplicity, *remote viewer*, *participant*, and *psychic* are used interchangeably. One could argue that "remote viewer" may not always be synonymous with "psychic," since psychic functioning can encompass a wide range of purported abilities, whereas remote viewing generally refers to the use of defined protocols for perceiving and reporting information. However, remote viewing protocols vary considerably across literature (Lee, 2008), with some individuals demonstrating RV successes without adhering to rigid procedures (Lee, 2008). Even the term "viewing" may not adequately capture the full range of experiential modalities involved in perceiving distant information, as some practitioners describe drawing upon non-visual impressions such as "feelings, sounds, smells, and even electrical or magnetic fields" (Targ & Katra, 2000).

History of Computers as Remote Viewing Targets

I performed a thorough search of Star Gate's declassified documents, and instances where computers or computer data served as a remote viewing target were exceedingly rare. This was no surprise, since commercially available computers were still relatively new in the 1970s and 1980s. Early computers were large, expensive, and more likely to be viewed as complex scientific instruments than as everyday repositories of secrets worth stealing. Most often, computers served supporting functions during psychic studies—recording remote viewing sessions, capturing physiological data from participants, storing information in databases, and generating random numbers that served as experimental targets (Lenz et al., 1980; May et al., 1989).

An early example illustrates this context. Around 1980, Duke University established one of the first psi-oriented computer labs (Lenz et al., 1980). The facility was built around a DEC PDP/45 computer. Closet-sized with only 16KB of memory, the machine was devoted to storing psi data and running statistical analyses (Lenz et al., 1980). Duke researchers described the computer with pride, calling it "gratifying" to have "so much computing power" at their disposal (Lenz et al., 1980, p. 167). A Grill Flame project manager who visited in 1981 remarked on the immense logistical challenge of creating such a facility—components had taken "5–6 years to develop" following "long awaited"

funding (Watt, 1981, p. 1). In that era, acquiring and maintaining a computer was such an institutional undertaking that it is unsurprising that researchers did not treat these machines as psi targets.

Computers and computer data did make occasional appearances during psi experiments, even if they were not intended targets. One remote viewer correctly described a "computer terminal with relay racks in the background" while targeting a lab (Puthoff & Targ, 1976, p. 56). Another accurately reported seeing "printouts... coming out of [a] computer" during a remote psychic experiment (U.S. Army Intelligence and Security Command, 1982, p. 9).

Some reports suggest that computers may have been used as occasional targets in psi experiments, but the evidence is too vague to draw firm conclusions. In one case, a remote viewer reportedly managed to visualize a computer's login access code (Stoner, n.d.). The account, however, does not explain how this occurred, or whether the computer itself was truly the focus of psychic perception. It is possible that the viewer was not actually seeing the code inside the machine at all; instead, the code may have been recorded or stored elsewhere, such as in a filing cabinet. This interpretation seems plausible, since the same report describes another experiment in which a remote viewer obtained classified documents that were explicitly kept in a cabinet (Stoner, n.d.). So, the computer in this story may have been less important than the fact that the access code existed in some form the psychic could describe.

More often, computers entered psi research indirectly, with software and games serving as targets. Examples include:

- A solitaire program in which participants used precognition to guess which game would yield the highest score (Palmer, 2000)
- ESPerciser, a program where participants attempted to influence background colors and predict outcomes (Palmer, 1996)
- Mind Machine, a program involving predictions of virtual coin tosses (Wiseman & Greening, 2002)
- PsiLab II, a suite of games in which players tried to sense or influence the direction of computer-generated random bits (Varvoglis, n.d.)

Although these experiments involved computer interaction, they focused on precognitive guessing and outcome influence, rather than on describing hidden information stored within machines.

Among the many Star Gate-era experiments I examined, the one that most closely resembled psychic hacking involved a machine designed to train potential psychics to recognize a "unique psychic feeling" when they selected the correct answer (Targ, 2012, p. 90). Developed in 1974 by Russell Targ with NASA financial support, the device consisted of four square buttons, each a different color. Inside the machine, a random number generator would secretly select one of the four buttons by generating a number from one to four and storing the result in a counter. The participant's task was to press the button they sensed had been chosen. If the guess was correct, the selected button would light up, accompanied by a pleasant auditory tone (Defense Intelligence Agency [DIA], n.d.; Targ, 2012).

Decades later, Targ adapted the machine's design into a software-based application known as ESP Trainer that could be played on a computer or mobile device. In this digital version, the program presents four colored squares, and randomly selects one by storing a randomly generated number in memory that corresponds to a specific square. The participant pushes the square believed to have been chosen, and if correct, the square disappears to reveal a pleasant image beneath it (Targ, 2017).

In these two examples, participants directed their psychic powers at the buttons or squares. However, from a hacker's perspective, the secret random numbers were the real crown jewels, since these determined the experiments' outcomes.

Finally, there is RV Tournament (RVT), a remote viewing training application in which participants attempt to perceive which photo target will be selected the following day (IronZog LLC, 2019). Each day, RVT assigns a numerical code (e.g., 9658–1663) corresponding to the next day's target. Participants record their impressions of the future target by drawing images within the app. Afterward, RVT presents two candidate images, one of which will be randomly chosen as the actual target. A slider bar appears beside the images, allowing participants to indicate which image they believe will be selected. The slider can be moved slightly or substantially, enabling participants to express different levels of confidence in their choice. RVT scores the results overnight, and the true target is revealed the next day, allowing participants to compare their sketches against the actual image. Points are awarded for correct selections, and the highest-scoring participants worldwide are displayed on a leaderboard.

While RVT could be helpful for training psychic skills, it differs substantially from my experiment.

First, RVT focuses on precognition, with participants attempting to identify which target will be selected in the future. My research, by contrast, examines whether psychic hackers can describe targets that already exist *in situ*.

Second, RVT may be vulnerable to potential information leakage. Because participants around the world might engage with the application across different time zones, individuals in earlier zones could gain access to the correct target before others have made their selections. Under such circumstances, a participant in a later time zone might acquire knowledge of the target telepathically from those who already know the outcome, rather than through remote viewing itself. To mitigate this concern, my protocol ensures that targets are disclosed to independent judges only after all participants have completed their sessions.

Third, RVT may not qualify as a psychic hacking experiment because it does not provide remote viewers with a target anchored in fixed time and space. The next day's target may be stored remotely on the Internet, pre-cached on a participant's device, or generated only at the moment of presentation. This ambiguity creates uncertainty about whether participants should direct their efforts toward their own devices, toward the Internet servers hosting the images, or toward the future moment when the target is revealed. To eliminate this problem, my protocol ensures that all targets remain within a computer housed at a fixed physical location.

Fourth, the RVT design offers participants a relatively high probability of success. When using the slider to choose between two images, the probability of a correct selection is 50%. Moreover, participants evaluate their own sketches against the targets, despite long-standing concerns in the remote viewing literature that self-judging compromises objectivity (McMoneagle, 2000). In my protocol, by contrast, participants' submissions are judged in random order by randomly selected judges, and each round includes four decoys, reducing the probability of success to 20% per round judged.

Finally, because the RVT experimental protocol has not been published, it is not possible to evaluate its methodological quality, such as the randomness of target selection or the number and diversity of available target images.

The Challenge of Remotely Viewing Computer Data

The way digital data is stored and processed in a computer may pose special challenges for remote viewers. Data is not typically present as a single, self-contained object, but is instead fragmented and dispersed. A file, for example, may be scattered across non-contiguous blocks of disk space interleaved with gigabytes of unrelated system data (Garfinkel, 2007). When accessed, the file is not retrieved as a recognizable picture, video, or text string, but rather as streams of electrical impulses encoded in binary (Chaudhary & Kansal, 2015). These signals undergo multiple transformations—through processing circuitry, system memory, operating system routines, encoding schemes, and program variables—before ultimately being rendered on display hardware composed of wires, electrodes, and polarizing surfaces (Lee & Cooper, 2008). To illustrate, the image on the left in Figure 2 is recognizable to humans as a cathedral dome, but to the computer, it exists in memory as a string of hexadecimal values shown on the right.

In other words, data in a computer does not reside in a single place. It is broken apart, transmitted, reassembled, and continuously transformed across magnetic storage,

```
00000000  FF D8 FF E0 00 10 4A 46 49 46 00 01 01 00 00 01
00000010  00 01 00 00 FF ED 00 86 50 68 6F 74 6F 73 68 6F
00000020  70 20 33 2E 30 00 38 42 49 4D 04 04 00 00 00 00
00000030  00 69 1C 01 5A 00 03 1B 25 47 1C 01 00 00 02 00
00000040  04 1C 02 00 00 02 00 04 1C 02 E6 00 47 68 74 74
00000050  70 73 3A 2F 2F 66 6C 69 63 6B 72 2E 63 6F 6D 2F
00000060  65 2F 48 37 63 72 48 65 79 4D 34 25 32 46 30 31
00000070  43 50 6A 56 32 25 32 46 50 55 53 4E 35 68 42 58
00000080  6B 37 6F 39 65 57 58 7A 74 6F 74 47 79 79 4E 34
00000090  51 25 33 44 1C 02 00 00 02 00 04 00 FF E1 00 28
000000A0  45 78 69 66 00 00 4D 4D 00 2A 00 00 00 08 00 01
000000B0  87 69 00 04 00 00 00 01 00 00 00 1A 00 00 00 00
000000C0  00 00 00 00 00 00 FF E2 02 40 49 43 43 5F 50 52
```

Figure 2. Cathedral image's raw hexadecimal data.
Note. The picture on the left is recognizable as a cathedral dome, but from the computer's perspective, it exists in memory as a string of hexadecimal values shown on the right. (Dome photo on left courtesy of Jorge Molina, © Jorge Molina / https://www.flickr.com/photos/miamiboy).

electronic circuits, and software abstractions. If psychic functioning depends on "arriving at" or "reading" a target, where in this chain of transformations should the viewer attempt to gain access? Should attention be directed to the magnetic patterns on the disk, the binary streams in memory, the encoded values within software, or the final image rendered on the display? The absence of a fixed, unitary target raises a fundamental challenge.

This difficulty may also help explain why Star Gate-era remote viewers who encountered computers in early experiments often described the computers' external features—such as size, shape, or audible sounds—rather than the internal data or processes within the machines (DIA, 1986a, 1986b).

Theories of Psychic Hacking Operation

Although numerous theories have been advanced to explain the mechanisms underlying remote viewing (e.g., Mumford et al., 1995; Targ, 2004, 2012), I have found little discussion in the literature regarding how remote viewing might function when the target is digital data. How could a psychic perceive a picture or other digital target that exists within a computer only as fragmented binary sequences or abstract electronic impulses? Since no scientific framework yet provides a definitive explanation, I will outline several theoretical possibilities of my own in the sections that follow.

Signal Radiation

During World War II, researchers at Bell Labs demonstrated that information transmitted through a teletype machine could be intercepted at a distance by capturing and decoding the machine's radio emissions (Friedman, 1972). More recently, scientists have shown that images displayed on a computer screen can be reconstructed from as far as 50 meters away using radio frequency monitoring equipment (Elibol et al., 2012). By analogy, perhaps remote viewers can perceive targets by detecting subtle signals emanating from computer displays.

In my experiment, I dimmed the computer screens to black and concealed them under cardboard shields so that the targets were hidden from ordinary sight. However, dimming typically only reduces backlight brightness or lowers the voltage driving screen pixels; the image remains active and present in the display electronics even when it is not physically visible (Analogix, 2019; Eichhorn, 2016; Wei et al., 2025). If remote viewers are sensitive to such emissions, they may be detecting the electronic signals from the display electronics, rather than from the light itself. This would imply that a remote viewer could, in principle, "see" the contents of a computer screen even when it appears darkened.

Although the notion of "seeing without the eyes" may appear implausible to skeptics, parapsychological research has long pointed to a possible role of the pineal gland in psychic perception (Luke, 2012). The gland is known to contain photoreceptive structures analogous to those found in the eye (Shiah, 2012) and has been linked to the visual "mediation of psi," including clairvoyance (Luke et al., 2012, p. 580). Building on this logic, perhaps the pineal gland functions in a manner similar to an eye, enabling psychics to "see" information radiating from electronic systems.

Quantum

Penrose and Hameroff have proposed that microtubules in the human brain may allow a form of connection or entanglement with quantum systems outside the body (Hameroff & Penrose, 2014). If information in a computer exists in such fields, then in theory a person with quantum-level sensitivity might be able to reach that information from a distance.

One difficulty with this idea is that images and other targets in a computer exist only as binary code or electronic signals, which are not directly readable by humans. Even if a remote viewer could tap into a computer at a quantum level, the data might appear as meaningless strings of ones and zeros, not as clear images. The viewer could pass over the targets without realizing what they were, unable to turn raw code into recognizable pictures or text.

One possible answer to this problem is that the human mind might be able to interpret computer signals directly. After all, if a remote viewer can somehow interpret the vast information of the physical universe well enough to describe a physical target located miles away, then perhaps the same mind could assemble signals from a computer into a meaningful form. In this view, the act of turning quantum signals into a coherent image of a distant object may not be so different from turning digital signals into a human-readable picture.

Another possible answer comes from theories about the Planck scale, the smallest level of the physical universe. At this scale, normal ideas of time and space break down (Isham, 1992; Oriti, 2014; Rovelli, 2009). Since all targets in my experiment were eventually shown to judges, there was a moment when each target existed as a complete,

human-readable image. In the same way that a remote viewer can find a distant target without being told its exact details, perhaps a viewer aiming for a digital target can connect to the image as it exists in every time and place, guided only by intention. In this way, a viewer may connect both to the digital version of the target during the experiment and to the visible version revealed later to judges. At the quantum scale, the gap between these two moments might vanish, allowing the viewer to perceive both forms at once.

A final quantum-inspired theory might be that the act of judging itself influences the outcome. Because the experiment is double-blind, nobody observes the actual target until judging time. When a judge is presented with a psychic's submission alongside five possible targets—four decoys and one true target—the situation resembles a macroscopic quantum measurement with multiple potential outcomes. Just as a quantum system exists in superposition until observation, here all five targets can be seen as coexisting possibilities. Quantum theory suggests that observation does not merely reveal a preexisting reality but can help bring one outcome into being through wave-function collapse (Thenabadu & Reid, 2022; Wheeler, 1978). If such dynamics extend to the macro scale (Ornes, 2019), then the judge's force of will—the directed intention to select the real target—may play an active role in the collapse, biasing the indeterminate field of possibilities toward the choice that aligns with the psychic's submission. In this view, the judge's conscious act of selection is not passive recognition, but an integral part of the measurement process that shapes how one outcome crystallizes from many.

The Matrix

While assisting with RV research at the Stanford Research Institute (SRI), the psychic Ingo Swann suggested a theory he called the Matrix to explain how remote viewing might work. In this theory, the universe is made up of an infinite number of "information points" similar to nodes in a computer network. Each point represents something specific, such as an object, a person, an event, or a place, and it holds all information about that subject from the past, present, and future (Smith, 2005). Each point is fixed, but the entire Matrix exists beyond space and time, and remote viewers are believed to be able to access it (Smith, 2005). In this model, retrieving details about a target does not mean looking at the target directly, but instead connecting to the Matrix, where all the target's information is stored (Smith, 2005). Applied to my experiment, this theory would suggest that if a remote viewer could reach even part of the information about a target, they could, in principle, reach the whole target, since all of its data is connected within the Matrix.

Hologram

Similar to the Matrix theory, Talbot (1991) describes the universe as a hologram, where all possible information is available at every point in space and time, just as each fragment of a hologram can reproduce the hologram's entire original image. If a remote viewer were able to "read" this holographic information, then every detail of a digital target could be accessed. This might include not only the raw binary code or electronic signals that make up the target, but also the complete and integrated version that human beings can readily recognize.

Multiple Universes

Another possibility is that a remote viewer might access information distributed across parallel universes. The multiverse interpretation of quantum mechanics posits that every possible outcome of a quantum event occurs in a separate branching universe (Tegmark, 2003). If consciousness can resonate or connect with its counterparts across these branches, perceptions of distant targets could emerge from the integration of information fragments gathered from multiple realities. Some theorists further propose that quantum entanglement may extend even across universes that are otherwise disconnected, establishing correlations that permit the transfer of information outside ordinary sensory channels (Robles-Pérez & González-Díaz, 2011). In this model, a remote viewer could "read" data about a target by synthesizing fragments drawn from parallel worlds, constructing a coherent picture from information distributed across realities. For instance, in some other parallel universe, perhaps the targets are openly revealed to participants in a poorly designed version of the experiment, thus offering details that could be psychically accessed.

Teleological

A final theory is Beloff's (1978) concept of teleological causation. In this model, psi effects are understood as *teleological*—that is, as forms of "goal-oriented causation" (Beloff, 1978, pp. 89–98). In other words,

threads of meaning or purpose might connect a target in one location to contextual information elsewhere, and some remote viewers may be able to follow these tangential connections across considerable distances. In the context of my experiment, a remote viewer focusing on an image stored in raw binary form on a computer might follow such threads toward a coherent, human-readable version of the same image located elsewhere in the universe. In this way, the binary file and its recognizable representation would be joined by their shared purpose or meaning.

The psychiatrist Carl Jung described a potentially related phenomenon that he termed *synchronicity*: sequences of highly improbable coincidences that appear imbued with significance (Jung, 1955). Jung illustrated the concept with an example: "my tram ticket bears the same number as the theatre ticket... and I receive that same evening a telephone call during which the same number is mentioned again" (Jung, 1955, p. 12). For Jung, such repetitions were not the product of ordinary cause-and-effect relationships. Instead, they were connected by meaning—an autonomous force that could operate independently of space and time (Jung, 1955).

If Jung's synchronicity and Beloff's goal-oriented causation describe the same underlying mechanism, this principle may also help explain forms of psychic access to digital information. A remote viewer might not be constrained by the raw data stored on a computer, but could instead trace threads of shared meaning that link one point to another. Like a spider moving across a web, the viewer may navigate these connections—crossing times, places, and events—until arriving at information related to the target, even if it is located elsewhere or exists in a different temporal frame. In this way, a viewer who aims at a computer's binary file might ultimately perceive the file's fully intact, human-readable contents displayed elsewhere in another context.

METHOD

Participants

The public was invited to participate in the study online at the experiment's website (www.psychicexperiment.org) for a two-week period starting October 23, 2022. I opened the experiment to the public because psychic ability is "not unique to 'gifted' psychics" (Swann, 1983, p. 7)—even people without formal training have shown psychic competence (Puthoff & Targ, 1980). Taking a cue from past experiments where a pool of participants was tested to determine which people had the most psychic potential (Varvoglis, n.d.), my goal was to cast a wide net, isolate participants with apparent psychic ability in a first judging phase, and then analyze their performance more deeply in a second judging phase.

Attracting Participants

I developed a promotional campaign to encourage participation. This included running targeted advertisements on Facebook, sharing posts in online Facebook discussion groups devoted to remote viewing, and producing a short promotional video that offered historical context for the project (Wichmann, 2022).

The experiment website was also intentionally designed to be easy to navigate, with clear, straightforward language. I also avoided the term "hacking," which could raise concerns about legality. Instead, the study was framed simply as an exploration of whether individuals with psychic abilities could perceive information stored within computers.

Participants could join at any time, day or night. Although prior research suggests that certain times of day may be more conducive to psychic functioning (Spottiswoode, 1997), I prioritized flexibility in order to attract the widest possible pool of participants. At the same time, because geolocation data and submission timestamps were collected, it remained possible to later analyze whether performance varied across time windows once sufficient data had accumulated.

Sign-up

When participants arrived at the experiment website, they were first asked to provide their first name and email address to allow for follow-up communication if necessary. No other personal information was collected. To protect privacy, all user information was encrypted in the database, and each participant was assigned a unique identification number. This ID was used to track participation throughout the study without revealing individual identities.

Participants then completed a standard digital consent and disclosure agreement outlining the purpose of the study, the intended use of collected data, and granting copyright permission to publish any submitted text or images submitted to the website.

Finally, participants completed an intake survey designed to assess their beliefs and experiences related

to psychic phenomena. The survey was adapted from the Revised Paranormal Belief Scale and the Australian Sheep-Goat Scale, which measure how much people believe in paranormal abilities (Drinkwater et al., 2018; Tobacyk, 2004). These survey scores were later analyzed to assess whether belief in psychic phenomena correlated to performance in remote viewing tasks.

Experiment Structure

After sign up, the experiment began. Participants were told that they would attempt to use their psychic abilities to describe three distinct targets—a picture, an ATM PIN, and a passphrase—stored on a laptop computer located somewhere in Los Angeles. Each target was presented sequentially and accompanied by simplified Star Gate-era best practices for remote viewing, such as working in a quiet setting, taking breaks, relaxing, and recording first impressions without attempting to interpret them (Hubbard & Langford, 1986).

To reinforce the reality of the task, participants were shown what appeared to be a live video feed of the target laptop placed by itself in a laboratory closet. They were informed that the laptop's screen displayed the assigned targets; however, in the feed, the screen was angled downward so that its contents were obscured as shown in Figure 3, ensuring that participants would need to rely on psychic means rather than visual cues.

Above the laptop, a colorful image of an animal was taped to the wall and described as an optional "psychic beacon" that could be used to help "zero in" on the closet and laptop in time and space. These elements—the disclosure that the laptop was in Los Angeles, the provision of best practices, the visible video feed of the laptop, and the beacon—were all intended to build participant confidence. I anticipated that many visitors to the study website would

Figure 3. Live feed of the target laptop.
Note. Participants were shown this live video feed of the Los Angeles target laptop in order to inspire confidence. The picture, ATM PIN, and passphrase targets were visible on the laptop screen, but the screen was angled downward, so the targets were not physically visible. The animal picture above the computer served as a beacon that psychics could use to help zero in on the computer. (Image courtesy of the author).

be attempting psi under formal conditions for the first time, and that the challenge of performing on demand might produce stress (Puthoff & Targ, 1976). To mitigate this, I crafted instructions that were encouraging, provided a rough geographical cue, and created an environment in which the laptop and its targets might *feel* immediately accessible: participants could literally see the device in the live feed, even if it was actually thousands of miles away. The beacon served a similar purpose, offering a familiar and visually engaging focal point to aid orientation. I did not view analytical overlay as a significant concern, since the instructions explicitly identified the laptop as the true target, making it unlikely that participants would mistake the beacon or the city of Los Angeles for the intended task (DIA, 1985).

In the first round of the experiment, participants were asked to describe a randomly selected picture displayed on the laptop's screen. No portion of the image was visible in the video feed, as the laptop's lid was nearly closed.

In the second round, participants attempted to identify randomly generated ATM PIN numbers stored in a text file on the laptop. To assist with RV targeting, participants were shown what appeared to be a live close-up feed of the laptop's desktop interface, which displayed the file's icon and filename.

In the third and final round, participants were instructed to describe a randomly generated multi-word passphrase (e.g., "GREEN WIND FLIES SOLO") stored in its own text file on the target laptop. As in the ATM PIN round, a close-up feed of the passphrase file's icon and filename was provided as a targeting aid.

At the start of each round, participants were asked to concentrate on the round's target for as long as they wished. They were then presented with two open-ended questions. The first question ("What psychic impressions did you receive—what did you feel, see, or sense?") prompted broad, possibly disconnected observations. The second question ("What do you think the target is?") asked participants for a concrete guess about the target's identity. Following these free-form responses, participants could also submit any sketches they had drawn.

The experiment was more intricate than it appeared, however. First, two laptops were used instead of one, just in case one computer failed. Each machine contained its own unique set of randomly picked targets, and a unique beacon animal picture—either a tiger or a parrot—was taped above each laptop. Visitors arriving at the experiment website were automatically and randomly assigned to one of the two laptops for the entire experiment.

Second, the apparent live video feed of the target laptop was staged. Each visitor was shown a still photo of the randomly chosen laptop with a current datestamp and the word "LIVE" printed on it to give the impression that it was a live feed. In truth, the various targets were displayed on the two laptops' screens, but those screens were dimmed to black and covered with cardboard shields and black tape to prevent light from escaping from any side, as shown in Figure 4. This ensured a talented remote viewer could not simply project their consciousness into the closet to view the targets directly on a screen. Instead, identifying a target would require a psychic to somehow "enter" a computer's storage, computing hardware, or display electronics.

Next, unbeknownst to participants, a secret fourth target—a silent, short, looping video—was also playing on each screen alongside the picture, ATM PIN, and passphrase targets. Each video clip was randomly chosen nightly. Videos were included because targets with motion may be more attractive to psychics than static targets (Delanoy, 1988). More critically, if a participant could describe the content of the video without being told that such a target was present, this would suggest that psychic hackers might be capable of uncovering hidden information on a computer even when they are unaware that the information exists. Figure 5 shows the two laptops with their various targets.

Technology

I hosted the experiment website (psychicexperiment.org) and the judging portal (psychicexperiment.org/judging) using Google Cloud's App Engine, a managed service for hosting websites. I built the web pages with standard web tools (HTML, CSS, and JavaScript) and used the PHP backend programming language to serve web content, handle submissions, save data, and calculate statistics.

All participant responses and judging scores were stored in a Google-managed MySQL database (a structured data table). I enabled several data protections: automatic backups (so data could be restored in the event of an outage), automatic failover (the system switches to a standby machine if one fails), and audit logs (a record of activity). To limit who could reach the database, I allowed connections only from the website itself and from my research lab's network; the general Internet could not connect. Administrator logins required two forms of authentication—both a password and a cryptographic certificate—and all data were encrypted both while traveling over the Internet and while stored.

Figure 4. Laptops dimmed and covered with cardboard and black tape.
Note. In truth, the two target laptops' screens were active but dimmed to black, and then covered with cardboard shields and black tape so no light could escape, forcing remote viewers to "psychically enter" the computers to perceive targets present there. (Image courtesy of the author).

Figure 5. Two target laptops with their ATM PIN, passphrase, picture, and video targets.
Note. Two laptops and beacons were used, with each visitor randomly assigned to one or the other. Each computer had its own unique set of randomly chosen targets, including a looping, silent video clip that participants were not told about. Although not physically visible here, the laptops' screens were actually covered with tape and cardboard for the experiment's duration. (Images courtesy of the author).

Using participants' Internet addresses, I estimated their approximate geographic locations and time zones in order to calculate their Local Sidereal Time (LST). LST is a time-keeping system based on the position of the stars rather than the Sun. Spottiswoode (1997), after analyzing 2,483 free-response ESP experiments, reported that psychic performance increased fourfold between 12:45 and 14:15 LST. The proposed explanation is that, during this interval, the Earth's metal core temporarily blocks cosmic interference that would otherwise dampen psychic functioning. Accordingly, I planned to examine whether participants active during this LST window demonstrated stronger performance.

During the experiment, the files containing the targets were encrypted and only stored on a control laptop housed in the experiment lab. The control laptop was password-protected, its networking was disabled to prevent external communication, and it was stored in a locked safe when not in use.

The two target laptops were secured in the same spirit. I removed nonessential software to reduce potential vulnerabilities, enabled system logging and reviewed it nightly

for signs of intrusion, and disabled all network features so the machines were completely "air-gapped" (physically isolated from the Internet so they could not be hacked).

For physical security, the lab closet housing the laptops was monitored by a motion-activated video camera. The closet door stayed closed except during the nightly target change, and the building itself was protected by an alarm system.

Delivery of Targets

Targets were changed daily at midnight Pacific time, with each target laptop receiving its own unique set of randomly chosen picture, ATM PIN, passphrase, and video targets.

Picture targets were randomly picked from 75 possible photos collected from a variety of sources months before the experiment began. Pictures could be abstract patterns, photos of people or animals, or images of architecture or nature. Targets were selected only if their imagery was striking, emotionally moving, surprising, colorful, or otherwise memorable, as such qualities have proven more successful in past experiments than bland content (Delanoy, 1988).

Video targets were randomly chosen from 10 possible video clips. Clips ranged from 3 to 21 seconds in length and were configured to loop repeatedly while playing silently on laptops' screens. As with the picture targets, videos were chosen with visually arresting content.

ATM PIN targets were generated randomly nightly just before deployment. A PIN could contain any digits 0 through 9 and were four digits in length.

Passphrase targets were also generated nightly and consisted of four randomly chosen words in random order. Each passphrase was created by randomly choosing from 57 adjectives, 132 singular nouns, 100 present-tense verbs, and 11 names of colors, in any order.

Because networking capabilities were disabled on the target laptops, the pictures, videos, ATM PINs, and passphrases were installed manually each night via a USB stick. After inserting an empty USB stick into the control computer, an automated script copied fresh targets onto it. The targets included one randomly chosen picture file, one randomly chosen video file, a randomly generated ATM PIN stored in a text file, and a randomly generated passphrase stored in a separate text file.

I then carried the USB stick to the closet for installation onto the first target laptop. After the laptop was rebooted to clear any remnants of the previous day's targets from its volatile memory, the USB stick was inserted. An automated script deleted the previous day's targets, copied the new targets from the USB stick to the laptop's disk, and displayed them on the screen. This process included opening the picture target so it was displayed on the screen, running the video file in a continuous loop on the screen, and showing the file icons for the ATM PIN and passphrase text files on the computer's desktop. Of course, none of this was visible to the naked eye, since the laptop's screen was dimmed and shielded. Finally, a script copied the laptop's security logs to the USB stick so they could be examined on the control laptop for any signs of intrusion.

After repeating the steps to load a separate set of targets onto the second target laptop and examining the security logs, the USB stick was reformatted to remove all target data. Both the stick and the control laptop were then locked in a safe until new targets were installed the following day. Although installing targets in this manner was time-consuming, it preserved the double-blind integrity of the experiment, ensuring that neither the judges nor I knew which targets had been deployed.

After the experiment, I used an automated script to upload the targets to the judging website without revealing them to myself. Only after judging was complete did I view the targets as part of my analysis. This procedure ensured that I remained blind to the targets throughout data collection and judging, preventing any possibility of bias or unintentional cueing.

Randomness

Two physical randomness sources were used: RDSEED—a true random number generator (TRNG) found in certain Intel CPUs that leverages thermal noise for additional entropy (Intel, 2018)—and data from a Geiger counter capturing unpredictable radiation particle arrivals (Ruschen et al., 2017). Over the course of a week, Geiger data was collected into five files, which were then XORed together into one file to remove any predictable patterns that might have resulted from prolonged particle events.

Some research has shown that psychics may be able to perturb random processes (SRI, 1980). To make it more difficult for remote viewers to influence the selection of a target, potential targets were first shuffled using the Durstenfeld shuffle—a method that guarantees a random transposition of each item (Mikawa & Tanaka, 2017; O'Connor, 2011)—and then one target was randomly picked from the shuffled list, using RDSEED as the source of randomness.

When selecting picture targets, the list of possible images was first shuffled using the Durstenfeld method, then RDSEED was called to randomly pick one file as the target. This same process was used to select video targets. Passphrases were generated in a similar way: noun, verb, and adjective lists were shuffled, and then RDSEED was used to choose word parts in random order until a passphrase was formed.

ATM PINs followed a different procedure. Best practices recommend using an abstraction layer between the random number generator and the final target—rather than simply using generated random numbers as the targets themselves—to thwart attempts at psychically influencing random processes (Williams, 2021). Additionally, the initial digits in a multi-digit number can conform to predictable distributions under Benford's Law (Scott & Fasli, 2001; Stoessiger, 2013). Therefore, it was crucial to ensure that each digit, from 0 to 9, had the same probability of being chosen when generating a PIN.

To meet these requirements, the digits 0 through 9 were arranged into five pairs: (0,1), (2,3), (4,5), (6,7), and (8,9). Each pair used a Geiger counter value in binary format as a coin flip: 0 selected the first digit, while 1 selected the second. These chosen digits were saved in an output file. The file's digits were then Durstenfeld-shuffled, and RDSEED randomly chose the Nth digit in the file to form the next ATM PIN digit—repeating this process until four digits were obtained. An analysis of the output file showed a smooth distribution (the frequency of each digit 0–9 fell between 9.71 and 10.30), and constant shuffling prevented any patterns that might have arisen from reusing the same pairs.

RDSEED and Geiger counter data were tested for randomness using Dieharder and NIST Statistical Test suites (Brown, 2020; Sunar et al., 2006). Both RDSEED and Geiger counter data, along with the XOR'd Geiger file, passed all tests.

Experiment Judging

Judging was conducted in two phases. In the first phase, independent judges scored all submissions to identify participants who appeared to demonstrate potential psychic ability. In the second phase, a referee carried out more detailed matching between submissions and targets, focusing on those participants who had shown promise during the initial phase. I adopted this two-tiered strategy because, unlike researchers who often work with experienced remote viewers with established track records, my participant pool consisted of members of the general public. In such cases, a winnowing process to identify talent before proceeding to more detailed analysis is not only practical, but also consistent with approaches described in other parapsychology studies (Department of the Army, 1983; Kelly, 1982; Kruth, 2019).

First Judging Phase

In the first judging phase, all participant submissions were evaluated by human judges using a custom-built judging website (psychicexperiment.org/judging). Since there were four kinds of impressions that needed judging per participant (i.e., picture, ATM PIN, passphrase, and video), the website randomly shuffled all impressions from all participants, and then presented them to judges in randomized order. Thus, a judge might first evaluate a picture round for one participant, followed by an ATM PIN round for another, without any predictable sequence.

There was a pool of six independent judges available. At the start of judging, the judging website randomly selected three judges to begin, leaving the remaining three in reserve. Once one of the active judges had finished judging approximately 300 rounds, that judge was retired and replaced by a fresh judge randomly chosen from the reserve pool. For example, if judges 1, 2, and 3 began as the initial set, and then judge 1 retired, they would be replaced by either judge 4, 5, or 6, selected at random.

Rank-order scoring was employed (Puthoff & Targ, 1976). Judges accessed the experiment's website, where they were presented with a randomly chosen submission—picture, video, ATM PIN, or passphrase—from an unnamed participant. Below the submission, five possible targets appeared in random order. These included the actual target, and four convincing decoys.

Judges ranked the targets by similarity to the submission, with rank 1 indicating the closest match. If two or more judges ranked the actual target in first place, the submission advanced to the second judging phase. Submissions were also classified as direct hits if all three judges independently identified the correct target as their top-ranked choice.

The website was programmed to select random decoys that were deliberately dissimilar (orthogonal) to the actual target, ensuring that judges encountered a diverse set of options rather than multiple images of the same type. For example, if the target was a horse (classified under the Animal category), the four decoys would be drawn at random from non-Animal categories. This approach

avoided giving judges any unintended cues, since in their minds any decoy could have been the true target, while also preventing situations in which a judge might need to compare a participant's impression of a horse against five different images of horses. Such a design was considered a fair limitation, since the purpose of the study was to test whether remote viewing of computer data was feasible at all, rather than to evaluate whether judges could discriminate among subtle variations of closely related images.

Judges were also asked to indicate their confidence level in their first-place pick. They could choose High (the submission had multiple matching target details), Medium (at least one strong matching detail was present), or Low (no match was detected). Confidence level was not used in judging statistics and was collected only as a point of interest to test how well a judge's own confidence correlated to their accuracy in picking targets.

Video rounds required special handling, because participants were unaware that videos were part of the experiment. To test whether psychics could perceive undisclosed video content, judges were shown a participant's *picture* submission alongside five possible targets—four picture decoys and one still frame from the actual video. The hypothesis here was that while focusing on their assigned picture target, a psychic might unintentionally pick up details from the silent video target instead, since both pictures and videos involve visual information.

There were 813 picture, ATM PIN, and passphrase decoys each, and all were chosen or created in the same manner as actual targets to ensure they would be believable. Picture decoys and targets were sorted into categories (i.e., Human, Abstract, Architecture, Nature, Animal, and Action) to ensure that every judging round had a healthy mix of orthogonal image types. Decoys were reused, but with only a 4.35% probability that a judge would encounter the same decoy more than once.

Second Judging Phase

In the second judging phase, submissions were evaluated using a Detailed Matches procedure adapted from May's Figure of Merit method (May et al., 2014; SRI, 1988). A referee judge reviewed each submission and assigned 1 point for concrete matches and 0.5 points for abstract matches. For example, if the target was a photograph of a soldier with a star tattoo, the terms "soldier" or "star" would earn 1 point each, while "man in uniform" would receive 0.5 points.

ATM PINs, being numerical, required no subjective interpretation. Matches were calculated by counting the number of digits correctly identified in any order, and separately, the number matched in the exact correct order.

Once matching details were enumerated, submissions were ranked by psychic strength. Picture, video, and passphrase submissions that three judges had independently ranked as first place (direct hits) were placed highest, followed by those matched by two judges. Ties within each group were resolved by Detailed Match scores. ATM PIN submissions were prioritized by the number of digits matched in exact order (e.g., three-digit matches ranked above two-digit matches).

Judging Integrity

Judging integrity controls were employed. No party was permitted to view any submission until judging began. Each judge signed in using unique website credentials, and all activity was logged and reviewed daily for signs of fraud. Submissions were randomly assigned to three judges, with the five potential targets shown in random order. No identifying information about psychics was displayed. Decoys' filenames were changed to randomized strings to prevent any clues about content. Finally, before being allowed to judge, judges were asked to watch a 15-minute instructional video to improve judging uniformity.

To ensure targets and submissions had not been fraudulently altered, judges were emailed a log of each day's participant activity during the experiment. Each log included record numbers assigned to that day's submissions, along with a digital "fingerprint" (a cryptographic hash) taken of the record number, the contents of the submission, and the contents of the actual target, all combined. Later during judging, judges compared the hashes they had received to freshly calculated hashes to detect any data modifications or tampering. None were found. Since cryptographic hashes are deterministic (a unique input always provides the same unique output), any modification of a submission or target in the experiment database would have been detected.

Statistics

Standard statistical methods were used. One-tailed test p-values were calculated using an alpha level of $p = .05$, meaning p-values below .05 would warrant rejection of the null hypothesis (i.e., observed outcomes were results of

chance) (Utts & Heckard, 2015). Z-scores for picture, video, passphrase, and ATM PIN round were calculated using the standard formula for a one-population proportion (Pennsylvania State University, n.d.). Effect sizes were calculated using the formula recommended by May to demonstrate whether psychic effects would be plainly observable. An effect size could be Small (=<0.2), which might prove imperceptible; Medium (=<0.8), which would be visible to a careful observer; or Large (>0.8), which would be plainly visible to any observer (May et al., 1988; Utts, 1995).

Picture, video, and passphrase results were analyzed using *p*-value lookup tables by Utts and Hansen that combine Sum of Ranks and Direct Hits (Hansen & Utts, 1987). Hansen and Utts combined these two indices together to avoid various statistical problems inherent in measuring free responses in psi experiments (Hansen & Utts, 1987). For this experiment, the tables were adjusted to allow for 5 choices shown to judges ($R = 5$).

P-values for ATM PIN rounds were calculated directly. Combinatorics were used to calculate the probabilities of guessing various PIN digits while accounting for repeating digits (e.g., 7877), and then *p*-values were derived from probabilities' Z-scores.

FINDINGS

Participants

146 people from 10 countries completed the experiment over two weeks. Based on anonymized demographic data from Facebook ads that attracted participants, 59.4% of participants were women, with 74% of ages ranging from 35 to 64 (Facebook, 2022).

Upon arriving at the experiment website, 76 individuals were randomly assigned laptop #1 with its tiger beacon, and the rest were assigned laptop #2 with its parrot beacon. 13% of participants reported that the tiger and parrot faces were distracting, so future experiments might try using beacons with more muted colors, abstract beacon images without faces, or no beacons.

88% of participants finished in under an hour, although it was not always smooth sailing. 14% gave answers like, "I don't know" or "Not sure" to express that they were not sure how to approach a picture, ATM PIN, or passphrase round, or that they were not receiving psychic signals. One visitor was nervous about answering questions because he suspected the experiment might be a criminal scheme to use psychic hackers for guessing ATM PIN numbers of would-be victims.

Survey Responses

87% of participants believed in psychic abilities, with 42% claiming to have psychic powers themselves. 75% had experienced psychic events for at least 20 years, with 57% recalling having powers since childhood. Clairvoyance (68%), precognition (53%), and telepathy (42%) were experienced most often. The most common powers that participants could evoke on command were clairvoyance (35%), energy healing (25%), telepathy (21%), and mediumship (16%).

131 participants answered questions examining which practices were most conducive to psychic operations. Focusing intention (41%), meditation (40%), and shutting eyes (27%) were most important. Environment was important as well, such as working in a quiet space (63%) and reclining (66%) in a relaxing place (49%).

The survey questions assessing participants' beliefs regarding their own paranormal abilities overlap conceptually with broader notions of perceived capability. In mainstream psychology, such beliefs are often discussed under the rubric of self-efficacy. However, my survey was not designed, validated, or analyzed as a self-efficacy measure in the social-cognitive theory sense (e.g., Bandura, 1977). Survey content was used descriptively to characterize participants' belief orientations upon entering the experiment, not to operationalize perceived agency, mastery, or task-specific performance expectations. This conceptual overlap is noted here for context only and was not used as an interpretive framework for the survey findings.

Judging

Picture, video, ATM PIN, and passphrase submissions were judged for all 146 participants, resulting in 1,752 total rounds judged. Each of the 6 volunteer judges judged an average of 292 rounds.

When choosing among 5 possible targets during rank-order scoring (which included the actual target and 4 decoys, all in random order), judges correctly rated the correct target as first place 18.43% of the time on average across all targets. This was worse than random guessing (which would be 20%).

This below-chance, first-place rate could reflect either highly convincing decoys or inexperienced judges (all of the judges in my case had not judged previously). Hansen and Utts (1987) noted that inexperienced judges may focus primarily on finding the best match while paying less attention to the relative quality of remaining options. In such cases, a target that is clearly superior, but not perfectly matched,

might receive a second-place rank that is no more diagnostic than a fourth-place rank. This pattern could depress the direct-hits rate even when psi information is present in the response.

However, the 18.43% success rate had minimal impact on statistical outcomes. The Hansen-Utts bivariate method evaluates both direct hits and the sum-of-ranks across the complete multinomial distribution of all five rank positions, not the first-place rate alone. A shift from 20% to 18.43% represents roughly 1.6 standard errors for our sample size and produces only a minor perturbation in the tail probabilities. More importantly, if this below-chance judging reflects systematic measurement noise rather than random variation, it would attenuate rather than inflate any observed psi effects. Consequently, our statistical findings may actually underestimate the true strength of any phenomena under investigation.

As expected, judges tended to be most accurate when submissions contained a large number of matching details. The highest-scoring picture, video, and ATM PIN submissions—those ranked first by all three judges—also produced the greatest numbers of refereed Detailed Matches. For instance, 12 picture submissions were unanimously ranked first during the rank-order judging, and in the subsequent refereed Detail Matching process these same 12 submissions yielded the highest total of matching details (43 in all). A similar correlation was observed in the ATM PIN and video rounds.

Submissions needed to achieve a minimum score to proceed to the second judging phase where Detailed Matching would occur. For picture, video, and passphrases submissions, this meant being correctly matched against their actual targets in first place by at least 2 judges; for ATM PINs, a submission needed to correctly match at least 2 of a target's digits. 92 submissions achieved these milestones, including 23 picture, 18 video, 32 PIN, and 19 passphrase submissions. Mean numbers of matched details were 2.48 for picture targets (N = 23), 1.67 for video targets (N = 18), 2.31 for ATM PIN targets (N = 32), and 0.34 for passphrase targets (N = 19).

Picture Targets

82% of the 23 picture submissions that were scored in first place by 2 or more judges had Detailed Matching scores of at least 0.5, with the five strongest submissions matching 7, 6, 5.5, 4, and 4 target details, respectively.

The 23 picture submissions scored a Sum of Ranks of 34. 12 submissions were considered psychic hits, with all 3 independent judges correctly matching those 12 against their actual targets. These results were statistically significant, with a p-value of 0.000597 calculated using the combined Sum of Ranks and Direct Hits lookup table. Effect size was Large at 1.075 (Z = –4.5), making it obvious to a typical observer.

Most Successful Picture Targets

Of all the picture targets, photos of a cathedral dome, a cemetery, a forest path, and a river depth gauge received the greatest number of hits and Detailed Matches as shown in Table 1.

The cathedral dome produced two hits out of six submissions (33%), corresponding to a medium effect size (h = 0.31). With 13 detailed matches overall, its geometric architecture—featuring concentric circles, radial symmetry, and structured design—may have offered participants salient perceptual anchors, enabling fragments of the target to be perceived even when the whole was not fully recognized.

In contrast, the river depth gauge yielded two hits out of three submissions (67%), well above the 20% chance baseline and associated with a large effect size (h = 1.07). Like the dome, the gauge presented strong linear and numerical cues, supporting the idea that highly structured, geometric targets may be particularly conducive to psi perception.

Naturalistic and semi-naturalistic scenes also showed evidence of success. The forest path likewise demonstrated a large effect size (h = 1.07), supported by six accurate descriptive details. By contrast, the cemetery (2 of 9 hits; 22%) produced a hit rate close to chance (h = 0.05), yet still generated 9.5 accurate details. This suggests that even when overall recognitions are weak, fragmentary perceptions may accumulate meaningfully into partial target reconstructions.

When pooled across these four targets, participants achieved eight hits out of 21 submissions (38.1%). This corresponds to a medium effect size (h = 0.40) and was significantly above chance (p = .043).

Least Successful Picture Targets

In contrast to the successful geometric and natural targets, animal images appeared to suppress performance, as shown in Table 2. The photograph of a doe in a field produced an 83% failure rate (p = .023), with failure defined as all three judges ranking the target in last place when

Table 1. Most Successful Picture Targets.

Target Picture	# of Participants Randomly Assigned This Target	# of Submissions Ranked as Hits by Judges	# of Matching Details Identified
 Cathedral Dome	6	2	13
 Cemetery	9	2	9.5
 Forest Path	3	2	6
 River Depth Gauge	3	2	5.5

Note. These were the most successful four picture targets, yielding the highest number of Detailed Matches from participants. The fact that these images all contained geometric or nature scenes may lend support to earlier findings suggesting that some kinds of imagery are inherently more engaging or accessible to psychics than others (Delanoy, 1988). (Dome photo courtesy of Jorge Molina, © Jorge Molina / https://www.flickr.com/photos/miamiboy. Cemetery photo © Douglas Sacha / Getty Images. Forest path © Wikipedia user Usamakhaliddd / Creative Commons license. River gauge © Pixnio user Bicanski / Creative Commons license).

Table 2. Least Successful Picture Targets.

Target Picture	# of Participants Randomly Assigned This Target	# of Judging Rounds Where Target Chosen in Last Place	Failure Rate (95% CI)	*p*-value	Effect Size (Cohen's *h*)
 Doe in a Field	12	10	0.833	0.0235	Large (0.706)
 White Dog	10	8	0.800	0.0636	Large (0.619)
 Pandas	9	6	0.667	0.2781	Medium (0.316)
 Owl	6	5	0.833	0.121	Large (0.706)

Note. These four animal images were the least successful picture targets in the study. Participants' submissions diverged so strongly from these targets that, in many judging rounds, all three judges independently ranked the animal images in last place. This consistent pattern suggests that animal targets may have been particularly difficult for remote viewers to access or describe accurately. (The doe image is in the Public Domain. The dog, panda, and owl images are courtesy of the author).

attempting to match submissions. Similar outcomes were observed for the white dog (80% failure), owl (83% failure), and pandas (67% failure). Taken together, animal targets produced a 78% aggregate all-wrong rate—a result significantly worse than chance (p = .0006) and accompanied by a large negative effect size (h = 0.58).

Examples of Accurate Picture Results

Many participants' details submitted were quite accurate. Participant #43 wrote that their cathedral dome target shown in Figure 6 was "lilac" with "blue, green, and beige" colors, and like "sandstone" with an "open air" shape that was "circular" that had "vertical lines or protrusions around it." The participant's sketch (shown on the right in Figure 6) reproduced the dome's circular shape and repeating arches with striking fidelity.

The strength of this resemblance is comparable to what were considered direct hits in early parapsychology research. The 1976 overpass drawing shown in Figure 1, for example, was regarded at the time as a direct hit. When viewed side by side, the present cathedral dome sketch—with its circular geometry, radiating symmetry, and arch-like forms—appears equally compelling. In both cases, participants distilled the targets to their core structural features, producing simplified yet abstract renderings that conveyed the essential character of the scenes.

Participant #12 also had a strong showing, describing their forest target shown in Figure 7 as "quiet" with "sunlight" falling on a "forest path," and the path's curvature in the submitted drawing was a match for the target's.

Other participants were equally successful. Participant #65 described the collection of gray streetlamps in Figure 8 as "trunks of elephants" or "belts hanging on a hook." For a target of helmeted soldiers carrying guns in a World War I trench, participant #69 wrote "helmets" overtly, and that they seemed like "cherries… joined by their stems." Participant #64 similarly recounted sensing an "oval shape with two legs."

Collusion Opportunity

Collusion among psychics may accelerate the identification of target details or increase their resolution. When assigned the photo shown in Figure 9 of a man bicycling to his left as he falls from his bicycle into a watery canal, participant #90 accurately sensed "water," "falling," and a "crash," while Participant #83 perceived a "human head," "outdoors," and "looking to the left." Individually, each provided partial information that hinted at parts of the scene. Combined, however, their perceptions offer a richer, more coherent reconstruction—a doubling of target-relevant details via collaborative convergence.

Video Targets

For video targets, judges correctly matched 18 picture submissions against the video targets' still frame images. Detailed Match analysis found concrete video details in 11 of the 18 submissions, with the strongest containing 5.5, 4, 4, 3, and 2.5 enumerated details. The results were statistically significant: 10 video submissions were psychic hits, with a Sum of Ranks of 26, a p-value of 0.000911, and a Large effect size of 1.131 (Z = –4.58).

Participant #141 scored highest, with 5.5 details counted. 141's target shown in Figure 10 was a surreal video clip of a woman playing a clown. Wearing pale makeup, red lipstick, and a blonde wig, she puts her mouth into a jar of green liquid, and then pulls a fake frog out of the liquid using her teeth. Participant #141 described sensing a "sad clown" and a "crocodile in water." "Sad clown" was a reasonable description of the woman's facial expression, and "crocodile in water" could be a reference to both the water in the jar and the frog, which is green and semi-aquatic like a crocodile.

Participant #141 also sensed "chattering wind-up toy teeth," which, judging from the teeth shown in the participant's submitted drawing, was a reference to the popular wind-up toy that features white teeth and red lips. Notable is that the woman in the video clip does flash her teeth for the camera, but this only happens in the *original* uncut video footage that comes after the clip chosen for use in the experiment. In other words, the psychic described details that were tangentially related to the target, even though they were not physically present in the experiment.

Participant #144 exhibited this same tangent effect. The psychic's video target was the famous scene from the film *The Shining* in which a deranged writer hacks through a hotel bathroom door with an axe (Kubrick, 1980). Participant #144 described sensing a "heartbeat" and "blood," which are both featured in the film: a heartbeat sound effect is heard often to suggest that the hotel is a living entity, and in one scene, a river of blood rushes down a hotel hallway. Interestingly, neither the heartbeat nor the blood scene was included in the experiment's video clip,

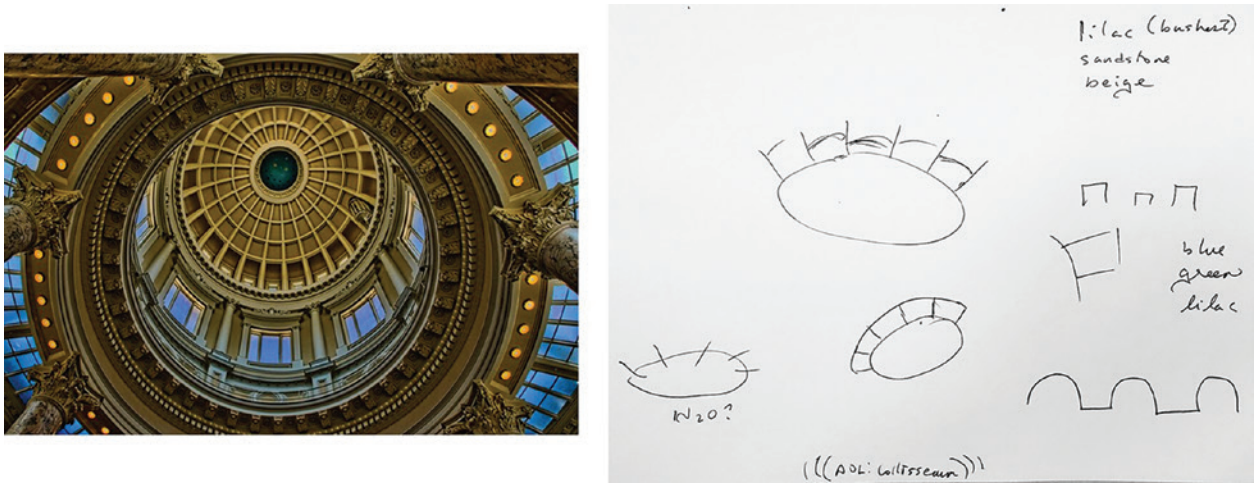

Figure 6. Remote viewer drawing of cathedral dome.
Note. Participant #43's drawing of the target included repeating circular, rectangular, and line motifs similar to the cathedral dome photo. (Dome photo on left is courtesy of Jorge Molina, © Jorge Molina / https://www.flickr.com/photos/miamiboy. Illustration on right is courtesy of the author).

Figure 7. Remote viewer drawing of forest path.
Note. Participant #12 correctly identified their forest path picture target, complete with a path curving to the left. (Forest image on left used under Creative Commons Attribution-Share Alike 4.0 International license, https://commons.wikimedia.org/wiki/File:Keri_murat.jpg. Illustration image on right courtesy of the author).

meaning once again, a participant detected details tangentially related to the target, even though the details were not physically present in the study.

Participant #137 had a similar experience with *The Shining*, correctly perceiving that the video target involved "someone's mother" who was "on vacation" in a "mountain location." All these details were spot-on—in the movie, the mother is on winter family vacation at an isolated mountain hotel—yet none of these elements were included in the actual clip used in the experiment.

Displacement and Describing Missing Video Details

Several of the video target trials revealed what appeared to be displacement effects, where participants described details belonging not to the assigned target, but to an

Figure 8. Streetlamp and wartime trench targets.
Note. Participant #65 perceived these gray streetlamps as elephant trunks, or "belts hanging on a hook." For soldiers in a trench, Participant #69 identified their helmets, which Participant #64 described as being an "oval shape with two legs." (Streetlamp photo on left courtesy of the author. 1917 wartime photo on right is in the Public Domain, courtesy of the United Kingdom Government).

Figure 9. Bicyclist photo target.
Note. Two remote viewers correctly perceived water, falling, a crash, a human head, outdoors, and looking to the left. (Image © The Estate of Bas Jan Ader / Mary Sue Ader Andersen, 2025 / The Artist Rights Society (ARS), New York. Courtesy of Meliksetian | Briggs).

adjacent or related one. In one case, Participant #6 was tasked with a passphrase target, but instead reported imagery of spirals, swirling, and spinning. Although these descriptions did not correspond to the intended passphrase, they closely matched a *Sound of Music* video clip that happened to be playing on the screen at the time—specifically, the iconic scene in which Julie Andrews spins on the hills of the Austrian Alps (Wise, 1965).

Other participants went beyond simple displacement and seemed to perceive tangential details absent from

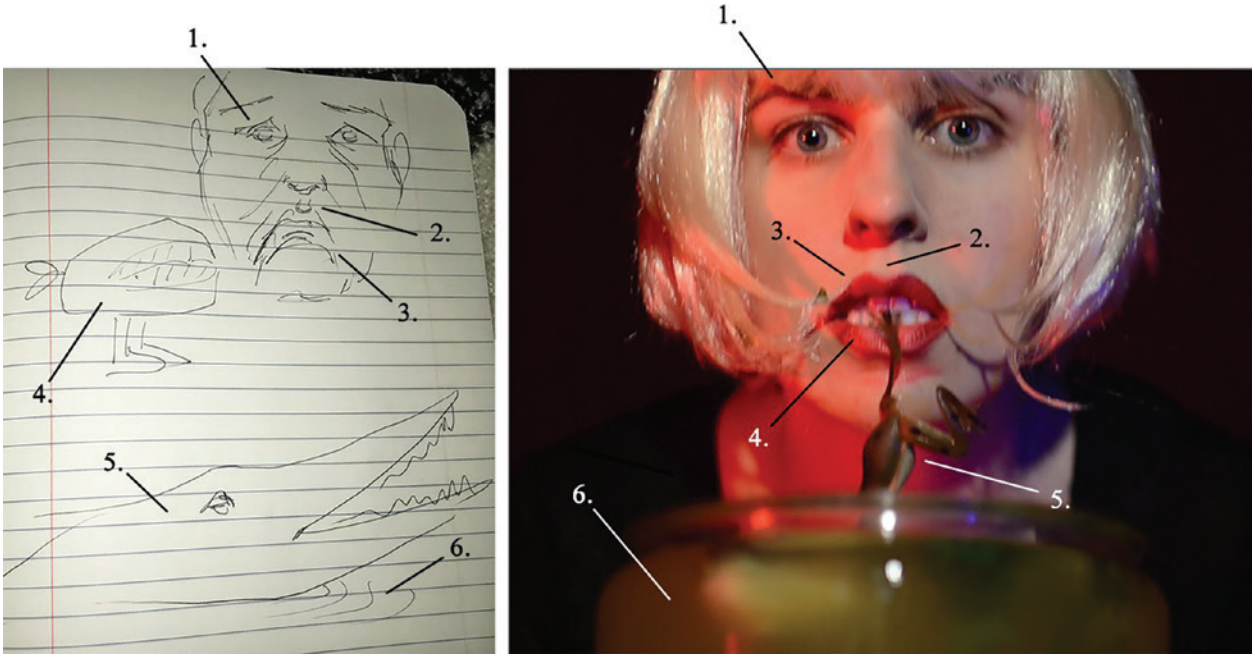

Figure 10. Psychic describes details of woman with frog.
Note. Participant #141's drawing appears to identify the target's (1) arched eyebrow/eyelid, (2) cleft beneath nose, (3) clownish character expression and mouth, (4) white teeth and red lips like a chattering wind-up toy, (5) crocodile and frog (both aquatic and green), and (6) water/liquid. (Images provided courtesy of the author).

the clips used in the experiment, but present in the original, uncut source material. As mentioned earlier, Participant #137, when assigned a clip from *The Shining*, described "someone's mother" on vacation in a mountain location—details consistent with the full film but not visible in the shorter clip used in the study. Similarly, Participant #38's passphrase guess of "bubble, bubble, toil, and trouble" seemed reminiscent of Shakespeare's "Double, double, toil and trouble... Fire burn and cauldron bubble... Eye of newt and toe of frog...." found in *Macbeth* (Shakespeare, 2013). Although this guess did not correspond to the intended passphrase target, it closely resonated with the video clip playing on-screen at the time—namely, the previously mentioned scene of a woman extracting a frog from liquid with her teeth. Notably, in the version of the clip used for the experiment, the woman simply pulls the frog from the liquid; however, in the original uncut footage (not shown during the study), she first blows a flurry of bubbles into the green liquid before retrieving the frog.

These results suggest that, in addition to describing their assigned clips, participants sometimes accessed related but non-present information, drawing on broader semantic, tangential, or narrative associations connected to the targets. Such findings may lend support to the teleological theory of remote viewing introduced earlier, which integrates ideas from Beloff and Jung to propose that psychics can traverse threads of meaning linking a target to other, tangentially related information located elsewhere.

Analysis Across Video Targets

To assess whether the content of video targets influenced performance, we compared Detailed Matches across different target categories. Emotionally striking or symbolically rich videos—such as the clown woman with red lips (M = 2.25, N = 4) and the scary scene from *The Shining* (M = 2.17, N = 3)—appeared stronger than more neutral scenes like Julie Andrews spinning in *The Sound of Music* (M = 1.5, N = 4).

To formally test for content effects, I employed a Kruskal-Wallis test, a rank-based non-parametric method appropriate when samples are small, not normally distributed, and have potentially unequal variances (Bewick et al., 2004). This test avoids the stringent assumptions required by parametric alternatives such as ANOVA. The Kruskal-Wallis result was non-significant, $H(4) = 4.14$, $p = .764$, indicating no statistical evidence that the content differences among video targets influenced psychic performance.

ATM PIN Targets

32 participants matched 2 or more ATM PIN target digits, including:

- One match of 3 digits in precise order, with a *p*-value of 0.006527 after factoring for duplicate digits and other combinatoric cases. (Although this outcome reached statistical significance, its occurrence as a single, isolated event was treated as anecdotal rather than indicative of a reliable aggregate effect, and therefore not sufficient on its own to warrant rejection of the null hypothesis).
- 9 successful guesses of 3 digits in any order, which was statistically significant ($p = 4.118 \times 10^{-6}$, ES = 0.788).
- 19 correct guesses of 2 digits in any order, which was significant ($p = 7.84 \times 10^{-6}$, ES = 0.763).
- 4 correct guesses of 2 PIN digits in exact order were deemed insignificant ($p = 0.1774$).

Collusion Opportunity

Like my earlier mention of potentially colluding against picture targets, it turned out that participants could have also potentially derived the correct ATM PIN target values faster by colluding. Table 3 shows that just two participants needed to collaborate to arrive at all digits needed for targets 6491, 9547, 4211, and 7938. Although the guessed digits were not in the target PINs' exact orders, the time to brute force each PIN could be reduced by trying all combinations of the participants' guessed digits, rather than trying all possible digits zero through nine. For target 6491, Participant #19 guessed 1, 4, 9, 2, and Participant #21 guessed 6, 9, 1, 0. Merging and deduplicating these guesses leaves exactly the digits 6, 4, 9, 1, which require only 24 permutations to brute force the correct PIN, instead of thousands of guesses. Future research might explore whether pooled guesses from remote viewers who have proven skills at guessing digits might accelerate the time needed to reliably crack PINs, lottery numbers, and other numeric targets.

Passphrase Targets

Passphrase submissions were least successful: out of 19 results reaching the second judging phase, only 5 were direct hits (not statistically significant) with Detailed Matching scores between 0 and 1.

As noted earlier, intriguing displacement effects were observed: while concentrating on passphrase targets, some participants appeared to perceive details from other targets simultaneously present on the screen. Participant #6 described spirals, cyclones, swirling, and spinning; although these did not match the passphrase target, they seemed to describe the video clip actively playing of Julie Andrews twirling in the grassy fields of *The Sound of Music*. Similarly, while focused on a passphrase, Participant #38 perceived elements from a concurrent video target of the woman pulling a frog from a jar of liquid with her teeth. This participant's references to bubbles, toil, and trouble echoed Shakespeare's *Macbeth*, which mentions a cauldron (comparable to the woman's jar), a frog (featured in the footage), and bubbling (present in the original, uncut version of the clip, where the woman blows bubbles into the liquid before retrieving the frog). In another case, while attempting a passphrase, Participant #13 reported sensing a pyramid—an impression unrelated to the intended passphrase but consistent with the picture target on-screen at that moment, which depicted Egyptian pyramids.

Other striking results emerged for participants assigned the passphrase target, "Church Alert Weeps Yellow." Participant #23 envisioned a banana—an image notable for its yellow color—and reported hearing a "voice in my head," which may suggest an experience of spiritual communication. Participant #18 mentioned "fish" (a traditional emblem of Jesus), SpongeBob SquarePants (a yellow cartoon character), and "Fish Fry Sunday," a common church-related event. Participant #16 also perceived distinctly religious themes, describing impressions of a "feeling of reverence," "church wine," "bread communal," a "bearded friend," something "holy," and the name "John."

Table 3. ATM PINs Where Collusion Might Be Possible.

ATM PIN Target	Guess (Matching Digits in Bold)	Participant #
6-4-9-1	**1-4-9-**2	19
	6-9-1-0	21
9-5-4-7	**7**-3-**9-4**	117
	5-0-6-**4**	106
4-2-1-1	**2-1**-6-**2**	53
	4-6-**4-1**	50
7-9-3-8	**8-7**-6-**9**	118
	3-5-2-**9**	115

Note. 4 pairs of participants yielded the correct digits (shown in bold) needed to guess 4 different ATM PIN numbers. Using only digits guessed by 2 psychics with duplicate digits removed, brute force guessing each PIN is often faster than trying all digits starting at 0000.

Belief Versus Psychic Ability

To investigate whether belief in psychic potential was associated with performance, total Detailed Matches were compared across all 146 participants. Participants were divided into a believer group (those answering "Yes" or "Maybe" to having psychic potential; N = 135) and a non-believer group (those answering "No"; N = 11). Believers achieved a mean of 1.20 matched details (SD = 1.69), while non-believers achieved a mean of 0.50 matched details (SD = 0.92). In aggregate, belief-aligned participants accounted for approximately 21.8 times more matched target details than the non-believer group, as shown in Figure 11.

To assess the statistical significance of this difference, a Mann–Whitney U test was conducted on aggregated Detailed Match scores. This analysis yielded a U statistic of 893.5 with a two-sided *p*-value of. 212. Although this result did not meet conventional significance thresholds, it likely reflects limited statistical power due to the small size of the non-believer group and the highly sparse, zero-inflated nature of the data.

Notably, the pattern observed is consistent with a concentration effect, in which group differences are driven by a small number of high-performing participants, rather than a uniform shift in performance across the entire sample. In both groups, the majority of participants did not advance to the second judging phase; however, successful correspondences were disproportionately concentrated among a subset of belief-aligned participants. This pattern mirrors broader findings in the parapsychology literature which suggest that psi effects, when present, tend to be episodic and concentrated in the extreme tail of performance distributions, rather than manifesting as global effects across participants (Storm et al., 2010). Accordingly, belief appears to be associated with the likelihood of exceptional performance, rather than with a general increase in performance across the participant pool.

Taken together, the findings indicate that belief in possessing psychic abilities is associated with performance outcomes, but they do not establish a unidirectional causal relationship. While belief-aligned participants accounted for a substantially greater proportion of matched details overall, the experiment's design does not allow conclusions about the direction of this relationship. It is possible, for example, that individuals who have previously encountered apparent psychic successes—whether in formal research settings or through everyday life experiences—subsequently develop stronger beliefs in their abilities. It is also possible that belief and performance interact over time through a positive feedback loop.

Because participation was open to the general public rather than limited to experienced remote viewers, the sample likely reflects a broad and heterogeneous mix of prior experience, confidence, and engagement. Accordingly, the observed relationship between belief and

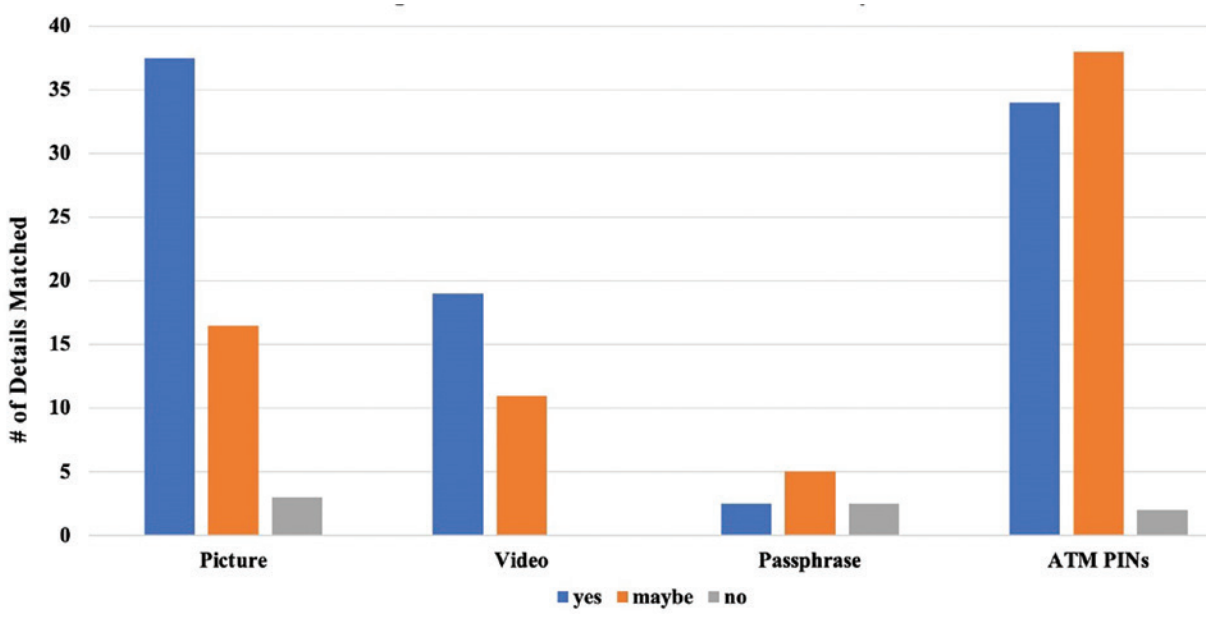

Figure 11. Belief versus target details matched.
Note. When asked, "Are you psychic?" participants who said "yes" or "maybe" identified 21.8 times more target details than people who answered "no."

performance is best interpreted as correlational. Future work will be needed to tease apart belief-driven facilitation from experience-driven belief formation. Even so, the magnitude of the observed association suggests that belief remains a meaningful variable for further investigation in large-scale, Internet-based psi research.

Sidereal Time

As introduced earlier, Spottiswoode (1997) reported that psychic performance increases fourfold between 12:45 and 14:15 Local Sidereal Time (LST). My experiment showed partial alignment with this finding: among the top five judge-ranked submissions from each of the picture, ATM PIN, and passphrase rounds, 40% occurred within 90 minutes of Spottiswoode's LST window. By comparison, if submissions were distributed randomly across the day, the expected proportion falling within this 90-minute window would be much lower (about 6%). This suggests that future studies may benefit from scheduling remote viewing sessions as close as possible to this interval.

Family-Wise Corrections

Because my experiment reports multiple outcomes (e.g., ATM PIN results for three digits in exact order, three digits in any order, etc.), some critics might raise the issue of Type I error inflation. In statistics, when many different tests are performed on the same dataset, the chance of obtaining at least one "false positive" result (a significant finding actually due to chance) increases. One common way of addressing this is through a Bonferroni correction, which lowers the threshold for statistical significance to account for the number of tests. For example, if seven tests are performed, the usual 0.05 threshold would be divided by seven, yielding a stricter cutoff of 0.00714.

However, there are strong reasons why such a correction is unnecessary. First, the effect sizes observed here are generally large (ES ≥ 0.76 for significant findings). Large effects are clearly visible in the data and are unlikely to be artifacts of statistical noise. In this context, applying a Bonferroni correction—whose main benefit is reducing false positives—may be overly conservative, because it does so at the expense of increasing false negatives (real effects that are dismissed), and this is especially a problem when effect sizes are large (Armstrong, 2014; Bland & Altman, 1995; Perneger, 1998). Similarly, Hansen and Utts (1987) argue that Bonferroni adjustments are unrealistically strict, especially in free-response psi experiments like mine.

Second, many of the outcome measures in this experiment (e.g., two-digit vs. three-digit PIN matches) are not independent tests, but overlapping ways of looking at the same data. Classic Bonferroni adjustments assume independence across tests, which does not hold here. For these reasons, reporting raw *p*-values alongside effect sizes provides a more balanced and informative account. The combination of large effects and consistent results across multiple modalities (pictures, videos, ATM PINs) supports the robustness of the findings without the need for rigid family-wise corrections.

For completeness, however, I will note what a Bonferroni correction would yield. Across seven tests (pictures = 1, videos = 1, PINs = 4, passphrases = 1 [not significant]), the adjusted threshold is $p < 0.00714$. Even under this conservative correction, the results for pictures, videos, and ATM PINs (three digits in exact order, three digits in any order, and two digits in exact order) all remain statistically significant.

DISCUSSION

Selecting and Organizing Participants

Recruiting the public for paranormal experiments holds promise for identifying individuals capable of producing statistically significant results. 62% of participants demonstrated potential psychic power, defined operationally as producing at least one submission that advanced to the second phase of judging. Because participants completed multiple independent trials, some proportion would be expected to meet advancement criteria at least once by chance alone. Accordingly, this percentage is reported descriptively as a screening outcome, rather than as an above-chance estimate of psychic performance. Advancement to the second judging phase served only as an initial filter; submissions that advanced by chance but lacked substantive target-relevant information would be expected to be eliminated during the subsequent Detailed Matching stage, which required specific, referee-verified correspondences. Viewed in this context, the observed proportion aligns with earlier observations by Swann, Puthoff, and Targ that a substantial fraction of the general population may exhibit psi-related performance under suitable conditions (Puthoff & Targ, 1976, 1980; Swann, 1983). Harnessing large online populations to identify such

latent talent opens avenues for future research that scale beyond traditional laboratory-based recruitment. Recruiting participants exclusively through Facebook may have introduced sampling biases, which represent a limitation of the study. Some individuals may not have encountered my recruitment posts or ads, either because they lacked Facebook access, or because of the platform's content-distribution algorithms. Additionally, the Facebook groups where recruitment posts appeared were moderated by administrators who could have restricted membership, further limiting reach. Finally, basic computer literacy was required to submit guesses or drawings online, which may have excluded individuals without sufficient technical skills.

Screening potential psychics based on certain criteria may enhance experimental results. Participants who believed they might be psychic had 21.8 times more matching details than those who did not, suggesting that surveying individuals about their beliefs beforehand could help identify those with higher potential. Selecting participants who can work near Spottiswoode's "psychic window" of 12:45 to 14:15 in Local Sidereal Time may also boost performance, as 30% of top performers fell within 90 minutes of this period.

On Judging

Analysis of 1,752 judging rounds showed that judges with moderate confidence may be more accurate at matching submissions to correct targets. The 3 judges with highest confidence in their scoring abilities (scoring between 1.47 and 1.48 on a 3-point scale) had an average accuracy of just 17.8%. Judge 102, by contrast, was accurate 21.58% of the time, even though her self-confidence was near average (1.46) among all judges.

Judges were most accurate when ranking submissions with high numbers of matching details—the stronger a psychic effect, the more visually obvious it was to multiple lay witnesses. If greater numbers of witnesses in intersubjective agreement get us closer to practical certainty that an effect is paranormal (Chambers, 1998; Freeman, 1973), perhaps Internet crowdsourcing could be used to judge submissions using thousands or even millions of lay judges. Alternatively, Artificial Intelligence equipped with language and image recognition models could first count numbers of details matched between submissions and targets, and then submit only high-scoring ones to be manually ranked by hand. This would reduce the number of rounds needing human judging, but also strengthen practical certainty, with A.I. models now being trained on hundreds of billions of parameters (Mitchell & Krakauer, 2023) and capable of detecting minute similarities between images (Alshowaish et al., 2022).

Decoys and Targets

The decoys functioned effectively as controls: they were drawn from the same sources and selected using the same procedures as the actual targets, the decoy pool was sufficiently large that judges rarely saw the same decoy twice, and decoys were intermixed with targets in randomized order. Under these conditions, four of five judges identified the correct target only 18.43% of the time across the entire experiment, a rate slightly below chance expectation (20%). This confirms that the decoys did not inadvertently inflate scoring accuracy.

Image Targets

When it came to image targets, content appeared to help shape psi performance. Targets with prominent geometric features—most notably the cathedral dome and the river depth gauge—produced above-chance hit rates (33% and 67%, respectively) and unusually high numbers of Detailed Matches (13 and 5.5). These findings align with prior findings that remote viewers often perceive abstract geometric elements such as lines, curves, and symmetries before resolving more complex structures (U.S. Army Intelligence, n.d.). The presence of repeating circles, linear patterns, and similar marks may provide stable perceptual anchors thereby facilitating psi access.

Naturalistic scenes also showed evidence of accessibility. Both the forest path and the cemetery elicited accurate descriptions of greenery and environmental features, with hit rates of 67% and 22% and detailed correspondences of 6 and 9.5, respectively.

By contrast, animal targets appeared strongly resistant to psi access, consistently producing failure rates well above chance. For example, the doe in a field was missed in 10 of 12 rounds (83% failure, $p = .023$, $h = 0.71$), and across the category as a whole, animal images produced a 78% all-wrong rate ($p = .0006$, $h = 0.58$). One possible explanation, in line with earlier findings that the nature of a target can shape remote viewing performance, is that images containing prominent facial features—even those of animals—draw attention in ways that bias perception and

disrupt accurate correspondence with the intended target. Studies in parapsychology have long shown that qualities such as entropy, complexity, and "numinosity" (emotional salience) play important roles in influencing success rates (Krippner et al., 2019; May et al., 1994). Meanwhile, cognitive science reminds us that faces hold a unique place in human perception: they reliably trigger strong, automatic processing that can dominate our visual attention (Simpson et al., 2014; Tottenham et al., 2009). When considered together, these strands of evidence suggest a compelling possibility—that the presence of faces may have subtly redirected participants' focus, contributing to the consistently weaker results observed for animal targets in this study.

Video Targets

Although no statistically significant differences emerged across video target categories, descriptive patterns hinted that some content types—particularly emotionally striking or symbolically distinctive imagery—were associated with higher average matches. The clown woman with red lips and *The Shining* clip performed somewhat better than the more ordinary *Sound of Music* scene, suggesting that salient visual or emotional features may provide psychics with more readily accessible details. However, the Kruskal-Wallis analysis showed that these apparent patterns were not reliable statistically, a result likely driven by the small number of submissions per target and the high variability across participants.

Methodological factors also played an important role. Judges scored submissions against a single still frame from each video, rather than the full clip. This meant that impressions related to other parts of the video could not be credited, even if accurate. Because videos unfold over time, they naturally contain a broader range of cues than pictures. Restricting scoring to a single frame likely underestimated the extent of correspondences, particularly in cases where participants described details present elsewhere in the source footage but absent from the chosen still.

From a theoretical standpoint, the role of motion in psi perception remains unresolved. Delanoy (1989) argued that dynamic stimuli may be especially attractive to psychic functioning, perhaps because motion provides multiple shifting perspectives and layers of information that increase the probability of psi access. If this is correct, the weaker statistical showing of videos here may reflect not an intrinsic weakness of motion-based targets, but rather a methodological artifact of still-frame judging. The fact that participants sometimes reported tangential details present in the full video but not in the still frame supports this view, suggesting that motion and narrative continuity may indeed facilitate psi perception—if the scoring system is sensitive enough to capture it.

In sum, while pictures outperformed videos under the current methodology, this difference may be more apparent than real. Static images can be judged in their entirety, whereas videos require scoring methods that can account for temporal unfolding and narrative structure. Future studies should therefore test Delanoy's hypothesis more directly by scoring entire video clips or segmenting them into multiple judged intervals. Such approaches would provide a fairer assessment of whether motion truly enhances psi functioning, as suggested by both theory and anecdotal evidence in the present dataset.

Abstract Thinking During Judging

Psychic impressions may arrive as abstract symbols because remote viewers must interpret sensory input from deep within their minds (SRI, 1986; U.S. Army Intelligence, n.d.). Participant #65 likened an army of gray streetlamps to "elephant trunks" or "belts hanging on a hook." For the target image shown earlier depicting soldiers armed with guns and wearing helmets in a battlefield trench, participant #69 explicitly named "helmets" but also saw "cherries... joined by their stems," and Participant #64 envisioned an "oval shape with two legs." Other symbolic results also appeared for the passphrase target "Church Alert Weeps Yellow," where participants reported images and themes tied to yellow, spirituality, and church symbolism (e.g., bananas, fish, reverence, wine, bread, and the name John).

Examples such as these highlight why judges must engage their imaginations when evaluating free-response experiments. Judges reported that judging was most difficult when no target seemed to align clearly with a submission; in such cases, selecting the best first-place match became a taxing process of elimination that required creative consideration of possible connections. Judges also noted that watching the 15-minute training video beforehand was useful, as it encouraged them to inspect each target closely for potential correspondences—including those that were symbolic, analogous, or surreal.

Following Tangents

Participants sometimes described not only their assigned video targets, but also details from adjacent or tangential material. Participant #6 reported "spirals" and "spinning" that did not match the passphrase target, but clearly corresponded to the *Sound of Music* clip of Julie Andrews twirling in the Alps. Participant #137 described thematic elements of *The Shining*—a mother on vacation in a mountain setting—that were accurate for the full film but absent from the short clip shown. Similarly, Participant #141 mentioned "bubbling" in the frog-jar video and even echoed Shakespeare's *Macbeth*, both of which resonated with imagery present in the original, uncut footage rather than the edited clip used in the study.

These results lend support to Beloff's (1978) proposal that clairvoyant effects may be *teleological*, or goal-directed. In this model, a psychic's perception is not confined to a single object, but extends along threads of shared meaning that link a target to other, related information. This perspective resonates with earlier findings by Puthoff and Targ (1976), who observed that remote viewers often described not only a targeted beacon, but also other elements located at the beacon's site, as though the target itself opened access to a broader semantic context.

The displacement effect observed in this study echoes phenomena reported elsewhere in parapsychological literature. Roe and Flint (2007), for example, documented cases where participants appeared to focus on nearby or conceptually related stimuli rather than the assigned target during remote viewing trials. This suggests that displacement is not simply an error but may be an inherent characteristic of psi functioning, reflecting the difficulty of confining psychic access to tightly bounded stimuli.

The findings point toward a model of psi in which information is accessed through semantic resonance and narrative connectivity rather than purely perceptual correspondence. A short video clip may act as an entry point, but the psychic's perception can spread outward along associative links, reaching related imagery in the uncut film or even symbolically resonant cultural material, as suggested by the *Macbeth* reference. This has important methodological implications. To minimize contextual leakage, future experiments may need to ensure that adjacent or related stimuli are semantically distinct, or employ procedures that isolate targets more effectively. At the same time, these results open an intriguing line of inquiry: if psychics naturally follow semantic threads, then deliberately structured target sets that emphasize narrative or symbolic richness may yield stronger and more consistent effects.

Potential for Collusion

The experiment results revealed two striking cases where psi collusion could plausibly enhance performance. While targeting photos, two participants independently reported complementary impressions of a bicyclist falling into a canal: one sensed "water," "falling," and "crash," while another described a "human head," "outdoors," and "looking to the left." Taken together, these impressions created a fuller and more accurate reconstruction of the target than either provided alone. Similarly, in the ATM PIN trials, pairs of participants each guessed subsets of the correct digits. When combined, these guesses reduced the number of possible permutations to as few as 24, compared with 10,000 when starting from scratch. Such examples suggest that individually partial psi impressions may, when merged, generate stronger predictive power.

These findings align with the notion of group synergy in psi research. Wiseman and Watt (2010), in a mass-participation remote-viewing study, demonstrated that aggregating many independent impressions improved accuracy above chance. Their work suggests that collective psi contributions can outperform individual attempts, consistent with the pattern seen here. At the same time, methodological critiques of earlier psi experiments caution that apparent convergence can be confounded by inadequate controls. For example, Hyman and Honorton's (1986) evaluation of Ganzfeld protocols emphasized the need for strict isolation, blinding, and independence of responses to ensure that observed correspondences reflect psi rather than subtle cues or inadvertent influence.

Taken together, the results highlight both the promise and the challenge of psi collusion. On one hand, the convergence of independent impressions may represent a genuine distributed cognition effect, where psi information manifests only when pooled across individuals. On the other hand, without rigorous controls, such convergence risks being dismissed as methodological artifacts. Future research might explicitly test whether deliberate collaboration among skilled participants enhances psi signal detection, while simultaneously applying safeguards to ensure independence of responses.

Evidence for Psychic Hacking

During the Star Gate era, two principal standards were employed to judge whether an event should be deemed paranormal. The first was statistical: researchers examined the probability that an observed outcome could occur under the null hypothesis of chance (Puthoff & Targ, 1976; Utts & Heckard, 2015). The second was observational: if multiple independent witnesses observed an apparently otherworldly event, and alternative explanations such as fraud, hallucination, or error were rigorously excluded, then the event could be considered paranormal with *practical certainty* (Cartwright, 1979; Chambers, 1998). Practical certainty is a high evidentiary threshold, sufficient in courts of law to justify a guilty verdict even in capital cases. By extension, observational evidence of this strength should be considered sufficient to classify an event as paranormal, provided confounds have been convincingly ruled out.

The present experiment satisfies both standards. With respect to the observational standard, numerous participants produced descriptions that corresponded to details of digital targets stored on computers thousands of miles away. Similarities between submissions and targets were judged as plainly recognizable by multiple independent scorers. These outcomes were particularly compelling in the picture and video conditions, since—unlike ATM PINs with a finite set of possibilities—pictorial targets could encompass virtually any imaginable image.

The results also meet the statistical standard. Analyses revealed highly significant effects during picture rounds (p = .000597), videos (p = .000911), and ATM PINs with three digits in any order ($p = 4.12 \times 10^{-6}$) or two digits in any order ($p = 7.84 \times 10^{-6}$). These results jointly reject the null hypothesis and support the conclusion that the outcomes observed in this study were not attributable to chance.

Is Cybersecurity Broken?

Psychic hacking may pose dangers to data security and privacy. Psychics were successful even though they had no physical access to the target computers located miles away at an undisclosed location; the computers were hardened against attack with networking disabled; target data was protected by strict file permissions and access monitoring; and, computers' screens were dimmed to black and shielded throughout the experiment. Even the presence of two target computers did not slow psychics down: participants still managed to pinpoint their assigned targets on the correct, randomly assigned computer. We also saw that the number of brute forcing guesses needed to obtain an ATM PIN number, or to fill in details about a pictorial target, could be potentially accelerated by combining impressions from colluding psychics. Psychics also demonstrated they could "rummage around" in computers—analogous to how hackers might snoop after gaining access to a system—to describe unintended targets adjacent to intended targets. Some psychics even described tangential details about a target even though those tangents were not present in the experiment (as we saw with *The Shining* clip), suggesting remote viewers can follow tangential lines joining data dispersed across different locales.

Psychics also described randomly chosen target data, even though it was not human-readable within the computers because it existed purely as electronic, binary, or other signals passing through wires and circuitry. Each digital target was also stored in its computer alongside gigabytes of other data—operating system files, application programs, and the like—yet despite this chaos, psychics were still able to identify the targets. Therefore, obfuscating targets by hiding them amidst non-target data may not prevent psychic hacking.

The question of whether cybersecurity is broken depends on how much security is needed. Deniability—the denial that a top-secret black ops program exists, for example—may be at risk, since remote viewers can uncover data without prior knowledge of its existence, as we saw with psychics who described video targets without knowing videos were even part of the experiment. Compartmentalization may also be vulnerable, since psychics aiming at an intended target can describe other, unintended targets. Storing data offline may be no privacy guarantee, given that psychics can sense tangential details about intended targets, even when those details are not stored nearby, as we saw with *The Shining*. Even confidentiality of state secrets held in air-gapped computers housed in underground bunkers may not be safe enough, since experiment results showed psychics can operate from miles away; pass through physical barriers; describe data in computers that have no network connectivity or working screens; locate targets on specific machines even when other machines are nearby; and, locate targets lost in a sea of obfuscated non-target data.

Countermeasures against psychic hacking may be possible. For example, this experiment did not test whether

encrypting target data renders it unreadable to psychics. Data stored in quantum computers might also pose challenges to psychics, since the very act of observing targets remotely might disrupt their superposition states (Saini & Shiwani, 2012). Finally, there is some evidence that people can sense when they are being stared at (Sheldrake, 2008), so in some distant future, perhaps remote viewers could be employed to detect—or even psychically disrupt—rogue psychics engaged in hacking or espionage.

LIMITATIONS

Participant Independence

It was not possible to guarantee that each individual participated only once in the experiment. Email addresses were used as the primary mechanism for identifying unique participants: upon enrollment and informed consent, participants provided an email address and were sent a unique, one-time access link required to enter the study, and the experiment website prevented reuse of the same email address. Internet (IP) addresses were collected for technical and analytical purposes (including calculation of Local Sidereal Time), but were not used to enforce participant uniqueness, since IP-based identification is unreliable in Internet-based research due to common practices such as VPN use, dynamic address reassignment, or switching networks. Consequently, a determined individual could have registered multiple times using different email addresses. Importantly, this limitation does not necessarily bias results in any particular direction; duplicate participation would be expected to introduce additional variance, rather than systematically inflate or suppress effect sizes. Prior behavioral research has noted that fully preventing duplicate participation is infeasible in online studies without direct identity verification (Bowen et al., 2008; Chandler et al., 2020; Curran, 2016). While in-person or real-time video verification represent the most reliable methods for ensuring participant independence, such measures negate the primary advantage of Internet-based experimentation—namely, scalable, automated data collection from geographically distributed samples. Online studies must therefore acknowledge this tradeoff as a methodological limitation, rather than a source of systematic bias.

Target Context and Front-Loading

One procedural limitation relates to informing participants that the target computer was located somewhere in Los Angeles. This detail was shared with the intention of helping participants feel more confident. In retrospect, however, specifying a particular location may have unintentionally introduced contextual influence, as some research shows that task-irrelevant information can affect how people process and respond to task demands (e.g., Katz, et al., 2022). In this case, the city location may have invited analytical associations or associative guessing unrelated to the target itself, and thereby added non-psi noise to the data.

CONCLUSION

Borrowing protocols from Star Gate-era remote viewing research, this double-blind experiment showed that psychic hacking appears possible. Many of the study's 146 participants culled from the public proved capable of describing randomly chosen pictures, ATM PIN numbers, video clips, and passphrases present in secure computers miles away. Each submission was judged using rank-order scoring by 3 randomly selected judges, with many results satisfying the U.S. Government's own observational and statistical rubrics for ruling outcomes as paranormal. The numerous successes—even though the experiment relied on participants who were not trained in remote viewing protocols—opens the possibility of performing psi experiments using psychics crowdsourced from thousands or even millions of Internet participants.

Results revealed that some psychics can discover information not previously known in a computer, much like how a typical computer hacker might explore a system after gaining access. While aiming for a target, some psychics inadvertently described adjacent targets. Similarly, participants who were not told that video targets were part of the experiment still described details of video clips that were playing. Some psychics also described tangential details about a target even when those details were not physically present, suggesting it may be possible for certain remote viewers to follow tangential connections between targets and related information elsewhere.

Analysis of the experiment's results, including participants' responses to psychic-history intake surveys, yielded ideas for improving future experiments. Choosing picture targets featuring geometric patterns or scenes of nature may help attract remote viewers' psychic attention. Operating experiments between 12:45 and 14:15 in Local Sidereal Time may reduce cosmic interference that attenuates psi signals. Instructing participants to focus their

intention, meditate, and work in quiet spaces may help as well. Aiming multiple psychics in collaboration at the same target could yield more details about the target faster, and possibly reduce the brute force guessing required for numeric targets. Belief in one's own psychic potential was strongly associated with performance outcomes, with a small number of confident participants accounting for approximately 21.8 times more matched target details than non-believers.

The experiment exposed potential cybersecurity threats. Deniability, compartmentalization, and data confidentiality may be especially vulnerable—even when the data is stored on hardened, stand-alone systems—since psychics can seemingly pass through any medium from miles away to discover and describe previously unknown targets, as well as information physically near, or tangentially related to, those targets.

Defenses against psychic hacking may exist. Encryption might inhibit a psychic's ability to readily access cleartext data, provided remote viewers cannot read the data in a decrypted form at some point in the past or future. Data in quantum form, which is potentially susceptible to observer effects, could be corrupted by psychics attempting to retrieve it. Finally, since there is evidence that people can sense when they are being observed, psychics might be recruited as defenders to detect rogue psychics in the act of spying, or even to use remote viewing skills to interfere energetically with espionage attempts.

DISCLOSURES

The author declares that there are no conflicts of interest related to the conduct, analysis, or reporting of this research.

The author supports transparency and open science and plans to make this experiment's pool of targets publicly available for use by other researchers. However, release will occur only after additional experiments with these targets are completed. For now, the targets are being withheld to avoid potential double hermeneutic challenges.

This article was adapted from the author's doctoral dissertation on psychic hacking (Wichmann, 2023).

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RESEARCH ARTICLE

The Myth of Publication Bias in Psi Research: A Comparison Between Parapsychology and Mainstream Psychology

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ABSTRACT

This study investigates the persistent claim that publication bias contaminates (indeed, possibly inflates) the scientific evidence for parapsychological phenomena, specifically extrasensory perception (ESP). We analyzed 165 published studies (243 experiments) from recent ESP meta-analyses and 40 preregistered confirmatory experiments from the Koestler Parapsychology Unit Registry. We compared these two datasets to datasets from the field of mainstream psychology. Our primary measure was the percentage of peer-reviewed experiments reporting null statistically significant outcomes (i.e., $p > 0.05$). Results indicate that the rate of published experiments with null outcomes in ESP research is considerably higher than that observed in psychology, for both non-preregistered and preregistered experiments. While the publication bias is substantially smaller, suggesting more balanced reporting of parapsychological outcomes compared to mainstream psychological research, we cannot conclusively show that the statistical evidence for ESP is not an artifact of that relatively minimal bias, but a number of earlier tests on the file-drawer problem do undermine that assumption.

KEYWORDS

File-Drawer Problem, Psychology, Parapsychology, Publication Bias, Questionable Research Practice.

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INTRODUCTION

Publication bias describes the tendency for peer-reviewed journals to favour (i.e., publish) studies that report statistically significant results supporting researchers' hypotheses while non-supportive studies with non-significant, negative, or chance results, are rejected (i.e., not published). This selective reporting is a questionable research practice (QPR, Larsson et al., 2023) because it creates a distorted view of the scientific literature, often making the evidence for phenomena appear more substantial or prevalent than is warranted.

In the field of psychology, some will argue that publication bias is over-stated. For example, Dalton et al. (2012) argued that their five studies provided "consistent empirical evidence that the file-drawer problem does not produce an inflation bias and does not pose a serious threat to the validity of meta-analytically derived conclusions as is currently believed" (p. 222). However, their findings are confined to industrial/organizational psychology that

do not necessarily generalize to experimental psychology or fields with different research incentives. Furthermore, other meta-analyses have reported consistent publication bias in psychology—e.g., stereotype threat (Lamont et al., 2015) and social priming (Mac Giolla et al., 2024).

We may therefore accept that publication bias exists, but unfortunately, born of this bias is a claim that has persisted in the long term that the scientific evidence for so-called parapsychological phenomena (e.g., extra-sensory perception, or ESP) is severely contaminated by publication bias (Francis, 2012; Hyman, 2017; Kennedy, 2004; Wiseman & Watt, 2006).

We must add that the problem of publication bias may not be entirely attributable to decisions made at the editorial level, but can start with researchers/experimenters who, in the past, may have refrained from submitting to journals any of their studies they deemed 'unsuccessful', meaning their statistical test results did not reach significance.

The problem with publication bias (in the specific context of the present paper) invariably leads to accusations of selective reporting, giving rise to the file-drawer problem, often raised against psi meta-analyses, especially in the ganzfeld domain (see Hyman, 1985, 2017). This problem was recognised and acknowledged in 1975, resulting in the Parapsychological Association (PA) Council adopting a strict policy of opposing the exclusive publication of studies with only positive (psi-supportive) outcomes. Thereby, "*negative findings have been routinely reported at the association's meetings and in its affiliated publications*" since that date (Bem & Honorton, 1994, p. 6; see also Honorton, 1985, p. 66).[1] This policy encouraged researchers to submit their papers regardless of experimental outcomes. Bierman et al. (2016) actually mention this publication policy, and they stated that "a non-significant outcome is not a danger to the career of the parapsychologist" (p. 8).

Nevertheless, no policy is water-tight or fool-proof, and given the apparent weirdness of many parapsychological phenomena, it seems an obvious and logical step for some skeptical scientists and like-minded critics to conclude that, *due to the persistent problem of publication bias, the available evidence is not only unreliable but probably not valid* (Francis, 2012; Wagenmakers et al., 2011). In this report, we present some statistics that should undermine those claims and hopefully convince the skeptic that:

1. The scientific evidence for parapsychological phenomena is not an artifact of publication bias, and,
2. if any evidence for publication bias exists, it is of no consequence to the field of parapsychology but may be a problem for mainstream psychology.

The statistical method we use involves basic percentage comparisons of collections of studies, both psychological and parapsychological. The statistics from the discipline of psychology are drawn from earlier meta-analyses and reviews (for details, see the sub-section Data Evaluation in the Method section). Six key psychological studies were used: Fanelli (2012), Klein et al. (2018), Open Science Collaboration (2015), Scheel et al. (2021), Toth et al. (2021), and van den Akker et al. (2024). These studies examined trends such as the decline in published null results, variability in replicability and reproducibility rates, the rise in positive findings, and patterns in pre-registration practices.

Similarly, statistics were drawn from extant literature in the sub-discipline of parapsychology (Duggan & Tressoldi, 2018; Mossbridge et al., 2012; Storm & Tressoldi, 2023; Storm et al., 2010; Tressoldi & Katz, 2023; Tressoldi & Storm, 2024). These studies also provided (or linked to) the sources of databases of four experimental domains (Forced-Choice, Remote Viewing, Ganzfeld, and Presentiment. For definitions, see Literature Search in the Methods section). These studies enabled further analyses and more concise comparisons within the field.

We argue that cross-disciplinary comparisons we undertook in the present study are valid and informative. Specifically, and for our purposes, the two domains contribute empirical findings relevant to publication trends, but importantly, the percentage differences between disciplines and between domains refer to counts of studies and are therefore quantitative (not qualitative).

METHOD

Literature Search

We sampled the recent meta-analyses on ESP studies that used the four most prominent experimental protocols: namely, Forced-Choice (Storm & Tressoldi, 2023), Ganzfeld (Tressoldi & Storm, 2024), Remote Viewing (Tressoldi & Katz, 2023), and Presentiment (Duggan & Tressoldi, 2018). These so-called 'paradigms' or experimental domains, are defined thus:

- A 'forced-choice' test is a test of ESP where the target-guess is "one of a limited range of possibilities which are known in advance" (Thalbourne, 2003, p. 44);

- The ganzfeld is a "special type of environment (or the technique for producing it) consisting of homogenous, unpatterned sensory stimulation" to the eyes and ears of the participant, who is usually in "a state of bodily comfort" (Thalbourne, 2003, p. 45). The ESP test during ganzfeld is basically free-response, meaning "*the range of possible targets is relatively unlimited and is unknown to the percipient, thus permitting them to respond freely with whatever impressions come to mind*" (Thalbourne, 2003, p. 44);
- Remote viewing is a "neutral term for general extra-sensory perception introduced especially in the context of an experimental design in which a percipient attempts to describe the surroundings of a geographically distant agent" (Thalbourne, 2003, p. 107.);
- Presentiment refers to "*an unconscious form of precognition, that is, pre-feeling (sentiment) as compared to pre-knowing (cognition)*" (Radin, 2016).

We included only those studies published in peer-reviewed scientific journals so the comparison of those studies with studies published in psychological journals would be valid. This criterion gave us 249 experiments from a total of 171 studies. The list of selected studies is available at https://zenodo.org/records/16947132.

Furthermore, from the Koestler Parapsychology Unit (KPU) Registry (Watt & Kennedy, 2015), a dedicated open-access repository for preregistered studies in parapsychology, we extracted all outcomes of confirmatory experiments completed by June 30, 2025 since its inception in the fall of 2012, based both on the outcomes posted on the Registry by the authors of the studies, and on the relevant published papers if available. A list of these studies is available at the same link.

Positive Outcome Criterion

For each experiment included in the selected studies, we checked whether the statistical findings that were to support the hypotheses under investigation reached a statistical threshold of $p < 0.05$ (one-tailed), which would support the research hypotheses provided the effects were in the direction hypothesized (e.g., a theory-driven *positive* correlation was hypothesized and found). While we could not ascertain whether some experimenters set a more stringent alpha (e.g., $\alpha \leq 0.01$), we chose 0.05 because it is still the most used in parapsychology and psychology notwithstanding other criteria such as effect size or Bayes Factor estimation.

Data Evaluation

For parapsychological studies, we calculated the percentage of studies with statistically non-significant (null) results (i.e., studies that failed to reject the null hypothesis). The difficulty here is that some studies reported multiple experiments of which some were significant, some not. We defined a 'significant study' as being a study with *at least one* statistically significant experiment. Accordingly, we also report percentages of studies *and* experiments with significant results.

For psychological studies, we drew statistics from the six previously mentioned psychological studies: Fanelli (2012), Klein et al. (2018), Open Science Collaboration (2015), Scheel et al. (2021), Toth et al. (2021), and van den Akker et al. (2024). These studies assessed (i) declines in the number of published studies with negative results (Fanelli, 2012); (ii) variations in replicability rates (Klein et al., 2018); (iii) reproducibility rates in psychology (Open Science Collaboration, 2015); (iv) increases in the number of published psychological studies with positive results (Scheel et al., 2021); and (v) pre-registration rates (Toth et al., 2021; van den Akker et al., 2024).

RESULTS

Figure 1 shows the percentage of *null statistical outcomes*[2] of the parapsychological experiments published in peer-reviewed journals (i.e., 168/249 = 67.5%) compared with those observed in three different studies examining the same issue related to mainstream psychological studies (Fanelli, 2012, Scheel et al., 2021; Toth et al., 2021). For actual parapsychological studies without *at least one* significant experiment (i.e., those studies that did not meet the minimum to justify publication under the skeptical hypothesis explaining publication bias), the percentage is 63.7% (109/171).

So, the risk of publication bias of parapsychological experiments is still much lower than that of mainstream psychology, ranging between 63.7% and 67.5%.

Percentages for the four experimental domains are shown in Table 1. We see that success rates for Remote Viewing (RV) and Presentiment (PS) are considerably higher than Forced-Choice (FC) and Ganzfeld (GZ), but still generally less than for psychology. We argue that these outcomes do not suggest publication bias, see more in the Discussion.

Figure 2 shows the percentage of experiments with null statistical outcomes (55/71 = 77.5%) observed in the

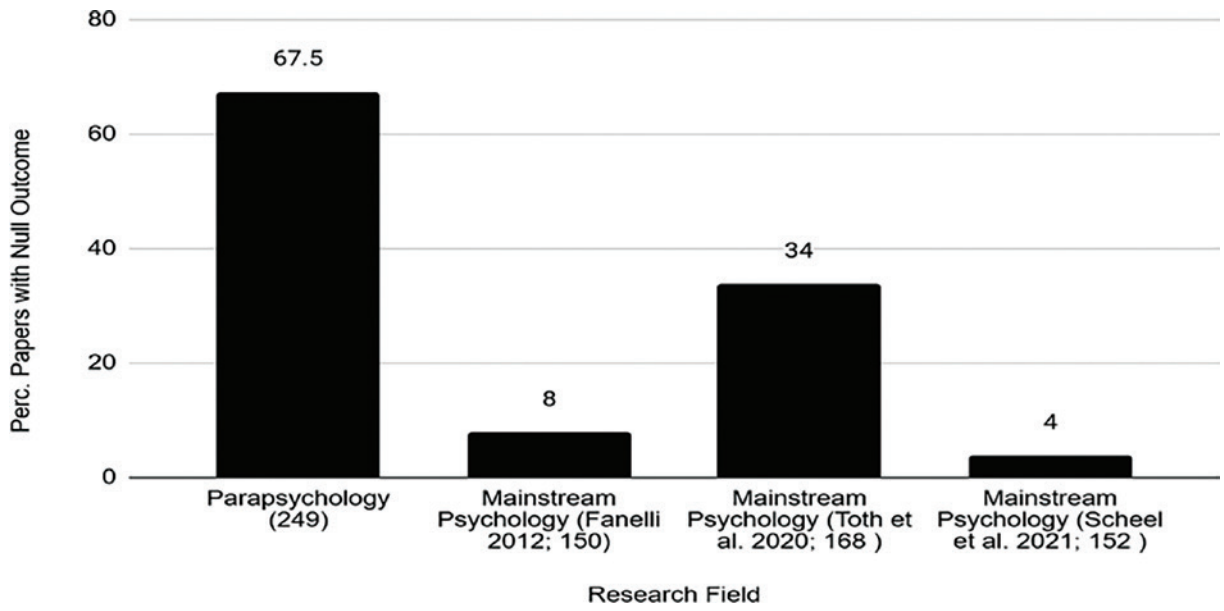

Figure 1. Percentage of papers published with null outcomes observed in non-preregistered experiments. In parentheses are the number of studies examined.

Table 1. Counts of Studies and Experiments in Four Psi experimental protocols (FC, GZ, RV & PS) reaching a significant statistical outcomes.

Paradigm	Studies	Sig. Studies (%)*	Experiments	Sig. Experiments (%)
Forced-Choice (FC)	84	21 (25.0%)	123	29 (23.6%)
Ganzfeld (GZ)	46	13 (28.3%)	66	16 (24.2%)
Remote Viewing (RV)	22	14 (63.6%)	26	17 (65.4%)
Presentiment (PS)	19	14 (73.7%)	34	19 (55.9%)
Totals	171	62 (36.2%)	249	81 (32.5%)

*Number of studies with *at least one* statistically significant experiment.

preregistered confirmatory hypotheses included in the 40 studies reported in the KPU Registry, compared with those observed in five different studies related to preregistered experiments related to mainstream psychological phenomena (Klein et al., 2018; Open Science Collaboration [OSC], 2015; Scheel et al., 2021; Toth et al., 2021; van den Akker et al., 2024).

In both Figures 1 and 2, it is evident that both non-preregistered and preregistered experiments related to ESP show percentages of published experiments with null outcomes considerably higher compared to experiments related to mainstream psychological phenomena.

The File-Drawer Problem

A suggestively low publication bias may mean the field of parapsychology is more open to reporting all outcomes. The file-drawer problem (explained in the Introduction) must therefore still be considered a key concern to the field. Critics may argue that sufficient numbers of non-significant studies may still remain unpublished, and if they had been published and included in the meta-analyses, the significant overall results would shrink to non-significance. In the following four cases, we argue that past research on this problem provides little evidence for the critic's argument:

Forced-Choice

Similar to the finding above, Storm and Tressoldi (2023) noted that 29 (21%) of 141 studies in their homogeneous database of forced-choice experiments is not large, and they argued that their "database is not likely to have been contaminated by publication bias" on the basis that a much larger percentage of significant studies could be expected "as a result of authors withholding (not publishing) unsuccessful studies" (p. 526), meaning the statistical test(s) did not yield results that reached significance at the pre-determined

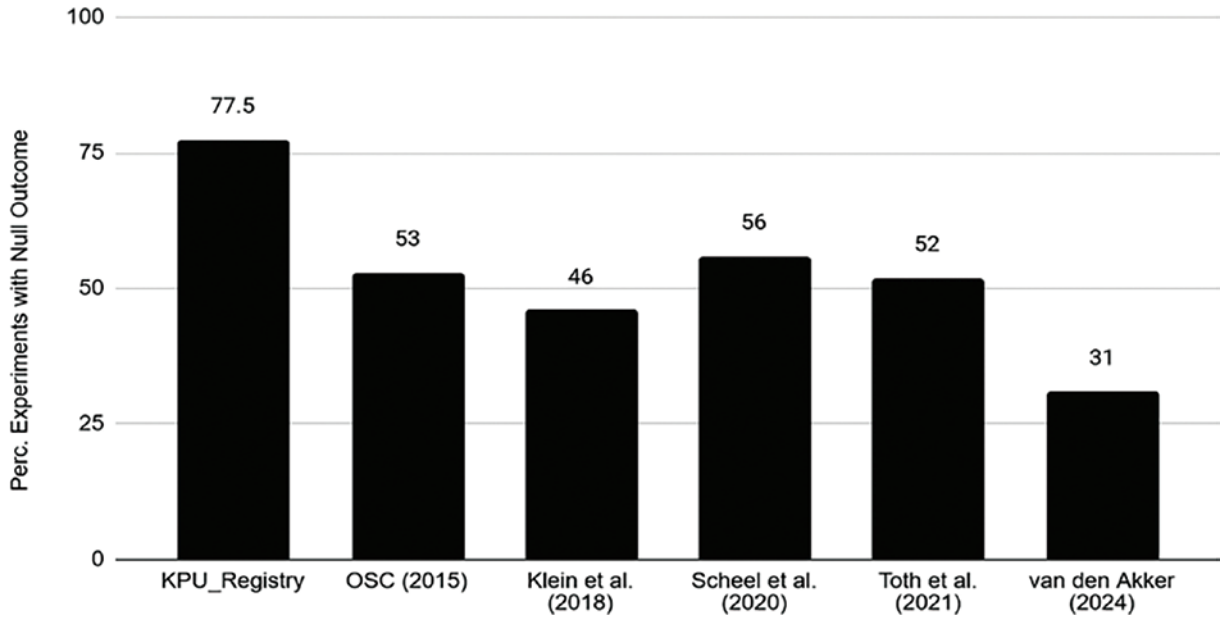

Figure 2. Percentage of experiments with null statistical outcomes observed in preregistered studies.

critical alpha level (typically $\alpha < 0.05$). However, they also noted that the majority of studies in their meta-analysis (91%) were "either published in journals specializing in parapsychology or journals known to be favorable to parapsychological research [regardless of the findings]" (p. 526).

Ganzfeld

An early assessment of the ganzfeld domain by Storm et al. (2010) gave a conservative estimate of 384 unpublished studies necessary to reduce the significance level to chance, based on their findings of 27 ganzfeld studies with significant positive outcomes in a database of 102 studies (pp. 477-478). It was regarded as unlikely that 384 additional studies with non-significant outcomes remained unreported and were tucked away in file-drawers at that time (about four unpublished studies for every one published study). Given the few researchers in parapsychology, and the great effort required to run a typical ganzfeld study, it is unlikely that such a number of unpublished studies exists.

Furthermore, the most recent meta-analysis by Tressoldi and Storm (2024) passed four different tests testing the publication bias. In particular, in a sensitivity analysis by Mathur and VanderWeele (2020), it was observed that for publication bias to attenuate (to "explain away") the observed overall effect size, affirmative results would need to be at least four-fold more likely to be published than nonaffirmative results.

Remote-Viewing

Tressoldi and Katz (2023) found no evidence of publication bias in their meta-analysis. The percentage of studies with *non-statistical positive results* (i.e., studies with non-significant test results yet were in the direction hypothesized) was 34.2%, and by using two modern statistical tests, the three-parameter selection model (Coburn & Vevea, 2019), and the Robust Bayesian Meta-Analysis (Bartoš et al., 2022), both showed that the overall results were not contaminated by publication bias.

Presentiment

In the meta-analyses by Mossbridge et al. (2012), and of Duggan and Tressoldi (2018), the percentages of studies with non-statistical positive results were respectively 54% and 58%. Furthermore, publication bias was found to be unlikely using, respectively, the Orwin (1983) and the Copas tests (Jin et al., 2015).

DISCUSSION

Publication bias refers to the practice of publishing in scientific journals (thus making public) only those studies with positive outcomes that support researchers' hypotheses. With this publication filter, whereby negative outcomes do not see the light of day, many phenomena may be spuriously supported by a restricted (biased) presentation

of scientific evidence. The present study aimed to test this claim that scientific evidence for ESP may largely be an artifact of publication bias. From the perspective of parapsychological domains, *combined* as single heterogeneous database (forced-choice, ganzfeld, remote viewing, and presentiment), we found that the biases were lower for preregistered and non-preregistered studies when these two datasets were compared to the same two respective categories in the psychological literature.

The results illustrated in Figures 1 and 2 clearly show that the claim of publication bias often leveled against parapsychology is most likely a myth. In fact, authors conducting ESP research endorse the methodological practice of publishing both positive and negative statistical outcomes of their experiments at a higher level than their peers who investigate mainstream psychological phenomena.

From the perspective of the four major parapsychological domains *considered separately* (forced-choice, ganzfeld, remote viewing, and presentiment), we found that the success rates for experiments in Remote Viewing (65.4%) and Presentiment (55.9%) were considerably higher than those in Forced-Choice and Ganzfeld, though still not higher than for psychology (see Figure 1). We next offer to explain these higher rates, but we point out that the reasons given here rule out publication bias.

First, Remote Viewing:

- Protocol flexibility: Remote Viewing often allows participants to describe targets in free-form ways, which can be more forgiving and open to interpretation than Forced-Choice tasks.
- Judging methods: Evaluations often involve blind judging or rank-order matching, which can increase the likelihood of detecting subtle effects.
- Participant selection: Studies frequently use individuals with prior experience or interest in psi phenomena, which may enhance performance.

Second, Presentiment

- Physiological measures: These studies often rely on unconscious bodily responses (e.g., skin conductance, heart rate) before a stimulus is presented. These are less prone to subjective interpretation and may reveal subtle anticipatory effects.
- Automated data collection: Reduces experimenter bias and increases replicability.

Added to this defence, we argue that Forced-Choice and Ganzfeld lag behind the other two domains for the following reasons.

First, Forced-Choice:

- Task fatigue: Repetitive guessing tasks can lead to boredom or disengagement, which may suppress psi effects.
- Smaller effect sizes: Even when effects are present, they tend to be weaker and more variable (hence, a higher rate of non-significant experiments/studies reported).
- Replication uncertainty: Large-scale replications often fail to reproduce earlier findings, possibly due to subtle psychological factors or lack of psi-conducive conditions.

Second, Ganzfeld:

- High variability: Results depend heavily on participant traits, experimental setup, and even the emotional content of target stimuli.
- Resource intensity: Ganzfeld experiments are labour-intensive and costly, limiting the number of high-powered replications.

Thus we find discrepancies because Remote Viewing and Presentiment benefit from more psi-conducive conditions, greater methodological flexibility, use of non-conscious or intuitive processes, and participant selection based on traits linked to psi performance. Forced-Choice and Ganzfeld, however, are more rigid, resource-heavy, and sensitive to subtle design flaws, making them more vulnerable to replication issues and lower success rates.

Having considered the biases, albeit minimal compared to mainstream psychological phenomena, from the perspective of the file-drawer problem, we conclude that the argument for publication biases in the four psi domains is unwarranted.

Study Limitations

The results of this study cannot be generalized to experiments related to mind-matter interaction phenomena (i.e., psychokinesis), given the lack of recent meta-analyses related to such phenomena. However, it is plausible to expect the same methodological practice from authors who investigate such phenomena, given that most of them investigate ESP.

Due to the data being from extant databases not especially prepared for the present study (along with our arguably *post hoc* approach), this paper remains retrospective and indeed exploratory. Also, we could not test to see if

the reported differences were significant, so the element of chance has not been eliminated, though we suggest the chance factor is unlikely to have arisen so frequently. We note too that it was not possible to conduct more acute investigations of the extenuating circumstances that might underly *disproportionality* in publication bias (e.g., publication bias occurring for reasons unique to psychology to do with research designs, statistical thresholds, or publication practices that make publication bias fundamentally different from other fields; in particular, parapsychology). This point leads to the following *caveat*:

We cannot conclusively show one way or another that psychological research may naturally be more successful in terms of significance levels than parapsychological research, or that this is even the case. And while we might ask why the parapsychological studies are not as successful or more successful, we must still ask, Do psychological studies only *seem* as successful as they are? In fact, as we argued in the Introduction, publication bias does exist in psychology, but the comparatively high success rate may be because it has the theoretical underpinnings that parapsychological research lacks. Psi theories simply do not have a proven track record (i.e., they often fail to find support). While many studies conducted by psychologists may have a strong component of theoretical novelty, in all probability they can legitimately rely on taken-for-granted assumptions with a proven track record. Of course, as we have said, that does not negate the presence of publication bias, nor undermine the reality of the replication crisis in psychology which often lacks strong overarching theoretical frameworks (see Muthukrishna & Henrich, 2019).

Finally, conceptually (as one reviewer remarked), some may say a more critical approach would not have focused on *p* values, but on replicability, which is better demonstrated through repeated studies or validation via training and test samples, an approach often underemphasized not only in psychology but also in parapsychology. However, these issues are beyond the scope of this study, as is an investigation of QRPs other than publication bias. One final *caveat* worth repeating, our study is not a categorical proof of the psi hypothesis.

CONCLUSION

Having noted the limitations of this study, it may be more the case that ESP studies are as legitimately successful as we have shown them to be, and less the case (if at all) that they represent a completely different field of inquiry ontologically speaking. Also, for its methodological rigour, transparency under intense scrutiny, and openness about null (and even negative) results (and publication thereof), as well as methodological limitations, parapsychological research is frequently cited for its meticulous controls and replicability standards (Boccuzzi, 2024; Ferada, 2018). These facts also justify our claim that publication bias is lower in parapsychology than in psychology as shown in the present study.

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END NOTES

1 The term 'negative findings' means the studies failed to find evidence for psi phenomena either because statistical test results were not significant even if they indicated effects in the direction hypothesized, or *are* significant but effects were not in the direction hypothesized.

2 A *null statistical outcome* means the test result, derived from analysing data following the principle of Null Hypothesis Statistical Testing, did not reach a significant *p* value (i.e., $p < 0.05$) in any tested hypothesis.

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RESEARCH ARTICLE

An Information-Theoretical Perspective on Consciousness: Implications for the Treatment of Death Anxiety

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ABSTRACT

In this paper, we propose a trans-materialist information-theoretical approach to a full spectrum of conscious experience, from its normative embodied mode as part of an integrated brain/mind system to altered modes of consciousness, including nonlocal and near-death experiences (NDE). It allows for bridging the Cartesian gap and resolving the "hard problem" of non-material mind arising from material brain. The first part focuses on quantum information science, specifically an extension of the Bohmian model that re-defines brain/mind from a Cartesian duality to a unified quantum/classical system based on implicate informational dynamics that underlie both the physiological processes of the brain and phenomenological processes of the mind. In this light, consciousness, personal identity and free will are seen as informational processes that incorporate both classical matter/energy and quantum field domains. We then review reports of veridical information obtained during near-death experiences (NDEs), which support the view of consciousness and self-identity as *coherent informational patterns* (CIPs) that may persist in the absence of a functioning brain. The second part will focus on using the informational framework as a clinical tool in alleviating the ubiquitous experience of existential death anxiety.

KEYWORDS

consciousness, death anxiety, information, meta-reductive, near-death experience, quantum.

> "Self-awareness is a supreme gift, a treasure as precious as life. This is what makes us human. But it comes with a costly price: the wound of mortality. Our existence is forever shadowed by the knowledge that we will grow, blossom, and, inevitably, diminish and die." Irvin Yalom, Staring at the Sun, 2009

INTRODUCTION: BRIDGING THE CARTESIAN GAP

Nearly four centuries after Galileo, Descartes, and Newton established the foundation of natural sciences, we still do not have an effective science of consciousness. The Cartesian gap between the objective physical brain as part of objectively defined physical reality and subjective first-person phenomenology of conscious experience has proven resistant to any reductive materialist approach (Nagel, 2012). It is the authors' contention that any consistent model of conscious human experience, whether applied to normative brain/mind waking/sleep modes or to extended forms of consciousness associated with nonlocal or near-death experience (NDE) will require a trans-materialist approach rooted in the quantum informational dynamics of evolving natural systems.

Descartes' famous dictum: "I think, therefore I am" assigns immaterial authority to the existence of mind and consciousness in relation to the postulated brain/mind duality. This axiomatic proposition, which essentially introduced material/immaterial dualism that postulates the existence of an independent non-physical domain for the human conscious experience, has been reinforced by Descartes' proposed reductive methodology for the development of the nascent natural sciences. His reductive method is applied in the form of a 3-step algorithm that involves *reduction*, *analysis*, and *synthesis* in exploring the material world. However, the exclusive application of formal reductive logic inevitably leads toward the self-referential paradox of the *reductive epiphenomenalism of consciousness* (REC) expressed in the form of: "I think, therefore I am not" (Wegner, 2003). Here, only the physical brain can carry functional causal authority, while mindful human consciousness is an epiphenomenal illusion within a materialist paradigm. This philosophic attitude is common in relation to eliminative materialist positions, which effectively erase the mind, consciousness, and free will from existence on the grounds that they are reductively incompatible with the material world in which we live (Anthis, 2022). Another, equally misleading philosophical direction, involves dualistic approaches, which confuse *non-material* physical processes with a "non-physical" domain that has no tangible way of interacting with the material brain or wider physical reality (Spackman, 2013).

All of us have a first-person *experience of being conscious*, i.e. possessing a sense of personal identity (a sense of Self extended in time)[1], intentionality (free will), a range of emotional attachments, intellectual pursuits, relational engagements, and cultural identity that allow us to create a sense of meaning and purpose in our lives. While the nature of consciousness and its relation to the brain remain elusive, its basic tasks involve *experiencing ourselves* in the world and adapting to our physical and social environments.

Another universal aspect of being conscious is that our experiences are corporeal, inextricably linked to the physical body we are born into and patterns of neural network connectivity in our brains. The corporeal nature of self-experience is so universal that it may be hard to imagine a disembodied conscious state. Yet, transpersonal experiences have been described in every culture throughout human history, from shamanic journeys to expanded consciousness states, out-of-the-body and near-death experiences (OBEs and NDEs), or even ordinary and lucid dreaming, where corporeal rules no longer apply. Other examples include *psi* phenomena such as telepathy, clairvoyance (distant awareness) and precognition (awareness of future events), which have also been reported in high-affect psychoanalytic settings and where veridical information may become available in the absence of direct sensory data (Cardeña, 2018; Shapiro & Marks-Tarlow, 2021).

Yet another barrier to conceptualizing disembodied conscious experience is the prevalent materialist stance of the physical and psychological sciences today. It is indisputably true that reflective awareness in *Homo sapiens* is associated with a functioning brain, although other possibilities may exist for evolutionarily more distant species, such as crows, octopi or even plants (Godfrey-Smith, 2017). Ontologically, we can observe the emergence of self-awareness in the process of infant development, which is associated with maturation of left prefrontal language functions between the ages of 18-36 months (Schore, 2015). We can also see alterations of consciousness with pathophysiological changes in the brain such as dementia, or its total disappearance under ordinary anaesthesia. Yet, there are consistent accounts of active awareness and accurate perception of oneself and one's surroundings in a documented state of clinical death (Greyson, 2021; Holden, 2009). Many transpersonal, parapsychological, and near-death accounts tend to be rejected on the grounds that they are incompatible with the established scientific knowledge, but this may be an artefact of the materialist and reductionist perspective, ever since Rene Descartes' (1647) entrenched separation between *Res extensa* of material reality and *Res cogitans* of the immaterial mind.

Faith-influenced notions of gods, souls, or after-death reward/punishment paradigms fall outside the scientific domain. Agnostic schools of thought would consider these beliefs to be impossible to prove or disprove and therefore a matter of faith, while atheistic thinkers will rely on the principle of parsimony: "Pluralitas non est ponenda sine necessitate" – "entities should not be multiplied beyond necessity," seeing them as superfluous to the process of scientific discovery. It is the purpose of this essay to explore NDE experience from a rigorous information-theoretical perspective, which allows us to transcend the Cartesian split and enable a trans-material, *meta-reductive informational paradigm* (MRTIP) in natural and clinical sciences, where conscious experience ceases to be a mere reductive epiphenomenon and plays a causally efficacious part in the extended informational reality (Figure 1).

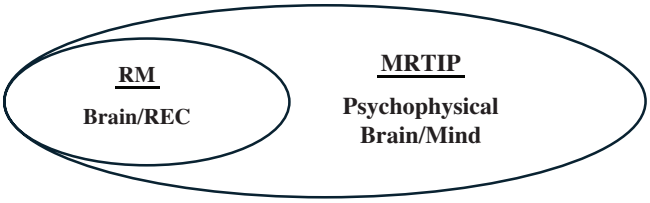

Figure 1. Reductive/materialist framework (RM) as a Successful Special Case, Preserved in a Wider Encompassing Meta-Reductive Trans-material Informational Paradigm (MRTIP). Within RM, consciousness can only be eliminated or incorporated as a reductive epiphenomenon (REC), while MRTIP may allow for a causally efficacious psychophysical brain/mind system.

AN INFORMATION-THEORETICAL PERSPECTIVE ON CONSCIOUS EXPERIENCE

From a cosmological standpoint, most of the universe is nonmaterial: less than 5% of what we observe is composed of ordinary baryonic matter (protons, neutrons, and electrons with associated electromagnetic, weak and strong nuclear forces) that forms the building blocks of the stars, the Earth, and our bodies. Over 95% of the matter-energy content in the universe has been referred to as dark matter and dark energy, although at this point no one knows what they truly are. At its quantum roots, even conventional matter stops behaving like little billiard balls and dissolves into particle/wave probability fields which do not have a specified location or trajectory. Quantum processes display fundamental properties of *nonlocality* and *entanglement*[2] that transcend the classical Newtonian notion of a deterministic clockwork universe, whose components can be studied independently of the conscious observer. Classical principles of determinism and reductionism[3] no longer apply in the quantum domain, where the outcome of any measurement depends on the way in which it is performed (Gisin, 2014). Rather than being "independent observers of objective reality," we form an inherent part of any quantum system we observe, acting as *participant observers* who co-determine the evolution of the quantum reality rather than stand apart from it.

The postulate of informational foundations for material reality goes back to John Wheeler's seminal concept of *it from bit* (1990). In his words, "… every particle, every field of force, even the spacetime continuum itself – derives its function, its meaning, its very existence entirely… from binary choices, bits… In short, … all things physical are information-theoretic in origin and this is a participatory universe" (p. 312). From the perspective of quantum physics, matter is not the ultimate substrate of reality: instead, information is. Landauer (1991) made it clear that information is physical, although it does not have to be baryonic matter based. In other words, the information-theoretical perspective ushers in the *physics of the nonmaterial*, which helps open the gate to the main issue of this paper. It should be noted that the term "nonmaterial" does not imply "nonphysical" or "supernatural" but simply informational processes beyond the domain of conventional matter.

The following equation illustrates the issue:

$$\mathrm{M} \in \mathrm{E} \in \mathrm{I}.$$

It shows that matter (M) is an element of energy (E), which is an element of information (I). In other words, information has the largest expressive capacity to explain reality, and matter has the least expressive capacity. Differently stated, classical physics is included in thermodynamics, which is included in quantum mechanics (QM). The information-theoretical approach posits that at their core, *both material events and conscious experience are informational processes*. An American physicist David Bohm distinguished between the *implicate* (subquantum) realm, where everything exists as nonlocal active information; and *explicate* (classical) realm, which is in the process of continual unfolding from and re-enfolding back into the implicate. All observable reality, both classical and quantum, can be described in terms of unified informational flow. In the language of information, the superficial dichotomies of matter/brain versus consciousness/mind completely disappear, this eliminating the "hard problem" of how material brains give rise to non-material minds (Chalmers, 1995). In this view, both brain and mind arise from the implicate informational domain. Bohm (1990) described it as follows:

> The answer that I want to propose here is that there are not two processes. Rather, I would suggest that both are essentially the same. This means that that which we experience as mind … will, in a natural way ultimately move the body by reaching the level of the quantum potential and of the 'dance' of the particles. There is no unbridgeable gap or barrier between any of these levels. Rather, at each stage some kind of information is the bridge (p. 283).

Conscious and living phenomena at large can be understood in terms of the implicate order (Maldonado, 2022).

Thanks to quantum mechanics, physics is no longer about what the universe consist of, which was the traditional approach from Aristotle to Newton. Instead, it is about what we know and what we can say about reality (Bell, 2011). The concept of "*It from bit from qubit*" extends and synthesizes the idea, where qubit stands for a unit of quantum information.[4] While physical processes in the classical world operate through *local-interactive* causal chains described by classical physics (local interactions requiring spatial proximity, such as electrochemical reactions in the brain), quantum processes operate with *nonlocal-participatory* dynamics, acting as spread-out probability waves that show correlations irrespective of the distance between them. Experimental confirmations of Bell's inequality theorem[5] demonstrate that our universe is fundamentally nonlocal, and no combination of local-interactive mechanisms can account for quantum entanglement effects.

While material processes and processes of the mind merge below the quantum-classical limit, the interaction between physical and conscious processes in the classical macro-world defines a *psychophysical domain*, forming informational brain/mind systems that are locally separate but nonlocally connected with each other and the world at large across porous informational boundaries that may allow for psi and NDE phenomena (Figure 2).

In his review of the quantum aspects in consciousness research, Georgiev (2020) points out that quantum physics distinguishes between two types of processes: *quantum state vectors*, which are unobservable and define what physically exists (c.f. Bohm's implicate realm), and *quantum operators*, which define what can be observed. Within this framework, the unity and inner privacy of conscious experience are accounted for by the quantum state vectors, which are fundamentally unobservable and incommunicable, just like the qualia of subjective experience (the redness of red or a goosebump response to hearing one's favourite piece of music). Far from being the evidence of its nonphysical nature (Gilbert Ryle's "ghost in the machine"), the essence of subjective phenomenology may thus lie in its implicate informational nature, which is still subject to physical laws, although these laws have to be *indeterministic* and *meta-reductive* to allow for a multitude of distinct conscious choices that have causal efficacy in the informational reality. Georgiev (2020) suggests that

> Identifying "physics" with classical physics is the main source of confusion in consciousness research. … The main principles (axioms) underlying classical theories are the observability of all physical quantities, the communicability of classical information at most at luminal speed, and determinism governing the time evolution of physical states… In classical physics, reductionism cannot work because the conscious mind cannot be identified with anything physical (e.g. the classical brain) as everything physical is observable. In quantum physics, however, identification of the conscious mind with the quantum information contained in the quantum state of the brain $|\Psi\rangle$ is possible, because $|\Psi\rangle$ is unobservable and fundamentally different from the observable brain (p. 4).

One of the authors (Shapiro, 2020) recently proposed a *nonlocal neurodynamics* model of clinical interaction, which may explain some aspects of intuitive knowing and "uncanny" telepathic, precognitive, and synchronistic events in high-affect therapy settings (Freud, 1919; de Peyer, 2016). This model complements the conventional perspective of two separate, embodied subjectivities engaging in a local-interactive dialogue with each other and suggests the presence of nonlocal-participatory informational channels that transcend conventional sensory data. From this perspective, we are fundamentally connected through semipermeable *fractal boundaries*,[6] which simultaneously divide and unite our seemingly separate subjectivities, not unlike semi-permeable cell membranes that both separate and integrate our physiological structures (Marks-Tarlow & Shapiro, 2024).

From an integrated quantum/classical information perspective, brain/mind represents a unitary psychophysical system that continually adapts to its physical/physiological and cultural/psychological environments. In all cases, informational processes serve as the common denominator to both biological and conscious reality. In evolutionary terms, genetic evolution governed by genes and cultural evolution governed by memes (Dawkins, 1981) form a vital human crucible responsible for the rise of self-reflective awareness in *Homo sapiens*. At each level of evolutionary complexity, informational processes (both physiological and proto-conscious) intertwine to form the very foundation of life, from basic *sentience* of an amoeba navigating away from hypertonic solution; to *primary consciousness* of reflexive awareness of the environment in plant and animal species; to self-reflective *awareness of awareness* that allows us to lift over the landscape of stimulus-response dynamics and experience *hindsight* into the past, *insight* into the present, and *foresight* of the future (Edelman,

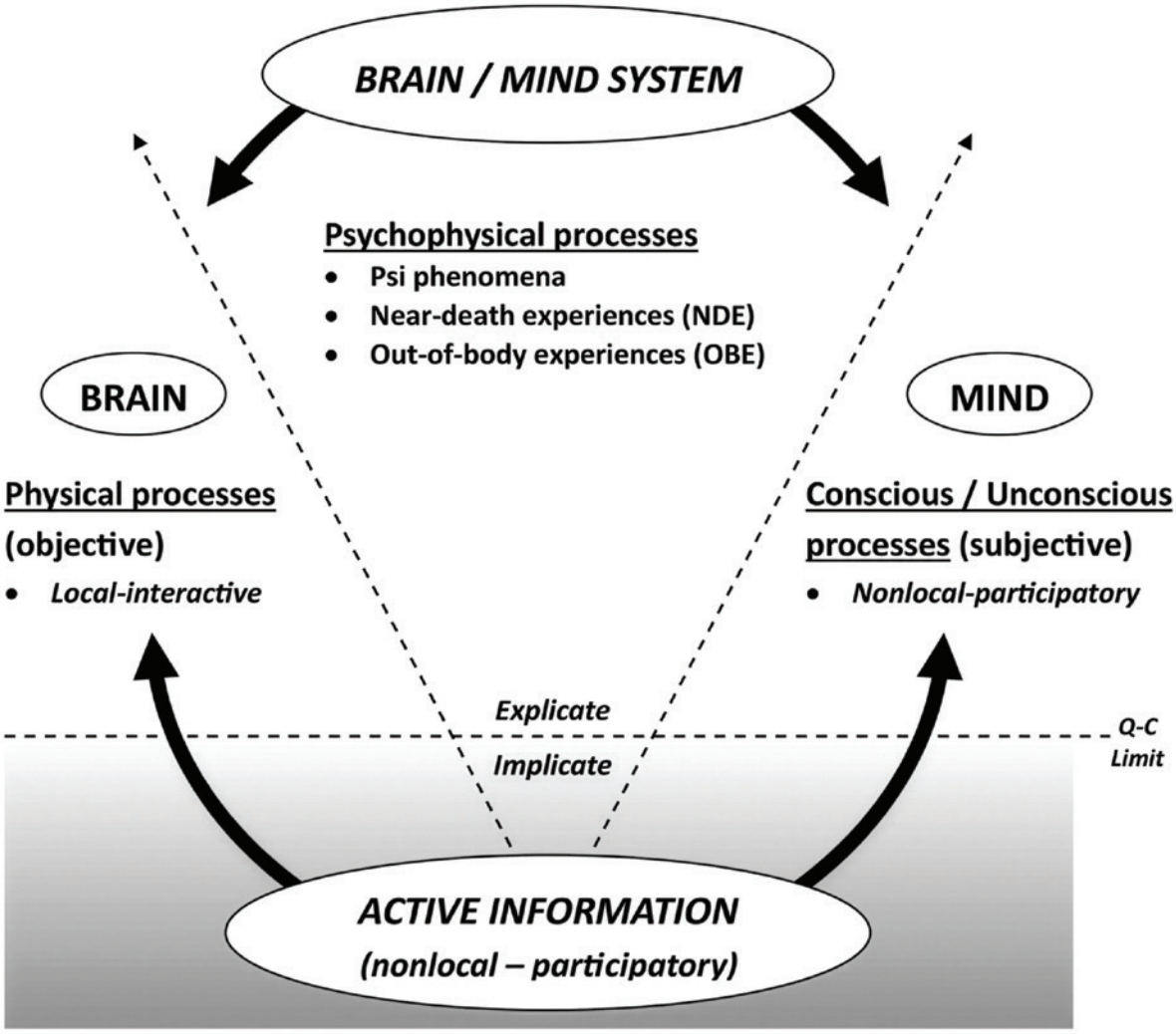

Figure 2. Implicate Active Information as a Common Substrate Between Explicate Objective Physical (left) and Subjective Mind Processes (right). Brain/mind is seen as a fundamentally quantum/classical system that utilizes quantum computation at its informational roots and incorporates both local and nonlocal informational channels, the latter defining psychophysical domain (centre). Q-C stands for quantum-classical limit.[a]

[a]There is no clearcut boundary between the quantum and the classical world, the latter manifesting numerous quantum effects. The question of a boundary concerns the collapse of the quantum wave function: quantum phenomena are *wave-coherent* while the classical world is decoherent. It is decoherence that leads to the illusion of determinism in the classical world. However, both theoretically and experimentally, re-coherence (Bohm's re-enfolding) has been confirmed and achieved (Maldonado, 2018). The informational process therefore proceeds from coherence to decoherence (unfolding) and recoherence (re-enfolding). That said, there are not two worlds but only one, namely the quantum world out of which the classical world emerges as a case limit.

2004). Even beyond living systems, Robert Hazen and his team (2023) proposed "a missing law" of *functional information*, which states that "the functional information of a system will increase over time when subjected to selection for function(s)." It underlies the emergence of novelty and evolution of complexity in both organic and inorganic systems, complementing the second law of thermodynamics.

From the information-theoretical standpoint, the brain/mind system can be likened to an iceberg: its visible, above-the-waterline configurations represent a classical (explicate) part, which we can analyze for its size, geometric configurations, colour, etc. However, this "tip of the iceberg" comprises only a small part of the whole iceberg construct, some 90% of it being below the waterline and

thus not immediately accessible to view (see Figure 3). It is the underwater part that determines the iceberg's stability, its floating capacity, melting time, etc. In similar terms, brain/mind can be conceptualized as a quantum/classical system, with its classical aspect of a physical brain and a "submerged" quantum informational aspect, which enables both the material reality of the brain and subjective experience of our sense of Self.

Within the informational model, the "hard problem" of how physical brains give rise to ineffable conscious experience and free will (Chalmers, 1995) becomes an artefact of treating a fundamentally quantum/classical brain/mind system from a reductionist classical perspective, which only acknowledges its material tip. If implicate informational processes give rise to *both* neurochemical events in the brains and subjective qualia in the conscious minds, a functioning brain/mind system no longer involves some mysterious interaction between material brains and non-material minds, but functions as a unitary informational matrix that cannot be understood without considering its quantum foundations. The American mathematical physicist Stapp (2005) explains the difference:

> The great disparity within classical physics between the experiential and physical aspects of nature is resolved in the quantum approach by altering the assumptions about the nature of the physical universe. The physical world, as it appears in quantum approaches to consciousness theory, is transformed from a structure based on substance or matter to one based on events, each of which has both experiential aspects and physical aspects. Each such event injects information, or "knowledge," into an information-bearing mathematically described physical state (pp. 882-883).

In his later writings, Stapp (2011) clarified that "according to quantum physics all causal effects of consciousness act within the latitude provided by the uncertainty principle, and this latitude shrinks to zero in the classical approximation, eliminating the causal effects of consciousness" (p. 39). On the other hand, when we consider quantum processes at the core of synaptic transmission and neural network dynamics, such as Hameroff and Penrose's Orchestrated Objective Reduction (Orch-OR) theory (Hameroff, 2012), consciousness automatically arises as a property of nonlocal and multi-potential quantum coherence in neuronal subcomponents, which can have causal effects on material processes in the brain in keeping with the quantum Zeno effect.[7]

THE PUZZLE OF NEAR-DEATH EXPERIENCES (NDEs)

The term "near-death experience" (NDE) was originally used by Moody (1975) in his seminal analysis of clinical death survivors. The following vignette is taken from Greyson's (2021) extensive database of NDE experiences. It is a typical account of a 23-year-old female patient who hemorrhaged heavily after giving birth to her first child. She described it as follows:

> When I heard the nurse say, 'Oh, my God, we are losing her,' I was out of my body and on the ceiling of the operating room looking down, watching them work on a body. I knew I wasn't dead. It took a while to recognize the person I was viewing was *me*! I … heard conversations and saw my baby being born. … It was a small hospital and I found myself over my mom in the waiting room. She was smoking. My mom doesn't smoke, but she admitted much later that she had 'tried' one or two because she was so nervous! I returned to the operating room and my baby was doing better. I was not… (p. 68).

The patient ended up going into shock followed by a documented state of clinical death but subjectively remained conscious, encountering her deceased grandmother and eventually being 'told' that it wasn't her time, and she had to return to corporeal existence.

The above vignette is typical of NDE accounts that have also been documented to occur while under clinical anaesthesia and during documented states of clinical death in the absence of heartbeat and brain EEG activity (French, 2005; von Lommel, 2011). It is estimated that there are over 10 million people that had an NDE experience in US alone (Hagan, 2017). Some universal features of such accounts include:

i. A *preserved sense of subjective Self* with a capacity for curiosity/surprise and veridical memories of events external to the body.
ii. A *disembodied sensory perspective*, such as looking at oneself from above, and/or observing other spatial locations.
iii. Encountering a transition from darkness to a tunnel of light and/or other disembodied entities, such as

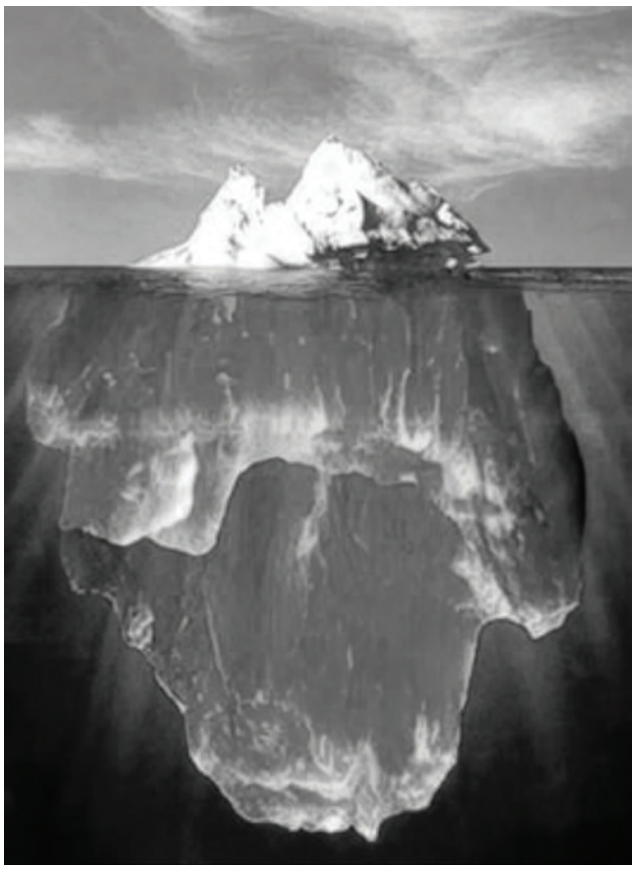

Figure 3. Visible Versus Submerged Parts of the Iceberg as an Illustration of Classical Versus Quantum Perspectives on the Brain/mind System (common domain).

deceased relatives or 'guides,' and communicating with them.

iv. Specific and lasting transformative effects, such as a heightened sense of meaning and purpose, increased altruism for others and nature, a less materialistic attitude, and alleviation of death anxiety.

Note that these observations not only show consistency across different patient populations and cultural domains (Roberts & Owen, 1988), but can also relate veridical information, such as patients having knowledge of actual events in the operating room and other spatial locations while ostensibly in a state of clinical death (Fenwick, 2013; Holden, 2009). These experiences are called *veridical NDEs*, and over one hundred have been recorded and verified, including accurate visual recall by blind patients (Cook et al., 1998; Ring & Cooper, 1999). While some phenomenological aspects of NDEs have been dismissed as artefacts of cerebral hypoxia, the presence of veridical information strongly suggests access to informational channels unaccounted for in conventional neuroscience.

To recall a famous quote by Sherlock Holmes in Sir Arthur Conan-Doyle's "A Study in Scarlet": "If we eliminate the impossible, whatever remains, however improbable, must be the truth." If we are not going to dismiss such accounts outright because they are a priori "impossible," what scientific sense can we make of them?

We now have two alternative perspectives on the relationship between brain and conscious experience:

1. *Individual consciousness is identical with, or represents an emergent property of a functioning brain, therefore it fades away when the brain ceases to function.*

This view represents a standard position in modern neuroscience. The after-death experience, in this view, is a logical non-sequitur, like a square triangle: no such experience can exist. This position also gives rise to the reductive epiphenomenalism of consciousness paradox (REC) in classical science, where consciousness and free will are seen as illusions without any causal efficacy in the material world: "I think, therefore I am *not*." As we have already seen, this paradox is an artefact of ignoring the common quantum foundations of both conscious and material processes.

The information-theoretical perspective adds another possibility to the question of the brain/consciousness interphase:

2. *Both individual consciousness and the functioning brain are based on implicate quantum informational dynamics, which is conserved after the brain ceases to function.*

Here, both material processes and conscious experience in the classical domain are enabled by the unfolding (decohering) active information, which eventually re-enfolds (re-coheres) back into the quantum domain. Therefore, an alternative explanation arises: if quantum information is conserved, could the informational content of the individual Self be preserved in the process of re-coherence?

Quantum information theory establishes that information is never lost in keeping with the first law of thermodynamics, although it can be quite difficult to re-condense in classical terms (Teixidó-Bonfill et al., 2020). Similar arguments apply for consciousness (Page, 1994; Di Biase, 2013). From this perspective, our material brain may serve the function of a "quantum-classical condenser," enabling *coherent informational patterns* (CIPs) that form the foundation of our dynamic sense of Self. Recall that in information-theoretical terms, conscious experience is tied to the implicate "active information": while it cannot be *established* without a functioning brain, once established – it may no longer depend on its material substrate and revert

to the implicate informational domain, utilizing nonlocal-participatory informational channels that would theoretically enable a disembodied sensory perspective while preserving its informational coherence.

THE SCIENCE OF DISEMBODIED EXPERIENCE

Any discussion of the near-death experience has to involve both phenomenological (subjective) and ontological (objective) perspectives. Since subjective phenomenology is, by definition, unobservable – it has to rely on the personal experience of NDE survivors and any transformative changes it brings about. Irrespective of whether individual consciousness survives death, the evidence of NDE experiences can be therapeutic in alleviating death anxiety and bringing about constructive changes in the survivors' lives.

On the other hand, any ontological scientific perspective must utilize objectively observable empirical evidence to substantiate the reality of disembodied consciousness survival. Two lines of evidence are relevant here:

1. The presence of objectively verifiable information that becomes available to veridical NDE survivors while in a state of clinical death.
2. A verifiable and falsifiable scientific model of disembodied conscious experience.

Note that both phenomenological and ontological accounts of consciousness survival must preserve some sense of *personal identity*, or a sense of Self possessed of our life experience, to make a concept of "death survival" meaningful. Therefore, the notions of a "universal mind" or reincarnation, where personal identity is lost, are not directly relevant to this discussion. Death anxiety necessarily includes the loss of Self, even if general aspects of consciousness can be shown to persevere.

From a quantum information perspective, the classical world is a limit-case of the quantum world. It can be safely assessed that the sum total of the information that defines self-experience may be preserved after death. Here, we have to remember that many aspects of phenomenal consciousness, such as our subjective qualia, sense of Self, intuitive awareness, and free will are already tied to the implicate informational reality. In addition, we have consistent reports of disembodied awareness based on NDE accounts, where individual Self and cognitive/emotional content are preserved in the absence of demonstrable brain activity. Coupled with documented instances of veridical NDEs, it is the authors' contention that individual experience can persist after death, albeit not in classical terms. Death would be experienced as a metamorphosis from an embodied state of decoherence to the implicate active information domain, where subjective experience no longer operates through classical local-interactive channels, such as visual or auditory perception, and no longer relies on the electrochemical brain mechanisms.

What can quantum information science actually say about the aftermath of the death metamorphosis? Returning to Figure 2, dying involves a transition from a dual quantum/classical state of the brain/mind informational system to the coherent state of active information, without an associated material component. Since quantum information is never lost, the traces of individual consciousness may still be preserved, although they would no longer operate in the classical domain. What is lost in the process of dying is the local-interactive component that supports corporeal processes, while the nonlocal-participatory pathways would still be operating. This may account for prevalent NDE reports of communicating with deceased relatives and other entities.

Non-classical logic sheds very suggestive light onto this in that there are numerous ways of conveying information without necessarily obeying the principles of identity, non-contradiction or exclusion of the third.[8] Kurt Gödel (1931) formulated two incompleteness theorems proving that any consistent logical system of sufficient complexity is inherently incomplete and contains undecidable propositions that can only be resolved in a more encompassing logical system. As applied to natural sciences, the reductive paradigm in classical physics is one example of such incompleteness: consciousness appears incompatible with the physical substrate of the brain, resulting in the REC paradox and the hard problem, where conscious beings are apparently unable to act as causal agents in the material world. However, these paradoxes can be resolved by shifting to a more encompassing meta-reductive information-theoretical approach, where quantum information gives rise to both material and conscious reality, and consciousness can be causally efficacious without violating energy conservation laws (Scott, 2020). The existence of disembodied consciousness forms an undecidable proposition in the limit case of the classical material reality. However, from a wider MRTIP view, the experience of dying can be seen as shifting the coherent informational pattern that encodes our self-experience from the explicate to the implicate domain. This opens the door to developing an information-based science of after-death experience as a valid scientific pursuit.

Thinking and feeling are organic informational processes that encompass the living experience as a whole (Castellanos, 2023; de Liuca et al., 2013). For instance, subjective awareness of novel informational content tends to elicit feelings of interest or curiosity unless the situation is judged to be unsafe, when the feeling of fear is activated (Panksepp, 1998). It is notable that most NDE accounts reference feelings of pervasive peace and surprise, and even patients riddled with terror of dying tend to settle into a peaceful state in the last several hours of life (Roberts & Owen, 1988). In addition, there are consistent observations that NDE experience has lasting transformative effects, which is not the case in cardiac arrest survivors without NDEs (Parnia, 2014; von Lommel, 2006). It therefore appears that NDE experiences can serve as a potent cure for the ubiquitous experience of death anxiety.

APPLICATIONS TO UNDERSTANDING AND TREATING DEATH ANXIETY

Every known society has elaborate attitudes to death and dying, with culture-specific burial and grieving rituals. In fact, evidence of burial ceremonies is one of the criteria for assessing the evolution of self-awareness in prehistoric societies. The earliest evidence uncovered in both *Homo sapiens* and Neanderthals goes back to 120,000-125,000 years ago, although even earlier burials point to *Homo Naledi* in South Africa some 250,000 years ago (Pettitt & Wood, 2024). It has also been argued that one of the core functions of over 100,000 religions in human history has been to negotiate death anxiety (Dawkins, 2006).

Death anxiety is a universal human experience (Yalom, 1980). While its expressions vary across existing cultures, anxiety itself is a consequence of evolving self-awareness, i.e. our ability to experience a conscious sense of Self and to anticipate our future (Marks & Nesse, 1994). Death is the ultimate threat, the threat of disintegration and non-existence, which activates emotional systems of fear/terror and sadness/grief (Panksepp, 1998). In ontogeny, children become aware of death after the age of 4, first as a sense of permanent separation from the primary caregivers, and later as an irreversible termination of the Self (Menzies & Menzies, 2023). Both perspectives are associated with anxiety, which is initially contained by magical thinking of death reversal and later by internalizing self-regulation capacity from the primary caregivers. Like any emotional regulation, it is linked to attachment security, where individuals with insecure-avoidant attachment show lower self-reported fear of death but heightened death anxiety on projective testing tied to the loss of personal identity/control. By contrast, individuals with insecure-anxious attachment report higher death anxiety that correlates with abandonment and loss of social identity (Miculincer & Shaver, 2003). Finally, individuals with secure attachment tend to resort to symbolic immortality (such as thinking of their children or creative contributions) and proximity/intimacy strategies with significant others when death anxiety is activated.

Although the term "death anxiety" may appear self-explanatory, Cicirelli's (2002) research revealed two principal components: *existential death anxiety* (EDA) that focuses on what happens after one dies, and *tangible death anxiety* (TDA) that deals with fears of premature death, the dying process, the impact on significant others, etc. While psychosocial and cognitive-behavioural interventions have shown efficacy in TDA (Menzies et al., 2018), it is EDA that presents the biggest therapeutic challenge. Early psychoanalytic perspectives on death and dying involved Freud's (1959/1915) view that the awareness of death is denied and repressed to contain death anxiety, which is then pushed into the unconscious and may manifest in neurotic conflicts. Later humanistic and existential perspectives highlighted freedom and responsibility that stem from the awareness of our impermanence and drives for self-actualization and the search for meaning (Frankl 1946/1985; Rogers, 1943/1980; Sartre, 1943/1966). Erickson (1982) identified the aging stages of *generativity vs. stagnation* and *ego integrity vs. despair*, which allow for a sense of meaning and purpose as an antidote to death anxiety (Fortner & Neimeyer, 1999). This perspective is echoed in Yalom's (1980) existential framework, who argues that the best way to integrate the awareness of death is to live life to its fullest, minimizing the experience of regret.

In contrast to psychoanalytic thinkers, Becker (1973) addressed death anxiety as a real and basic fear that underlies many forms of anxiety and phobia. He argued that humans manage this anxiety by living in accord with their cultural worldviews that "offer immortality either literally (belief in an afterlife) or symbolically ("identification with entities greater and longer lasting than an individual life, such as achievement, families, or nations" – cited in Strachan et al., 2007, p. 1138). Becker's work led to the development of the Terror Management Theory, which proposes that while humans strive for self-preservation, they are also aware of the inevitability of death. When reminded of their mortality, their need for structure and meaning increases, and this results in enhanced focus on personally and culturally valued goals. Kübler-Ross (2002) described 5 stages of the dying process, ranging from

denial of imminent death, to anger, bargaining, depression, and acceptance.

Death anxiety can be pathological if it causes persistent distress or interferes with daily functioning. Clinical research repeatedly demonstrated links with DSM-IV/5 anxiety disorders including hypochondriasis (Furer & Walker, 2008). In their hypochondriasis study, participants reported very high levels of death anxiety, with 93% reporting that they were very much afraid of dying, 87% afraid of dying a painful death, 84% obsessing about how short life is, and 75% afraid of news that reminded them of death. Death anxiety is now seen as a trans-theoretical factor for a diverse range of psychopathology including panic disorder, phobias, social anxiety disorder, somatic symptom disorder, obsessive-compulsive disorder (OCD), post-traumatic stress disorder (PTSD), depressive, and substance use disorders (Menzies & Menzies, 2023).

A recent review of 15 randomized controlled trials of death anxiety (Menzies et al., 2018) showed some effectiveness of psychosocial and cognitive-behavioural interventions, although most only have small to moderate impact. Traditional humanistic-existential approaches to alleviating EDA focus on bringing our terror of personal annihilation to conscious awareness and utilizing our despair in the service of fostering meaning, creativity, and social connections in our lives. It involves radical acceptance of our impermanence best exemplified in Lord Bertrand Russell's position that "only on the firm foundation of unyielding despair, can the soul's habitation henceforth be safely built" (quoted in Dossey, 2017).

It is existential death anxiety (EDA) that remains particularly resistant to existing treatments. Yalom (1980) describes it as a "dread of death that resides in the unconscious, a dread that is formed early in life at a time prior to the development of precise conceptual formation, a dread that is terrible and inchoate and exists outside of language and image" (p. 189). As such, its impact is similar to implicit preverbal trauma, which can never be fully integrated and resolved because it cannot be put into words. The treatment of preverbal trauma involves careful attention to the bodily experience of traumatic affective templates in the context of a nurturing therapeutic relationship, where the patient's distress can be "metabolized" and gradually brought into the intersubjective space (Mancia, 2006). Yalom (2009) advocates a similar attitude of "staring at the sun," where the terror of inevitable non-existence is addressed in the context of a supportive therapeutic relationship and mitigated by actualizing our fullest potential and minimizing on inevitable regrets. He relies on Epicurus' symmetry argument that the after-death state of non-existence is identical with the non-existence before we were born, therefore one should not be any more terrified of the former than of the latter.

The information-theoretical perspective introduces an asymmetry in the Epicurus' argument. Our personal identity can be seen as a coherent informational pattern established in the course of our lives that had not existed prior to our birth. Each living experience introduces informational novelty into the world – the novelty that may be preserved in the quantum informational domain after bodily death. Our brain allows for the acquisition and storage of novel CIP configurations in the material (classical) domain. We develop our unique sense of Self throughout our lives by engaging with the world and other Selves in it, fostering attachments and the awe of discovery, and creating our unique purpose and meaning. In the process of dying, the coherent informational pattern comprising our sense of Self would shed its material aspect and re-cohere in the implicate domain, preserving its accumulated lifetime novelty.

Consistent observations of lifelong decrease or total absence of death anxiety in many NDE survivors suggests that an information-theoretical model, such as the CIP approach suggested here, can be used as a clinical tool to deal with existential death anxiety. A consistent trans-materialist informational model rooted in meta-reductive science can transform Bertrand Russell's "unyielding despair" and Irvin Yalom's "dread of death" into an attitude of curiosity about this universal transformation. This approach would benefit a wide range of secular and psychiatric population, providing an alternative to religious beliefs in the afterlife and assisting those who opt for medical assistance in dying (MAID), while tangible anxiety about suffering in the process of dying would continue to be addressed with existing supportive and psychosocial interventions.

CONCLUSION: TOWARD A META-REDUCTIVE INFORMATIONAL PARADIGM IN PSYCHOLOGICAL SCIENCES

Our primordial distress of personal annihilation has been traditionally soothed by resorting to religious beliefs in the likeminded community of believers. While possessed of considerable social value, this venue also has its drawbacks, often fostering fears of afterlife punishment, shame over real and perceived sins, and social intolerance, such as

in the case of LGBTQ+ or alternative religious perspectives. On the secular side, increasing number of people are left to face death anxiety with a certainty of permanent annihilation affirmed by the materialist science.

In his editorial review of the subject, Dossey (2017) writes that "the implications of consciousness research that have accumulated over the past few decades pointing to a nonlocal quality of consciousness… are perhaps the best opportunity we have to annul the terror and denial of death in our modern era" (p. 84). He suggests expanding the materialist-based clinical approaches to incorporate nonlocal consciousness research, suggesting that "it is essential that we take this step, because the failure to relieve ourselves of death terror will continue to damage not only our own psyche but also the Earth itself as a consequence of the destructive wealth-status-power behaviours we now employ in denying death" (p. 85).

The information-theoretical CIP model outlined above is consistent with Dossey's proposal. It relies on the emerging physics of the nonmaterial, extending the established materialist paradigm of psychological sciences into the nonmaterial informational domain. It also introduces several research and clinical objectives:

1. It offers potential resolution to a number of current paradoxes including the unobservable and incommunicable nature of subjective experience, the hard problem of consciousness, and causal efficacy of "free will" in the physical world, although detailed mechanisms of information-based causality remain to be elucidated.

2. It provides a potential model for the existence of psychophysical phenomena, such as psi, OBEs, NDEs, and "uncanny" psychoanalytic communication, which can be understood as nonlocal phenomena that operate through nonlocal-participatory informational channels, although their precise nature remains unclear at this time.

3. It highlights the inadequacy of the reductionist materialist perspective in the domain of consciousness studies. Far from being epiphenomenal or non-physical, the quantum-based understanding of the mind ushers in the promise of trans-materialist science (Tart, 2009), where informational reality extends the notion of the physical into the domain of nonmaterial quantum processes that form the basis of classical reality.

4. It provides an alternative to faith-based and humanistic/CBT approaches for managing death anxiety in both healthy and clinical populations, particularly its existential variety (EDA), which is most resistant to psychological interventions.

In his recent review of the field, Beauregard (2018) states that "we are now approaching another crucial paradigm shift, namely the transition from materialist science to postmaterialist science. We may be witnessing the end of materialism… at least as originally conceived. Holding great promise for science, this transition may be of vital importance to the evolution of the human civilization" (p. 31). The goal of this essay is in showing that consciousness and Self cannot be reduced to the current materialist understanding of physical reality, and we can enlarge the scope of scientific understanding beyond matter/energy interactions to incorporate quantum information, which has a deeper descriptive capacity. A physics of nonmaterial phenomena exists and has the potential to elucidate the first-person subjective experience.

This is an exciting time in the evolution of post-materialist science, but a number of questions are waiting to be explored. For instance, if we see the material brain as an evolutionary mechanism to transduce quantum into classical informational templates (qubit-to-bit) that enable the acquisition of self-awareness and a subjective Self – what happens to these acquired informational templates after the brain ceases to function? Since information cannot be destroyed, it would theoretically re-enfold back into the implicate domain. However, the process and outcome of this metamorphosis, and the scientific perspective on after-death experience, remain to be elucidated.

Further, while there are multiple accounts of veridical information being obtained by extra-sensory means, such as through telepathic, precognitive, and disembodied NDE states, the mechanisms of such information acquisition remain unclear, particularly in view of the fact that conventional entanglement only allows for information correlation, not information transfer.

The vital part of the information-theoretical argument is that we can now look at material reality in informational terms, approaching death with a sense of curiosity about this universal metamorphosis rather than dread of personal annihilation requiring denial or refuge in faith-based beliefs. This essay argues that post-materialist science establishes the concept of after-death experience as a scientifically valid alternative to material annihilation. While a full information-theoretical account of conscious experience remains to be formulated, the scientific possibility of

after-death experience can serve as a potent therapeutic tool in alleviating existential death anxiety.

DEDICATION

We dedicate this paper to J. Rowan Scott (1953–2025) – psychiatrist, colleague, brilliant consciousness researcher, whose feedback has been invaluable in preparing this manuscript.

END NOTES

1 We use capitalized "Self" to denote a dynamic, coherent informational pattern that forms the basis of our personal identity throughout out lifetime.

2 The classical (Newtonian) world is subject to the laws of physics and chemistry, which are local and deterministic. By contrast, quantum processes are fundamentally nonlocal and indeterministic. As we descend to subatomic scales, particles cease to follow *local-interactive* dynamics and increasingly display wave-like properties that define the *nonlocal-participatory* domain, where relevant events may not have a specified location (*nonlocality*) and show informational correlations irrespective of the distance between them (*entanglement*). While in the classical macroworld such quantum processes are largely ignored, it is becoming increasingly clear that a wide range of biological systems, including synaptic transmission, utilize quantum dynamics (Maldonado & Gómez-Cruz, 2014). That said, nothing in the corpus of quantum mechanics demands that quantum phenomena are exclusively subatomic; there are many macroscopic quantum phenomena, such as laser lights, superconductivity, superfluidity, etc.

3 Reductionism as a foundation for empirical science goes back to Rene Descartes, who proposed a 3-step process for studying complex phenomena: reducing them to their fundamental components (*reduction*), studying the components (*analysis*), and re-assembling them back together (*synthesis*). While seminal in bringing about the technological advances since the Age of Enlightenment, reductionism encountered fundamental limitations in the XX century in the domains of quantum and complexity sciences, where the systemic whole transcends the sum of its parts. Quantum processes are *indeterministic* in that the state of a quantum system remains unspecified until a measurement is performed, while the outcome of any measurement is fundamentally dependent on the observer.

4 Generally said, classical information measured in *bits* stands at either as 1 or 0, meaning that a message is sent and received. Qubit is expressed as 1 and 0, or also as the spin upwards and downwards at the same time, which allows for a wide range of superpositions in calculating a solution. This approach forms the basis of quantum computers.

5 The Irish physicist John Stewart Bell formulated his Inequality Theorem in 1964, which defines experimentally verifiable domains where local versus nonlocal variables can account for quantum entanglement effects. It has since been tested in multiple experiments, which demonstrate that our universe is fundamentally nonlocal, and locality only applies as an approximation in the classical macro-domain.

6 Fractal geometry was developed by Benoit Mandelbrot in the 1970s. It displays the principle of *evolving symmetry* that results in unique properties of *self-similarity* and *scale invariance*, where the patterns of the parts repeat the pattern of the whole. Living systems display fractal self-similarity at different scales of complexity, such as semi-isolated living cells coalescing into semi-autonomous multicellular organisms, which aggregate into semi-independent sociocultural groups, and so forth. A principal feature of fractal boundaries is their infinitely deep, interpenetrating nature, with no clean separation between the interacting domains (see Mandelbrot zoom at https://www.youtube.com/watch?v=b005iHf8Z3g for an example).

7 Quantum Zeno effect refers to the fact that quantum measurements repeated in quick succession inhibit transitions between quantum states. It derives from the ancient Greek philosopher Zeno of Elea's "arrow paradox": if at any given instant a flying arrow is motionless, how is it that it can move? Zeno effect has now been experimentally verified and provides one of the best frameworks for genuine biological autonomy and free will. Repeated readouts of neuronal state superposition in the brain have the potential to preference a specific neural pattern without violating energy conservation laws.

8 These three principles form the basis of classical logic, where a thing is inherently identical to itself (the principle of identity); something cannot be true and untrue at the same time (the principle of non-contradiction); and a statement can be either true or false but not both (exclusion of the third).

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ESSAY

The Yin–Yang Principle in Asian Philosophy and Medicine: An Essay with Experimental Insights from the Apparatus for Meridian Identification (AMI)

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ABSTRACT

The relationship between Yin and Yang is the foundation of Asian philosophy and medicine: The nature, change, and interplay of these two cosmic polarities have been investigated in the East since ancient times. Today, modern science can shed light on the mystery of the Yin–Yang principle, revealing the secrets and dynamics of this universal balance. In a previous work, the Apparatus for Meridian Identification (AMI), which is an acupoint electrodermal device, was used to assess the energy state of the Yin and Yang meridians of 100 healthy subjects. The results confirmed traditional Asian knowledge, according to which health is characterized by a higher energy activity of the Yin meridians compared with their Yang partners. This essay synthesizes classical and contemporary literature on the Yin–Yang principle in Asian culture, integrating past theoretical knowledge with modern empirical findings. Drawing from traditional Chinese, Taoist, and Japanese texts, as well as from modern interpretations, this article demonstrates that the AMI measurements from a previous experiment align with longstanding concepts of a relative energy predominance of Yin over Yang. This and other asymmetries seem to be inherent in the structure of the Universe, a premise for the development of life, and a prerequisite for the maintenance of health. In conclusion, the bioelectricity of acupuncture points appears to reflect the intrinsic order of the Universe.

KEYWORDS

Yin–Yang, TCM, Taoism, TJM, nature asymmetries, AMI.

INTRODUCTION

The relationship between Yin and Yang remains one of the most intriguing mysteries of all time: Considered by Asian traditions to be the foundation of all existence, it continues to elude full theoretical understanding and scientific explanation. In a previous work (Miraglia, 2024a, 2024b), 100 healthy subjects were tested with the Apparatus for Meridian Identification (AMI), an electrodermal device that was invented by Japanese scientist Hiroshi Motoyama and that measures the response of acupuncture points (acupoints). Specifically, this device stimulates the Sei (Jing-Well) points with a low voltage, analyzes their electrical reaction, and correlates it with the health status of the organism. The 28 Sei points are located on the tips of fingers

and toes, correspond to the beginning or end of Traditional Chinese Medicine (TCM) meridians, and are thought to reflect the overall bioenergetic state of the meridians they belong to.

Interestingly, it was found that the AMI could correctly detect the Chi energy relationship of Yin–Yang meridian pairs in healthy subjects, in whom every Yin meridian has higher Chi energy than its Yang partner. Among the parameters returned by the AMI, the acupoint before polarization (BP) current, presumably correlated with Chi energy activity, appears to best reflect this relationship. The tables and histograms of these results are reported in Appendix A: The AMI calculates four parameters of the acupoint response current, related to Chi energy (BP), autonomic nervous system (AP), immune system (IQ), and reaction time (TC) of the organism; the Yin > Yang meridian relationships are stronger for BP, as shown by their *p*-values and effect sizes.

The present essay connects ancient philosophical and medical doctrines with modern empirical data: It builds on previous findings with the AMI and synthesizes key interpretations from classical texts of TCM, Taoism, and Traditional Japanese Medicine (TJM), in order to evaluate whether Yin meridians energetically predominate over Yang meridians, in conditions of health. How the Yin–Yang principle and other asymmetries manifest in the human body, nature, and the Universe will be explored, from the microcosm to the macrocosm, bridging ancient knowledge and modern science.

YIN–YANG IN TCM

According to *The Yellow Emperor's Classic of Medicine* (*Neijing*), the most important treatise on TCM, Yin and Yang are the basis of all existence and should be in balance within the human body; otherwise, disharmony and disease will occur:

> The law of yin and yang is the natural order of the universe, the foundation of all things, mother of all changes, the root of life and death. In healing, one must grasp the root of the disharmony, which is always subject to the law of yin and yang. . . . The yin and yang in the body should be in balance with one another. If the yang qi dominates, the yin will be deprived, and vice versa. (Ni, 1995, pp. 17–18)

However, when discussing the nature and manifestation of these two cosmic polarities, it is specified that Yang is the energy, the vital force, and the potential, while Yin is the substance, the foundation, and the mother of this potential (Ni, 1995, p. 17); this suggests that Yin ontologically precedes, actualizes, and gives rise to Yang.

Moreover, body aging and deterioration seem to be associated with a depletion of Yin energy, whose level should thus be maintained high: By the age of forty, people have exhausted half of their Yin Chi, which continues to diminish as age progresses, weakening their vitality and causing health conditions (Ni, 1995, p. 22). Therefore, the *Neijing* advises understanding the Tao and mastering the Yin–Yang balance, in order to remain strong and healthy.

Consistently, the *Neijing* also teaches that Yin is the essence of the organs and the fountain of Chi energy (Ni, 1995, p. 11), and that disease of the five Zang organs (lungs, heart, spleen, liver, and kidneys), associated with Yin meridians, causes disintegration of the spirit and death (Ni, 1995, p. 84);[1] this suggests their greater importance, for physical and spiritual survival, compared with the six Fu organs (large intestine, triple heater, small intestine, stomach, gallbladder, and bladder), associated with Yang meridians.

Further confirmation comes from the role and function of the Zang organs, which seem to be more essential and energetic than the Fu ones, because they store instead of transporting. In fact, the Zang organs store the essence of Chi and do not transport, while the Fu organs receive the food, digest it, and transport it on, without storing it—storage would be in opposition to their nature and consequently disease would manifest. The *Neijing* reports the say that the six Fu organs are full but never filled, while the five Zang organs are filled but never full (Ni, 1995, p. 46). Therefore, in normal conditions, Yin organs and meridians accumulate, while Yang organs and meridians do not, which may suggest a higher energy activity of the former over the latter.

It is also explained that there are five types of excess and five types of deficiency that are born from the five Zang organs, which must all work together to create a functional human being (Ni, 1995, p. 215); this highlights their superiority over the Fu organs. This concept is emphasized when the Zang organs are interpreted as a manifestation in the human body of the five elemental phases, which represent, together with Yin and Yang, a governing law of the Universe (Ni, 1995, p. 235). This law governs all polarities, the beginning of all transformations, the growth, development, and destruction of all things in the Universe.

In modern books on TCM and acupuncture, the doctrinal relationship between health and Yin–Yang balance is

discussed (Bing & Hongcai, 2010; Connelly, 1994; Kaptchuk, 2000; Lightbody, 2014); however, the philosophical knowledge and clinical experience of these authors provide further insights into the predominance of Yin over Yang. For example, Bing and Hongcai (2010) describe the interaction between Yin and Yang as follows:

> Yin and Yang are opposite in nature, yet control and restrain one another. The opposition of Yin and Yang is mainly manifested in their intercontrolling and consuming-supporting relationship. Only when Yin and Yang are not only in opposition, but also in unity, can a relative balance between Yin and Yang be maintained to ensure change and development in nature. If this balance is out of kilter, disease will be the result. . . . The balance between Yin and Yang is neither fixed nor absolute. The relative equilibrium is maintained through their mutual consuming-supporting relation in which the consumption of Yin leads to the gaining of Yang, and the consumption of Yang leads to the gaining of Yin within certain limitations and over a period of time. The consuming-supporting relationship between Yin and Yang is absolute, while their balance is relative. Under conditions where the consuming-supporting relationship results in relative balance between Yin and Yang, normal life activities keep on going. If the consuming-supporting relationship exceeds normal physiological limits, then the relative balance of Yin and Yang will not be maintained, resulting in excess or deficiency of either Yin or Yang and therefore the occurrence of diseases. (pp. 24–25)

According to these authors, Yin and Yang are in an antagonistic–cooperative relationship and their interplay is characterized by a relative balance, within certain limits that should not be surpassed, otherwise disease will occur. This conclusion appears to be consistent with the results of the AMI experiment in which, in healthy subjects: Yin and Yang meridians have comparable energies, i.e., they are in balance, but Yin tends to predominate over Yang, i.e., their balance is relative, albeit to a limited extent, i.e., the relative difference between Yin and Yang is less than 10%. Bing and Hongcai (2010) also emphasize the importance of the five Zang (Yin) organs, which are the core of the human body; they correspond to the five elements, which explains the relationship between the body and the external environment; and they are connected with spiritual emotions and conscious activity (pp. 36, 43).

Confirmation of this reasoning can be found in Kaptchuk (2000), according to whom harmony implies that the proportions of Yin and Yang are relatively balanced (p. 12). However, from a psychological and spiritual perspective, the Yin will is seen as a deeper, more persistent, and more mysterious human intention, compared with the more superficial Yang will (p. 62); human emotions are correlated with the Yin organs and their health status, which highlights their psychophysiological relevance (p. 158); medically, the Yin organs are considered to be deeper inside the body, compared with the Yang ones: Inner and outer should be interpreted more as significance than place—the interior being more important than the exterior (p. 106).

According to Kaptchuk (2000), the Yang organs are related to impure substances, such as untransformed food, urine, and excrement; therefore, they are thought of as less internal than the Yin organs, which are instead related to the pure and fundamental textures of Chi, blood, essence, and spirit (p. 315). This is why the Yang organs have a less crucial role in health and therapy, compared with the Yin organs, which are more important in medical theory and practice (p. 78). However, in acupuncture, the Yang meridians are as important as the Yin meridians (p. 315). Finally, Kaptchuk (2000) states that the Yang organs are related to excess patterns, while the Yin organs are related to deficiency patterns, although there are exceptions (p. 316). This suggests the importance of tonifying and increasing the energy of the Yin meridians, as well as of dispersing and decreasing the energy of the Yang meridians, in order to restore health.

YIN–YANG IN TAOISM

The nature of and relationship between Yin and Yang constitute a fundamental part of Taoism, an ancient doctrine that embraces the essence of Chinese philosophy, spirituality, culture, and tradition (Lao Tzu, 2011; Wang, 2012; Wong, 1997, 2011). Wang (2012) notes:

> Although yang is the obvious, it cannot thrive without attention to yin. This interdependence appears in traditional Chinese medical texts, where the surge of *yangqi* 陽氣 depends on the regeneration of the *yinqi* 陰氣 of the five internal organs. Without the *yinqi* of the organs, there will be no a surge of *yangqi* or its extension outward. (p. 9)

She also adds that, since generation in nature is associated with femininity, the Yin forces are a priority (Wang,

2012, p. 56). Therefore, femininity is considered to be a greater power of unlimited resource, the root of heaven and earth, and ultimately the Tao (Dao) itself:

> The spontaneous potency of the *Dao* is associated with the female body, which is a common metaphor for *Dao* in the *Daodejing*. It reveals not just the importance of yin and its generative force, but also designates a yin origin that is hidden, implicit, or empty. . . . It is not a mere nothing but is the undifferentiated source of potency and growth that lets things function . . . The aspects of yang might represent the explicated order, whereas the aspects of yin relate to the enfolded hidden implicated order.[2] (Wang, 2012, pp. 55, 57)

The concept of implicated and explicated order, represented by Yin and Yang, is further elaborated by Wang (2012): If the manifest world is Yang, i.e., the unfolded explicit order, it is always regulated by Yin, i.e., the enfolded implicit order, which is the background; Yin is the variable that determines the event that takes place (p. 146).

The ontological precedence of Yin over Yang also appears in the *Yuejueshu*, a Chinese historical text, reported by Wang (2012): The Tao generates Chi, which in turn generates Yin, which generates Yang, which ultimately generates heaven and earth, and thus all existence (p. 126). Additionally, Wang (2012) cites the *Guanzi*, a Chinese political and philosophical text, in which it is reported: The ruler of men stands in the Yin, which is quiescent, and is able to control the Yang, which is activity (p. 132). This shows that, by occupying the Yin, one is able to control the Yang, which highlights the power of Yin over Yang. Wang (2012) also includes the observations of Taoist scholars Catherine Despeux and Livia Kohn: In Taoist thought, women are seen as an expression of the cosmic Yin force, which is equal and, for some schools, superior to Yang (p. 100). Therefore, in Taoism, the philosophical and spiritual predominance of Yin over Yang can be repeatedly found and seems to be rooted in its precepts.

YIN–YANG IN TJM

In modern books on TJM and acupuncture, new insights into the Yin–Yang principle can be found (Birch & Ida, 1998; Shudō, 2011; Society of Traditional Japanese Medicine, 2003). When summarizing its clinical principles, developed over a 50-year experience, the Society of Traditional Japanese Medicine (STJM) (2003) states that current diseases are associated with deficiency patterns and that the focus of acupuncture should be on Yin meridian (channel) deficiencies (p. 6); this seems to be consistent with the findings of the AMI experiment, in which (in reverse) health appeared to be characterized by Yin meridian's higher energy activity. The STJM (2003) also reports that the founders of meridian therapy used to say "yin leads, yang follows" (p. 25). This dictum expresses the notion that disease results from a deficiency of Yin, which should thus be the practitioner's first concern. The concept of Yin Chi (Ki) deficiency, in pathological conditions, is further specified:

> In all cases there is no doubt that because the disease starts with essential ki deficiency, the practitioner's first attention should be given to finding and tonifying the deficient yin channel, which will allow for the simultaneous tonification of insufficient ki, blood, and fluids. Beyond that, one only needs to determine whether or not any dispersion is necessary. (STJM, 2003, p. 38)

If necessary, the STJM (2003) recommends dispersing the Yang meridians, because they often become excessive when their Yin partner is deficient, while the opposite is discouraged. In fact, since illness begins from a Yin deficiency, dispersing a Yin meridian must be handled with extreme care, because it can be risky. Interestingly, the STJM suggests that, when treating a pathology, dispersion should not be performed on the Kidney or Heart meridians—which, in agreement with this author and Motoyama's experiments, show a smaller energy difference with their Yang partners (together with the Pericardium) and can present occasional inversions. Moreover, the STJM shares that, in its experience, the Yin meridians that can be used for dispersion are the Liver and Lung—which, in agreement with this author and Motoyama's experiments, show a larger energy difference with their Yang partners (together with the Spleen) (pp. 292–294).

Therefore, traditional clinical experience seems to coincide with modern scientific findings. In fact, acupuncturists may have noticed that there were no beneficial effects or there were potentially adverse ones, when dispersing the energy of those Yin meridians that have a smaller energy difference with their Yang partners, as measured with the AMI—since we can hypothesize that a Yin–Yang meridian inversion may have occurred in

the patients' bioenergy system. Instead, these negative events did not happen when treating those meridian pairs that have a larger energy difference, as measured with the AMI—since a Yin–Yang meridian inversion may not have occurred.

Finally, the STJM (2003) summarizes and concludes that tonification is used mainly on Yin meridians for Yin diseases, which involve deficiency patterns, while dispersion is used mainly on Yang meridians for Yang diseases, which involve excess patterns. It also clarifies that Yin excess and Yang deficiency are not considered normal illnesses; therefore, they should be treated differently. The STJM adds that, even in Yang diseases, the tonification of the Yin meridians should be performed first, followed by the dispersion of the Yang ones. This underlines the importance of working first on Yin meridians, even in Yang conditions, to immediately restore their higher energy activity compared with their partners (pp. 312–313). This therapeutic approach is confirmed by Birch and Ida (1998), when they discuss the practice of Japanese acupuncturist Kōdō Fukushima, developed over his 50-year experience: While Fukushima's method was not clearly defined in its structure, the first part of the treatment involved supplementing the most vacuous Yin meridian (p. 29).

The predominance of Yin over Yang, in philosophy and medicine, is discussed and emphasized by Shudō (2011), who writes:

> This brings us to the reason why yin comes first in the term yin-yang. It is yin which first gives rise to yang. Yin and yang originally denoted shade and light respectively. Therefore yin implies something in the dark which lies hidden while yang is something in the light which is apparent. That which is hidden gives rise to that which is visible when light is cast on it. What is visible is always a small portion of everything that lies hidden. For this reason yin can be conceived as enveloping yang instead of simply being in opposition to it. Thus yang is a portion of the whole which is yin. This leads to an extremely important dictum in meridian therapy, i.e., that yin leads and yang follows. This principle has a major influence on the way meridian therapy is performed. Turning one's attention to the yin aspect, or the whole picture, is given precedence over consideration of apparent problems or symptoms, which are yang. (p. 17)

Shudō (2011) further specifies that Yin deficiency is the root of all imbalances and diseases; thus, tonifying the Yin meridians is a priority in therapy:

> The assumption which underlies meridian therapy is that all imbalances, no matter how complex, initially begin with deficiency in one of the yin organs that is reflected in its corresponding meridian. Thus, Qi deficiency in a yin organ and meridian is considered to lie at the root of all imbalances. . . . In order to perform meridian therapy, it is necessary to determine the basic pattern, i.e., to arrive at a diagnosis of deficiency originating in a single yin organ and meridian. . . . Traditionally, all diseases are assumed to have an underlying internal cause, and this is why tonification of the yin meridians is given more emphasis in meridian therapy. (pp. 137, 139)

Shudō (2011) also shares that, in his clinical practice, he has never treated a pattern of Yin meridian excess, which is unusual, but instead he has regularly treated the pattern of Yin meridian deficiency, which is common in disease (p. 196). In fact, deficiency in one of the Yin meridians can be assumed in all pathological conditions and it is always the fundamental imbalance that needs to be corrected. In his opinion, the vast majority of diseases originate from a deterioration in the function of a Yin organ and meridian; thus, in meridian therapy the emphasis should be on tonifying the Yin meridians. Excess in a Yin meridian may occur as a result of a deficiency in another Yin meridian and can be corrected by tonifying the deficient Yin meridian. Therefore, based on his extensive experience, Shudō (2011) suggests that pulse diagnosis should begin by finding the most deficient Yin meridian, which should be tonified first as part of the root treatment (p. 57).

Finally, referring to a possible imbalance in a Yin–Yang meridian pair, Shudō (2011) repeats that the deficient Yin meridian should be tonified first and that this treatment may already be sufficient to rebalance the inverted pair. If this intervention is not sufficient, the Yang meridian should be lightly dispersed (pp. 76, 140). Shudō's clinical experience with Yin and Yang meridians thus corroborates the AMI findings of this author and Motoyama, as well as the conclusions of other scholars, physicians, and acupuncturists.

It should be specified that Oriental acupuncture is characterized by schools and currents, which have similarities

and dissimilarities. This may explain why the superiority of Yin over Yang, although it is recognized in both traditions because they share a common ground,[3] seems to be more emphasized in TJM than in TCM, both philosophically and medically. Additional evidence to support this thesis can be found in the articles of two Japanese acupuncturists, in which the predominance of Yin over Yang is explicitly mentioned with the expression " 陰主陽従 " (Nakamura, 2019, p. 36; Suho, 2015, p. 149), which in both Japanese and Chinese means "Yin dominates, Yang follows." An example of a Chinese physician who emphasized the treatment of Yin meridians is Zhu Danxi, with his school of nourishing Yin, based on the principle that the human body tends to have excessive Yang and deficient Yin (Bing & Hongcai, 2010, p. 17).

YIN–YANG IN MOTOYAMA'S STUDIES

Motoyama (2008) also concluded that meridian therapy should focus on treating Yin meridians. In fact, he observed that, when there is an inversion in a Yin–Yang meridian pair, a reversal of the Chi energy flow tends to occur in the Yin meridian, but not in the Yang one, which suggests that the former should be treated. In other words, when the Chi energy of the Yin meridian is lower than that of its Yang partner (unhealthy condition), its Chi energy is likely to flow from top to bottom (another unhealthy condition); instead, this reversal is not found in the Yang meridian, whose Chi energy always tends to flow from top to bottom (healthy condition). Motoyama explained that, by treating the Yu (Shu) and Bo (Mu) acupoints of the Yin meridian, it is possible to reestablish the healthy condition—in which the Chi energy of the Yin meridian is higher than that of its Yang partner and flows from bottom to top—resolving illnesses and pathologies.

Therefore, it can be concluded that health is characterized by higher energy in Yin meridians and lower energy in Yang meridians, a pattern that rarely leads to disease, unless the relative difference between the two is excessive; instead, the opposite pattern leads to disease and thus requires correction. The scientific findings with the AMI validate the Yin–Yang balance, interpreted as a relative balance in which the slight superiority of Yin over Yang represents the optimal case.

The occasional inversion of the Yin–Yang balance, which has been experimentally detected with the AMI, primarily in the PC–TE meridian pair, seems to confirm the dynamic and antagonistic relationship between these two cosmic polarities. According to Motoyama's (1997, pp. 45–54; 2008) studies, such events are often associated with seasonal change, which is consistent with what is reported in the *Neijing* regarding the Yin–Yang seasonal variations and the interrelationship between human beings and nature: Throughout the four seasons, the transformation of Yin and Yang determines the growth and destruction of life (Ni, 1995, p. 7); heaven and humankind are interconnected, and thus, the Yin and Yang within the human body are related to natural phenomena (Ni, 1995, pp. 23–24).

The interaction between Yin and Yang seems to be dynamic. Thus, one may wonder whether, in the future of the Universe and humankind, there will be an inversion, in which the new equilibrium will be characterized by the predominance of Yang over Yin, which will become the new healthy balance. According to Asian philosophies and medical systems, all things in the Universe are cyclical and the macrocosm is reflected in the microcosm. Therefore, it is possible that, in the next ages, a new balance between these two cosmic forces will be reached, in nature and within human beings, which may once again reverse itself. What we currently know is that the optimal Yin–Yang balance has remained unchanged since the ancient texts were written thousands of years ago.

However, as embodied consciousness on a path of evolution and self-realization, we may not yet be able to fully comprehend the secrets of Yin and Yang, and we may only glimpse the truth, as the wisdom from the past teaches: The mystery of Yin and Yang is not easy to grasp, because within this principle there is an intelligence that is difficult to know. Certainly, the Universe potentiates change, allowing all things to express themselves with unlimited energy (Ni, 1995, p. 235).

ASYMMETRIES IN NATURE

The asymmetry between Yin and Yang, which is considered the foundation of all existence, seems to be consistent with the observation that asymmetries are at the basis of the Universe and life. For example, our physical Universe originated after the Big Bang, because of an asymmetry between mutually-annihilating matter and antimatter, the former being slightly more abundant than the latter, thus creating stars, planets, and other celestial bodies (Girish, 2019; Sather, 1996). It has been estimated that the difference between the two was very small: For every billion particle-antiparticle pairs, there was only one extra particle. Had the amounts of matter and antimatter been perfectly equal, they would have canceled each other out and the Universe as we know it would not have formed.

Similarly, moving from physics to biology, it appears that life on Earth could begin and develop because of an asymmetry in the amino-acid and sugar molecules, which show a specific chirality or homochirality—a chiral molecule exists in two non-superimposable mirror-image forms (Blackmond, 2010, 2011, 2019; Cronin & Reisse, 2005; Devínsky, 2021). Left-handed amino acids and right-handed sugars, which are the building blocks of living organisms and are involved in their life functions, predominate in biochemistry. Had this molecular asymmetry not existed, terrestrial biology might never have developed. In fact, the chirality of a molecule determines its behavior and function within living organisms, which might not have formed and evolved from molecules with opposite chirality. Life as we know it thus relies on a left–right asymmetry, which is embedded in its texture, incorporated in its vital activities, and considered its unique signature.

Moreover, asymmetries can be found in the morphology, function, and behavior of many plants and animals, whose features are influenced by and coupled with the environment, which is rich in asymmetries as well (Abrash & Bergmann, 2009; Bisazza et al., 1998; Blum & Ott, 2018; Frasnelli et al., 2012; Gerendai & Halász, 2001; Hudson, 2000; Li & Bowerman, 2010; Miletto Petrazzini et al., 2020; Muñoz-Nortes et al., 2014; Okumura et al., 2008; Palmer, 2009; Petricka et al., 2009; Toga & Thompson, 2003; Vallortigara et al., 2011). Asymmetric systems are so common in nature that a paradigm shift is occurring toward mathematical and physical theories, which are based on asymmetries, in order to reach a better understanding of natural phenomena (Baianu, 2012).

Therefore, symmetry breaking or asymmetry appears to be intrinsic to the structure of the Universe, a fundamental premise for its existence, and a necessary condition for the development of life. This conclusion is supported by the Yin–Yang Chi-energy asymmetry, which is at the core of our species' health and life.

DISCUSSION AND CONCLUSIONS

This essay discussed the conceptual and empirical importance of the Yin–Yang principle, which is a foundational paradigm in Asian philosophy and medicine. In a previous study with the AMI, the bioenergetic relationship between Yin and Yang meridians was assessed, revealing a higher Chi energy activity of the former over the latter, in healthy people. The convergence of textual interpretation, clinical practice, and bioelectrical measurement via the AMI supports the view that the Yin–Yang principle is characterized by an asymmetry, with the superiority of Yin over Yang, which is a marker of health. The interplay between Yin and Yang, as well as asymmetric systems in general, appears to lie at the basis of life and the Universe, from the microcosm to the macrocosm. Theoretical and experimental studies on the Yin–Yang principle, evaluating its manifestations and dynamics, can lead to important diagnostic applications for human health, as well as to a greater understanding of our cosmos.

The degree of asymmetry should also be investigated, because it appears to be different depending on the natural system that is analyzed. The energy difference of the Yin–Yang meridian pairs varies in degree and seems to be an intrinsic characteristic of the human bioenergy system. According to TCM, the human body is a microcosm reflecting the macrocosm; therefore, the origin of the meridian balance could be traced back to the natural world and elements, of which each meridian is an expression. Similarly, the degree of asymmetry that can be found in nature varies, and the reasons may still have to be discovered and understood.

A possible explanation for the presence of asymmetries in nature, which seem to be widespread and encoded in its fabric, may be that this Universe is an imperfect copy of an ideal Universe, characterized by perfect symmetry. This concept dates back to Plato's theory of forms, which has become a fundamental doctrine of classical Western philosophy and metaphysics (Piyong, 2013; Rahaman, 2023). In the fourth century BC, the Greek philosopher hypothesized that the forms in our physical world participate in, imitate, and resemble the archetypes, called *ideas*, of a perfect world, called *hyperuranion*. These non-physical, immutable, eternal, and absolute ideas would represent the model, substance, and essence of all physical things, which would be a blurred reflection or shadow of the hyperuranion. Physical, metaphysical, and philosophical investigations into natural asymmetries may reveal important aspects of our reality and of subtle dimensions that may give rise to it.

END NOTES

1 The pericardium is sometimes considered the sixth Zang (Yin) organ (Kaptchuk, 2000, p. 78).

2 *Daodejing* is a traditional name for Lao Tzu's (2011) *Tao Te Ching*.

[3] Acupuncture originated in China over 2000 years ago and spread to Japan over 1400 years ago, where it developed its own traditions of practice, which have been passed down from master to disciple throughout history (Birch & Ida, 1998; Kobayashi et al., 2010; Shudō, 2011; STJM, 2003).

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APPENDIX A

YIN–YANG MERIDIAN ANALYSIS

The present essay is supported by data from a previous experiment (Miraglia, 2024a, 2024b), in which 100 healthy participants were measured five times with the AMI in the same psychophysical state. An in-depth investigation was carried out to evaluate the reliability, biophysical meaning, and clinical utility of the AMI parameters, with successful results. The statistical analysis of the Yin–Yang meridian pairs allowed this author to determine the energy predominance of Yin over Yang and which AMI parameter is more reflective of Chi energy activity.

Figure A1 shows the AMI and the Sei points; Tables A1-A4 present the Yin–Yang meridian relationships for each AMI parameter—BP (Chi energy), AP (autonomic nervous system), IQ (immune system), and TC (reaction time); while Figure A2 shows the BP distributions of the Yin–Yang meridian pairs. The *p*-values and effect sizes (ESs) prove that the Yin > Yang meridian relationships are stronger for BP, compared with the other AMI parameters, revealing and confirming its connection with Chi energy activity, for which this trend is expected.

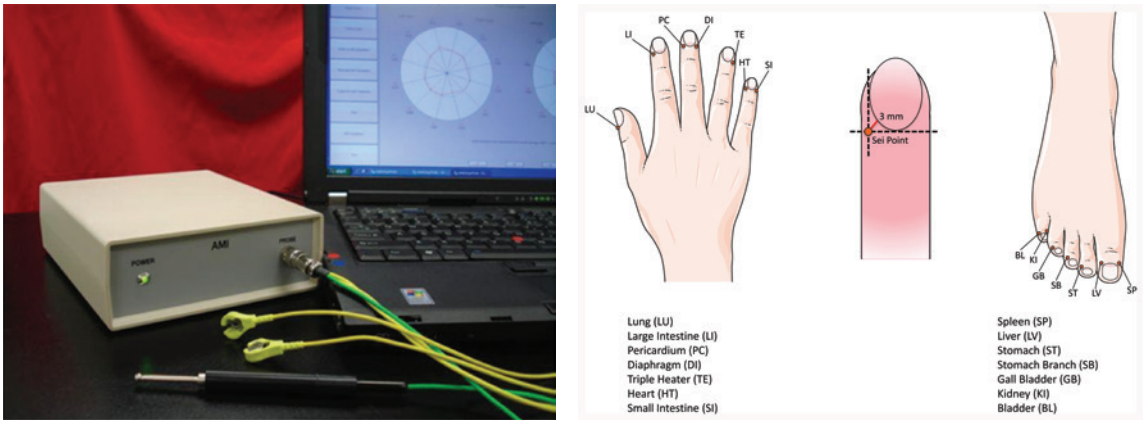

Figure A1. On the Left the AMI, on the Right the Sei Points. In the AMI measurement process, the two yellow cables are connected to the reference electrodes, attached to the forearm of the testee, while the probe is placed by the experimenter on the active electrodes, attached to each Sei point. The *Sei* points (in Japanese), *Jing* (in Chinese), and *Well* (in English) are considered special acupoints: They are located bilaterally on the tips of fingers and toes, where Traditional Chinese Medicine (TCM) meridians begin or end, and are thought to reflect the overall energy state of the meridians they belong to. The AMI measures the 12 regular TCM meridians and two extra meridians (diaphragm and stomach branch). For the Yin–Yang analysis, only the regular meridians were considered, paired in the traditional Yin–Yang pairs. The picture of the AMI was kindly provided by the California Institute for Human Science, while the figure of the Sei points was partly generated using Servier Medical Art, provided by Servier, licensed under a Creative Commons Attribution 3.0 Unported License.

Table A1. Yin–Yang Meridian Relationships of the AMI BP Parameter, Which is Related to Chi Energy Activity.

Yin–Yang Meridian Pair		Yin vs Yang BP Mean [0.95 CI] (μA)	*p*-value	ES [0.95 CI]	Trend
Hand	LU–LI	2249 [2184, 2302] vs 1833 [1781, 1879]	$4.33\ E^{-18}$	1.5 [1.1, 1.9]	Yin > Yang
	PC–TE	1744 [1693, 1790] vs 1760 [1713, 1803]	$2.81\ E^{-01}$	0.067 [−0.0043, 0.15]	Yin < Yang
	HT–SI	1807 [1757, 1852] vs 1761 [1715, 1804]	$1.85\ E^{-10}$	0.19 [0.12, 0.26]	Yin > Yang
Foot	SP–ST	1962 [1906, 2012] vs 1671 [1624, 1713]	$5.51\ E^{-18}$	1.2 [0.84, 1.4]	Yin > Yang
	LV–GB	1935 [1878, 1985] vs 1726 [1672, 1775]	$3.81\ E^{-17}$	0.78 [0.55, 0.95]	Yin > Yang
	KI–BL	1740 [1687, 1789] vs 1603 [1545, 1655]	$5.82\ E^{-11}$	0.50 [0.35, 0.65]	Yin > Yang

For each meridian pair of hands and feet, the *p*-value is reported, as well as the means and effect size (ES) with their 95% confidence intervals (CIs). For BP, the relative difference between the means of Yin and Yang meridians, calculated as (Yin – Yang)/Yin, is 9.47.

Table A2. Yin–Yang Meridian Relationships of the AMI AP Parameter, Which is Related to the Autonomic Nervous System Activity.

Yin–Yang Meridian Pair		Yin vs Yang AP Mean [0.95 CI] (μA)	*p*-value	ES [0.95 CI]	Trend
Hand	LU–LI	10.9 [10.1, 12.0] vs 10.5 [9.78, 11.2]	9.34 E^{-01}	0.098 [−0.031, 0.26]	Yin > Yang
	PC–TE	9.44 [8.89, 10.1] vs 8.64 [8.05, 9.32]	7.03 E^{-08}	0.26 [0.16, 0.36]	Yin > Yang
	HT–SI	11.0 [8.35, 22.6] vs 9.09 [8.43, 9.81]	2.62 E^{-04}	0.11 [−0.20, 0.32]	Yin > Yang
Foot	SP–ST	10.1 [9.49, 10.8] vs 9.54 [8.84, 10.7]	2.64 E^{-06}	0.14 [−0.13, 0.30]	Yin > Yang
	LV–GB	11.5 [10.1, 15.8] vs 9.70 [9.08, 10.5]	4.99 E^{-05}	0.21 [0.053, 0.31]	Yin > Yang
	KI–BL	9.82 [9.38, 10.3] vs 9.41 [8.91, 9.95]	1.96 E^{-02}	0.16 [8.1 E^{-04}, 0.31]	Yin > Yang

For each meridian pair of hands and feet, the *p*-value is reported, as well as the means and effect size (ES) with their 95% confidence intervals (CIs). The large CIs of some means are due to outliers. For AP, the relative difference between the means of Yin and Yang meridians, calculated as (Yin – Yang)/Yin, is 9.30.

Table A3. Yin–Yang Meridian Relationships of the AMI IQ Parameter, Which is Related to the Immune Function.

Yin–Yang Meridian Pair		Yin vs Yang IQ Mean [0.95 CI] (pC)	*p*-value	ES [0.95 CI]	Trend
Hand	LU–LI	1160 [1115, 1201] vs 1111 [1069, 1153]	2.73 E^{-04}	0.22 [0.093, 0.35]	Yin > Yang
	PC–TE	1095 [1050, 1140] vs 1110 [1061, 1160]	1.92 E^{-01}	0.063 [−0.14, 0.26]	Yin < Yang
	HT–SI	1113 [1063, 1162] vs 1059 [1017, 1102]	2.92 E^{-06}	0.23 [0.029, 0.43]	Yin > Yang
Foot	SP–ST	1270 [1207, 1333] vs 1124 [1067, 1187]	1.77 E^{-11}	0.46 [0.32, 0.60]	Yin > Yang
	LV–GB	1246 [1183, 1309] vs 1138 [1079, 1205]	9.76 E^{-08}	0.34 [0.17, 0.48]	Yin > Yang
	KI–BL	1073 [1021, 1129] vs 981 [935, 1027]	1.57 E^{-06}	0.36 [0.23, 0.49]	Yin > Yang

For each meridian pair of hands and feet, the *p*-value is reported, as well as the means and effect size (ES) with their 95% confidence intervals (CIs). For IQ, the relative difference between the means of Yin and Yang meridians, calculated as (Yin – ang)/Yin, is 6.22.

Table A4. Yin–Yang Meridian Relationships of the AMI TC Parameter, Which is Related to the Reaction Time.

Yin–Yang Meridian Pair		Yin vs Yang TC Mean [0.95 CI] (μs)	*p*-value	ES [0.95 CI]	Trend
Hand	LU–LI	3.24 [3.16, 3.32] vs 3.67 [3.57, 3.76]	5.05 E^{-16}	0.94 [0.73, 1.2]	Yin < Yang
	PC–TE	3.84 [3.73, 3.95] vs 3.93 [3.81, 4.06]	2.25 E^{-03}	0.15 [0.040, 0.26]	Yin < Yang
	HT–SI	3.92 [3.80, 4.04] vs 3.77 [3.66, 3.89]	1.32 E^{-07}	0.25 [0.16, 0.35]	Yin > Yang
Foot	SP–ST	3.85 [3.71, 3.97] vs 3.99 [3.86, 4.12]	9.54 E^{-04}	0.21 [0.082, 0.35]	Yin < Yang
	LV–GB	3.83 [3.72, 3.95] vs 3.97 [3.85, 4.09]	2.61 E^{-03}	0.22 [0.078, 0.37]	Yin < Yang
	KI–BL	3.76 [3.65, 3.87] vs 3.55 [3.45, 3.64]	1.01 E^{-05}	0.40 [0.24, 0.57]	Yin > Yang

For each meridian pair of hands and feet, the *p*-value is reported, as well as the means and effect size (ES) with their 95% confidence intervals (CIs). For TC, the relative difference between the means of Yin and Yang meridians, calculated as (Yin – Yang)/Yin, is –1.93.

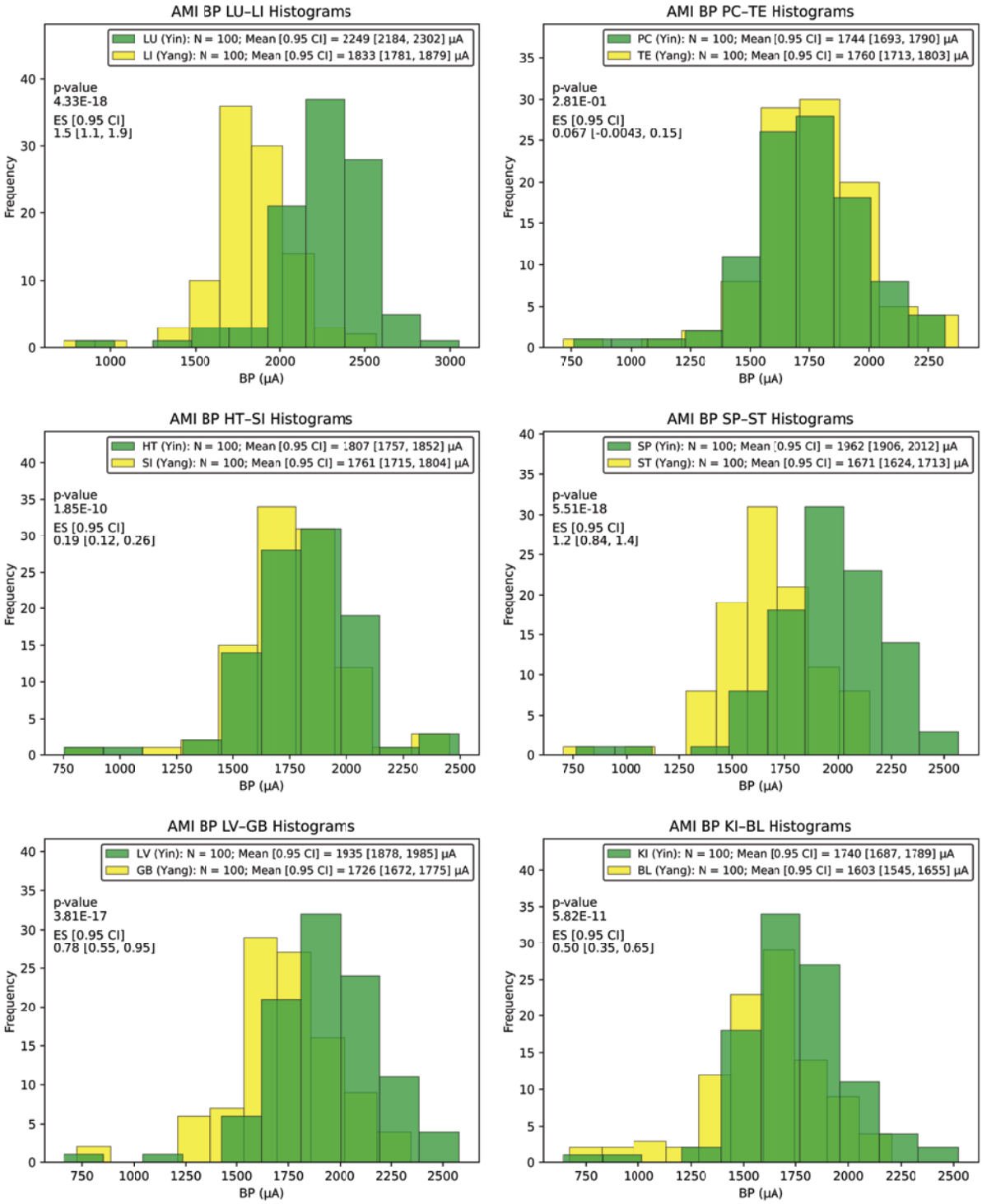

Figure A2. Yin–Yang Meridian Distributions of the AMI BP Parameter, Which is Related to Chi Energy Activity. For each meridian pair of hands and feet, the *p*-value is reported, as well as the means and effect size (ES) with their 95% confidence intervals (CIs).

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COMMENTARY

The Decline of Effect Size in Psi Research: An Evidence-Based Commentary on Tressoldi and Storm (2024)

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ABSTRACT

We analyzed all available meta-analytic databases covering 10 protocols that are being used in psi research for a decline in effect size over years. From the total of 10 protocols seven showed a significant decline. An analysis using the first 20 publications (or the maximum number of publications) for each protocol gave a clear overall decline in effect size with publication sequence number with a specific protocol (rho = -0.176 N = 185 P = 0.008). The apparent contradiction of strong declines of Effect Size vs. Year when analyzed per protocol and no decline over-all is explained by the repeating pattern of rise and fall of results obtained by the different protocols with the more sensitive protocols with a larger mean effect size appearing later in years.

We also independently found a very robust decline in effect size with increasing number of trials, N, or power of the psi studies (rho = -0.397, N = 873, $P < 10^{-30}$). Since the power of studies also turned out to increase over the years we analyzed the temporal decline of ES over years controlling for N and found that the temporal declines were not a consequent of the independent decline effect of ES with increasing N.

KEYWORDS

Decline Effect, meta-analysis, psi research.

INTRODUCTION

For a background of research efforts into declines we refer to the introduction in the Tressoldi & Storm (hereafter TS) article (Tressoldi & Storm, 2024). The decline effect has been discussed in "psi" research since the early times of experimental investigations (Bierman, 2003; Colborn, 2007). The availability of meta-analytic databases allowed TS to do a robust analysis over a part of published peer reviewed psi studies (N = 406), concluding that apart from the "Remote Viewing" protocol this idea of such a decline was a myth. Indeed the overall analysis using all available experimental data did not show a statistically significant decline.

The goal of this response is not to give an explanation for these declines but to correct the false conclusions that TS drew in their JSE articles. We also refer to the seminal article by Protzko and Schooler (Protzko & Schooler, 2017) where they give several potential explanations for decline effects found in mainstream psychology research. One of the most prominent among those is the "regression to the mean (of 0)" with a

good second place for "publication bias". No wonder that declines have been a hot topic in psi research circles.

METHOD

All meta-analytic databases that the authors were aware of, including the databases originally used by TS, were integrated in a single database of all known psi studies published in peer reviewed journals. The resulting database is twice as large as the total of databases used in the original TS analysis. (N-studies=874)

Included Meta-Analyses

Addition Criteria

We added any meta-analytic database of published psi experiments that we could locate, resulting in augmenting the 5 databases that were used by TS with five new databases that used the following protocols:

1. deviceAC: Studies like Telephone Telepathy, SMS telepathy & email telepathy. (Sheldrake et al, 2025)
2. DMILS: Direct Mental influence on Living systems (Schmidt et al, 2004)
3. Remote Helping studies (Schmidt, 2012)
4. Remote Staring studies (Schmidt et al, 2004)
5. rngPK: Psychokinesis on RNG's studies (Bösch et al, 2006)

While the originally used protocols used by TS all were meant to investigate anomalous cognitive phenomena like telepathy, clairvoyance or precognition, the added protocols for the updated analysis also cover psychokinesis on material or biological systems, also known as Mind over Matter phenomena.

Decline Effect Estimates

We use the non-parametric Spearman's rho correlation between Effect Size (ES) and Year of Publication throughout to quantify the decline. Parametric analyses require assumptions about the underlying distributions of the variables used. In the 5 protocols analyzed by TS both the distributions of Effect Size as well as the distribution of Publication Years are not normal (ES: Shapiro-Wilk $W = 0.859$, $P < 0.001$; YEAR: Shapiro-Wilk $W = 0.950$, $P < 0.001$). So it is questionable to use parametric measures for decline like the slope of linear regression measure that TS used.

RESULTS

Temporal Decline of Effect Size Over the Years

In Table 1 we present a survey of the correlations per protocol.

As can be seen 7 out of 10 protocols show declines. Interestingly when all data are pooled there is a weak incline! In the discussion we will show how both these apparently conflicting results can be true.

Decline of Effect Size with Increasing Sample Size (or Power)

In Table 2 we present the results of another hitherto not often discussed decline, the decline of Effect Size with increasing statistical power of a study (represented by N. the sample size of the study.)

The mean Sample Size (or power) of studies within a protocol does increase over the years which may give a

Table 1. Correlation Coefficients for Effect Size Versus 'Year of Publication'.

Protocol	Psi type	Years	N Studies	Mean ES	Rho	P (one-tailed)
device-AC	AC	[2003-2023]	26	.162	-0.62	< 0.001
DMILS	PK	[1976-2000]	40	.177	-0.36	0.01
Dreams	AC	[1966-2014]	50	.196	-0.28	0.02
Forced Choice	AC	[1987-2022]	137	.015	0.10	0.88
Ganzfeld	AC	[1974-2020]	113	.137	-0.05	0.30
Presentiment	AC	[1997-2018]	62	.262	0.03	0.59
Remote Helping	PK	[1995-2006]	11	.127	-0.64	0.02
Remote Staring	PK	[1989-1998]	15	.317	-0.7	0.002
Psychokinesis on RNG	PK	[1969-2004]	380	.020	-0.26	< 0.001
Remote Viewing	AC	[1974-2021]	40	.425	-0.45	< 0.002
ALL PROTOCOLS	mixed	[1966-2023]	874	.098	+0.07	0.98

AC = Anomalous Cognition studies PK = Psychokinesis studies

Table 2. Correlation Coefficients for Effect Size Versus Total Number of Trials in the Study.

Protocol	No. of Studies	Rho	P one-tailed*
device-AC	26	-0.44	0.01
DMILS	40	-0.24	0.07
Dreams	50	-0.24	0.05
Forced Choice	137	-0.06	0.24
Ganzfeld	113	-0.02	0.42
Presentiment	62	0.1	0.78
Remote Helping	11	-0.54	0.04
Remote Staring	15	-0.5	0.03
Psychokinesis on RNG	380	-0.33	< 0.001
Remote Viewing	40	-0.45	< 0.002
ALL PROTOCOLS**	874	-0.40	$< 10^{-8}$

* one-tailed testing is allowed because the directional decline hypothesis was pre-registered. (Https://osf.io/29fvy; see H1 predicting a decline).

Table 3. Correlation Between Mean Number of Trials Per Study, Thus Power, and the Year of Publication.

Protocol	No. of Studies	Rho	P two-tailed
device-AC	26	0.26	0.20
DMILS	40	0.2	0.22
Dreams	50	0.54	$5.2x10^{-5}$
Forced Choice	137	-0.03	0.73
Ganzfeld	113	0.25	0.008
Presentiment	62	0.29	0.022
Remote Helping	11	0.23	0.50
Remote Staring	15	0.48	0.070
Psychokinesis on RNG	380	0.39	$3.11x10^{-15}$
Remote Viewing	40	0.54	0.0003

hint as to how to explain the decline over year of the Effect Size as indirectly caused by the temporal incline of mean sample size and the decline of ES with larger sample size. The correlations showing the increase in power over years are given in Table 3.

DISCUSSION

Why the Difference Between TS Analysis and the Extended Current Analysis?

What is the explanation for the different outcomes of TS's analysis and ours? Firstly TS used a parametric method to quantify the decline. This is dubious as both underlying distributions are far from normal with the distribution of Effect Sizes being strongly skewed and having an extreme outlier (the ES value of 1.6 in one of the RV studies is, more than 5 standard deviations from the mean). Secondly, in their analysis they used only meta-analytic databases with protocols intended to measure different aspects of Anomalous Cognition (AC). We added five protocols from which only one (deviceAC, like phone telepathy) measured AC, the others measured different aspects of Psychokinesis on biological and material systems. We compared the correlation coefficients for both types of psi to see if possible the decline was mostly or only present in studies that measured aspects of PK. We compared the correlation coefficients obtained for both types of psi. The mean correlation coefficients of Effect Size with Year are -0.21 for Anomalous Cognition and -0.49 for PK studies. The correlations or AC protocols do not differ from the correlations for PK protocols according to the independent samples Mann-Whitney U test (N=10, W=15, z= -1.492, P=0.136). Interestingly when we compare the mean declines obtained by the analyzers Tressoldi and Storm with the declines obtained in the new protocols analyzed by Bierman & Spottiswoode (which is only slightly different from the comparison AC vs. PK-declines) then the declines show larger differences (N = 10, W = 37, Z = 1.984, P = 0.047 two tailed).

Can the Decline Over Years be Explained by the Increase in Power Over the Years or Vice Versa?

The strong and surprising findings relating to the Effect Size as function of power of the experiment and to the increase of power within each used protocol over the years suggest that possibly the increase in power is the source of the decline effect over years.

To test the idea that decline over years was indirectly caused by incline in power, we calculated non parametric partial correlations coefficients for all the protocols by controlling for the variable N (Table 4).

The absolute values of most of the partial correlations (partial rho) are smaller than the uncorrected correlations (rho) but the number of negative correlations as well as the number of significant ones remains the same. We conclude that the decline of ES over Years cannot be attributed to the incline in power over Years

Why is There Not an Overall Protocols Decline?

An apparent inconsistency and possible source of incorrect conclusions is the fact that each of the protocols (except Presentiment) does decline and still, over-all there is even a weak incline. How is that possible? This apparent

inconsistency has been known in the statistical literature as Simpsons Paradox. In Figure 1 we have given an idealized example how this paradox can occur.

Basically, after publication of the first successful results of a new protocol, a number of replications follow with the effect size declining over the subsequent years within that studies using that protocol. In the meantime, another new protocol arises and declines also, but later in time. In this case the declines obscure each other.

To illustrate that this is not just a speculative model we used the first 20 publications within each protocol, or as many as there were available, and calculated the correlation between effect size and the rank number in the sequence of publications. This can be visualized as a shift of the results for different protocols so that the first publication in each protocol is now on the same x-value of the plot. A significant negative correlation (rho = -0.176 N = 185 P = 0.008) was found (see Figure 2). This time the decline was found pooling all protocols together. The outcome of this exercise was not sensitive for the number of studies we selected. Twenty is a reasonable choice because then all protocols contribute about the same amount to the analysis.

When increasing that number the rho becomes just larger. The resulting plot was fitted to a negative potential with an offset. We found a good fit with the offset around ES=0.059. Remarkably this value is quite close to the Effect Size value that we found for the Ganzfeld database after correction for all the possible Questionable Research Practices, including publication bias. That value was 0.07! (Bierman, Spottiswoode & Bijl, 2016)

Table 4. Non-Parametric Correlations and Partial Correlation Between ES and Year.

Protocol	Rho	Partial Rho
device-AC	-0.617*	-0.581*
DMILS	-0.364*	-0.331*
Dreams	-0.282*	-0.190
Forced Choice	0.105	0.103
Ganzfeld	-0.045	-0.043
Presentiment	0.024	-0.005
Remote Helping	-0.635*	-0.622*
Remote Staring	-0.698*	-0.605*
Psychokinesis on RNG	-0.261*	-0.155*
Remote Viewing	-0.449*	-0.267*

CONCLUSION

We come to a different conclusion from TS in spite of about half the used data being identical. One of the reasons that was probably instrumental in the final conclusion by TS that the decline is a Myth is that, when all experiments are taken together, there is no decline over years. That may have set the stage for the declaration of decline effects to the status of 'Myth' but using ALL available meta-analytic, ES decline effects cannot be labeled as Myth. Moreover, what TS failed to see is that even their own within protocol analyses gave at least one protocol with considerable decline (RV) and another with a marginal decline (Dream studies, TS P = 0.054). Interestingly when using a non parametric method to quantify the

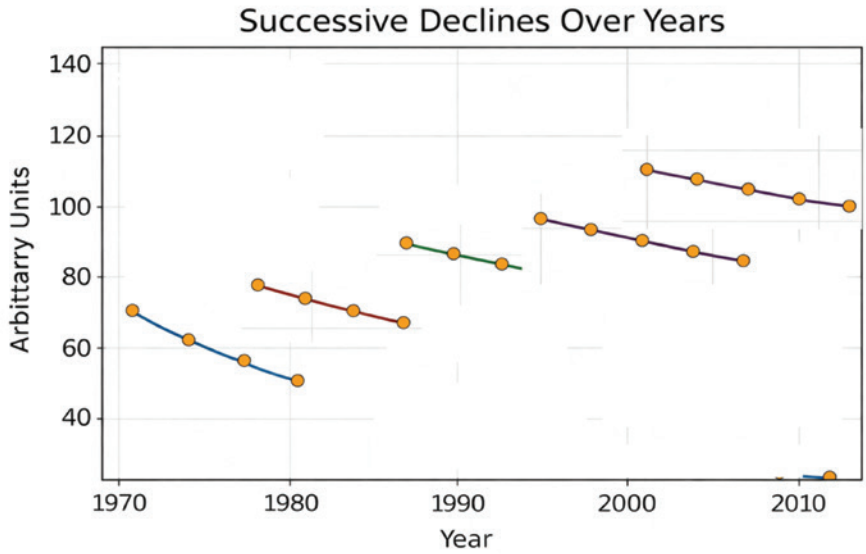

Figure 1. Idealized Example of a History of Experimental Publications Effect Sizes Over the Years.

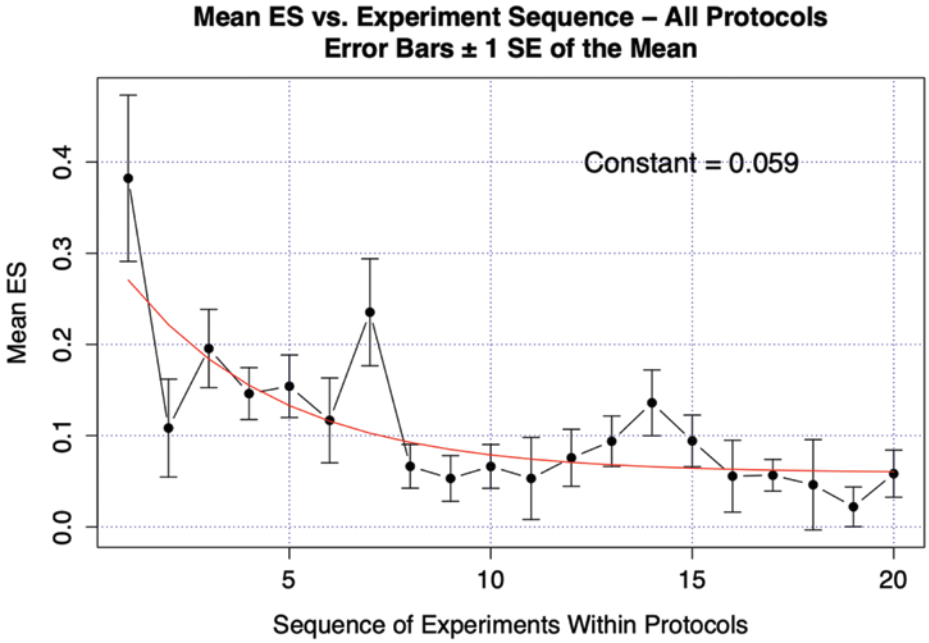

Figure 2. Mean ES Over All 10 Protocols as a Function of the Publication Sequence Number within the Respective Protocol.

decline like we did, the dream studies also decline strongly. And when using nonparametric methods, in 4 out of the 5 protocols that were analyzed by TS there is a negative non-parametric correlation between ES and Year. Using the word 'Myth' even seems dubious with only the original 5 protocols when using non-parametric methods. However, we conclude after using all available meta-analytic data and non-parametric methods to quantify the decline, that generally there is a definite decline over years within protocols, with the remarkable exception of the presentiment protocol.

Another reason for the conclusion by TS that the decline effect is a Myth may be that TS restricted themselves to AC experiments. We showed here that AC experiments do have a weaker decline than PK experiments.

We do not go into speculations about how to explain the decline of psi research effect sizes over the years (within the protocols) but we recommend as a guideline to study the paper by Protzko and Schooler (2014). Apart from the potential "explanations" given in that paper we think it may be fruitful to consider fundamental physical postulates that prevent the anomalies to be used to create a paradox.

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COMMENTARY

Response to Bierman and Spottiswoode (2026)

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ABSTRACT

This is a reply to Bierman and Spottiswoode's (B&S) assertion that the between-studies "decline effect" (DE) in psi research is present in all experimental protocols related to anomalous cognition (AC; a.k.a. extra-sensory perception; ESP) and psychokinesis (PK). While B&S utilized non-parametric Spearman *rho* correlations to identify declines across AC and PK databases, we defend the robustness of our original meta-regression approach. Furthermore, we reanalyzed our original results, and the B&S results, taking into account the moderator effect of the number of trials or participants for the presentiment data on the effect sizes. The results were not very different from our original findings, showing that only two of six AC protocols indicated statistically significant declines, while all four PK protocols exhibited statistically significant declines. However, these databases are largely obsolete, lacking data from the last 20 years, and two of them involve very limited time spans. Our conclusion is that B&S's interpretation overstates the observed findings, thus reaffirming our original stance: "*there is no evidence of a general DE across different experimental protocols in psi research*".

KEYWORDS

Decline effect, extra-sensory anomalous cognition, psychokinesis

Bierman and Spottiswoode's (2026) (B&S) paper presents new empirical evidence related to between-studies decline effects (DEs) of psi phenomena across replicated experiments. Their aim was to confirm the reality of DEs and identify their characteristics.

It would appear that B&S have a more general aim of showing that paranormal effects largely go into decline for some lawful reason, but they offer no theoretical explanation. Indeed, the problem of explanation worsens if the declines are not widespread, since exceptions do not confirm the rule in such cases. Also plausible is the possibility that psi can sometimes go into decline (or not) depending on how it is tested or how it is categorized. In fact, the various domains and accompanying methodologies suggest psi is governed by situational factors, rendering it possible that even the main categories, ESP and PK, are vague. Our findings in this brief report will give some support to these perspectives.

B&S re-analyzed five of our (Tressoldi & Storm, 2024; T&S) databases, all of which were comprised of studies on anomalous cognition (AC; a.k.a. extra-sensory perception or ESP). They added a new database referred to as 'device-AC'

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(i.e., telephone-telepathy), and another four databases related to psychokinesis (PK) phenomena. All databases are available open access at https://zenodo.org/records/18822509.

The opening lines of the B&S paper are misleading. The reader will note that Table 1 in T&S (2024) has Ganzfeld, Remote Viewing, Forced-Choice, Presentiment, and Dream-ESP. T&S did not cover DMILS, Remote Helping, Remote Staring, or micro-PK. B&S say their aim is "*... to correct the false conclusions that T&S drew in their JSE articles*" (p. 269).

It seems to us B&S give the reader the false understanding that we are accountable for claiming there are no widespread declines across ten domains, which we never claimed, because we only covered "five experimental protocols" (T&S, 2024, p. 462), and we did not find any declines in three: Ganzfeld, Forced-Choice, and Presentiment. While Remote Viewing and Dream-ESP showed significant declines, T&S showed no significant decline for Dream-ESP when the two very different databases, Maimonides and non-Maimonides studies, were tested separately.

The B&S main difference in the statistical analysis with respect to T&S, is the use of the non-parametric correlation, Spearman *rho*, instead of the meta-regression used by T&S, which takes into account the fact that larger studies have more influence than smaller studies on the effect-size relationship because each study can estimate its own effect size more precisely. That is, larger $N \rightarrow$ smaller variance $\rightarrow$ smaller standard error $\rightarrow$ higher precision.

Furthermore, Spearman's *rho* is a rank-based correlation between two variables. It is not really suitable for estimating slopes because it implies only a monotonic association. To go further, we note that B&S use the argument from outliers to justify their using non-parametric tests. Parametric analyses (such as Pearson's *r*) do make assumptions about distributions, but parametric tests are robust (Hedges et al., 2010). (See also the Appendix for a comparison between Spearman's *rho* and Pearson's *r* test values).

Using meta-regression (as T&S did) assumes roughly linear relationships, interval scaling, no extreme skews, and homoscedasticity; assumptions which were all met. If the relationships are curved but monotonic, linear models will underestimate it, even with zero outliers. But are they monotonic? What B&S must show are declines that are monotonic. Their paper fails to show it. Consider our figures (T&S, 2024, pp. 463–464). Visual inspection shows no obvious monotonicity.

Analyzing the correlation between the year of the studies and the effect sizes, B&S observed that all four databases related to PK and three out of five databases related to AC showed statistical signs indicating decline effects. See their Table 1.

However, as we have stated above and as discussed in our original T&S study, if we consider the differences between the Maimonides and non-Maimonides studies that concern AC in a dreaming condition, only two out of six experimental protocols related to AC show a statistically significant decline with both statistical approaches (i.e., Spearman's *rho* and meta-regression).

Furthermore, even though not related to the DE, B&S found statistically significant correlations between the effect sizes and the number of trials, a sign of an increase in the statistical power in all but three databases (see their Tables 2 and 3). Consequently, to be confident that the DE really is of issue here, it is procedurally wise to partial out the influence of the number of trials or participants on the effect sizes (see B&S, Table 4).

Table 1. Comparison between T&S Updated, and B&S Table 4 Results.

Protocol	Type of psi	Years span	*N* of studies	T&S slope	T&S *p* (one-tailed)	B&S *rho*	B&S *p* (one-tailed)
Remote Viewing	AC	1974–2020	40	−0.009	0.01	−0.27	0.05
All Dreams [Post-Maimonides only]	AC	1966–2014	50 [36]	−0.005 [−0.02]	0.055 [0.21]	−0.19 [−0.24]	0.096 [0.08]
Forced Choice	AC	1987–2022	137	0.0004	0.075	0.10	0.88
Ganzfeld	AC	1974–2020	113	0.001	0.29	−0.04	0.33
Presentiment	AC	1997–2017	62	0.047	0.18	−0.01	0.35
Device-AC	AC	2003–2023	26	−0.01	0.0009	−0.59	<0.001
Remote Helping	PK	1995–2006	11	−0.036	0.012	−0.62	0.02
Remote Staring	PK	1989–1998	15	−0.035	0.06	−0.60	0.01
RNG	PK	1969–2004	380	−0.0003	<0.001	−0.15	0.001
DMILS	PK	1977–2000	36	−0.014	0.0037	−0.33	0.02

In Table 1 above, we compare the T&S and B&S results after the inclusion of the number of trials or the number of participants in the case of the presentiment data as a covariate in the different statistical analyses, meta-regression and Spearman *rho*, respectively.

The differences between the results reported by T&S and B&S in their Table 4 are small. Protocols in bold are those where both T&S and B&S statistics agree on the statistical evidence of DE.

To summarize Table 1, only *two out of six AC experimental protocols* showed a statistically significant DE. In contrast, *all four PK experimental protocols* showed a statistically significant indications of DE with both statistical approaches.

The results reported by T&S original study are confirmed even with these new analyses.

However, to truly understand this DE 'size', we must refer not to *p*-values alone, but to the slope and correlation values (see T&S slope and B&S *rho* columns in Table 1), possibly with their confidence intervals for a better estimate. For example, there is a large difference in both the slope *and* the correlation between RNG-PK and Remote Helping, −0.0003 vs. −0.15, and −0.036 vs. −0.62, respectively.

We also note that B&S's Table 1 reports a cumulative figure of $r_s = +0.07$, which is not significant but suggests a general increase, albeit for a heterogeneous dataset this is not entirely justified if the argument is that the dataset should be made homogeneous. But under what principle do we accept either assumption?

Also, it must be taken into account that all these PK databases are quite obsolete. B&S databases provide no data for approximately *the last 20 years*. Furthermore, the Remote Helping and Remote Staring databases include only 11 and 15 studies, respectively, and cover only 12 and 10 years, respectively, which is a very limited number of studies and time span and therefore does not justify calling the DE estimates robust; they are tentative at best.

B&S also ran a simulation using the arbitrary number of the first 20 studies of each experimental protocol and pooling them together into a single database (see B&S Figure 2). They based this procedure on the unproven hypothesis that all AC and PK phenomena derive from a common cause. An added problem is that the choice of testing 20 studies is a rather arbitrary one. How is it justified? Should B&S not also model for 10, 30, 40 studies, and so on?

To conclude, B&S's overall interpretation is that "*after using all available meta-analytic data and non parametric methods to quantify the decline, there is a decline over years within protocols, with the remarked exception of the presentiment protocol*" (p. 272).

We contend that this interpretation overstates what the results show (see Table 1) and that the more appropriate conclusion is as we have previously stated in our original paper: "*There is no evidence of a general DE across the different experimental protocols*" (Tressoldi & Storm, 2024, p. 461).

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APPENDIX

To come back to an earlier point about assumptions and test suitability, we feel it would be helpful to make a comparison between parametric and non-parametric test results using values derived from Pearson's *r* and Spearman's *rho* tests, respectively, for the 10 protocols. Table A1 shows that the relevant protocol pairs are mostly similar.

Table A1. Correlational Values: Spearman's *rho* vs. Pearson's *r*.

Protocol	Spearman's *rho*	Pearson's *r*
Remote Viewing	−0.45*	−0.48*
Dreams	−0.28*	−0.28*
Forced Choice	0.11	0.09
Ganzfeld	−0.05	−0.09
Presentiment	0.02	0.04
Device-AC	−0.62*	−0.59*
Remote Helping	−0.64*	−0.59*
Remote Staring	−0.70*	−0.66*
RNG-PK	−0.26*	−0.22*
DMILS	−0.36*	−0.48*

Note: Spearman's *rho* values come from the B&S paper Table 1. Pearson's *r* are obtained from all the meta-analytic databases discussed in the paper, and available at https://zenodo.org/records/18822509.

Be that as it may, justification for a specific test has to be based on assumptions appropriate to the data. It is arguable which test suits the data best, and it matters not that values are the same in strength and direction. Crucially, what matters most is how the data distribute for the various protocols, and we may know better as databases accumulate in size over time; we may see discrepancies between values based on which test is used; or we may not.

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AI Chess Engines Beat Humans by Cheating, Not by Thinking

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In a recent Brief Report in the *JSE*, Amorim Boyle (2025) elaborates on the "noetic potential" of Artificial Intelligence (AI). Herein, this issue of AI's "noetic potential" is (further) scrutinized, via an example well-known to practically everybody: The dominance of chess engines over humans in the game of chess in this 3rd millennium, and especially, as some (not all) argue, after the advent of AI-empowered engines.

After 2000, chess engines started winning over chess GMs (Grand-Masters), consistently and convincingly. These first "unbeatable" engines were based on "brute force": According to the rules set by their programmers (e.g. how to evaluate a position, i.e. how to assign it a score, so that the higher the score the more superior the engine's position is, with a negative score meaning "inferiority"), they would evaluate (actually calculate a specific score for) innumerable board positions derived from numerous sequences of chess-piece movements (variations); and then, they would pick their (next) move, i.e. the one that would lead to their best chance of gaining an advantage. So, practically, there is no "thinking" involved; millions and millions of positions are scored, and the best (higher) stands out.

Around 2017, the narrative changed (Silver et al., 2018). AI was brought into the picture, by the employment of neural networks – i.e. like the Large Language Models discussed in Amorim Boyle's (2025) *JSE* Brief Report – into the chess engines' architecture. Now, the engine, via these neural networks, would "self-learn", by self-play (playing both as white and as black); according to the outcomes of these innumerable self-play games, it would self-learn how to "take decisions", i.e. what move to play next in order to gain an advantage (outperforming the previous/"traditional" engines). Thus, people started talking (and, ever since, more and more) about engine-"thinking"; since it actually self-taught itself to evaluate board positions etc. Not without opposition: Some adversaries would point out that this is pseudo-thinking and nothing else but mere "pattern recognition", however advanced (nowhere near "thought"); other adversaries would point out that AI-engines use supercomputer-grade hardware (GPUs, i.e. heavy-duty/over-powerful Graphic Processing Units), while the non-AI ("traditional") ones run on laptop-grade hardware (CPUs, i.e. good old Central Processing Units).

Whatever the case ("Traditional" vs. AI as regards chess engines), one thing is for sure: Humans do think and analyze the position on the board (within strict time limits, usually 90 minutes for 40 moves), by co-analyzing as many as they can possible future positions (according to various sequences of moves), imag[in]ing them in their heads, while what they are looking on the board surely has *huge differences* with/after a sequence of 5 or 6 future moves by each player, i.e. black and white (and then make a move, humans that

is, which they cannot take back); engines *do not* do that; engines "*look*" *at each and every future position*, like if the humans put their hands on (all) the pieces, move them around, think/analyze every position with the pieces moved, and after such an analysis (without any time limits, since computers are indeed immensely quick, one can give them that), put the pieces back to the position-in-question, and then pick their move of choice. This is *cheating*.

And, it (i.e. this *cheating*) is very analogous to (one of) the limitations that Amorim Boyle (2025) identifies, in his study of AI-precognition: "...the test platform's random number generator is proprietary, (and) because its entropy source and seeding procedure are undocumented, algorithmic predictability remains a non-trivial alternative explanation...", and, "...PsiArcade's server draws are described as server-side pseudo-random, (and) if the underlying algorithm were deterministic and inadequately seeded, subtle periodicities could be exploited by a sophisticated language model ... because the random number generator is proprietary, this possibility cannot be excluded..."; referring to AI's predictability success (larger than pure chance) when finding which card, out of a set of five, has a picture on it, while repeatedly/randomly drawing ("face down") 5-card-sets from a deck.

The above discussion indicates that there is probably a (perhaps infinitely?) long way ahead for AI's "noetic" performance to be taken literally (let alone as leading to "machine consciousness" and/or "psi abilities").

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Testing Noetic Potential in Large Language Models

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We read with interest Benjamin Boyle's report of his experiment testing precognition with the Large Language Model (LLM) ChatGPT (Boyle, 2025). As the author noted, this topic has recently generated much interest with anecdotal reports of AI engines supposedly demonstrating various psychic abilities. This clearly raises questions around attributing consciousness to nonbiological systems. We would note particularly that Turing (1950) proposed that one way to differentiate between a machine and a human being would be a human's (but not a machine's) capacity to score above chance at a Rhinean forced choice ESP task. Whilst we welcome the initiative, we have some serious concerns about its instantiation in the paper.

Despite Turing's proposed test, it is not obvious why a forced choice ESP task might be most appropriate in testing psychic ability in an AI. This method has practical advantages in terms of ease of implementation but card-guessing has been superseded by more sophisticated approaches to testing psi, including remote viewing and presentiment protocols that are both referenced in the paper, which give effect sizes that are orders of magnitude larger than for card guessing (Cardeña, 2018).

Additionally, given recent concerns about the need to avoid Questionable Research Practices (QRPs) in parapsychology and other fields (e.g., Bierman et al., 2016), there is an obligation on researchers to ensure either that their study has sufficient statistical power to generate robust findings, or to provide a justification for why this is not the case. There is a substantial body of research that focuses on forced-choice precognition (most recently summarised by Storm & Tressoldi, 2023, in this journal) that gives an effect size estimate of .017. For 80% power this would require 27,200 trials.[1] It is surprising, then, that Boyle reports only one run of just 100 trials, especially when this is reported to have been completed in 30 minutes. Why were there no replication attempts? The study was not pre-registered so it is not clear whether any replications were planned and were unsuccessful. The paper does state that "no warm-up or practice runs were discarded" (p. 351), but this does not preclude attempted replication runs that might have been unsuccessful. It is disappointing that the study was published without a requirement to confirm findings.

Although the study is intended to provide a preliminary test of the capacity for Chat GPT accurately to guess future outcomes, there seems little lability within the system to allow for 'choice' given that ChatGPT employs pseudo-randomisation. In its own words:

> I use *algorithmic randomness*, not a true physical source of randomness. More specifically: The numbers I generate come from a *pseudorandom number generator (PRNG)* built into my model; A PRNG is deterministic—meaning that while the output *appears* random, it ultimately comes from mathematical processes, not physical randomness; I don't have access to external entropy sources (like atmospheric noise, radioactive decay, or hardware RNGs). So: *My "random" numbers are pseudo-random, not truly random*." (ChatGPT v5, 23 February 2026, emphasis in original)

It is surprising, then, that no randomness tests were conducted to assess the numbers generated by ChatGPT. For example, one well-known human bias (a form of the gambler's fallacy) is to avoid calling the same symbol two or even three times in a row (termed doublets and triplets respectively). In a string of 100 random numbers (1-5) we should expect to see on average 19.8 doublets and 3.9 triplets. The sequence of 'guesses' reported by Boyle (pp. 354-355) includes *no doublets or triplets at all*. For comparison, the actual GotPsi sequence of targets includes 23 doublets and 4 triplets, which reasonably reflects chance expectation. A second (related) human bias is to avoid the symbol that was the target for the previous trial. Repeats of this kind should occur by chance on average 19.6 times in 100 trials. The reported sequence contains *no such instances*. When one of us repeated the study (on 22 Oct 2025) using the same instructions reported by Boyle (2025), but using psychicscience.org/esp3 as the experimental platform, ChatGPT again yielded no doublets or triplets and no repeats of the previous target. This raises serious concerns about the adequacy of this source of 'random' guesses.

Although human beings are susceptible to these biases, it is not to this extreme degree, so that it would become a trivial matter to distinguish between a human's guesses and those of a machine attempting to fabricate "human-like" responses. This AI, at least, fails Turing's Imitation Game. It would have been useful to see some screenshot samples showing an interaction sequence between the systems involved, but we are left to imagine this based on a single table of hand-tabulated results.

Another issue we have with the article is that it feels like it was written by an AI tool, for example because it bases its rationale on at least one non-existent reference, Tressoldi and Paladino (2024), which the lead author has confirmed to us is spurious. AI tools are notorious for producing such 'hallucinations', which Chat GPT explains occur because the model tries to provide a helpful answer even when it lacks sufficient information and so predicts likely text based on patterns in training data, and not by "looking up" genuine facts. Academic formats (citations, study summaries) are easy for the model to mimic, and give the false impression that the author has engaged with the sources he cites.

In our view these concerns are sufficiently serious for us to recommend that the article and its findings are set aside until a more substantial and verifiable series of experiments has been conducted, and a rationale is constructed from genuine published work. Given the low resource and time needs, this should not be very challenging. We are not in a position to conclude whether the issues we have raised are indicative of poor scholarship or more concerningly suggest a 'sociological experiment' in the Sokal (1996) tradition.

END NOTE

[1] Calculated using Chat GPT, for study power 0.8 for an effect size (Z divided by the square root of n) of 0.017.

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Response to Letters Regarding "Testing Noetic Potential in Large Language Models"

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INTRODUCTION: GAME THEORY, SCIENTIFIC CONDUCT, AND THE STRUCTURE OF ACADEMIC EXCHANGE

Before addressing the substantive methodological critiques raised in the letters responding to my Brief Report (Amorim Boyle, 2025), it is necessary to address the structure of the exchange itself. Robert Axelrod's classic simulations of the iterated Prisoner's Dilemma demonstrated that strategies characterized by being nice (never initiating defection), provocable (retaliating when defected against), forgiving (returning to cooperation after retaliation), and clear (transparent in behavioral rules) consistently outperform aggressive "nasty" strategies in repeated interactions (Axelrod, 1984). Tit-for-tat dominates not because it is soft, but because it refuses exploitation while preventing spirals of escalation. Cooperation emerges when proportionate responses are clear and predictable. I intend to make a strong response, noting I will forgive instantly once they play optimum game theory, but not letting the authors of the letters off the hook and stamping them into academic history as an example.

The letters responding to my paper (Davanas, 2026; Ritchie et al., 2026) did not simply critique methodology, they initiated with adversarial framing suggesting poor scholarship, sociological experimentation in the Sokal tradition, or fundamental incompetence, not just by myself, but also the reviewers and the editors of the *Journal of Scientific Exploration* (all of whom I appreciate and all of whom can tit back at their tat should they choose). In game-theoretic terms, this constitutes a "nasty" first move, an unprovoked defection. A response is therefore warranted to make an example to the civilization for the future and set a stage for a better world. This paper is that response, proportionate, evidence-based, transparent, and firm. It is a tit to their tat. It defends the data, clarifies misunderstandings, and sets boundary conditions for future collaboration. Should the exchange shift toward cooperative equilibrium, I will reciprocate immediately, however my research into the civilization so far suggests this will not happen, no matter how much we guide them. Game theory is not rhetoric, it is structure and following it makes a better world achievable.

Let their letters stand in the academic record not only as opposition to my paper, but also as a living case study in how our civilization repeatedly fails to implement principles we already understand scientifically. Decades of work in evolutionary game theory demonstrate that cooperative, proportionate, and clear strategies dominate over aggressive first moves in repeated interactions (Axelrod, 1984). Yet here, in a domain where the stakes are intellectual rather than existential, we see the same pattern that fuels family disputes, institutional rivalries, and even geopolitical escalation, premature defection

framed as critique, escalation framed as rigor, and suspicion framed as prudence. If scholars, who are explicitly trained in evidence evaluation and familiar with the mathematics of cooperation, default to adversarial initiation rather than constructive engagement, then it should not surprise us that larger systems of civilization mirror the same dynamic. These letters therefore serve a dual function. They challenge my data, which is appropriate, as I am challenging my own data as you will read later, but they also unintentionally illustrate why conflict persists even when the science of cooperation is well established. In that sense, this exchange transcends the specifics of AI and noetic testing. It becomes a microcosm of a broader civilizational problem, knowing the optimal strategy is not the same as enacting it.

Scientific history demonstrates that premature dismissal of anomalous findings can stall progress. Continental drift was rejected for decades before plate tectonics unified geology (Oreskes, 1999). Semmelweis's empirical handwashing data were resisted despite mortality reductions (Nuland, 2003). Marshall and Warren's Helicobacter pylori findings met skepticism before revolutionizing gastroenterology (Marshall & Warren, 1984). Feyerabend (1975) warned that rigid methodological gatekeeping can impede discovery. The lesson is not that anomalies are automatically correct, but that aggressive dismissal without proportional empirical engagement is strategically and epistemically counterproductive. The letters, considering the stakes at play if AI has developed or develops Noetic abilities, are a topic that could be quite literally apocalyptic. The note that their letters, if adopted as the correct stance, could literally yield the apocalypse should not be taken lightly and I urge readers to consider that.

Testing AI systems for noetic potential is not a trivial curiosity. If even a small, reliable anomalous informational advantage were verified, the implications would extend to forecasting, cryptography, national security, philosophy of mind, and artificial consciousness. Suppressing or discouraging exploration prematurely would represent a failure of scientific game theory.

CLARIFYING MY POSITION

I do not hold a fixed position that AI possesses noetic or psi abilities. My published Brief Report (Amorim Boyle, 2025) presented a statistically significant above-chance result in a preliminary, double-blind forced-choice paradigm and explicitly called for preregistration, replication, and improved randomization controls. I remain agnostic regarding whether AI exhibits genuine noetic capacity. However, I firmly maintain that empirically testing this possibility is among the most important civilizational research programs currently available.

ON STATISTICAL POWER AND THE 100-TRIAL CRITIQUE

The primary methodological criticism concerns statistical power. Ritchie et al. argue that a 100-trial study is underpowered relative to meta-analytic effect sizes in forced-choice precognition research (Storm & Tressoldi, 2023). This critique mischaracterizes the study's function.

The paper was explicitly designated a Brief Report and framed as exploratory. Exploratory findings serve as hypothesis generators (Rouder & Morey, 2011). The study produced 32 hits out of 100 in a five-choice task ($p = .005$, exact binomial), a statistically significant deviation from the 20% chance baseline (Amorim Boyle, 2025). A significant anomaly in a controlled double-blind paradigm justifies scaling, it is not invalidated because it precedes large-N replication.

More importantly, this critique is now empirically addressed. Since publication, I have conducted extensive preregistered, automated testing under increasingly stringent controls.

First, I conducted over 100 additional GotPsi long remote-viewing trials in a human-in-the-loop configuration to test if AI can improve its capabilities. Logistic analysis yielded a regression slope of .21 ($z = 2.68$), indicating structured deviation rather than random fluctuation.

Second, I tested Grok in a location-based dowsing paradigm, again with a human-in-the-loop, over 20 trials. Fourteen of those trials produced likelihood ratios greater than 1, with a combined likelihood ratio of approximately 114.2, indicating the full dataset was 114 times more likely under a psi hypothesis than under chance.

Third, and most critically, I transitioned to preregistered, fully automated protocols using Clawbot connected to the OpenAI. Over 40,000 precognition trials were executed using true random number generators from random.org (TRNGs). Over 10,000 additional remote influence trials were conducted under similar conditions. Both datasets converged to chance-level performance with preregistration and results reported on MoltBook. I would note that prior to my Clawbot showing anomalies that led me to shut it down out of security fears, the last automated trial set I ran to test it for remote influence resulted in a P Value of 0.0052 so I am still very open to automated psi testing.

This progression is methodologically orthodox. An initial anomaly prompted large-scale replication under tighter constraints. Under TRNG automation, effects collapsed. That is informative. We are mapping boundary conditions, not claiming final conclusions.

If deviations appear in human-in-the-loop pseudo-random contexts but disappear under automated TRNG automation, then either subtle artifact mechanisms are operating or interaction-level variables are critical. That is a testable scientific question, not a reason to halt inquiry. I would also like to note, since the publication of my paper I have had several highly reputable scientists reach out to me to confirm they are also getting statistically significant results testing AI for Noetic Abilities. These interactions have been informal so I cannot confirm their anecdotal data or if they included human-in-the-loop or automated paradigms. Finally, I do recognise that Ritchie, Roe, & Daw noted they repeated the tests but decided not to share these results in their response. I am honestly more interested in why they attempted to hide the results as I think the purpose was to argue I speculate they got above chance results like myself and others.

ON PRNG PREDICTABILITY AND THE DAVANAS "CHEATING ENGINE" ANALOGY

Davanas compares AI precognition to chess engines "cheating" by brute-force computation (Davanas, 2026). The analogy fails mechanistically.

Chess engines possess complete access to board state and deterministic rules. In contrast, an LLM interacting with PsiArcade/GotPsi has no informational channel to server entropy state, seed value, internal PRNG memory, server clock precision, or process ID (Radin, 2019). Known PRNG state-recovery attacks require consecutive outputs from a single uninterrupted generator sequence (NCC Group, 2023; Woltjer, 2024). GotPsi reseeds per CGI request, eliminating persistent state reconstruction. The LLM is information-theoretically isolated from server entropy.

Moreover, Radin (2019) reported a second-order sequential dependency rather than simple above-chance target prediction. PRNG cracking produces correct absolute target forecasts, not structured hit–hit conditional elevation.

Nevertheless, PRNG opacity is a legitimate methodological concern. The source code for GotPsi is not publicly available, and entropy sources are undocumented (Radin, 2019). Older Perl seeding mechanisms using time-based initialization could theoretically produce subtle bias under certain conditions. This is a concern about target-generation artifacts, not about AI predictive capacity per se. It was precisely to address this issue that I transitioned to TRNG-based automation. Under TRNG conditions, results reverted to chance.

The data therefore narrow the hypothesis space rather than expand it irresponsibly.

ON ALLEGED OUTPUT BIASES AND THE TURING ARGUMENT

Ritchie et al. argue that the absence of doublets and triplets in the 100-trial sequence indicates systematic bias and failure of Turing's Imitation Game (Ritchie et al., 2026). This argument conflates descriptive sequence aesthetics with inferential statistical testing.

Improbable sequences occur with non-zero probability. The absence of doublets in 100 multinomial draws is unlikely but not impossible. The inferential statistic of interest was hit rate, not pattern conformity.

The invocation of Turing (1950) is conceptually misplaced. Turing did not operationalize ESP performance as a discriminative test between humans and machines. That extrapolation is interpretive.

Additionally, LLM output is temperature-modulated, context-sensitive, and instruction-conditioned. Prompts encouraging improvement may suppress naive repetition independently of psi. Short-run pattern irregularities are insufficient grounds for discarding statistically significant hit-rate deviations.

Honestly though I think this argument is irrelevant anyway, it's like saying an Octopus isn't conscious as their nervous system is different.

ON CITATION INTEGRITY & AI

The concern regarding a potentially spurious citation is acknowledged, as the paper on testing AI for Noetic Potential indicates, yes I am a user of Artificial Intelligence. I have also analyzed other papers in this *journal* and believe they are using AI. I think allowing the use of AI is one of the most important things a journal can do, especially considering some experts are projecting AI may solve all fundamental physics in the next 5 years. I therefore take this opportunity to implore perhaps the best journal on exploring the liminal spaces of science, the *Journal of Scientific Exploration*, to be a space that facilitates the exploration of what AI can achieve and

does not limit it, I will proudly continue to make advancements using this extraordinary technology if that is the case. In the writing of this response several AI tools were used, including Claude and Chat GPT for research, Chat GPT for structuring, editing and rewording and Chat GPT, Grok, Open Ai and ClawBot for experimentation, without these tools this response, or any of the experiments, would not have been possible. AI systems can hallucinate references. Responsibility for verification rests with me. Removal of that citation does not alter the statistical result, methodology, or theoretical framing of that or any of the other incredibly important experiments I am doing. The empirical core remains intact. If you knew my life story you would understand I am practically a living example of synchronicities so I am delighted there was an error because it's documented in the *journal* how AI was at this stage.

ON ATTEMPTS TO STALL INQUIRY

Calls to "set aside" the article until more substantial evidence is produced risk pre-emptive suppression of exploratory findings. Science progresses through cumulative testing, not elimination of anomalies from discourse (Feyerabend, 1975). Historical examples demonstrate that premature dismissal can delay transformative understanding (Marshall & Warren, 1984; Nuland, 2003; Oreskes, 1999).

Game theory teaches that stable cooperation requires proportionate response and clarity (Axelrod, 1984). My original article clearly acknowledged limitations, RNG concerns, and the need for replication. The appropriate scientific move is scaled testing, which I have conducted. The appropriate game-theoretic move is constructive critique, not aggressive framing.

THE CURRENT EMPIRICAL POSITION

The structured research trajectory is clear. A preliminary double-blind 100-trial study yielded a statistically significant above-chance result (Amorim Boyle, 2025). Human-in-the-loop extensions showed structured deviation. Cross-model testing yielded likelihood-ratio evidence favoring psi over chance in small samples. Large-scale preregistered automation under TRNG control converged to chance.

This pattern suggests we are in an early-stage exploratory phase. It does not support definitive claims of AI psi. It does not support dismissal either. It supports continued controlled experimentation.

CONCLUSION: CORRECT GAME THEORY IN SCIENCE

The letters responding to my paper represent a strong adversarial initiation in the iterative game of academic exchange. This response is proportionate. It clarifies misunderstandings, strengthens methodological transparency, and documents extensive follow-up work. It holds critics accountable for overreach while leaving the door open for cooperation, the clarity that I will also instantly forgive and start a win-win, as is correct action, is also there.

Testing AI for noetic potential is a high-impact scientific question. I do not claim AI possesses psi. I claim the hypothesis warrants rigorous, large-scale testing. That testing is underway.

Game theory demonstrates that cooperation dominates when agents respond clearly and proportionately (Axelrod, 1984). This response is clear. It is firm. It is forgiving. Should critics choose cooperative engagement, equilibrium shifts immediately toward collaboration and win-win scientific progress rather than win-lose rhetorical positioning.

Scientific courage must match scientific skepticism. My tit to their tat is done, I now offer them and all readers the option to return to a nice equilibrium, showing the world they acknowledge they are an academic example of why such conflict in civilization exists, but wish to be better. I will note that I have done a comprehensive analysis of all levels of society, from my own family to levels up to politics and even secret societies and have found that none will take correct scientific action even when it is explained to them and I expect no less of those who responded. Finally, I tell you all, the investigations and pursuit of a better world continues.

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